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Prevalence and Correlates of Drinking Behaviors of Previously Deployed Military Personnel and Matched Civilian Population

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Abstract

We examined drinking behaviors (frequency of use, quantity of use, and frequency of binge drinking) and correlates of frequency of use and binge drinking in a representative sample of previously deployed personnel from the US military ($n = 1887$). Drinking behaviors were compared with a matched sample of adults in U.S. households ($n = 17,533$). Comparable patterns of alcohol consumption were reported in both samples: 70% of previously deployed personnel and 69% of US adults reported drinking alcohol in the past 30 days though, civilians drank on average more drinks on the days that they drank than did previously deployed military personnel. Regression analyses indicated that among previously deployed military personnel, deployment-related experiences (e.g., combat-related traumas) and psychological distress (e.g., symptoms associated with posttraumatic stress disorder) were associated with frequency of drinking behaviors. We discuss the implication of our findings for developing interventions to modify drinking behaviors for military personnel.

Keywords

Military; Alcohol; Epidemiology; Iraq; Afghanistan

Over the past thirty years, there have been noteworthy reductions in the prevalence of adverse substance-using behaviors among military personnel. Between 1980 and 2008, the prevalence of illicit drug use among active duty military personnel decreased from close to 30% to less than 5%, excluding a recent increase in nonmedical use of prescription drugs since 2005 (Bray & Hourani, 2007; Bray et al., 2009). However, unlike trends in illicit drug use, the prevalence of heavy alcohol use among active duty military personnel has remained the same as it was thirty years earlier. In a 2008 survey, approximately 20% of active component military personnel reported using alcohol heavily in the past 30 days (Bray et al., 2009).

Concern about alcohol misuse among military personnel is heightened by evidence documenting high rates of psychological distress among those who deploy to Afghanistan (in support of Operation Enduring Freedom, or OEF) and/or Iraq (as part of Operation Iraqi

Freedom, or OIF), coupled with the association between trauma-induced psychological distress and alcohol misuse (Stewart, 1996). To date, there is limited evidence to suggest that alcohol misuse may be heightened for previously deployed personnel. Hoge et al. (2004) found that 25% of soldiers from two Army units and 35% of Marines from a single unit assessed three months post-deployment reported using more alcohol than they had intended to use compared with only 17% of soldiers in an Army unit just prior to being deployed. Routine post-deployment screenings of military personnel in 2007 indicated that among Army soldiers, 12% of a cohort from the active component and 15% from a cohort of Reservists and National Guard troops reported either using more alcohol than they intended to use, wanting or needing to cut down on their drinking, or both (Milliken, Auchterlonie, & Hoge, 2007). The most convincing evidence to date comes from a cohort study which showed changes in alcohol-using behaviors before and after deployment. Among members of the active component who experienced combat exposures, 27% of those who did not report binge drinking in the week before they were surveyed prior to being deployed reported doing so at a post-deployment assessment relative to 19% of those who did not deploy over the same time period. Among Reservists/National Guard, those with combat exposures were more likely than non-deployers to start heavy weekly drinking (9% vs. 5%), binge drinking (26% vs. 17%), and to develop alcohol-related problems (7% vs. 4%) (Jacobson et al., 2008).

Understanding the nature of this problem, and whether some aspects are unique to the military context, is a key to designing effective mitigation strategies. For example, there is convincing evidence that the Department of Defense (DoD) zero-tolerance policy for illicit drug use implemented in 1982 accounts for a significant portion of the drop in prevalence of illegal drug use (Mehay & Pacula, 1999). However, the rise of prescription drug misuse among active duty military personnel from 4% in 2005 to 11% in 2008 parallels a national increase in this behavior among males and young adults (i.e., 18-25 year-olds) over the same time (United States. Substance Abuse and Mental Health Services Administration. Office of Applied Studies., 2009b). In other words, trends in military substance use behaviors do not necessarily reflect military-specific phenomena, and effective strategies to combat adverse substance use could reasonably be built upon research that examines these behaviors as part of a larger, national context.

To date, there is limited information on how drinking patterns among deployed personnel relate to patterns in the civilian population. Among all active duty personnel, including those who did not deploy, the relation is known to differ by age: after standardizing the civilian data to the sociodemographic distribution of active military (i.e., by gender, age, education, race/ethnicity, and marital status), active duty personnel under age 35 exhibit a higher rate of heavy drinking relative to their civilian counterparts, whereas those aged 36-45 had comparable rates and those aged 46-64 had lower rates of heavy drinking (Bray et al., 2009). However, these data systematically exclude members of the Reserve Component along with service members who served in Afghanistan or Iraq but have since separated from military service. Understanding how drinking behaviors among a representative sample of deployed personnel differ from the civilian population provides useful information on the differential burden of drinking behaviors among those previously deployed. Such information can help guide the allocation of resources both within the Department of Defense as well as the

Department of Veterans Affairs, the agency responsible for serving those who deployed but are no longer part of the active component.

The current study provides the first step in achieving a more in-depth understanding of how alcohol misuse among previously deployed military personnel differs from the civilian population. Specifically, we compare drinking behaviors among a representative sample of previously deployed personnel with those of adults in a nationally representative sample of U.S. households, adjusting for sociodemographic characteristics known to correlate with drinking behaviors. In addition, we examine correlates of adverse drinking behaviors among those who previously deployed to identify those subgroups that may be at increased risk and for whom targeted prevention and intervention programs should ideally be designed.

Method

Data and Procedures

Data for this study were drawn from two surveys, the RAND survey of individuals previously deployed to Afghanistan or Iraq administered between August 2007 and February 2008 (Schnell & Marshall, 2008); and the National Survey on Drug Use and Health (NSDUH) administered between January and December of 2007. *Previously Deployed Personnel.* The RAND survey¹ used random digit dialing procedures to sample respondents from 24 geographic regions in the US that included the largest numbers of previously deployed personnel. Screening calls within each region were approximately proportional to the number of deployed personnel within that area. This procedure excluded military personnel who were currently deployed, hospitalized or incarcerated, as well as those without access to a land line telephone. Computer assisted telephone interviews (CATI) were conducted with a total of 2120 previously deployed personnel. Response rates for the RAND study was 54% (The American Association for Public Opinion Research [AAPOR], 2006). The original weighted sample was approximately 12% female (Schell & Marshall, 2008); however, the measures reported in this paper were only given to males (N=1887) and analyses will be restricted to that subsample. *Civilian Sample.* The NSDUH survey used a multistage area probability sampling strategy to obtain a representative sample from the US population. Sampling procedures oversampled youth and young adults and excluded homeless persons not living in shelters, military personnel on active duty, and individual's living at institutional group quarters (e.g., jails, hospitals). Computer-assisted personal interviewing (CAPI) along with audio computer-assisted self interviews (ACASI) were conducted with a total of 67,870 eligible respondents. The weighted response rate for the NSDUH study was 73.9%.

Measures

Alcohol Use—Drinking behaviors were measured with two questions assessing respondents' frequency and quantity of alcohol use in the past 30 days. Frequency of use referred to the number of days the respondent reported having a drink containing alcohol in

¹All study procedures adhere to APA ethical guidelines. The study was approved and monitored by the RAND IRB: consent was given orally, and confidentiality of responses was ensured with a NIH Certificate of Confidentiality

the past 30 days. Quantity referred to the number of alcoholic beverages respondents typically drank on each day that they drank alcohol among those reporting alcohol use in the past 30 days; in the RAND survey, previously deployed respondents could not report drinking more than 15 alcoholic beverages on a day that they drank alcohol. A total alcohol use score was computed by taking the product of frequency of use and quantity of use for each respondent. The NSDUH used a similar set of items though respondents could not report drinking more than 90 alcoholic beverages on a day that they drank alcohol. As such, we opted to truncate NSDUH responses so they would adhere to the maximum value of 15 from the RAND study (representing 4.06% of the nationally-representative weighted sample of males 18 and over).

Frequency of binge drinking—A single item was used to ask respondents about the number of times they had 5 or more drinks on a single occasion within the past 30 days (National Institute of Alcohol Abuse and Alcoholism, 2004).

Sociodemographic and Military Characteristics—Sociodemographic characteristics included questions assessing age, marital status, and race/ethnicity. Military characteristics included questions assessing current duty status, military rank (enlisted vs officer/warrant officer) and branch of service.

Deployment-Related Experiences—Previously deployed survey respondents were asked a series of questions assessing deployments in support of OIF/OEF, including questions about the nature of deployments (e.g., deployed to Iraq or Afghanistan), frequency of deployments (e.g., number of times deployed and to where), and recency of deployments (e.g., month of last deployment). They were also asked about experiencing specific deployment stressors (e.g., watching as Americans are injured or killed by hostile fire or IED, clearing/searching homes, buildings, or bunkers). Respondents were asked a yes/no questions about whether they experienced each of the 10 experiences during any deployment in support of OIF or OEF. Higher scores indicate greater combat exposures during deployments (Schell & Marshall, 2008).

Psychological Health—We used the Posttraumatic Symptom Checklist – Military Version (PCL-M; Weathers, Huska, & Keane, 1991) to assess Posttraumatic Stress; and the depression subscale from the Patient Health Questionnaire-8 (PHQ-8; Kroenke, Spitzer, & Williams, 2001; Lowe, Kroenke, Herzog, & Grafe, 2004) to assess symptoms of depression. For the PCL-M, respondents were asked to evaluate the degree to which they were bothered in the past 30 days by 17 clinical symptoms that correspond to posttraumatic stress disorder (PTSD; e.g., repeated, disturbing *dreams* of the stressful experience) on a 5-point response scale that ranged from not at all to extremely; and for the PHQ-8 how often in the past 4 weeks they were bothered by 8 clinical symptoms that correspond to depression (e.g., little interest or pleasure in doing things) on a 4-point response scale from not at all to nearly every day. All items were summed into a composite score indicating higher levels of PTSD and depression symptoms, respectively. Probable criteria for PTSD and depression was assessed by applying criteria based on the Diagnostic and Statistical Manual of Mental

Disorders, 4th Revision (American Psychiatric Association, 1994) to the PCL (Brewin, 2005; Weathers, Litz, Herman, Huska, & Keane, 1993) and PHQ (Kroenke et al., 2001).

Weighting Procedures and Analytical Strategy

Sample Weighting Procedures—Analytic weights for the sample of previously deployed military personnel were designed to match the target population of all previously deployed service members derived from the Contingency Tracking System Deployment File of the Defense Manpower Data Center. Weights were based on the branch of service, and within each service on age, marital status, rank, currently separated duty status, and Reserve Component. Analytic weights were available for the NSDUH data to create estimates that are representative to the civilian, noninstitutionalized population aged 12 years old or older residing within the United States. However, because the population of previously deployed military personnel differs from the civilian population with respect to age and race (i.e., youth and minority individuals are disproportionately represented in the US military; U.S. Census Bureau., February 3, 2010; U.S. Department of Defense, undated); and because age and race are known to be associated with drinking behaviors (Substance Abuse and Mental Health Services Administration, 2009a), we revised the analytic weights in the NSDUH to make the nationally-representative distribution by race and age match the weighted distribution of the previously-deployed sample. After excluding those under age 18 and those with non-logically assigned missing data on one of our outcomes (quantity of alcohol use), we stratified both samples into 44 different race × age strata (age categories were based on 11 age categories available in public use files of the 2007 NSDUH). Weights were then created to ensure that the NSDUH sample matched the RAND survey of previously deployed personnel when multiplied by the NSDUH nationally-representative sample weights. Table 1 presents the sample distributions by age and race categories both before and after weighting.

Analyses were conducted using sample weights with Stata Version 9.2 and account for the effects of the weights and complex sample design on both the parameter estimates and their standard errors. Accordingly, we calculated weighted mean and standard deviations across groups for each of the alcohol use outcomes. We also calculated these summary values for the total population, including those who did not report drinking any alcohol in the past 30 days, and then only among those who used alcohol in the past 30 days. Differences between the previously deployed population and weighted civilian population were assessed using Poisson regression that accounted for the survey weights and complex sample design. We used negative binomial regression to estimate bivariate predictors of two alcohol use outcomes: frequency of use and frequency of binge drinking. We present incident rate ratios (IRRs) for bivariate models along with their 95% confidence intervals. IRRs provide an estimate of the proportional change in the rate of the given outcome (e.g., days of drinking alcohol over 30 days) associated with a one-unit change in the predictor. We ran multivariate models for military and deployment constructs (branch, current duty status, months since returning from last deployment, length of last deployment, and number of traumas) to examine the effects of non-military from military-specific characteristics while controlling for the effects of sociodemographic factors (e.g., age, marital status, rank, and race/ethnicity).

Results

Drinking Behaviors among Previously Deployed and Matched Civilian Sample

Table 2 presents the prevalence of drinking in the past 30 days in both the previously deployed and matched civilian samples, as well as mean values of frequency of drinking, quantity of drinking, amount drunk, and frequency of binge drinking in these two groups. In both samples, the same proportion of males reported drinking in the past 30 days (70% of previously deployed personnel compared with 69% of the matched civilian sample, see Table 2). Similarly, both groups reported drinking at nearly the same frequency (among drinkers, between 9 and 10 days in the past 30 days), and binge drinking (5 or more drinks on one occasion) at the same frequency (among drinkers, close to 3 days in the past 30 days). Among the four outcomes, the only significant difference between the previously deployed population and the civilian population involved the average quantity respondents reported drinking on days when they drank—civilians reported larger quantities of use than previously deployed personnel ($M = 4.24$ for the civilian sample vs. $M = 3.31$ for the previously deployed sample; $\text{Ratio} = 1.28$, $p < 0.001$).

Predictors of Frequency of Use and Binge Drinking among Previously Deployed Personnel

Table 3 presents the bivariate associations (estimated as IRRs) and associated confidence intervals between covariates and frequency of use and frequency of binge drinking among previously deployed personnel. As shown in Table 3, men currently or formerly in the Air Force drank less frequently and engaged in binge drinking less frequently than men in other branches of service. These associations were not attenuated in multivariate analyses controlling for age, race, rank and marital status (also presented in Table 3). Although frequency of regular drinking was not higher among those discharged or retired, the frequency at which they engaged in binge drinking was higher than members of the active or reserve components. These associations also remained in multivariate analyses. Bivariate analyses showed that single men drank more frequently and engaged in binge drinking more frequently than married men. Finally, though age was not associated with the frequency at which men in the sample drank, those who were younger more frequently engaged in binge drinking. The number of traumas males reported having experienced was positively associated with both of the drinking outcomes we examined. The only other deployment related experience associated with drinking was the number of months formerly deployed personnel's prior deployment lasted: longer deployments were associated with more frequent binge drinking. This association also remained after adjustment. Both increases in self-reported posttraumatic distress and depressive symptomatology were positively associated with drinking and binge drinking more frequently. Meeting probable criteria for posttraumatic stress disorder (PTSD) was not significantly associated with frequency of alcohol use ($\text{IRR} = 1.38$, 95% Confidence Interval (CI) = 0.98, 1.96) but was associated with frequency of binge drinking ($\text{IRR} = 2.58$, 95% CI = 1.63, 4.01). The same pattern was seen for having a probable depression diagnosis: it was not significantly associated with frequency of alcohol use ($\text{IRR} = 1.17$, 95% Confidence Interval (CI) = 0.83, 1.66) but was associated with frequency of binge drinking ($\text{IRR} = 2.25$, 95% CI = 1.40, 3.61).

Discussion

We examined alcohol drinking patterns among representative samples of male military personnel and adults from US households matched on age and race. Our analyses revealed very few differences between the two groups; in fact, the only difference was that men in the civilian population drank a greater quantity on the days that they drank than did male military service members who had previously deployed to OEF/OIF. Thus, unhealthy drinking is, if anything, higher among civilian males than it is among men who previously served in Afghanistan or Iraq.

The correlates of drinking outcomes among previously deployed personnel also reflect patterns seen in the civilian population. Studies of civilians consistently show that single and divorced males have higher levels of drinking than those who are married (Leonard & Rothbard, 1999; Power, Rodgers, & Hope, 1999; Temple et al., 1991). Similarly, heavy and binge drinking is concentrated, though by no means confined, to younger adults in the United States (Greenfield, Midanik, & Rogers, 2000; Naimi et al., 2003). However, there do appear to be correlates of heavy drinking that are specific to the military and not explained by age, race, rank, or marital status. Those who had deployed as part of the Air Force drank less frequently and engaged in binge drinking less frequently than men who had deployed as part of the Army, Navy, or Marine Corps. In addition, those who had been discharged or had retired engaged in binge drinking more frequently than those in the Active or Reserve Components.

There were also aspects of deployment that were associated with more frequent drinking behaviors. Most notably, the number of traumas to which previously deployed personnel were exposed, and their reports of current depressive or posttraumatic distress symptoms, were associated with frequency of drinking and were even more strongly associated with frequency of binge drinking. We did not investigate frequency of drinking in a non-linear way for the current study, though there is some evidence that the relation between alcohol drinking and psychological health may be non-linear (Caldwell et al., 2002; El-Guebaly, 2007; Peele & Brodsky, 2000; Rehm et al., 2003), and that moderate use may be less strongly linked with adverse mental health outcomes. However, the strength of the association between deployment-related experiences and depressive and posttraumatic distress symptomatology with frequency of binge drinking suggests a pattern of problematic use for those with these symptoms.

While the association between number of traumas and frequent drinking and binge drinking is noteworthy, it should be noted that combat exposure is the strongest predictor of psychological distress among previously deployed personnel (Ramchand et al., 2010). Thus, the association between trauma exposure and posttraumatic distress with alcohol use outcomes may represent identical or similar phenomena. While it is beyond the scope of our current paper to disentangle the complex relation seen in this cross-sectional analysis, future research should carefully examine how traumatic exposure, psychological distress, and alcohol use are related among previously deployed personnel.

An important implication of the current study results is that although there is a relation between drinking and psychological distress, and though psychological distress is prevalent among those previously deployed to Afghanistan and Iraq (Ramchand et al., 2010; Sundin, Fear, Iversen, Rona, & Wessely, 2010), drinking patterns among men previously deployed are not very different from civilians who look the same with respect to race and age. The relation between drinking and psychological distress is known to be complicated. For example, persons with alcohol use disorders are at greater risk for experiencing traumas (Breslau, Davis, Andreski, & Peterson, 1991; Cottler, Compton, Mager, Spitznagel, & Janca, 1992; Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995) but also, among those who experience a trauma, those who develop PTSD are more likely to report a perceived increase in the amount they drank since the trauma relative to those who do not develop PTSD (Grieger, Fullerton, & Ursano, 2003; Ullman, Filipas, Townsend, & Starzynski, 2005; Vlahov et al., 2004). Though complicated, the current results suggest that even though men who have deployed are generally more traumatized and experience more distress than their civilian counterparts (Kessler et al., 1995), their drinking rates are at least as similar. It is important that policymakers, providers, researchers, advocates, and the population at large not exaggerate or overstate any presumed relation between posttraumatic distress and unhealthy drinking, which could cause unhealthy expectations or stereotypes among those who have deployed and those who may experience trauma-induced distress.

Certain of the characteristics of previously deployed personnel were associated with frequency of binge drinking but not with frequency of drinking. For example, those who previously deployed but who were discharged or who retired when they were interviewed had higher rates of binge drinking than those on active duty, while officers/warrant officers have lower rates of binge drinking than those who deployed as enlisted personnel. These results have important implications- most importantly, they suggest that public health efforts should be focused primarily on preventing or reducing binge drinking rather than on alcohol use more generally. Evidence-based strategies exist for preventing heavy, episodic drinking, ranging from regulatory (Stout, Sloan, Liang, & Davies, 2000) to community-based (Holder et al., 2000) approaches. Also, screening and providing brief interventions for heavy drinking in routine medical care settings (e.g., primary care and emergency room visits) have produced favorable results and could be applied in both VA and military contexts (Fleming, Barry, Manwell, Johnson, & London, 1997; Whitlock, Polen, Green, Orleans, & Klein, 2004). Screening for binge drinking among trauma patients may have additional benefits by identifying those with other substance use disorders, and intervening effectively could hypothetically reduce re-injury (Ramchand, Marshall et al., 2009).

In considering these results, it is important to consider certain limitations that may impact the findings presented here. RAND's survey of previously deployed personnel was by design restricted to those who have land-line telephone numbers, and was limited to 24 geographic areas around the country that account for the majority of deployments and thus may underrepresent reservists, retirees and discharged personnel that are more widely dispersed. Though weighting adjusts for this underrepresentation, it may not correct for unmeasured differences between reservists who live close to military installations and those who live farther away. Our analysis was restricted to males, and future research should consider the

unique patterns of alcohol and other drug use among females who had previously deployed to Afghanistan and Iraq.

Overall, the findings presented here suggest that in spite of the increased risk of trauma-associated alcohol problems military personnel deployed to combat may face, their alcohol drinking patterns are comparable to that of their civilian counterparts who have generally had fewer traumatic exposures. Nonetheless, this finding should not undermine efforts in the Department of Defense to curtail harmful drinking behaviors among its personnel. Rather, the results suggest that the military would do well to examine evidence-supported approaches to reduce harmful drinking in civilian-based institutions, such as college campuses (Larimer & Crouce, 2007) and civilian workplaces (Ramchand, Pomeroy, & Arkes, 2009). The association between trauma exposure, psychological distress, and harmful drinking also suggests that screening service members returning from deployment and providing or suggesting referrals is likely a useful approach. However, such an approach will require a validated screening tool and an assurance that service members will be provided high-quality care when referred, and that the barriers that prohibit their access to such care are understood and removed.

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Table 1

Distribution of RAND Survey of Previously Deployed Personnel and 2007 National Survey of Drug Use and Health, Before and After Weighting

	RAND Survey of Previously Deployed Personnel (%)	NSDUH: Nationally Representative Weights (%)	NSDUH: Analytic Weights to Reflect RAND Study
Age			
18-20	0.33	2.37	0.31
21-29	48.98	16.47	48.98
30-49	44.37	38.28	44.38
50	6.31	38.95	6.31
Race/Ethnicity			
White	66.11	69.89	66.09
Black	22.03	10.37	22.05
Hispanic	7.65	13.64	7.66
Other	4.20	6.09	4.20

TABLE 2

Drinking Behaviors Among Previously Deployed Personnel and among Weighted Civilian Counterparts

	<u>Previously Deployed Mean (SE)</u>		<u>Weighted Civilian Mean (SE)</u>		<u>Ratio (SE) p Value</u>	
	Total	Drinkers (70%)	Total	Drinkers (69%)	Total	Drinkers 0.98 (0.03) .601
Frequency of use (possible range: 0–30)	6.67 (0.17)	9.54 (0.47)	6.47 (0.11)	9.34 (0.13)	0.96 (0.58) .532	0.98 (0.05) .671
Quantity of use (possible range: 0–15)	2.31 (0.13)	3.31 (0.17)	2.92 (0.58)	4.24 (0.07)	1.27 (0.08) <.001	1.28 (0.07) <.001
Frequency × Quantity (possible range: 0–450)	24.81 (1.19)	35.6 (2.93)	27.77 (0.75)	40.37 (1.10)	1.12 (0.10) .224	1.13 (0.10) .151
Frequency of binge drinking (Possible range: 0–30)	1.98 (0.20)	2.85 (0.27)	2.32 (0.07)	3.38 (0.09)	1.17 (0.12) .133	1.19 (0.12) .086

Note.

^aSE = standard error; standard errors and *p* values obtained using Poisson regression.

Table 3

Predictors of Alcohol Use Outcomes among Previously Deployed Military Personnel. Bivariate and Multivariate Associations from Negative Binomial Regression Models

	Frequency of Use			Frequency of Binge Drinking		
	Bivariate		Multivariate*	Bivariate		Multivariate*
	IRR	95% CI	aIRR	95% CI	IRR	95% CI
Branch						
Army (Reference)	1.00		1.00		1.00	
Navy	0.93	(0.70, 1.24)	1.10	(0.65, 1.10)	0.72	(0.39, 1.32)
Marine Corps	1.11	(0.80, 1.52)	1.52	(0.82, 1.52)	1.34	(0.89, 2.01)
Air Force	0.70	(0.50, 0.98)	0.88	(0.49, 0.88)	0.33	(0.15, 0.70)
Current Duty Status						
Active (Reference)	1.00		1.00		1.00	
Reserve/Guard	0.90	(0.57, 1.42)	1.32	(0.53, 1.32)	0.54	(0.28, 1.04)
Discharged/Retired	1.20	(0.98, 1.47)	1.50	(0.96, 1.50)	1.45	(1.03, 2.05)
Deployment-Related						
Months Since Last Return	1.00	(0.99, 1.01)	1.01	(0.99, 1.01)	1.00	(0.99, 1.01)
Length of Last Deployment (Months)	1.00	(0.97, 1.03)	1.04	(0.98, 1.04)	1.05	(1.01, 1.11)
Number of Traumas (0-10)	1.06	(1.02, 1.11)	1.12	(1.03, 1.12)	1.21	(1.10, 1.32)
Seriously Injured	0.85	(0.53, 1.35)	1.33	(0.57, 1.33)	1.86	(1.02, 3.36)
Race						
White (Reference)	1.00				1.00	
Black	0.92	(0.68, 1.23)			0.95	(0.56, 1.61)
Hispanic	0.57	(0.38, 0.86)			1.15	(0.68, 1.95)
Other	0.83	(0.41, 1.69)			0.89	(0.44, 1.81)
Current Marital Status						
Married (Reference)	1.00				1.00	
Not Married	1.36	(1.04, 1.78)			1.70	(1.14, 2.52)
Age (Per Decade)	0.95	(0.83, 1.08)			0.69	(0.54, 0.88)

	Frequency of Use			Frequency of Binge Drinking		
	Bivariate		Multivariate*	Bivariate		Multivariate*
	IRR	95% CI	aIRR	95% CI	IRR	95% CI
Rank						
Enlisted (Reference)	1.00				1.00	
Officer/Warrant Officer	1.21	(0.97, 1.50)			0.59	(0.45, 0.78)
Psychological Health						
PTSD Symptoms	1.02	(1.01, 1.03)	Not assessed in multivariate model		1.04	(1.03, 1.06)
Depression Symptoms	1.04	(1.01, 1.06)	Not assessed in multivariate model		1.10	(1.05, 1.14)

IRR= Incident Rate Ratio; aIRR=adjusted Incident Rate Ratio

* Multivariate models adjusted for Race, Marital Status, Rank (Enlisted vs Officer / Warrant Officer), and Age (by decade)