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Drinking and Spouse Abuse Among U.S. Army Soldiers

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Abstract

Background—This study examines the relationship between typical weekly drinking and perpetration of spouse abuse as well as the relationship between the perpetrator's typical weekly drinking and alcohol use during the abuse event among U.S. Army male soldiers.

Methods—Cases include all active duty, male, enlisted Army spouse abusers identified in the Army's Central Registry who had also completed an Army Health Risk Appraisal Survey (HRA) between 1991 and 1998 ($N = 9534$). Cases were matched on sex, rank, and marital status with 21,786 control subjects who had also completed an HRA.

Results—In multivariate logistic regression models, heavy drinkers (22 or more drinks per week) were 66% more likely to be spouse abusers than were abstainers (odds ratio 1.66; 95% confidence interval 1.40–1.96). In addition, self-reported moderate and heavy drinkers were three times as likely and light drinkers (1–7 drinks per week) were twice as likely as nondrinkers to be drinking during the time of the abuse event.

Conclusion—Self-reported heavy drinking is an independent risk factor for perpetration of spouse abuse among male, enlisted Army soldiers. Even 5 years or more after ascertainment of typical drinking habits, there is a significant association between self-reported heavy drinking and alcohol involvement at the time of the spouse abuse event. Personnel who work with perpetrators and victims of spouse abuse should be trained carefully to query about current and typical drinking patterns.

Keywords

Spouse Abuse; Violence; Alcohol; Injury; Military

DOMESTIC VIOLENCE IS a significant cause of injury to women (Tjaden and Thoennes, 2000). The vast majority of cases involve violence perpetrated by a male partner (Bureau of Justice Statistics, 2000). Heavy drinking has been implicated as a risk factor for interpersonal violence in studies conducted both in the U.S. and internationally (Hamilton and Collins, 1981; Jewkes, 2002; Kantor and Straus, 1987, 1989; Kyriacou et al., 1999). Alcohol abuse is common in the context of domestic violence episodes among both perpetrators and their victims (Martin, 1992). A published review of 15 studies on domestic violence noted that 25 to 50% of the spouse abuse perpetrators were drinking during the event and that a history of alcoholism was present among 60 to 70% of spouse abuse perpetrators (Hamilton and Collins, 1981). Hotelling and Sugarman (1986) also found that alcohol was a significant risk factor for husband-to-wife assault in seven of nine studies included in their review of the literature. Kantor and

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Straus (1987) found a positive linear association between levels of heavy drinking and spouse abuse. They also found that 48% of binge drinkers were drinking before an episode of violence and that binge drinkers were three times more likely to abuse their wives than abstainers (Kantor and Straus, 1987). Moreover, even when perpetrators were not drinking at the time of the event, they often displayed symptoms of alcohol dependence and/or alcohol abuse. Hamilton and Collins (1981) found that a large percentage of husbands who were spouse abusers were also heavy or problem drinkers. Leonard et al. (1985) found that long-term alcohol abuse and alcohol dependence were associated with marital violence in a community sample of blue-collar workers.

Spouse abuse is also an important health and social problem for Army families. A survey of a random sample of married civilian and active duty Army soldiers indicated that once race and age differences were accounted for, Army soldiers were slightly but significantly more likely to perpetrate spouse abuse than their civilian counterparts (Heyman and Neidig, 1999). Studies of military populations show similar patterns of demographic risk factors for spouse abuse (West, 1997b). Explorations of other risk factors for violence in military families are relatively rare in the published literature. Relatively few studies have explored the role of alcohol use and spouse abuse among active duty military, yet male soldiers aged 18 to 25 are 1.8 times more likely than their civilian counterparts to drink heavily, suggesting that they may be particularly at risk for involvement in alcohol-related family violence (Bray et al., 2003). One study of spouse violence in military families found that victims listed alcohol as the fourth most frequent cause of the violent episode, whereas the aggressor listed it as the second most frequent cause (Wasileski et al., 1982).

The purpose of this study was to examine the relationship between self-reported typical weekly drinking behaviors of male enlisted soldiers and spouse abuse, as well as the relationship between typical weekly drinking of perpetrators and drinking by both perpetrators and their victims during the abuse event. A key strength of this study is the ability to identify all reported active duty perpetrators of spouse abuse and to link to personnel records that contain demographic and occupational information as well as health behavior surveys, including information on typical alcohol consumption and symptoms of problem drinking before the abuse event. Most civilian research on spouse abuse has focused on victims; less is known about their perpetrators. What is known about perpetrators often derives from studies based on samples from shelters for victims of abuse or from surveys of perpetrators administered after the abuse event. Data from these studies may suffer from reporter bias or loss to follow up (Kantor and Straus, 1987; Lehmann and Krupp, 1984; Leonard et al., 1985; Rounsaville, 1978). Army administrative databases are less susceptible to reporting bias and loss to follow-up for those who remain on active duty. The extensive representation of minorities in the Army in a context in which many potential socioeconomic confounders are controlled (by virtue of the fact that the soldiers all are fully employed, have full access to health care, and undergo a criminal background screen as well as preemployment screening for serious mental health and drug abuse histories) also allows for more insightful explorations of associations between sociodemographic factors such as ethnicity and violence and the role of alcohol abuse in this context (Kantor, 1997).

MATERIALS AND METHODS

Data for this study come from the Total Army Injury and Health Outcomes Database (TAIHOD) (Amoroso et al., 1997, 1999). The TAIHOD is a relational database that links health and administrative data sets for Army personnel. Portions of the TAIHOD used in this article include the Child and Spouse Abuse Registry System, referred to as the Army Central Registry (ACR), Army Health Risk Appraisal (HRA) surveys, and personnel records (demographic and discharge information) from the Defense Manpower Data Center.

Army policy recognizes incidents of partner violence between married persons only. Case reports are investigated by a multidisciplinary committee at the nearest Army medical treatment facility, and substantiated spouse abuse events are recorded in the ACR. TAIHOD data include ACR records for substantiated cases of abuse that occurred between 1971 and 2002.

The HRA was routinely offered to Army soldiers throughout the 1990s and includes items that ask about the number of alcoholic drinks consumed in a typical week (Bell et al., 2002, 2003; Senier et al., 2003). Previous work has shown that the HRA weekly drinking measure is a strong predictor of adverse health and occupational outcomes such as hospitalizations for alcohol-related conditions or early separation from service because of alcoholism (Bell et al., 2003). The ACR documents alcohol use at the time of the incident by both perpetrators and victims. This article explores the association between self-reported typical drinking habits before the event (as reported on the HRA) and drinking at the time of the event (as reported in the ACR).

Variable Definitions

An “event” is defined as any substantiated incident of physical spouse abuse that occurred between 1991 and 1998. Risk factors and covariates of interest include typical drinking habits reported before the event, drinking during the event, and demographic characteristics. Typical weekly drinking behavior responses on the HRA were grouped into five categories as follows: none, 1 to 7 drinks, 8 to 14 drinks, 15 to 21 drinks, and 22 or more drinks per week according to published guidelines for safe drinking levels (Campbell et al., 1999; Gordis, 1992; Sanchez-Craig et al., 1995). Because the HRA weekly drinking item solicits information only about typical drinking quantity and not drinking frequency, it is not possible to identify the impact of variations in drinking patterns, such as binge drinking, that have been linked to violence in other studies (Wechsler et al., 1995). Alcohol involvement at the time of the event was based on caseworker interview with the perpetrator and the victim and was coded in the ACR as yes, no, or missing.

Demographic variables were drawn from Army personnel files and included age at time of incident, race/ethnicity, education, military rank, number of years in service, and number of dependents. Race (white, non-Hispanic; black, non-Hispanic; Hispanic; Asian/Pacific Islander; and American Indian/Alaskan native) was cross-tabulated with a separate variable indicating ethnicity (white, black, Hispanic, Asian/Pacific Islander, and American Indian/Alaskan native) to define the following subgroups: white, non-Hispanic; black, non-Hispanic; Hispanic of American Indian/Alaskan native ancestry; Hispanic of Asian/Pacific Islander ancestry; Hispanic with “other” ancestry; and Hispanic. For some analyses, two dummy variables were constructed, one for black, non-Hispanic and one for Hispanic. White, non-Hispanic was the referent. Education was dichotomized as some college compared with no college (referent). Military rank was grouped according to level of seniority, leadership, and responsibility as follows: E1 to E4, junior enlisted rank; E5 to E6, junior noncommissioned officers; and E7 to E9, senior noncommissioned officers. Time between date of HRA administration and incident date was grouped as follows: 1 year or less, 2 years, 3 years, 4 years, 5 or more years.

Study Design

All male, enlisted, active duty soldiers who had a substantiated case of perpetration of spouse abuse between 1991 and 1998 and had no previous substantiated events in the ACR database (i.e., first-time offenders) composed the spouse abuse perpetrator group (cases). Approximately 97% of the active duty spouse abuse perpetrators in the ACR database are enlisted, and ~92% are men. For these reasons and because only episodes of interpersonal violence between married partners are investigated and recorded in the ACR, we restricted our

selection of control subjects to male, enlisted soldiers who were on active duty and married at the time of the case event but who had no records in the ACR files before the event date. We used the incident date from the ACR to match eligible control subjects to spouse abuse perpetrators.

There were 32,221 male cases and 64,442 male control subjects who met the initial criteria for inclusion in this study. Approximately 29% of spouse abuse perpetrators ($n = 9534$) and 34% of control subjects ($n = 21,786$) had taken an HRA before the event date. Distribution of variables by case/control status and presence/absence of HRA were examined (data not shown). HRA takers were very similar to HRA nontakers with respect to their demographic characteristics, consistent with previous studies (Bell et al., 2002, 2003). In separate logistic regression models for HRA takers and HRA nontakers, comparable odds ratios (ORs) for abuse perpetrators were obtained for race/ethnicity, education, and number of dependents. Among HRA takers, lower rank was more strongly associated with perpetrator status than among low-ranking soldiers who did not complete an HRA. The reasons for this are unknown.

Analysis

Logistic regression equations were used to assess the relationship between drinking status and outcome, controlling for effects of other background characteristics. Age was highly correlated with time in service ($r = 0.88$) and rank ($r = 0.78$), and time in service was highly correlated with rank ($r = 0.87$). Many potential social and economic factors that might also relate to spouse abuse or detection of abuse are related to rank (base salary, housing allowance, degree of independence or supervisory oversight, etc.). In view of the strong correlations between rank, age, and time in service, age and time in service were excluded in multivariate analyses.

Analyses were conducted in SAS, version 8 (SAS Institute, Cary, NC). All analyses for this project adhere to the policies for the protection of human subjects as prescribed in Army Regulation 70-25 and with the provisions of 45 CFR 46.

RESULTS

In unadjusted logistic regression models, spouse abuse perpetrators were more likely to be black and Hispanic. When the Hispanic groups are combined without regard to ethnicity, the OR was 1.3 [95% confidence interval (CI) 1.15–1.36]. Among subgroups of Hispanics, spouse abuse perpetrators were more likely to be Hispanic with American Indian/Alaskan native ancestry as compared with white, non-Hispanic (OR 2.4; 95% CI 1.74–3.41; data not shown).

In unadjusted models, spouse abuse perpetrators were significantly less likely than control subjects to have any college education; they were in younger age groups and had less time on active duty. Spouse abuse perpetrators were also significantly more likely to be at a lower rank and were more likely to have four or more dependents, suggesting that abusers tended to have larger families (data not shown).

Approximately 56% of the total sample reported drinking one or more drinks in a typical week, and among drinkers, ~50% reported drinking four or more drinks in a typical week. Among nonabstainers, the mean weekly drinking level was 6.8 drinks per week for spouse abuse perpetrators as compared with 5.9 drinks per week for control subjects. There was an increasing trend noted between drinks per week and case status. The heaviest drinkers (≥ 22 drinks per week) had 68% greater likelihood of perpetrating spouse abuse as compared with abstainers (Fig. 1).

In multivariate logistic regression models, there are significant and positive associations between each of the drinking categories and likelihood of perpetration of spouse abuse (Table

1). The level of association did not change substantially with the inclusion of demographic variables. The relationship between drinking categories and case/control status was not affected by the length of time between the HRA and the incident.

In addition to alcohol use, black race and Hispanic ethnicity were positively related to perpetration of spouse abuse, whereas college education was negatively related. Lower rank was significantly related to perpetration of spouse abuse, and the odds for spouse abuse decreased with successively higher ranks: soldiers in lower ranks were at increased risk. The likelihood of spouse abuse was higher among soldiers with four or more dependents.

When compared with intervals of 5 years or more from HRA to the event date, the adjusted odds of spouse abuse perpetration were significantly higher for all categories <5 years from HRA data to event.

Alcohol Use by Perpetrators and Victims During the Spouse Abuse Event

Alcohol use by the perpetrator at the time of the event was distributed as follows: drinking, 24.1%; not drinking, 64.7%; unknown, 11.2% (Table 2). The typical weekly drinking habits of the perpetrator, based on his self-reports on the HRA, were related to drinking at the time of the spouse abuse event. The relative proportion of spouse abuse perpetrators who were drinking at the time of the event increased with successively greater levels of self-reported weekly drinking.

Alcohol use by the victim at the time of event was also related to the perpetrator's drinking habits, although fewer victims, overall, were reportedly drinking during the event (13.5% of victims were drinking, 74.7% were not drinking, and drinking status was unknown for 11.8% of victims). The proportion of victims who were drinking at the time of the event increased linearly in association with increasingly heavy levels of reported weekly drinking by their perpetrators (Table 2).

The association between typical weekly drinking by perpetrators and odds of drinking during the event (for both perpetrators and victims) were largely unchanged by the inclusion of covariates in the model. In multivariate logistic regression models (Table 3), lighter drinking perpetrators (1–7 drinks per week) were twice as likely and heavier drinking perpetrators were three times as likely as nonabstainers to be drinking at the time of the spouse abuse incident.

Both black and Hispanic perpetrators were less likely to be drinking at the time of event, compared with nonblack perpetrators. Lower ranking enlisted perpetrators were 29% less likely to be drinking at time of event. The length of time between the HRA and the incident did not influence these estimates.

Perpetrator drinking patterns and association with drinking at the time of the event are closely linked to victim drinking at the time of the event. Where perpetrators are heavy drinkers, victims are 2.5 times more likely to have been drinking at the time of the event than are victims of perpetrators who are abstainers. Even when perpetrator drinking habits were assessed 5 years or more before the abuse event, victims whose perpetrators reported drinking 15 or more drinks per week were almost three times (OR 2.76; $p < 0.001$) more likely to have been drinking at the time of the event than were victims of perpetrators who were abstainers 5 years or more before their spouse abuse events (data not shown).

DISCUSSION

Several findings from this study are worth highlighting. First, this study establishes a clear link between heavy drinking and perpetration of spouse abuse among male, enlisted Army soldiers.

Second, heavy drinkers are not only more likely to perpetuate spouse abuse when they have been drinking but also are at greater risk for spouse abuse events even when alcohol has not been consumed by either the perpetrator or his victim. So, although heavy drinking is neither a necessary nor a sufficient causal element in the path that leads to spouse abuse, it is, nonetheless, an important and persistent risk factor. Third, heavy drinking is associated with subsequent episodes of spouse abuse even when drinking habits are measured years before the event. Fourth, the very youngest and lowest ranking soldiers are particularly at risk for perpetration of spousal abuse. Fifth, this study points to the importance of exploring race/ethnic subgroup variations in patterns of abuse and in the role of alcohol in spouse abuse events.

Our finding linking self-reported heavy drinking with drinking at the time of the violent event is consistent with other studies. The proportions of heavy drinkers who are also drinking at the time of the spouse abuse event in this study (40 and 44% of drinkers who consume 15–21 or 22+ drinks per week, respectively) is similar to civilian studies that have reported male perpetrator alcohol consumption during intimate partner violence events (Kantor and Straus, 1987; Roizen, 1993).

Drinking status was surprisingly stable across time when self-reports from the HRA were compared with the ACR measure of drinking at the time of the event. Heavy drinkers were much more likely to be drinking at the time of the event than were abstainers or light drinkers, even when relatively long periods of time elapsed between reporting typical drinking habits on the survey and the spouse abuse events (1–5 years). This may suggest that self-reported drinking habits, at least among heavier drinkers, do not vary much over time. It could also suggest that, among self-reported heavy drinkers, perpetration of spouse abuse is more likely to take place while drinking, or, because heavier drinkers spend more time drinking, it is possible that any event or activity in their life may be more likely to occur when they are drinking. Finally, it could also be that reported drinking behavior is simply a correlate of some other factor, such as sex identity or tendency toward male dominance and aggression, and that these factors do not change much over time. This explanation for the link between heavy drinking and abuse is further supported by the fact that, in this study, typical heavy drinking is associated with violent events even when there is no report of consuming alcohol at the time of the event. Heavy drinkers may have or develop mental health problems or may be subjected to a variety of life stressors (Collins and Messerschmidt, 1993; Wasileski et al., 1982), and it is not clear what role alcohol-related problems or chronic alcohol use plays in a violent event in this population. It is possible that self-reported drinking is associated with other, unmeasured factors such as risk taking, impulsivity, and aggression. Further research is needed to clarify these possible associations as well as the potential short- and long-range consequences of alcohol problems and chronic alcohol abuse as distinguished from heavy typical drinking behaviors.

There are positive associations between the self-reported measures of typical alcohol consumption on the HRA and the ACR report of drinking by offenders at the time of the incident. Despite these strong correlations between self-reported drinking habits and risk of alcohol involvement during the violent event, it is important to note that most spouse abuse events occur without any reported alcohol consumption by either perpetrators or victims. However, the consistent association between heavy drinking and spouse abuse documented in this study and several other civilian studies suggests that programs designed to screen and treat alcohol abuse presents an opportunity for intervention, regardless of whether drinking is causally related to spouse abuse.

Although only a small proportion (<15%) of victims reported drinking at the time of the event, it is interesting that their drinking status is associated with typical drinking behaviors of their abuser. The more the abuser reportedly drank in a typical week, the more likely it was that the

victim reported drinking during the spouse abuse event, even when the perpetrator's drinking was assessed 5 years or more before the event. This likely reflects that partners tend to have similar drinking habits, although it may also suggest that some victims are more susceptible to abuse if they are heavy drinkers (Cunradi et al., 2002; Slade et al., 1991), or it might suggest that victims of abuse use alcohol to self-medicate or escape from an abusive relationship (Center for Substance Abuse Treatment, 1994; Collins et al., 1997; Jones and Schechter, 1993).

The youngest and lowest ranking soldiers were at greater risk for perpetrating spouse abuse. This is consistent with findings from civilian studies documenting an inverse relationship between age and spouse abuse (Bachman and Saltzman, 1995; Caetano et al., 2000; Cunradi et al., 2000; Ratner, 1993; Sutor et al., 1990). Younger soldiers are also typically lower ranking and may face greater socioeconomic stressors than higher ranking soldiers. Studies done in the United States and internationally have also shown a link between poverty and spouse violence (Jewkes, 2002), and although soldiers are not, strictly speaking, poverty stricken, enlisted soldiers, particularly those in the lower enlisted ranks, earn very little money (new recruits earn a base pay of ~\$1000 per month, and even sergeants with 10 years on active duty earn ~\$2200) (Army Times, 2003). Thus, stress associated with constrained finances may explain, in part, the association between lower rank and violence. Finally, it is possible that systematic biases present within the Army spouse abuse detection program may result in poorer case ascertainment among soldiers who reside off post and who are in higher ranks (and thus also older).

In adjusted models, spouse abuse perpetrators were more likely to be black, non-Hispanic or Hispanic. Civilian studies based on national surveys or representative community samples have similarly shown that blacks and American Indians have tended to report higher rates of spouse abuse than whites; evidence from these studies with respect to rates of spouse abuse among Hispanics is contradictory (Caetano et al., 2000; Tjaden and Thoennes, 2000; West, 1997a). Studies have tended to explain these associations by correlations between race and socioeconomic status (Kantor, 1997). The civilian literature on racial and ethnic variations in partner violence notes the importance of factors such as social isolation, economic inequalities, degree of acculturation, and cultural acceptance of violence, all of which may covary with race and ethnicity (Cazenave and Straus, 1999; Straus and Smith, 1999; West, 1997a). Our findings noted variations within the Hispanic ethnic category, such that Hispanics who declare a Native American ancestry are at greater risk for perpetration of spouse violence than Hispanics who declare an Asian and/or Pacific Island ancestry. Variations in risk for partner violence among Hispanics may reflect cultural variations in tolerance for violence or norms regarding sex roles that vary by country of origin within the Hispanic community (Kantor, 1997).

Although minority race and lower rank were significantly associated with perpetration of spouse abuse, these high-risk groups were significantly less likely to be drinking at the time of the event. The causative pathways that lead to violence may differ for younger, minority soldiers, as compared with those for older and for white soldiers. Results from this study point to the need for more complex models to better understand cultural influences and contexts for violence in this population (Field and Caetano, 2003).

There are some limitations to these analyses. First, the HRA is not an anonymous survey, which may result in underreporting of heavy drinking. That we nonetheless document associations between self-reported drinking levels and subsequent risk for alcohol-related violence suggests that even if soldiers are underreporting, the information that they provide allows for identification of high-risk groups. Second, we have no empirical measure of alcohol use during the violent event. The drinking status item in the ACR is likely to undercount the role of alcohol during the event. Despite this acknowledged shortcoming, the association between the ACR

alcohol item and self-reported drinking ascertained in another setting (the HRA) suggests that the ACR measure has some validity. Finally, there are some potential risk factors identified in the literature that we could not take into account, including military deployment, drug use, and personal history of victimization (Chamberlain et al., 2003; McCarroll et al., 2000, 2003; Rosen et al., 2003).

Despite these acknowledged limitations, there are several key strengths to this study. First, extensive background data and information on alcohol use (e.g., typical consumption patterns) is available on perpetrators both before and during a violent event, which is a significant advantage over cross-sectional study designs that assess drinking habits at the time of the event only or studies that rely on victims' assessment of perpetrators' alcohol use patterns. We are able to describe typical drinking habits of perpetrators measured before the abuse event. This is important because much of what is known about perpetrators from civilian studies comes from surveys given to one or both members of a couple after the event, limiting the ability to draw directional associations between behaviors such as alcohol use and intimate partner violence (Caetano et al., 2000; Cunradi et al., 2002; Kantor and Straus, 1987, 1989; Straus and Gelles, 1986). Self-reports of behaviors measured before and independent from the event are less likely to be tainted by the emotions and consequences of reports that are made just after the spouse abuse event and are also likely to be more accurate than those made by a partner. The HRA survey used to provide information on perpetrator drinking behaviors before the event is generally administered in the context of in-processing to a new work assignment or through routine health examinations and thus less likely to be tainted by emotions or consequences of an abuse event. In addition, the HRA alcohol items have been validated in other studies (Bell et al., 2002, 2003; Senier et al., 2003), and the Army personnel data are less subject to self-report bias and loss to follow-up than self-reports or victim reports. Second, the ability to follow soldiers over long periods of time allows us to evaluate the stability of the relationship between reported drinking patterns and subsequent spouse abuse. Third, the ability to link demographic, occupational, and behavioral characteristics to records of spouse abuse in a population that is fully employed and has full access to health care benefits is a major strength of this study. Many studies of alcohol abuse among perpetrators have relied on data from populations with criminal backgrounds or in treatment programs. Thus, this study of fully employed, relatively high-functioning men fills an important gap in the research field on alcohol use and perpetration of spouse abuse. The potential confounding effects of unemployment or limited access to health care and social services are mitigated (Kantor, 1997). Fourth, the inclusion of data on victim drinking at the time of the event allows us to measure factors related not only to the individual perpetrator but also to begin to get at some of the contextual factors surrounding the event. Finally, the sheer size of the population allows us to delve into subgroup analyses, such as racial/ethnic identification, that are not possible with some other studies.

These results underline the importance of a careful alcohol intake assessment for perpetrators and victims of family violence, focusing not only on alcohol consumption during the violent event but also typical drinking patterns before the event. This study establishes a link between self-reported drinking habits and subsequent incidents of domestic violence regardless of the presence of alcohol during the incident. Moreover, it shows an association between alcohol use patterns of perpetrators and victim alcohol consumption during the violent event. Minority race is also a risk factor for spouse abuse but may not be related to abuse that occurs when either the perpetrator or the victim has been drinking. For white male soldiers, alcohol may play a more important role in the violent event. Similarly, whereas soldiers in the lowest pay ranks were at much greater risk for perpetration of spouse abuse, they were less likely to report drinking at the time of the event. These potential interactions deserve further inquiry. Future work should also take into account other manifestations of alcohol consumption (e.g.,

dependent or problem drinking), risk-taking behaviors, and other factors that may covary with typical drinking patterns and spouse abuse, such as depression.

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Fig. 1. Unadjusted odds of perpetrating spouse abuse by self-reported typical weekly drinking levels of perpetrators; active duty enlisted male Army soldiers who completed an Army Health Risk Appraisal survey prior to the event, 1991–1998 (n = 31, 320).

Table 1

Results of Multivariate Logistic Regression Model Predicting Perpetration of Spouse Abuse Among Active Duty Enlisted Male Army Soldier Who Completed An HRA Survey Before the Event (1991–1998)

Characteristic	OR	(95% CI)
No. of drinks in typical week		
None (referent)	1.00	
1–7	1.12	(1.06–1.19)
8–14	1.35	(1.22–1.49)
15–21	1.44	(1.22–1.70)
22 or more	1.66	(1.41–1.96)
Race		
White (referent)	1.00	
Black	2.79	(2.64–2.93)
Hispanic	1.47	(1.35–1.61)
Education		
No college (referent)	1.00	
College (some college or graduate)	0.62	(0.55–0.68)
Rank		
E1–E4	7.43	(6.74–8.19)
E5–E6	2.64	(2.41–2.89)
E7–E9 (referent)	1.00	
No. of dependents		
1 (referent)	1.00	
2	0.87	(0.82–0.94)
3	0.80	(0.74–0.85)
4 or more	1.09	(1.01–1.19)
Interval in years between HRA and event		
<1 year	1.32	(1.21–1.43)
2 years	1.38	(1.27–1.50)
3 years	1.17	(1.06–1.28)
4 years	1.22	(1.10–1.35)
5 or more years (referent)	1.00	

Among 9534 cases and 21,786 control subjects matched on sex, rank, and marital status, 208 cases and 544 control subjects were deleted from the model because of missing data on typical drinking, race, and education, bringing total sample included in the above table to 30,568.

Table 2
Distribution of Perpetrator and Victim Drinking Status at the Time of the Spouse Abuse Event, by Perpetrator Typical Weekly Drinking Patterns: 9534 Matched Spouse Abuse Perpetrators of Substantiated Spouse Abuse, When Abuser Was Active Duty Enlisted Male Army Soldier With a Completed Army HRA Before the Event (1991–1998)^a

Drinking at time of the spouse abuse event	Nondrinking perpetrators (<i>n</i> = 3978)	Light-drinking perpetrators ^b (<i>n</i> = 4029)	Moderate-drinking perpetrators ^c (<i>n</i> = 839)	Heavy-drinking perpetrators ^d (<i>n</i> = 561)
Perpetrators				
Yes	16.0%	27.3%	38.3%	37.3%
No	72.6%	61.7%	50.4%	52.1%
Unknown	11.4%	11.0%	11.3%	10.7%
Victims				
Yes	9.3%	14.8%	21.1%	21.7%
No	79.2%	73.2%	66.9%	66.5%
Unknown	11.6%	12.0%	12.0%	11.8%

^a A total of 127 spouse abuse perpetrators were missing typical weekly drinking information and excluded from analyses, bringing total sample size for analysis in this table to 9407. Because of small sample sizes, the drinking categories 15 to 21 drinks per week and 22 or more drinks per week were collapsed into one category (15 or more drinks).

^b In typical week consume 1 to 7 drinks.

^c In typical week consume 8 to 14 drinks.

^d In typical week consume 15 or more drinks.

Table 3

Results of Multivariate Logistic Regression Models Predicting Drinking at Time of the Event Among Perpetrators and Victims, by Perpetrator Typical Weekly Drinking Patterns: 8465 Matched Spouse Abuse Perpetrators and 8408 Victims of Substantiated Spouse Abuse, When Abuser Was Active Duty Enlisted Male Army Soldier Who Completed an Army HRA Survey Before the Event (1991–1998)^a

Characteristic	Perpetrator [OR (95% CI)]	Victim [OR (95% CI)]
No. of drinks in typical week		
None	1.00	1.00
1–7	1.98 (1.77–2.22)	1.69 (1.46–1.94)
8–14	3.23 (2.72–3.83)	2.42 (1.97–2.97)
15 or more	3.04 (2.49–3.71)	2.49 (1.97–3.15)
Race		
White	1.00	1.00
Black	0.62 (0.56–0.69)	0.55 (0.48–0.63)
Hispanic	0.78 (0.65–0.92)	0.69 (0.56–0.85)
Education		
No college	1.00	1.00
College	0.83 (0.65–1.05)	0.91 (0.69–1.21)
Rank		
E1–E4	0.83 (0.67–1.02)	0.69 (0.54–0.87)
E5–E6	0.85 (0.70–1.03)	0.81 (0.64–1.03)
E7–E9	1.00	1.00
No. of dependents		
1	1.00	1.00
2	1.07 (0.94–1.22)	0.99 (0.85–1.16)
3	1.36 (1.18–1.56)	1.07 (0.90–1.27)
4 or more	1.27 (1.08–1.49)	1.05 (0.86–1.28)
Interval in years between HRA and event		
<1 year	0.93 (0.79–1.19)	1.06 (0.87–1.30)
2 years	0.98 (0.83–1.15)	1.15 (0.94–1.41)
3 years	1.01 (0.84–1.20)	1.17 (0.94–1.45)
4 years	0.95 (.78–1.16)	0.99 (0.78–1.27)
5 or more years	1.00	1.00

A total of 1069 offender spouse abuse perpetrators with unknown alcohol use and 1125 victim spouse abuse perpetrators with unknown alcohol use were excluded from analysis.

^a 186 observations were deleted from the model because of missing data.