

Alcohol Use and Related Risk Behaviors Among College Students and Military Personnel

by

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Abstract

To date, no published studies have been conducted examining alcohol use specifically among military veterans who are attending college. Studies on whether interventions designed for either veterans or college students are effective in identifying and treating problematic alcohol use for these individuals are also lacking. In order to begin to address this gap in the literature, we conducted analyses of alcohol use among individuals who are both military veterans and college students. We expected our results would support the findings of earlier studies conducted on samples of college students and military personnel separately, with both groups demonstrating higher rates of overall alcohol consumption, problematic alcohol use and related risky behaviors. The results of the present study supported this hypothesis. We also hypothesized that college student and military status would interact such that inclusion in both groups would further increase the risk. Evidence was not found supporting higher levels of use or risky behaviors for military students (i.e., college students with a history of military service) above and beyond their peers (e.g., those with only military service or college enrollment, or neither, but not both). This finding should be interpreted with a measure of caution as this does not mean that there was not problematic alcohol use or engagement in alcohol-related risky behaviors within military students. These results have the potential to inform prevention and intervention efforts aimed at reducing risky alcohol use among college students with a military background.

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Introduction

Patterns of alcohol use have been studied extensively in both college students and military personnel, and both have been recognized as high-risk groups for problematic alcohol use and alcohol-related risky behaviors, such as drinking and driving. However, these two groups of individuals have only been studied separately thus far. Though the two separate literatures have drawn comparisons between the prevalence of alcohol use within the two groups, research simultaneously investigating the overall patterns of alcohol use and the prevalence of problematic alcohol use and related risky behaviors in a sample including both groups has yet to be conducted. Understanding how inclusion in one or both of these groups influences alcohol consumption could prove invaluable in designing and implementing effective intervention and treatment programs for both.

Furthermore, military personnel have been provided with financial aid for college since the passage of the Servicemen's Readjustment Act of 1944, now the Montgomery G.I. Bill, allowing for more military veterans to attend college. To date, it appears that no studies have been conducted examining alcohol use specifically among military veterans who are attending college. Given that these individuals fall into two categories that would typically place them at higher risk for problematic alcohol use and alcohol-related risky behaviors, it is important to explore the interactive effect, if any exists, of being a military veteran in college. In addition to a lack of empirical information on the prevalence and patterns of alcohol use among military personnel in college, studies on whether interventions designed for either veterans or college students separately are effective in identifying and treating problematic alcohol use for these

dual-role individuals are also lacking. In order to begin addressing this gap in the literature, the present study seeks to conduct analyses of alcohol use among individuals who are both military veterans and college students.

College Student Drinking

According to data from the 2008 National Survey on Drug Use and Health (NSDUH), young adults who were enrolled in college full-time were more likely to use alcohol than were their peers who were not enrolled in college or were enrolled part-time, with 61 percent of full-time college students endorsing current alcohol use compared with 54.2 percent of their peers (Substance Abuse and Mental Health Services Administration [SAMHSA], 2009). Full-time college students also endorsed higher rates of binge drinking and heavy drinking (i.e., consuming five or more drinks during one occasion on five or more of the past 30 days). Among full-time college students, 40.5 percent endorsed binge drinking compared with 38.1 percent of their same-age peers, and 16.3 percent endorsed heavy drinking compared with 13.0 percent of their peers. These differences in alcohol use between college students and their same-age peers have remained relatively consistent since 2002 within the NSDUH data collections (SAMHSA, 2009) and have been noted in studies utilizing NSDUH data from prior years as well as in other national and local studies.

Slutske (2005) examined alcohol use disorders and symptoms thereof among college students and non-college peers aged 19 to 21 years old, using the 2001 National Household Survey on Drug Abuse (NHSDA; former name of the current NSDUH). Slutske examined multiple indicators of the frequency of alcohol use, including any use (for lifetime, past-year, and past-month), drinking at least once per week (past-year and past-month), past-month daily drinking, and past-month binge drinking (at least one episode per week). While non-college

students were more likely to drink daily than their college peers, college students were more likely to endorse all other indicators examined. Further, college students were more likely to be diagnosed with an alcohol use disorder (18.0% for college students; 15.1% for non-college peers), particularly alcohol abuse, with 11.9% of college students meeting criteria compared with 8.5% of their non-college peers. The author did not find a significant difference in the likelihood of meeting criteria for alcohol dependence between college students and their non-college peers.

O'Malley and Johnston (2002) used data taken from five separate national studies in order to estimate the rates of alcohol use among college students. The national studies included were as follows: (a) the Harvard School of Public Health College Alcohol Study (CAS), (b) the Core Institute (CORE), (c) the Monitoring the Future (MTF) study, (d) the National College Health Risk Behavior Survey (NCHRBS), and (e) the National Household Survey on Drug Abuse (NHSDA). The authors found that all five of the examined studies yielded largely consistent results with respect to the rates of any alcohol use within the past 30 days and of binge drinking within the past two weeks (termed heavy drinking by the authors) among college students. Approximately two thirds of college students reported some level of alcohol consumption within the past 30 days. According to the results of four of the studies examined, approximately two out of every five college students reported binge drinking (O'Malley & Johnston, 2002). The NHSDA results indicated lower rates of binge drinking among college students; however, this appears to be due to differences in the definitions of binge drinking used for the NHSDA compared with those used for the other studies included. The authors describe having consumed five or more drinks in a row as heavy drinking (commonly referred to today as a binge drinking episode), and this operational definition appears consistent with the definitions utilized by the first four national studies examined. The NHSDA data, on the other hand,

contained only one measure of heavy drinking, defined as having consumed five or more drinks per occasion on five or more days during the past 30 days. Thus, individuals were required to have engaged in five binge drinking episodes during the past 30 days to qualify as heavy drinkers according to the NHSDA definition, while individuals included in the other four studies were required only to have engaged in one binge drinking episode over the past two weeks. This variation of terminology combined with the consistency of the data obtained from all five studies on the overall rates of alcohol use for the past 30 days among college students suggests that the difference in definition may be a significant factor in the lower “heavy drinking” rate reported for the NHSDA in this review.

Hingson, Zha, and Weitzman (2009) examined alcohol use among 18-24 year olds in order to assess for trends in alcohol-related, unintentional injury deaths and for other alcohol-related problems within this age group. In this study, the authors utilized data taken from the 1999, 2002, and 2005 NSDUH datasets to examine the frequency of heavy drinking (according to the NSDUH definition of drinking five or more alcoholic beverages per occasion on five or more days during the past 30 days) and the frequency of driving under the influence during the past year for college students and their non-college peers. The Harvard College Alcohol Study also was utilized for additional information, not only on binge drinking rates among college students, but also to incorporate data on the rates at which college students were experiencing various social and health problems related to alcohol use ranging from non-fatal, alcohol-related injuries to sexual assaults. Information on the rates of alcohol-related, unintentional injury deaths was taken from a variety of sources, including the National Highway Traffic Safety Administration Fatality Analysis Reporting System, the Centers for Disease Control and Prevention Injury Mortality Data, National Coroner Studies, and recent census and college

enrollment data. In their analysis, the authors found that, while the percentage of individuals engaging in binge drinking had increased significantly for both college and non-college 18-24 year olds from 1999 to 2005 (7% increase for college students; 10% increase for non-college peers), that college students were consistently more likely than their non-college peers to binge drink. The authors also found that college students were more likely to endorse drinking and driving than their non-college peers. Additionally, the authors noted that the rate of alcohol-related unintended-injury deaths increased across the 18-24 year old age category and estimated that the rate of alcohol-related, unintentional injury deaths per 100,000 students increased by 3%. However, the authors stated that, though their results indicated that college students more frequently engaged in alcohol-related risky behaviors, this was an intentionally conservative estimate that assumed these deaths occurred at a consistent rate across college and non-college 18-24 year olds due to the fact that college enrollment status is generally not recorded during fatal accident investigations (Hingson et al., 2009).

Military Drinking

Similar to the literature comparing alcohol use among college students and their non-college peers, efforts have been made to compare the rates of alcohol use and alcohol-related risky behaviors for military and non-military personnel. Wagner et al. (2007) conducted one such study using data from the 2000 through 2003 NSDUH data collections. The authors compared prevalence estimates for military veterans and a group of non-veterans that were statistically similar with respect to age, gender, and geographic region. The variables examined were past-month alcohol use, past-month binge drinking (i.e., consumption of five or more drinks on the same occasion), heavy alcohol use (i.e., engaging in binge drinking on five or more of the past 30 days), self-reported number of incidents of driving under the influence of alcohol

or illicit drugs in the past year, and past-year abuse or dependence (based on DSM-IV diagnostic criteria). The rates of past-month alcohol use were significantly higher among military veterans (56.6%) than among their civilian peers (50.8%). Though rates of past-month binge drinking were similar across the two groups, the rates of heavy alcohol use were also significantly higher among military veterans, with 7.5% of military veterans reporting heavy alcohol use in the past month compared to 6.5% of civilians. Additionally, veterans were more likely to report driving under the influence during the past year. As the study utilized NSDUH, the sample included only military veterans who were no longer active duty; therefore, this analysis excludes a large portion of the military personnel who have been involved in the recent and current wars in which the United States military have participated (Wagner et al., 2007).

In 1991, Bray, Marsden, and Peterson provided a comparison of the rates of alcohol use for civilians and military personnel, including active duty personnel. The authors included military personnel data taken from the 1985 Worldwide Survey of Alcohol and Nonmedical Drug Use Among Military Personnel, conducted by the Department of Defense, and a comparable civilian sample with respect to age, gender, race, and level of education, taken from the 1985 NHSDA. The study examined past-month rates of any alcohol consumption and heavy drinking, defined as consuming five or more drinks “per typical drinking occasion at least once a week” (Bray et al., 1991). Military personnel were significantly more likely to report past-month alcohol consumption and heavy drinking than their civilian counterparts. Specifically, the findings indicated that 84.1% of military personnel had consumed alcohol in the past month compared with 76.5% of their civilian peers, and that military personnel were twice as likely to report heavy drinking than civilians (20.8% versus 11.0%). The highest levels of alcohol use were among military personnel ages 18 to 25, with 87.3% reporting some level of alcohol

consumption and 29.6% reporting heavy drinking in the past month (Bray et al., 1991). Thus, these results suggest that military personnel in this age range are, much like similarly-aged college students, more likely to drink and to drink heavily. Though active-duty military were included in this study, it was published prior to the recent U.S. deployments and, therefore, also excludes veterans of the recent conflicts.

Several studies have since examined alcohol use trends among veterans of the recent wars in which the U.S. has deployed military personnel. In 2010, Hawkins, Lapham, Kivlahan, and Bradley examined alcohol misuse among veterans of the Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF) conflicts in comparison with other veterans. The authors found male OEF/OIF veterans were at higher risk of alcohol misuse, as defined by a score of five or higher on an abbreviated version of the Alcohol Use Disorders Identification Test (AUDIT-C), than other male veterans, even after demographic differences were accounted for (Hawkins et al., 2010). Also published in 2010, Bray et al. found that active-duty military personnel who had experienced any combat deployment since September 11, 2001, were reporting higher levels of heavy alcohol use (i.e., five or more drinks per typical drinking occasion at least once per week for the past month) than those not deployed. Jacobson et al. (2008) conducted a prospective study of alcohol use and related problems before and after deployment using data from the Millennium Cohort Study. In addition to being a prospective study, this study is notable due to the inclusion of Reserve and National Guard troops in the sample, who are often excluded from studies of military personnel (as they are not active-duty personnel when not deployed) but whose services have increasingly been utilized during combat, particularly as part of the ongoing wars in Afghanistan and Iraq. These Reserve and Guard personnel were at significantly increased risk of “new onset” (i.e., beginning following deployment) heavy weekly drinking and

binge drinking as well as alcohol-related problems (Jacobson et al., 2008). These studies provide evidence of continuing difficulties with problematic alcohol consumption among military personnel, which are not exclusive to active-duty personnel and which seem particularly problematic among military personnel who have experienced recent deployment.

Stahre, Brewer, Fonseca, and Naimi (2009) noted that the majority of efforts to assess alcohol use and misuse and to create interventions and treatments for alcohol problems within the military have been focused on alcoholism when a small number of military personnel who consume alcohol meet criteria for a diagnosable alcohol problem. These authors, instead, focused on binge-drinking among active-duty personnel, using the 2005 Survey of Health Related Behaviors Among Military Personnel conducted by the Department of Defense. Among all individuals included in the survey, 43.2% reported at least one binge drinking episode in the past 30 days, with those aged 17 to 25 accounting for 67.1% of all binge-drinking episodes. Among those military personnel who qualified as heavy drinkers in this study (defined as drinking an average of more than two drinks per day for men and more than one per day for women; approximately 20% of the sample), 94.6% reported at least one binge-drinking episode in the past 30 days. The authors note the similarity of binge drinking rates in this sample to those found among college students and suggest that similarities in demographics, typical living situations, and access to alcohol may contribute to the similarities in patterns of binge-drinking. In another similarity to the college student literature, the authors found that individuals who engaged in binge drinking were more likely to report alcohol-related negative consequences (e.g., working below their level of normal performance) and risky behaviors (e.g., drinking and driving), with these reports becoming more likely and more numerous as the number of binge drinking episodes increased (Stahre, 2009). This study, in particular, highlights the potential

usefulness of examining the possible similarities and differences in patterns of alcohol use and related risky behaviors between college students and military personnel. Though highlighting a significant gap in the literature, this study was limited to active-duty personnel. Thus it is currently unknown whether Reserve and National Guard personnel would display similar patterns of binge drinking and alcohol-related consequences.

Current Study

Both college students and military personnel have been shown to be at increased risk for problematic alcohol consumption, with binge drinking and alcohol-related risky behaviors being of particular concern for both. While these findings have long been recognized with college student populations, alcohol use problems outside of diagnosable alcohol abuse or dependence have just begun to be given attention among military personnel. In addition, the National Guard and Reserve personnel, who are increasingly being relied upon for active combat service, appear to have been largely ignored within the literature on alcohol use problems among military personnel. It appears from a review of the available literatures on alcohol use in both college students and military personnel that much of what has been learned in the study of problematic alcohol use among college studies could prove useful among military populations as well. However, no study has yet investigated rates and patterns of alcohol use and related risky behaviors in a sample that include participants from both populations.

The present study seeks to model alcohol use variables as a function of inclusion in one or both of these groups using a large, national sample, the 2008 NSDUH. The use of NSDUH data allows for comparisons of alcohol use within a large, national sample of the general population that includes individuals who were enrolled in college as well as those who have served in the U.S. military. Of particular interest, NSDUH allows for the inclusion of individuals

with past military experience who also were enrolled in college. We expected our results would support the findings of earlier studies conducted on samples of college students and military personnel separately, with both groups demonstrating higher rates of overall alcohol consumption, problematic alcohol use and related risky behaviors. We also hypothesized that college student and military status would interact, such that inclusion in both groups would further increase risk for problematic alcohol use. These results have the potential to inform prevention and intervention efforts aimed at reducing risky alcohol use among college students with a military background, or “military students.”

Method

Sample

Data for the present study were taken from the 2008 dataset of the National Survey on Drug Use and Health (NSDUH; United States Department of Health and Human Services (HHS), 2008). Pertinent sampling information from the 2008 NSDUH will be described first, followed by information specific to the subsample used in the current study. Participants for the 2008 NSDUH data collection were selected from each of the 50 states and the District of Columbia through independent, multistage area probability sampling. Participants were drawn from the civilian, non-institutionalized population ages 12 and older and included those living in a variety of non-institutionalized group settings (i.e., college dorms, shelters, group homes, and civilians living on military bases). As sampling areas were identified and included through the use of geographic areas defined by census data, and individuals then were selected from specific residences, this data excludes individuals who were homeless and not staying in shelters. Also excluded were active-duty military personnel and individuals living in institutionalized settings, such as prisons and in-patient facilities. Youth and young adults were oversampled such that, within each independent sample (i.e., each of the 50 states plus the District of Columbia), the number of participants was evenly distributed between the following age groups: (a) 12 to 17, (b) 18 to 25, and (c) 26 and older. Further information on the sampling methods and design of the NSDUH, both in general and specific to the 2008 dataset, can be found in the published report of the 2008 NSDUH findings (Substance Abuse and Mental Health Services Administration (SAMHSA), 2009).

For the 2008 NSDUH sample, completed interviews were collected from a total of 68,736 individuals. A statistical disclosure limitation method was then utilized that allowed for increased confidentiality of respondent data while still ensuring a representative sample, resulting in the inclusion of 55,739 records in the public use file. A full description of this statistical procedure can be found on pages 22-24 of the 2008 NSDUH Codebook, which is included in the available online materials for the 2008 NSDUH dataset (HHS, 2008). The final public use file contains 26,743 males (47.98%) and 28,996 females (52.02%). The sample was predominately Caucasian (61.98%), with 16.37% and 12.96% of participants identifying as Hispanic and African American, respectively (HHS, 2008).

All individuals from the 2008 NSDUH dataset between the ages of 18 and 23 (N = 14,640) were included in analyses for the present study. Initially, all individuals ages 18 to 25 were considered, as this is a common age range utilized in the area of college student alcohol use research; however, initial data analyses intended to replicate key findings related to college student alcohol use from the 2008 NSDUH, in fact, produced results that were inconsistent with the official 2008 NSDUH report. These analyses were rerun using only those individuals aged 18 to 23, which is similar to the age range utilized in the original NSDUH analyses of college student drinking (i.e., ages 18 to 22). This second round of analyses yielded results that mimicked the 2008 NSDUH report much more closely. The exact age range utilized in the 2008 NSDUH for analyses of college student drinking could not be replicated in the present study as the age variables provided in the public use dataset combine individuals of ages 22 and 23 into one age category. NSDUH-created variables were provided in the public use dataset for identifying college students as defined for the NSDUH analyses; however, no similar variables were provided for distinguishing the 18 to 22 year olds who were part-time or non-students.

College student status was determined using two variables from the NSDUH dataset. The first variable asked those individuals who previously reported being enrolled in school of any kind to indicate the “year of school” in which they were currently enrolled (or would be enrolled, if they were on vacation from school at the time of the interview). Initially, individuals who endorsed one of the three response choices related to college enrollment were considered college students for this study. These three response options were enrollment in (a) college or university/1st year, (b) college or university/2nd or 3rd year, and (c) college or university/5th year or higher. The second variable pertained to whether individuals were part-time or full-time students. These responses were used in order to determine the enrollment status of those considered college students for this study. Among the sample of 18-23 year olds included in this study, there were 8,430 non-students and 6,192 college students. Of the college students, 5,152 reported full-time student status and 1,036 reported part-time status. Originally, we had considered examining part-time college students as an independent group; however, this would have divided the sample into groups with too few individuals for meaningful analysis, particularly within the military student subgroups. Additionally, while running the initial analyses that lead to the alteration of our inclusion criteria for age, it was also noted that including part-time students as “college students” in the analyses also resulted in findings dissimilar to those of the 2008 NSDUH, which examined full-time college students versus their non-full-time peers (i.e., part-time and non-students [PTNS]). Again, the decision was made to alter the groups for the present study to match those of the 2008 NSDUH. Therefore, for all analyses, part-time college students were grouped with non-students and compared with their full-time college student peers.

Military involvement was determined based on responses to an item asking, “Have you

ever been in the United States' armed forces?" Among 18-23 year olds, those who endorsed having been in the armed forces (N = 180) were included in the military group for the present study. As active-duty personnel were excluded from the parent study, this group included only individuals who had been discharged from the military (honorably or dishonorably) or were actively associated with Reserve or National Guard units.

Measures

Frequency and quantity of alcohol use. Several variables from the NSDUH dataset allowed for the measurement of frequency and quantity of alcohol use across the groups of interest. The variables utilized in the present study were those asking individuals to report the number of days they have consumed alcohol in the past 30 days and in the past 12 months. Additionally, responses to an item asking the participant to indicate the typical number of drinks consumed per day during the previous 30 days were examined across groups.

Risky drinking behaviors. Several items collected as part of the 2008 NSDUH dataset allowed for the examination of drinking behaviors that have been shown to increase an individual's risk of experiencing alcohol-related negative consequences. Specifically, binge drinking during the past 30 days was assessed in an item asking individuals to indicate the number of times they consumed five or more drinks during the same occasion. Heavy alcohol use, defined as engaging in a binge drinking episode on five or more days in the past 30 days, was also assessed. Additionally, the frequency with which individual's engaged in driving under the influence was examined. Two additional items were considered for analysis that inquired about arrests resulting from DUI and drunkenness charges, respectively. However, these were not ultimately included in the present study as individuals were only asked these items if they reported legal difficulties in the past year on an earlier question in the NSDUH interview, and the

resulting group sizes were very small for the sample included in the current study.

Alcohol abuse and dependence. The 2008 NSDUH also presented select participants with a series of items designed to assess for alcohol abuse and dependence, based on the criteria in the Diagnostic and Statistical Manual of Mental Disorders, 4th edition (DSM-IV; APA, 1994). Participants were presented with these questions only if they reported alcohol consumption on more than five days during the previous 12 months or indicated they had consumed alcohol within the last year without providing any additional frequency information (SAMHSA, 2009). Individual items assessed for the presence of each of 7 dependence criteria and 4 abuse criteria. Composite variables were also created within the 2008 NSDUH dataset to determine whether individual met criteria for alcohol abuse or dependence diagnoses according to DSM-IV criteria. Individuals were coded as meeting criteria for dependence if they endorsed 3 of the 7 dependence items and meeting criteria for abuse if they endorsed one or more of the 4 abuse items (SAMHSA, 2009).

Results

Descriptive statistics were used to examine the composition of the sample of interest for the present study, including frequency and quantity of alcohol use. Additionally, chi-square tests of significance (Table 1) were run for each categorical dependent variable in order to examine whether group differences exceeded levels of chance for the following: (a) full-time college students versus PTNSs, (b) individuals who had served in the military versus those who had not, and (c) males versus females. Similarly, independent samples t-tests (Table 2) were conducted for all continuous dependent variables in order to gain initial information on group differences for college status, military status, and gender.

Rates and patterns of alcohol use among the military and college student groups then were examined using logistic and multiple regression analyses in order to determine whether inclusion in these subgroups predicts alcohol use or engagement in risky drinking behaviors. Logistic regression was utilized for all categorical variables with dichotomous response options (i.e., past-month alcohol use, past-year alcohol use, past-month binge drinking, past-month heavy drinking, past-year alcohol abuse, and past-year driving under the influence of alcohol). Multiple regression was used for the continuous variables (i.e., number of days used alcohol in the past month, typical number of drinks per day in the past month, and number of days an individual consumed five or more drinks within the past 30 days). All of these analyses looked at the both the independent and interactive effects of college student and military status. As males have been consistently identified as being more likely to engage in alcohol use than females (Hawkins, 2010; O'Malley & Johnston, 2002; SAMHSA, 2009) and gender differences

were significant for each of the initial analyses completed for the dependent variables, gender was also entered into each equation as an additional independent variable.

Initially, all logistic and multiple regression analyses were run in three blocks, as follows: (a) Block 1 entered the three main effects of college status, military status, and gender; (b) Block 2 included the three possible two-way interactions between the variables included in block 1; (c) Block 3 added the three-way interaction. As none of the analyses including the three-way interaction were significant, each variable was re-examined to determine the two-way interactions that yielded the best model. Though some two-way interactions were found to be significant predictors for the variables included in the logistic regression analyses, no two-way interactions were significant predictors for any of the three variables analyzed with multiple regression. For each variable included in the present study, the results from the best-fit model are reported. All significant interaction effects were further examined using individual samples t-tests in order to determine the nature and direction of these effects.

Predictors of Alcohol Use

Table 3 shows the results of the logistic regression models predicting past-month alcohol use. Individuals with a history of military service were more likely than their non-military peers to have consumed alcohol in the past month (Odds ratio [OR] = 2.312, $p < .001$), and males were significantly more likely to have consumed alcohol in the past month than were females (OR = 1.506, $p < .001$). Though college student status was not individually predictive of past-month use, the interaction between student status and gender (OR = 1.246, $p = .002$) was significant. Independent samples t-tests, conducted separately for males and females, indicated that full-time students were more likely to report past-month alcohol use among females ($t[6012.53] = -8.18$, $p < .001$) and males ($t[4756.29] = -3.12$, $p = .002$), but the interaction of student status and gender

was strongest for females (Graph 1). The results from the regression analysis of past-year alcohol use followed the same pattern (see Table 4). In this case, the follow-up t-tests on the interaction of student status and gender showed a significant effect of student status for females only (Graph 2), with full-time students being more likely to report past-year use than PTNS ($t[6321.62] = -6.04, p < .001$).

For the number of days during which alcohol was consumed, gender was the only significant predictor variable (Table 5), with males reporting a higher number of days of use per month ($p < .001$). Both gender and college status predicted the usual number of drinks per day in the past month (Table 6). Males reported drinking a larger number of alcoholic beverages per day than females ($p < .001$), as did PTNSs as compared to their full-time student peers ($p = .001$).

Alcohol Misuse and Alcohol-Related Risky Behaviors

Individuals with past military service ($OR = 1.618, p = .002$) and males ($OR = 1.894, p < .001$) were more likely to report having engaged in binge drinking during the past month (Table 7). However, college student status was also a significant predictor of binge drinking, with full-time students being more likely than their part-time and non-student peers to report having engaged in at least one binge-drinking episode in the past month ($OR = 1.181, p < .001$). None of the two-way interactions yielded significant results with regard to past-month binge drinking. With regard to the number of days in the past month during which binge drinking occurred (i.e., the number of days five or more alcoholic beverages were consumed), gender was the only variable found to significantly predict number of “binge drinking days,” with males reporting higher numbers of binge drinking days in the past month than females ($p < .001$; Table 8). While this finding might initially appear somewhat surprising given that the dichotomous past-month

binge drinking variable did display group differences for both college and military status, this continuous variable excluded all individuals who were non-drinkers as well as those who had not consumed alcohol in the past 30 days, unlike the dichotomous variable.

In a departure from the other dichotomous alcohol use variables examined, military service was not a significant predictor for past-month heavy alcohol use (Table 9). However, college status and gender did predict heavy use, with full-time college students ($OR = 1.345, p < .001$) and males ($OR = 2.516, p < .001$) being more likely to report this pattern of use. As with binge drinking, no two-way interactions added significantly to the model.

Full-time college students were more likely than their PTNS peers ($OR = 1.244, p < .001$; Table 10) to endorse a sufficient number of the DSM-IV criterion items included in the 2008 NSDUH to meet criteria for past-year alcohol abuse, as were males ($OR = 1.890, p < .001$). Military service did not predict past-year alcohol abuse, nor were any interaction effects significant for this variable. Males were more likely to meet criteria for past-year alcohol dependence ($OR = 1.602, p < .001$). However, full-time college students were less likely than their PTNS peers to meet criteria for past-year dependence ($OR = -0.588, p = .012$; Table 11). Additionally, the interaction of student status and gender was significantly predictive of past-year dependence ($OR = 1.355, p = .026$; Graph 3). The independent samples t-test revealed that student status was not significantly predictive for females, but that male PTNSs were significantly more likely to meet criteria for past-year dependence than their full-time student peers ($t[5079.57] = 2.50, p = .013$).

The 2008 NSDUH also included a variable examining the combined rate of past-year abuse or dependence. For this variable, student status and gender both predicted qualifying for either past-year abuse or past-year dependence (Table 12). As with the findings for past-year

dependence, PTNSs were more likely to meet criteria for either abuse or dependence in the past year than their full-time student peers (OR = 0.753, $p = .05$), and males were at greater risk than females (OR = 1.948, $p < .001$). Similarly, the interaction of student status and gender also was significant for past-year abuse or dependence, but in this case the effect was within student status for females ($t[4759.29] = -3.12, p = .002$). Female, full-time college students were at increased risk of past-year abuse or dependence relative to female PTNSs. Males did not differ significantly on rates of past year abuse or dependence between full-time and PTNS status (Graph 4). For past-year driving under the influence of alcohol (Table 13), full-time college student status (OR = 0.803, $p < .001$) and male gender (OR = 0.701, $p < .001$) were the only significant predictors.

Discussion

We hypothesized that our results would support the findings of earlier studies conducted on samples of college students and of military personnel. Indeed, the results of the present study were consistent with both the individual college student and military drinking literatures. With regard to alcohol use among college students, full-time students were more likely to report binge drinking and heavy alcohol use within the past 30 days. PTNSs reported higher rates of use only on the variable asking for the usual number of drinks consumed per day, which is also consistent with previous findings suggesting non-students are more likely to drink more moderately and more regularly while students are more likely to drink more heavily on days they consume alcohol but drink less frequently (Slutske, 2005). Additionally, full-time students were more likely to meet diagnostic criteria for alcohol abuse in the past year than their PTNS peers.

In a slight departure from previous results where no difference was found between full-time and non-students (Slutske, 2005), in the present study PTNS were more likely to meet criteria for dependence than full-time students. This is likely due to an expanded age range in the present study, as Slutske's analysis examined only ages 18 to 21. While it has been documented that rates of drinking tend to peak within the age range utilized by Slutske, several studies have also noted that older students tend to be at greater risk for diagnosable alcohol-related problems (Dawson, Grant, Stinson, & Chou, 2004; Fischer, Forthum, Pidcock, & Dowd, 2007). This appears to be the natural result of the foci of the diagnostic criteria for alcohol abuse and dependence. These criteria require symptoms such as recurrent negative consequences and patterns of unsuccessful attempts to cut down on use that are causing significant clinical

impairment. Some passage of time generally occurs between onset of risky or heavy alcohol use and when individuals begin to note the development of repeated negative consequences related to their alcohol use. Specific to alcohol dependence, there is the additional possibility of physiological markers of problematic alcohol use (i.e., tolerance and withdrawal), which also take time to develop to problematic levels.

Also consistent with previous research, males were more likely than females to report alcohol use and alcohol-related risky behaviors across all variables examined in the present study. Further, for both past-month and past-year alcohol use, as well as for the variable examining combined rates of past-year abuse or dependence, interaction effects of student status and gender supported previously observed higher rates of use among male students in particular.

With respect to the military drinking literature, the higher rates of past-month alcohol use and binge drinking noted among military personnel were consistent with previous findings. Unlike gender and student status, military status was not a significant predictor of any of the abuse or dependence variables examined. This finding supports the recent efforts within the military drinking literature to pull focus towards risky drinking as opposed to only assessing for and examining the need for treatments of alcohol abuse and dependence (Stahre et al., 2009). However, military personnel included in the present study did not report higher levels of heavy alcohol use (i.e., having engaged in a binge drinking episode on five or more days in the past 30 days) than their peers, which is in contrast with previously discussed studies (Bray et al., 1991; Wagner et al., 2007) that noted differences in heavy alcohol use across military status. This finding could indicate that the pattern of binge drinking episodes among military personnel may be less similar to that of college students than was anticipated based on the current military drinking literature, which thus far has relied on comparisons of military personnel to the general

population. In other words, military personnel may be reporting having engaged in at least one binge drinking episode in the past month with similar frequency as college students, but when the number of binge drinking episodes within that month is assessed, college students outstrip their military peers of the same age. While engagement in binge drinking episodes is concerning in and of itself, the lower rates of heavy alcohol use would lessen the likelihood that these military personnel are frequently engaging in other risky behaviors, such as drinking and driving. Indeed, the present study also found no effect of military status on rates of reporting driving under the influence in the past year, whereas student status was a significant predictor.

Based on the results of Jacobsen et al. (2008), however, the current results need to be viewed in light of the specific sample of military personnel included in this study. Jacobsen and colleagues noted, in their prospective study of military personnel deployed to Iraq and Afghanistan, that two overlapping groups were at the greatest risk for alcohol misuse following deployment, including new onset of alcohol use and misuse: younger military personnel and Reserve and National Guard service members. When it's also taken into account that the previous research showing higher rates of heavy alcohol use among military personnel compared to civilians included all 18 to 25 year olds, this would suggest that the rates of heavy use among younger military personnel are tied to history of deployment, which is more likely with the slightly older "younger military personnel." As the current study excluded those slightly older personnel and no information was gathered during NSDUH data collection as to deployment history, it is unclear what impact these individuals would have on the overall rate of heavy alcohol use. Further research should help clarify whether the current findings related to heavy alcohol use are an artifact of the age range utilized in the present study or a realistic view of heavy alcohol use among military personnel when compared directly with college students.

Our second hypothesis was that college student and military status would interact such that inclusion in both groups would further increase the rates of use and engagement in risky behaviors. Though the results of the present study were consistent with previous findings in both individual literatures, evidence was not found supporting higher levels of use or risky behaviors for military students (i.e., college students with a history of military service) above and beyond their peers (e.g., those with only military service or college enrollment, or neither, but not both). This finding should be interpreted with a measure of caution as this does not mean that there was not problematic alcohol use or engagement in alcohol-related risky behaviors within military students. As reported above, both of these individual groups were reporting higher rates of use than their respective peers, but there was no evidence to suggest that college students with a history of military service were at increased risk above that associated with either of those individual conditions. As noted above, this finding may be an artifact of the sample that excluded slightly older students who may have been more likely to have been deployed.

Limitations

There were a number of limitations of the 2008 NSDUH that have implications for the present study. According to the 2008 NSDUH methodological report (Research Triangle Institute [RTI] International, 2009), interviewers for the NSDUH data collection noted several concerns related to patterns of refusal among individuals identified for participation in the survey. First, the report indicates that individuals who were employed at “higher level jobs” tended to be home less often and, when home, tended to be less inclined to participate due to the time involved in the interview. Individuals employed at “lower level jobs” tended to be home less often as well, as they were more likely to work multiple jobs. Additionally, interviewers working in “unsafe areas” were provided escorts to ensure safety; however, this may have

impacted the willingness of respondents to participate in the survey. Interviewers also received feedback from many respondents who refused to participate that these individuals felt “inundated with market research and other survey requests.” Finally, significant numbers of individuals refused to participate due to concerns about privacy and “increased anti-government sentiment,” with the later being particularly common among immigrant populations. It was noted that these factors accounted for a higher proportion of refusals from selected households than in previous years (RTI International, 2009).

Additionally, several concerns were noted in the methodological report with regard to interviewer turnover and use of the handheld computer given to interviews to facilitate data collection. The authors note that turnover of interviewing staff was “continual.” Therefore, the impact of the learning curves of the new interviewers was larger than it would have been had a smaller number of interviewers been employed more consistently throughout the course of the 2008 data collection. This appeared to be particularly significant with respect to the use of the handheld computers, called iPAQs. The iPAQs were utilized during screening of potential participants in each household selected, and newer interviewers had less confidence in their operation of the iPAQ, which may have negatively impacted their ability to quickly establish good rapport with participants (RTI International, 2009). These factors, taken together, may limit the generalizability of the 2008 NSDUH results, as their influence on the willingness of individuals within specific segments of the population to participate and to provide honest responses may have been greater than the efforts taken to acquire a representative sample.

It is also worth noting that the NSDUH relies upon self-report data, which are prone to respondent error due to poor recollection of substance use as well as due to intentional dissembling. However, efforts have been made in several ways to reduce these sources of

inaccuracy. As noted in the 2008 NSDUH Summary of National Findings (SAMHSA, 2009), confidentiality was stressed to potential participants in all written and oral communications prior to and during the interview. Also, respondent names were not recorded during the interview process and were, thus, never connected to the individual's responses. Additionally, in recent years, the NSDUH interview has been conducted with computer-assisted interviewing (CAI) methods. During sections of the interview with potentially sensitive questions (e.g., questions about use of illicit substances), audio computer-assisted self-interviewing (ACASI) was utilized. During ACASI portions of the interview, the respondent read the questions from the computer screen themselves or listened to the pre-recorded questions through headphones, and then they recorded their own responses. Additionally, use of CAI methods allows for some during-interview response verification. As responses to items were recorded, the computer software checked for inaccuracies in the individual's responses. When inaccuracies were found, the interviewer or respondent, depending on whether the inaccuracy occurred during an ACASI portion of the interview, was prompted and an opportunity was given to the respondent to correct the inaccuracy (SAMHSA, 2009).

Several limitations specific to using NSDUH data for the present study became apparent during the course of investigating the topics of interest. As described previously, several inclusion criteria for the present study were altered following a failure to replicate key findings related to college student alcohol use that were reported in the results of the 2008 NSDUH. It was discovered during these early analyses that the inclusion of all 18-25 year olds as well as including both part-time and full-time students as "college students," both departures from the analyses conducted for the 2008 NSDUH, significantly altered findings related to the prevalence of alcohol use variables such as binge drinking. While it is unclear, based on a lack of

information provided in the publicly-accessible reports, the reasons behind the decisions of those responsible for analysis of the NSDUH data to restrict inclusion in the college student group to those aged 18-22 who were enrolled full-time, the primary purpose of the current study is not to question the methods utilized for the 2008 NSUDH. Rather, the intention is to build upon the current literatures related to both college student and military drinking, both of which have historically included the NSDUH, and, in particular, to expand knowledge of the military student subgroup. Therefore, efforts were made to modify the inclusion criteria for the present study to match the methods utilized in the 2008 NSDUH as closely as possible.

As a result, however, there was a significant reduction in the sample size of military personnel included in the study. This reduction in the military sample precluded analyses of differences in alcohol use across variables such as race and marital status. Additionally, while gender effects were examined for the overall sample, female military personnel and female military students were particularly under-represented, which eliminated the possibility of examining gender within military status. Thus, results related to military status may not be generalizable to the female military or military student populations. Additionally, age effects have been noted in college student samples, with older college students tending to drink less and to engage in fewer risky drinking behaviors than younger students. By reducing the upper age limit for the present study, these age effects could not be examined. This is a significant limitation in that military students tended to be slightly older, on average, than their non-military student peers. Therefore, the military student subgroup may not be representative of older military students.

Future Directions

The current study provides a valuable look at the prevalence of alcohol use, alcohol

misuse and alcohol-related risky behaviors across college students and military personnel within a single sample. In addition, it provides insight into the pattern of use among military students aged 18 to 23. However, the present study does not examine information on issues such as motives for drinking and expectancies related to alcohol use. These topic areas are important for future research, as they inform our understanding not only of the reasons behind group differences in the prevalence and patterns of alcohol use but also of the interventions most likely to be effective. There has been a recent expansion of the available services provided through the Veteran's Administration (VA) with regard to problematic alcohol use that makes use of interventions geared towards reduction of alcohol-related risky behaviors, such as brief alcohol interventions (BAIs).

Based on the available literature, it appears that these services are being offered primarily due to the recognition that problematic alcohol use among military personnel extends beyond diagnosable abuse and dependence and has a similar pattern to that seen in college populations. This recognition, combined with an awareness of the empirical support for brief alcohol interventions within the college student literature, does suggest these interventions would be useful in military settings; however, the empirical investigation of the efficacy of BAIs within military populations is struggling to catch up with what has already been implemented (Cucciare, Darrow, & Weingardt, 2011). This is especially important as BAIs rely upon altering an individual's alcohol-related beliefs through interventions such as providing individualized feedback on the average level of alcohol use in a peer group. There is evidence that college students and military personnel differ with regard to their primary motivations for drinking in ways that could influence the impact of such interventions. For example, college students frequently report drinking to fit in with their perception of what is normal for their social group

and to reduce anxiety in social situations (Ham & Hope, 2003). In contrast, the most common reason reported among military personnel is to cope with negative emotions, such as those related to depression and post-traumatic stress disorder (Cucciare et al., 2011). Further research comparing students and military personnel would assist these efforts to tailor existing college student interventions to this new population.

Finally, the understanding of factors such as expectancies and motivations for drinking is nonexistent among military student populations outside of what is known about college students and military personnel separately. Given the above-mentioned differences noted between college students and military personnel on these factors, it would be nigh impossible to determine the beliefs and motivations that influenced military students most heavily. Without a better understanding of these factors, the potential efficacy of BAIs, which these individuals may be likely to receive regardless of whether they seek services through their university or the VA, is uncertain. Further research should be conducted to examine these factors. Additionally, useful information may be gained from inquiring whether and where military students typically do receive services related to alcohol use. It is likely, based on the lack of information related to substance use provided on the VA webpages intended for veterans who plan to attend college, that these individuals are most commonly served by university clinics. If this is, in fact, the case, it is especially important to examine whether interventions typically used on college campuses would need to be modified for differing alcohol expectancies or reasons for drinking.

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Appendix A - Tables

Table 1
Comparisons of Alcohol Use Across Student Status, Military Status, and Gender (Dichotomous Variables)

	Student Status ^a				Military Status ^b				Gender ^b			
	Percentage		χ^2	<i>p</i>	Percentage		χ^2	<i>p</i>	Percentage		χ^2	<i>p</i>
	FT	PTNS			Mil	Non			M	F		
Past-month alcohol use	62.9	56.4	58.24	.00	77.2	58.5	25.84	.00	62.8	54.8	97.07	.00
Past-year alcohol use	79.2	75.6	24.52	.00	93.3	76.7	27.81	.00	78.1	75.7	12.33	.00
Past-month binge drinking	42.3	39.1	14.02	.00	54.4	40.0	15.39	.00	48.1	32.8	354.08	.00
Past-month heavy drinking	16.3	13.2	26.40	.00	17.8	14.2	1.86	.17	19.8	9.1	346.89	.00
Past-year alcohol abuse	10.6	9.0	10.45	.00	13.3	9.5	3.00	.08	12.3	7.0	120.99	.00
Past-year alcohol dependence	6.8	7.5	2.27	.13	7.2	7.2	0.00	.99	8.5	6.1	33.06	.00
Past-year abuse or dependence	17.4	16.5	2.24	.13	20.6	16.8	1.83	.18	20.9	13.0	159.68	.00
Past-year drove under the influence of alcohol	30.6	26.6	20.21	.00	30.5	28.0	0.52	.47	31.6	24.7	65.03	.00

Note. FT = Full-time college students; PTNS = Part-time and non-students; Mil = military; Non = Non-military; M = male; F = female.

^a*n* = 14,618 for all rows except past-year driving under the influence, where *n* = 11048. ^b*n* = 14,640 for all rows except past-year driving under the influence, where *n* = 11062.

Table 2
 Comparisons of Alcohol Use Across Student Status, Military Status, and Gender (Continuous Variables)

	Student Status					Military Status					Gender				
	FT		PTNS		t	Military		Non-Military		t	Male		Female		t
	n	M (SD)	n	M (SD)		n	M (SD)	n	M (SD)		n	M (SD)	n	M (SD)	
# days used	5152	3.26 (1.53)	9466	3.43 (1.56)	6.40*	180	2.82 (1.51)	14460	3.38 (1.55)	-4.90*	7063	3.35 (1.49)	7577	3.39 (1.61)	-1.64
Usual # of drinks per day	3086	4.53 (4.50)	4907	5.07 (5.77)	4.67*	130	4.75 (4.14)	7874	4.87 (5.38)	-0.31	4129	5.84 (6.34)	3875	3.83 (3.81)	17.38*
# days had 5 or more drinks	3149	3.46 (4.74)	5094	3.46 (5.18)	-0.00	137	3.30 (5.25)	8117	3.46 (5.01)	-0.36	4255	4.43 (5.68)	3999	2.42 (3.94)	18.81*

Note. All variables refer to alcohol use in the past month. FT = Full-time college students; PTNS = Part-time and non-students.
 * $p < .001$

Table 3

Predictors of Past-Month Alcohol Use					
Variable	Beta	SE	<i>p</i>	Exp(β)	Model χ^2
Constant	0.046	.029	.116	1.047	
Military Service ^a	0.838	.179	.000	2.312	
College Student ^b	-0.048	.116	.677	0.953	195.817*
Gender ^c	0.409	.042	.000	1.506	
Student x Gender	0.220	.072	.002	1.246	
Cox and Snell R ²			.013		

Note. N = 14,618.

^aNon-service members were the reference group. ^bPart-time and non-students were the reference group. ^cFemales were the reference group.

* $p < .001$.

Table 4

Predictors of Past-Year Alcohol Use					
Variable	Beta	SE	<i>p</i>	Exp(β)	Model χ^2
Constant	1.011	.033	.000	2.749	
Military Service ^a	1.436	.300	.000	4.202	
College Student ^b	-0.181	.136	.182	0.834	83.259*
Gender ^c	0.220	.048	.000	1.246	
Student x Gender	0.259	.084	.002	1.296	
Cox and Snell R ²			0.006		

Note. N = 14,618.

^aNon-service members were the reference group. ^bPart-time and non-students were the reference group. ^cFemales were the reference group.

* *p* < .001.

Table 5

Predictors of Number of Days Used Alcohol (Past-Month)						
Variable	<i>B</i>	SE β	Model 1			<i>R</i> ²
			β	<i>t</i>	<i>p</i>	
Constant	8.208	.554	–	14.823	.000	.029
Military Service	0.008	.557	.000	0.014	.989	
College Student	-0.082	.147	-.006	-0.561	.575	
Gender	-2.239	.143	-.170	-15.663	.000	

Note. N = 8,342. Model F = 82.878, *p* < .001.

Table 6

Predictors of Usual Number of Drinks Per Day (Past Month)						
Variable	<i>B</i>	SE β	Model 1			<i>R</i> ²
			β	<i>t</i>	<i>p</i>	
Constant	5.422	.460	–	11.789	.000	.038
Military Service	0.579	.463	.014	1.252	.211	
College Student	-0.411	.120	-.038	-3.418	.001	
Gender	-2.013	.117	-.189	-17.165	.000	

Note. N = 7,993. Model F = 105.018, *p* < .001.

Table 7

Predictors of Past-Month Binge Drinking					
Variable	Beta	SE	<i>p</i>	Exp(β)	Model χ^2
Constant	-0.781	.028	.000	0.458	
Military Service ^a	0.481	.152	.002	1.618	381.818*
College Student ^b	0.167	.036	.000	1.181	
Gender ^c	0.639	.034	.000	1.894	
Cox and Snell R^2			0.026		

Note. N = 14,618.

^aNon-service members were the reference group. ^bPart-time and non-students were the reference group. ^cFemales were the reference group.

* $p < .001$.

Table 8

Predictors of Number of Days Consumed 5 or More Drinks (Past-Month)						
Variable	<i>B</i>	SE β	Model 1			<i>R</i> ²
			β	<i>t</i>	<i>p</i>	
Constant	3.846	.422	–	9.119	.000	.041
Military Service	0.553	.424	.014	1.303	.193	
College Student	0.138	.112	.013	1.232	.218	
Gender	-2.013	.109	-.202	-18.674	.000	

Note. N = 8,243. Model F = 116.293, *p* < .001.

Table 9

Predictors of Past-Month Heavy Drinking					
Variable	Beta	SE	<i>p</i>	Exp(β)	Model χ^2
Constant	-2.425	.045	.000	0.088	
Military Service ^a	0.131	.199	.511	1.140	387.580*
College Student ^b	0.296	.049	.000	1.345	
Gender ^c	0.923	.050	.000	2.516	
Cox and Snell R ²			0.026		

Note. N = 14,618.

^aNon-service members were the reference group. ^bPart-time and non-students were the reference group.

^cFemales were the reference group.

* *p* < .001.

Table 10

Predictors of Past-Year Alcohol Abuse					
Variable	Beta	SE	<i>p</i>	Exp(β)	Model χ^2
Constant	-2.678	.051	.000	0.069	
Military Service ^a	0.285	.222	.200	1.330	137.550*
College Student ^b	0.218	.058	.000	1.244	
Gender ^c	0.637	.058	.000	1.890	
Cox and Snell R^2			0.009		

Note. N = 14,618.

^aNon-service members were the reference group. ^bPart-time and non-students were the reference group.

^cFemales were the reference group.

* $p < .001$.

Table 11

Predictors of Past-Year Alcohol Dependence					
Variable	Beta	SE	<i>p</i>	Exp(β)	Model χ^2
Constant	-2.770	.062	.000	0.063	
Military Service ^a	-0.102	.291	.726	0.903	
College Student ^b	-0.532	.212	.012	0.588	40.145*
Gender ^c	0.471	.080	.000	1.602	
Student x Gender	0.304	.136	.026	1.355	
Cox and Snell R^2			0.003		

Note. N = 14,618.

^aNon-service members were the reference group. ^bPart-time and non-students were the reference group.

^cFemales were the reference group.

* $p < .001$.

Table 12

Predictors of Past-Year Alcohol Abuse or Dependence					
Variable	Beta	SE	<i>p</i>	Exp(β)	Model χ^2
Constant	-1.994	.045	.000	0.136	
Military Service ^a	0.138	.187	.461	1.148	
College Student ^b	-0.284	.143	.047	0.753	174.045*
Gender ^c	0.667	.057	.000	1.948	
Student x Gender	0.263	.093	.005	1.301	
Cox and Snell R^2			.012		

Note. N =14,618.

^aNon-service members were the reference group. ^bPart-time and non-students were the reference group.

^cFemales were the reference group.

* $p < .001$.

Table 13

Predictors of Past-Year Driving Under the Influence					
Variable	Beta	SE	<i>p</i>	Exp(β)	Model χ^2
Constant	1.206	.036	.000	3.340	
Military Service ^a	-0.081	.170	.636	0.923	90.126*
College Student ^b	-0.219	.044	.000	0.803	
Gender ^c	-0.355	.043	.000	0.701	
Cox and Snell R^2			0.008		

Note. N = 11,048.

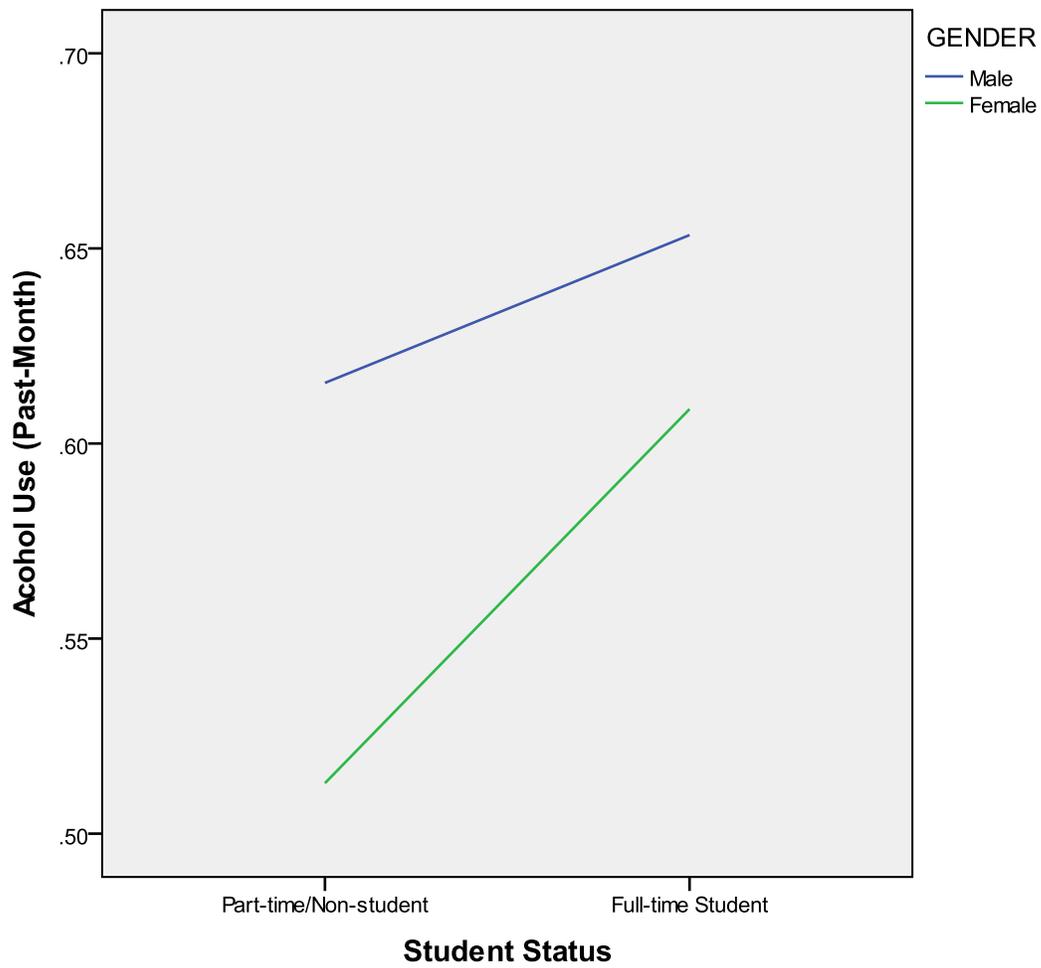
^aNon-service members were the reference group. ^bPart-time and non-students were the reference group.

^cFemales were the reference group.

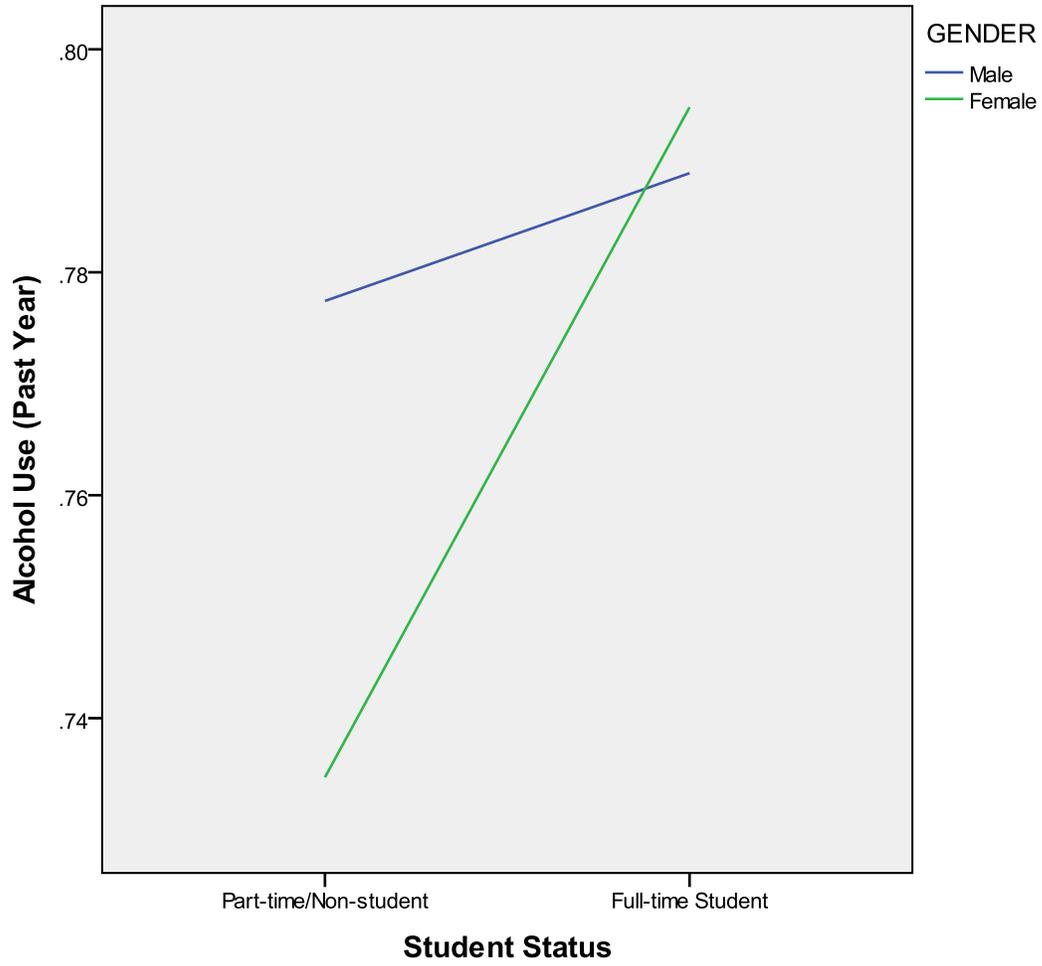
* $p < .001$.

Appendix B - Figures

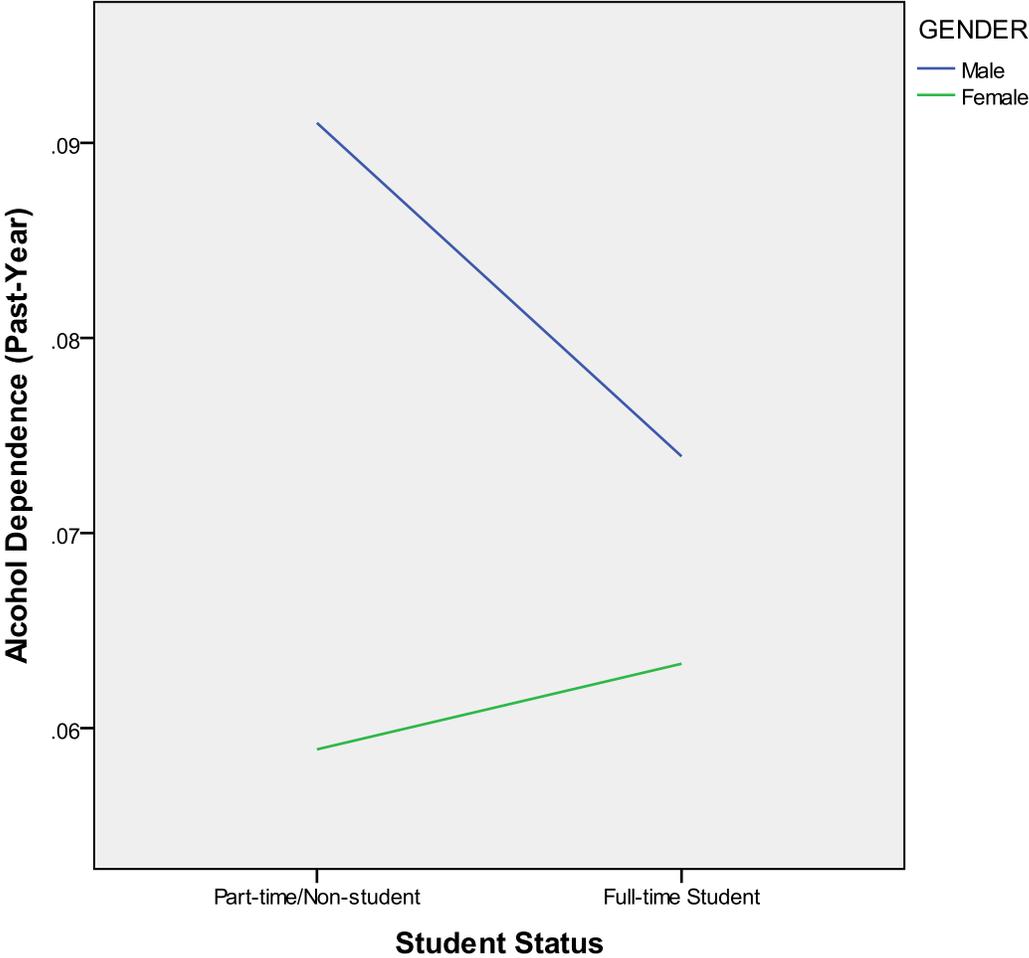
Graph 1
Past-Month Alcohol Use, Student Status by Gender



Graph 2
Past-Year Alcohol Use, Student Status by Gender



Graph 3
Past-Year Alcohol Dependence, Student Status by Gender



Graph 4
Past-Year Alcohol Abuse or Dependence, Student Status by Gender

