Adjustment to college and alcohol-related problems among student veterans: is social support a buffer?

Lindsay Claire Buckner

University at Albany, State University of New York, lindsaycbuckner@gmail.com

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ADJUSTMENT TO COLLEGE AND ALCOHOL-RELATED PROBLEMS AMONG STUDENT VETERANS: IS SOCIAL SUPPORT A BUFFER?

by

Lindsay C. Buckner

A Dissertation
Submitted to the University at Albany, State University of New York in Partial Fulfillment of the Requirements for the Degree of Doctor of Philosophy

School of Education
Department of Educational & Counseling Psychology

2020
Acknowledgements

Thank you to my peers and the faculty at the University at Albany Department of Counseling Psychology for your encouragement and support. To my advisor in all things, Dr. Jessica Martin, thank you for guiding, challenging, and believing in me through every step of my program. You have contributed immensely to my growth as a clinician, researcher, supervisor, and teacher, and it has been a pleasure working with you. To Dr. Michael Ellis, thank you for your cheerleading, for instilling the principles of a scientist-practitioner, and for picking up the baton and helping me reach the finish line during a global pandemic. Thank you also to Dr. Myrna Friedlander, Dr. Alex Pieterse, and Dr. Lisa McAndrew, for supporting my growth in clinical work and research. Thank you to the UAlbany Benevolent Association for providing funding for this research project.

To my Mom and Dad, thank you for your unwavering support and confidence in me, for not letting me give up, and for the countless hours of childcare and cooking that you selflessly provided. To my husband, Dave, thank you for your love, patience, and for helping carry the load of family life. To my children, Shirley, Alice, and Paul, thank you for the energy and joy you bring to each day. Let my journey be a lesson that learning is very fun and worthwhile even when it’s also very hard.

Finally, to my clients at Boston Medical Center, the PSC, the Albany Stratton VA Hospital, the University of Hartford, and the Carson Center, thank you for teaching me about humility, strength, compassion, persistence, love, and hope.
Abstract

U.S. Military veterans are increasingly represented on college campuses nationwide and, like their civilian peers, appear to be at risk for heavy alcohol use and its related problems. Qualitative research indicates that the college experience is fraught for many student veterans, owing to difficulty with adjustment to the social, academic, or emotional challenges unique to a higher education setting. Adjustment to college appears to be a risk factor for alcohol-related problems in civilian college students, but the extent to which this relation generalizes to student veterans is unknown. The current study sought to (1) determine the unique effects of alcohol use and adjustment to college on alcohol-related problems in a student veteran sample, and (2) test the stress-buffering effect of social support on the relation of adjustment to college and alcohol-related problems. Data from a national sample of 236 student veterans from two and four year colleges indicated that alcohol-related problems among student veterans were uniquely predicted by both their alcohol use and adjustment to college. Unexpectedly, social support did not moderate the relationship between adjustment to college and alcohol-related problems, nor did it uniquely predict alcohol-related problems. Implications for alcohol-related programming and research with student veterans are discussed.
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ADJUSTMENT TO COLLEGE AND ALCOHOL-RELATED PROBLEMS AMONG STUDENT VETERANS: IS SOCIAL SUPPORT A BUFFER?

College students are a high risk group for heavy and problematic alcohol use (Ham & Hope, 2003; Wechsler & Nelson, 2008). Heavy episodic drinking (HED) or binge drinking (defined as 4/5+ drinks in one sitting for women/men; Centers for Disease Control and Prevention; CDC, 2020) among college students constitutes a significant public health issue and has been linked to such negative consequences as property damage, verbal and physical violence, academic disruptions, and sexual assault, among others (Wechsler & Nelson, 2008). Recent research has demonstrated significant differences in alcohol-related outcomes between student veterans (i.e., military veterans who are attending college) and their civilian counterparts. Studies involving student veterans indicate significantly higher rates of drinking (Boynton Health Service, 2010, 2012; Whiteman et al., 2013) and more alcohol-related risk behaviors (e.g., riding in a vehicle with someone who has been drinking) than those reported by their civilian peers (Widome et al., 2011). Therefore, student veterans appear to be a particularly at-risk group for problematic alcohol use.

**Problematic Alcohol Use**

Large scale surveys (Hingson et al., 2017; Wechsler et al., 2002, 2008) indicate that heavy drinking among college students is prevalent and is associated with alcohol-related problems (defined as the negative physical, psychological, and social consequences associated with alcohol use; Kahler et al., 2005). As many as 39% of college students reported HED during the prior month (Substance Abuse and Mental Health Services Administration, 2013), a concerning figure in light of the direct association of HED to alcohol-related problems (Wechsler & Nelson, 2008). There is a range of problems associated with alcohol use, from those that are
seemingly harmless (e.g., saying something that you later regretted while drinking, suffering from the effects of a hangover), to concerning (e.g., legal troubles as a result of drinking, having unprotected sex while under the influence of alcohol), to morbidly severe (e.g., injury or death due to over intoxication; Ham & Hope, 2003; Perkins, 2002). In a large scale survey of American college student drinking outcomes, 19% of college students reported driving after having drank alcohol (and 2% driving after five or more drinks), and 14.7% reported suffering an injury as a result of their drinking (American College Health Association, 2015). In the most recent published report from the National Institute on Alcohol Abuse and Alcoholism (NIAAA), researchers reported 1,825 alcohol-related unintentional college student deaths in 2005 (Hingson et al., 2009), with estimates of close to 1,000 deaths due to drunk driving reported in more recent studies (Hingson et al., 2017). These statistics indicate that drinking is problematic, if not dangerous for many college students and those around them.

**Student Veterans’ Problematic Alcohol Use**

Recent research has examined more specifically the prevalence and nature of alcohol-related problems among student veterans. Among a large sample ($N = 1,651$) of student veterans from various colleges and universities in Minnesota, 72.1% reported prior months’ alcohol use while 33% reported HED in the previous two weeks (Grossbard et al., 2014). For student veterans with combat exposure those figures were significantly higher, with 82.1% reporting past months’ alcohol use and 41.2% reporting high-risk drinking (Grossbard et al.). Among the student veterans in Grossbard et al.’s study, HED predicted negative academic consequences such as missing class and poor test performance. In a national sample of college students, student service members/veterans (SSM/V; $N = 27,249$) were more likely than their civilian peers to report alcohol-related police encounters, have unprotected sex while drinking, and have
nonconsensual sex while under the influence of alcohol (Mitchell et al., 2017). Taken together, these findings suggest that student veterans are at particularly high risk for experiencing significant negative health, legal, and academic consequences associated with their alcohol use.

Despite indications that alcohol use among student veterans is problematic, relatively little is known about associated risk and protective factors for this population (Widome et al., 2011). The health and well-being of student veterans is a national priority (Borsari et al., 2017; NAMI, 2012) and, thus, it is important to understand factors that predict and protect against their alcohol-related problems. Alcohol consumption is obviously important in predicting alcohol-related problems, yet it does not fully explain why some individuals experience alcohol-related problems and others do not. Indeed, some researchers estimate that alcohol use accounts for less than 50% of the variance in alcohol-related problems (Park & Grant, 2005; Sadava, 1985), highlighting the need for research on additional contributing factors, such as psychological variables (e.g., stress; McCreary & Sadava, 2000; Park & Grant, 2005). Given that student veterans’ alcohol-related problems are at least partly predicted by their motivations to use alcohol to cope with negative affect (Whiteman & Barry, 2011), it is important to uncover sources of negative affect. One such source may be adjustment to college (Baker & Siryk, 1984), a unique type of stress experienced by college students and student veterans as they encounter the demands of the higher education environment (Borsari et al., 2017; DiRamio et al., 2008).

**Student Veterans’ Adjustment to College**

The phenomenon of adjustment to college has been studied widely among educational researchers (see Crede & Niehorster, 2012 for a review) and is broadly defined as the extent to which individuals can acclimate to college and meet the unique demands of the college environment (Baker & Siryk, 1984). Entry into higher education constitutes a significant change
in an individual’s life, marked by novel emotional, academic, and social challenges, requiring adaptation to navigate those challenges successfully (Baker & Siryk, 1984). Thus, college adjustment may be understood as a stressor that requires one to cope with changes in a number of important life domains.

It is estimated that more than one million military veterans and their dependents have pursued higher education since the provision of the Post-9/11 Veterans Educational Assistance Act of 2008 (Post-9/11 GI Bill; National Conference of State Legislatures, 2014). Amidst a growing presence in higher education, researchers have begun to explore veterans’ experiences in college, and have found that the transition from military to academic life can be challenging and stressful (Borsari et al., 2017; Elliott et al., 2011; Ryan et al., 2011). Qualitative inquiries into the transition from military to academic life indicate that some student veterans experience transitional stress associated with the following: administrative barriers, lack of support personnel, academic demands, physical and mental health challenges, social isolation, relationship difficulties, and conflicts surrounding identity (e.g., past vs. present self) and role (e.g., soldier vs. student; Mobley et al., 2019; Olsen et al., 2014; Rumann & Hamrick, 2010). Thus, the transition into higher education may be a stress-laden experience for some student veterans.

Alcohol use may serve as a means for coping with the stressors that student veterans encounter in college life. The proposed association between stress and alcohol-related outcomes is not novel. Two dominant models of alcohol use, the tension-reduction and motivational models, suggest that affect regulation is an important motivator of alcohol use. The tension-reduction hypothesis of alcohol use (Conger, 1956), which posits that the anxiolytic properties of alcohol offer an antidote to stress, is one of the earliest and most predominant theories of alcohol
use (Dawson et al., 2005; Greeley & Oei, 1999; Kalodner et al., 1989). The motivational model of alcohol use (Cooper et al., 2015; Cox & Klinger, 1988) extends the tension-reduction model and posits that additional non-chemical factors such as managing negative affect (e.g., stress) predict one’s motivations to drink. A substantial empirical literature indicates that drinking to regulate negative affect is predictive of alcohol use and, in particular, alcohol-related problems (see Cooper et al., 2015 for a review). Thus, from a motivational perspective student veterans may drink as a means of managing stress in the absence of more adaptive coping methods, thereby leading to alcohol-related problems (Cooper, 1994; Merrill et al., 2014).

Scant attention has been paid to the role of adjustment to college as a predictor of alcohol-related outcomes. What research does exist suggests that adjustment to college is associated with alcohol use (Montgomery & Haemmerlie, 1993) and alcohol-related problems (LaBrie et al., 2012) in civilian college students. Montgomery and Haemmerlie (1993) found that academic and personal-emotional adjustment were inversely related to consumption of hard liquor among a college student sample, but did not examine alcohol-related problems. LaBrie et al. (2012) found that poor adjustment to college mediated the relation of coping-motivated drinking to alcohol-related problems among college students, further suggesting that stress associated with adjustment to college may be a risk factor for alcohol-related problems. However, to what extent the relation between adjustment to college and alcohol-related problems generalizes to student veterans is unknown. Thus, examination of this relation may contribute to our understanding of affect-motivated problem drinking among student veterans as well as inform prevention and intervention efforts for college student veterans experiencing difficulty adjusting to college. Given that alcohol-related problems among student veterans are prevalent and concerning (Barry et al., 2012; Grossbard et al., 2014), and poor adjustment to college
appears to be a risk factor for alcohol-related problems in civilian college students (LaBrie et al., 2012), further inquiry is needed to test whether adjustment to college predicts alcohol-related problems among student veterans, and under what conditions this relation may exist. One condition in which the association between adjustment to college and alcohol-related problems may be attenuated is in the context of perceived social support (Cohen & Wills, 1985).

Social Support as a Protective Factor

Social support is defined as the emotional (i.e., empathy, caring, trust from others), instrumental (i.e., material aid provided by others), and informational (i.e., pertinent information provided to assist with coping) resources made available by one’s interpersonal connections (e.g., friends, family, significant others, coworkers; Cohen & Hoberman, 1983; House & Khan, 1985; Sarason & Sarason, 2009). Social support is argued to serve as a “coping resource” in the context of stress, which Thoits (1995) aptly describes as “a social ‘fund’ from which people may draw when handling stressors” (p. 64). Indeed, the perception of having even just one confidant upon whom to rely can allay the negative impact of stress (Cohen & Wills, 1985). It is the perception, not the actual receipt, of support that is thought to augment one’s coping ability, thereby altering their appraisal of the stressor and diminishing (i.e., moderating) its effect (i.e., the stress-buffering hypothesis; Cohen, 2004; Cohen & Wills, 1985). A substantial body of research suggests that perceived social support (i.e., functional support) is influential in moderating health risks (structural support, while important, appears less influential) (see Cohen, 2004; Uchino, 2004; Holt-Lunstad et al., 2010; and Wills & Ainette, 2012 for reviews).

Consistent with the stress-buffering hypothesis, research indicates that perceived social support serves a protective function against alcohol-related outcomes (i.e., use and associated problems) in the context of stress. The stress-buffering effect of social support on alcohol use has
been empirically supported in adult community samples (see Cohen, 2004 for a review), though results have varied in adolescent and college student samples (Hussong, 2003; Whiteman et al., 2013). For example, there is some evidence for the protective function of social support on affect-motivated drinking (i.e., drinking associated with feelings of hostility, stress, or sadness; Hussong et al., 2001) and risky drinking (Pittman et al., 2019) among college students. Conversely, a study among civilian students and student veterans found that emotional support from university peers directly predicted alcohol use (Whiteman et al., 2013). Notably, Whiteman et al.’s study utilized a one-dimensional measure of social support (e.g., university peer support) when multidimensional measures (i.e., encompassing military peers, familial/spousal support, and other sources of support; Cohen & Hoberman, 1983; Cohen & McKay, 1984) appear to be more appropriate for student veterans given their age, marital status, and noted dearth of on-campus peer support (Romero et al., 2015; Whiteman et al., 2013). Moreover, the majority of the above mentioned studies examined alcohol use but not alcohol-related problems as an outcome variable, and we know that alcohol use and alcohol-related problems are not always highly correlated. In sum, the applicability of the stress-buffering hypothesis of social support to student veterans’ alcohol-related problems is tenuous. Examination of the buffering effect of social support in a unique population under a unique type of stress has the potential to expand social support theory.

The Present Study

The current literature on risk and protective factors associated with student veterans’ problematic alcohol use and adjustment to college is lacking. Although well-established in the literature on civilian college student drinking (Park, 2004), the relation between alcohol use and alcohol-related problems has not been explicitly tested in the student veteran population. In order
to uncover and address the full continuum of risk factors for student veterans’ alcohol-related problems, it is important to first understand the extent to which their alcohol consumption contributes to their problems. Thus, an initial aim of this study was to test to the unique effect of alcohol use on alcohol-related problems (see Figure 1) in a sample of student veterans. It was hypothesized that alcohol use would significantly predict alcohol-related problems when controlling for the other predictor variables (H1).

An additional aim of the current study was to examine the association between adjustment to college and alcohol-related problems among student veterans in order to better understand it as a potential risk factor for problem drinking among a unique group of college students. While it appears that adjustment to college may be a risk factor for alcohol-related problems among civilian college students (LaBrie et al., 2012), if and to what extent this relation generalizes to student veterans is unknown. It is important to test the generalizability of the association between adjustment to college and problem drinking specifically among student veterans in order to inform evidence-based alcohol-related prevention and intervention programming for this unique population. Thus, informed by prior research and the tension-reduction and motivational models of alcohol use (Cooper et al., 1995, 2015), it was hypothesized that adjustment to college would demonstrate a significant inverse relationship with alcohol-related problems when controlling for alcohol use (see Figure 1, path b) in a student veteran sample (H2).

The final aim of the study was to test the application of the stress-buffering hypothesis of social support (Cohen, 2004; Cohen & Wills, 1985) in a student veteran sample as it pertains to their adjustment to college and problematic alcohol use. Intervention and prevention efforts stand to benefit from identification of factors that protect against alcohol-related problems among
student veterans. One potent protective factor, perceived social support, appears to buffer the effects of stress on problem drinking in civilian college students (Pittman et al., 2019), but to what extent this stress-buffering effect generalizes to student veterans also remains untested. It is important both theoretically and practically to test the generalizability of the stress-buffering hypothesis of social support to student veterans’ problem drinking. That is, to test whether perceived social support, a potentially malleable environmental factor, interrupts the stress-problem drinking relation in a population that appears to be particularly at risk. It was hypothesized that, consistent with the stress-buffering hypothesis of social support (Cohen, 2004; Cohen & Wills, 1985), perceived social support would moderate the relationship between adjustment to college and alcohol-related problems when controlling for alcohol use (see Figure 1, path a) (H3). A conditional hypothesis was proposed should the results fail to support an interaction for adjustment to college and social support on alcohol-related problems. That is, in the event that hypothesis three was unsupported, it was hypothesized that social support would demonstrate a main effect for (i.e., inversely predict) alcohol-related problems (H3a), when controlling for alcohol use.

Method

Participants

Power Analysis

An a priori statistical power analysis was conducted to determine an adequate sample size to detect significant moderation effects. Taking into consideration average effect sizes found in Counseling Psychology research (Haase et al., 2005) along with interaction effect sizes found in similar studies (e.g., Pierce et al., 1996; Shorey, 2010), the $\rho^2$ was set at .033 for the power analysis. This value meets Cohen’s (1992) criteria for a small effect in moderation analysis,
adheres to the ‘good enough principle’ (Serlin & Lapsley, 1985), and is reflective of the smaller effect sizes typically found with interaction effects (Aguinis et al., 2005). The value of power was set at .80, per convention (Cohen, 1988) and the per comparison alpha rate was set at .0167 using a modified Bonferroni correction (Holland & Copenhaver, 1988). With 4 predictor variables (two predictors, one moderator, and one interaction term), a sample size of 310 was needed. The final sample size was 236 participants, which yielded 67% observed statistical power. If an effect size of .05 is desired, observed power for the test of interaction increases to 87%.

**Sample Characteristics**

Participants included part-time and full-time undergraduate students enrolled at two and four-year colleges and universities in the United States who are veterans of the U.S. Military and 18 years old or older. The final sample included student veterans in their first (9.4%), second (23.5%), third (25.2%), and fourth (30.8%) year of schooling, with 10.7% reporting ‘other’ as year in school. Participants ranged in age from 22 to 66 years old with a mean age of 30.9 years old ($SD = 7.9$, $Mdn = 28.0$), and identified as 72.6% male, 26.1% female, 0.4% transgender, and 0.4% other. Participants’ racial background was as follows: Caucasian (78.6%), Hispanic or Latino (6.0%), Asian or Asian American (5.1%), Biracial/Multiracial (4.3%), Black or African American (2.1%), Native Hawaiian or other Pacific Islander (0.4%), and other (3.4%). Participants attended four-year (81.6%) and two-year (16.7%) colleges, and their classes took place fully on-campus (51.3%), fully on-line (8.1%), or a combination thereof (40.6%). Participants’ mean grade point average (GPA) was 3.3 ($SD = 0.6$). Participants were enrolled full-time (88.5%) and part-time (11.5%) as undergraduate students. Most participants (84.3%) lived off-campus with a roommate, romantic partner, or family member, while 14.8% lived alone.
off-campus and 0.8% lived on-campus. More than half of participants reported being in a
romantic relationship (60.6%). The majority of participants (74.8%) were attending schools
designated as ‘veteran friendly,’ and 22.6% reported they did not know if their campus was
‘veteran friendly.’ The majority of participants’ reported prior enlisted duty (94.9%) while 5.1%
reported prior reserve duty. The demographic makeup of the current sample of student veterans
(i.e., age, race, gender, living arrangement, course format, relationship status) was similar to that
reported with other student veteran samples (e.g., Boynton, 2012; Campbell & Riggs, 2015).

Measures

Demographic Questionnaire

Participants were asked to provide the following demographic information: age, gender,
race/ethnicity, relationship status, year in school, GPA, type of residence, years of military
service, branch of military service, and the “veteran friendly” status of their campus (e.g., is your
campus designated as “veteran friendly”?). These items were used to derive descriptive
information about the sample (see Appendix C).

Alcohol-Related Problems

The Brief Young Adult Alcohol Consequences Questionnaire (B-YAACQ; Kahler et al.,
2005; Appendix D) is a 24-item scale that is used to measure negative consequences associated
with alcohol use. The B-YAACQ was developed using the Rasch model of Item Response
Theory, which provides a severity index for scale items “along a theorized underlying latent
continuum”, such that each particular item suggests an equal increase in symptom severity across
the entire spectrum of problems (Kahler et al., 2005, p. 1181). The B-YAACQ assesses alcohol
problems across eight domains, which represent a continuum of severity (social-interpersonal
consequences, impaired control, self-perception, self-care, risk behaviors, academic/occupational
consequences, excessive drinking, and physiological dependence). Participants are asked to indicate whether they have experienced any of the given alcohol-related problems during the last year by responding either 0 (no) or 1 (yes). Total scores range from 0-24, with higher scores indicative of more problems.

The B-YAACQ was developed with a college student sample and demonstrates high convergent validity with the Young Adult Alcohol Consequences Questionnaire (YAACQ; Read et al., 2006) \( (r = .95) \) and Rutgers Alcohol Problem Index (RAPI; White & Labouvie, 1989) \( (r = .72) \). The 24 items on the B-YAACQ demonstrate a very good fit to the unidimensional Rasch model and tap into a range of type and severity of alcohol-related problems, which provides evidence of construct validity (Kahler et al., 2005). The Rasch model person reliability estimate (a similar but more conservative interpretation as other reliability estimates, such as Cronbach’s alpha and KR-20) was .82 (Kahler et al., 2005). Cronbach’s alpha was .91 in the current study.

**Alcohol Use**

The Daily Drinking Questionnaire (DDQ; Collins et al., 1985; Appendix E) is used to assess an individual’s alcohol use over a specific time period. Individuals are provided with a week-long calendar and are asked to report the typical number of alcoholic drinks (defined as a 12 oz. beer, 5 oz. glass of wine, or 1.25 oz. shot of liquor) consumed during each day of the week over the previous 30-day period. Drinks are summed to comprise the total number of drinks consumed per week (i.e., typical weekly drinking). The DDQ is used widely in research on college students’ alcohol use (Riper et al., 2009) and demonstrates adequate convergent validity with the Drinking Practices Questionnaire \( (r = .50, p = .001; \text{Cahalan et al., 1969}) \). The DDQ item type precludes estimation of test-retest reliability, as alcohol use is expected to vary week by week and is not conceptualized as a stable construct. Research indicates that scores on the
DDQ are amenable to intervention (Riper et al., 2009), suggesting that it is a meaningful measure of typical alcohol use.

Two additional items pertaining to alcohol use inquire about peak drinking episode (i.e., “In the last thirty days, what is the most number of drinks that you have had on any one occasion?”) and heavy episodic drinking (i.e., “In the past two weeks, how many times have you had five or more drinks in one sitting (if you are male) or four or more drinks in one sitting (if you are female?”). In addition to their use individually as descriptive measures of typical drinking, the three alcohol-use items (i.e., number of drinks per week, number of drinks consumed during peak drinking episode, and number of heavy drinking episodes) were standardized and summed to create a composite ‘alcohol use’ variable. The use of a composite or latent ‘drinking’ variable minimizes Type I error, and several studies with college students demonstrate support for its use as a valid measure of overall alcohol use behavior (Larimer et al., 2007; Marlatt et al., 1998). The composite alcohol use variable was used in the major analysis as a predictor of alcohol-related problems and also served as a control in the prediction of alcohol-related problems from adjustment to college given the moderate association between alcohol use and alcohol-related problems (Perkins, 2002). Psychometric data for the composite variable is limited, however one previous study with college students reported a Cronbach’s alpha of .85 (Martin, 2011). Cronbach’s alpha for the composite alcohol use variable was .89 in the current study.

**Adjustment to College**

The Student Adaptation to College Questionnaire (SACQ; Baker & Siryk, 1984; 1999; Appendix F) is a 67 item, self-report scale used to assess college students’ adjustment to the academic, social, and personal demands of college life. Only the total scale score was used in the
current study, as the interest herein is student veterans’ stress associated with their overall adjustment experiences and its association to problematic alcohol use. Total scale scores have been used in prior research (see Crede & Niehorster, 2012 for a review), including with the norming samples (Baker & Siryk, 1999). The SACQ uses a nine-point Likert response format in which participants indicate the extent to which each statement applies to them, ranging from 1 (doesn’t apply to me at all) to 9 (applies very closely to me). Roughly half (34) of the items on the SACQ are phrased negatively to account for desirability responding and thus were reverse scored. Higher scores on the SACQ indicate better self-reported adjustment to college (Baker & Siryk, 1984; 1999).

The SACQ is the most widely used multidimensional measure for assessing adjustment to college and has been tested on numerous college student samples with a sizable literature demonstrating relations between overall scores of adjustment to college and various academic and psychosocial outcomes (see Crede & Niehorster, 2012 for a meta-analytic review). There is generally consistent evidence for the validity of the SACQ (Baker, 2002; Dahmus & Bernardin, 1992). The full scale score demonstrates significant convergent validity with college attrition ($r_{pb} = -.37$). The SACQ demonstrates significant associations with the College Inventory of College Adjustment (CIAA; Borrow, 1949; Rice et al., 1990). The full scale SACQ demonstrates strong internal consistency reliability (Cronbach’s alpha = .94 for three administrations, and .93, .92 for two subsequent administrations). One item pertaining to academic adjustment (#62) was omitted in error in the study materials for the current study. Cronbach’s alpha for the full scale SACQ (less items 26, 33, and 62) was .95 in the current study, which is consistent with a recent study among a sample of student veterans (McAndrew et al., 2019).
**Social Support**

The Interpersonal Support Evaluation List (ISEL; Cohen & Hoberman, 1983; Cohen et al., 1985; Appendix G) is a 40-item scale that assesses the perceived availability of four aspects (appraisal, self-esteem, belonging, and tangible), as well an overall index of social support that individuals are expected to come across. The total scale score was used as the current study aims only to examine the hypothesized buffering effect of levels of perceived social support as opposed to specific types of social support. The total scale score has been used previously with college student samples (e.g., Bernardon et al., 2011; Cohen & Hoberman, 1983; Swickert et al., 2010). Items for the ISEL were informed by a social support framework set forth by House (1981). Participants respond to one of four statements about the perceived availability of support sources as being “definitely false” (0), “probably false” (1), “probably true” (2), or “definitely true” (3). Half of the items on the ISEL (22) are phrased negatively to account for desirability responding and were thus reverse scored. Total scale scores range from 0 to 120 and are calculated by summing all items, with higher scores indicating greater perceived availability of social support.

The ISEL demonstrates evidence of stability over time, with test-retest reliabilities over two day and six-week periods reported as .87 and .60, respectively. In a review of the psychometrics of the ISEL, Cohen et al. (1985) reported that the ISEL is moderately correlated with objective reports of close friends ($r = .46$), close relatives ($r = .42$), and quality of marital partner relationships ($r = .31$). The total scale score for the ISEL demonstrates good to excellent internal reliabilities, with Cronbach’s alpha coefficients ranging from .88 to .90 across studies. Cronbach’s alpha was .96 in the current study.
**Procedures**

Participants were solicited via email and on social networking sites to complete an electronic questionnaire consisting of the demographic questions, adjustment to college, social support, alcohol use, and alcohol-problem measures. Requests for participation were sent via email and Facebook messenger to campus chapters of the Student Veterans of America (SVA), the national organization of student veterans, across all fifty states as well as to campus veteran organizations that were not under the umbrella of SVA. Information about the study was also posted on the Facebook page and Twitter account of the author. Contacts were presented with a “cover page” (in the body of the email or social network posting/message) requesting their participation, along with a hyperlink that connected them to the password protected study materials on psychdata.com. In addition to the cover page and survey link, an informational flyer was also attached and offered for use in student veteran lounges and/or workspaces. Participants self-selected voluntarily into the study by clicking on the survey hyperlink.

Upon opening the psychdata.com hyperlink, participants were presented with an informed consent page (see Appendix B) that detailed the purpose of the study, relevant IRB approval information, their rights as participants, any potential risks associated with participation, and contact information for the author and the Dissertation Chairs. Because the study materials inquired about sensitive topics (alcohol-related problems), participants were made aware that they had the option to exit the survey at any point. Upon providing informed consent, participants were directed through the study materials as they appeared on the Psychdata.com webpages. The study materials were administered in counterbalanced order to prevent order effects. Upon completion of the questionnaire, participants were presented with alcohol and addiction related resources should they have concerns about their alcohol use or
related problems. Participants who fully completed the study materials were invited to enroll in a random drawing for 1 of 10 $25 e-gift cards to Amazon. To participate in the drawing, participants were directed to a separate website via an external link where they could elect to provide contact information. Additionally, for each participant that fully completed the study materials, a $1 donation was made to the Warrior Scholar Project, at a maximum of $250.

Results

Preliminary Analyses

Missing Data

Data for the 571 participants who initiated the survey were assessed for exclusion from the analysis based on pre-determined exclusion criteria and extent of missingness. First, any participants who did not meet the criteria of 1) being a military veteran ($N = 71$, or 2) being enrolled in higher education were omitted ($N = 75$). Next, the data was screened to determine the extent of missing cases. Participants who were missing more than 5% of total data or more than 5% of items on the SACQ, ISEL, or B-YAACQ were deleted ($N = 118$; Schafer, 1999). Two cases matched identically on IP address and demographic factors, thus one was eliminated. An additional 66 cases for which participants reported zero drinking in the prior thirty days were also deleted. Two cases for which implausible amounts of alcohol use were reported (i.e., > 6 drinks per hour over a twelve hour period) were omitted. The remaining missing data were examined in SPSS using Little’s MCAR test (1988) and were determined to be missing completely at random, $\chi^2(9967) = 10194.35, p = .054$. Next, missing data points on the Daily Drinking Questionnaire (DDQ) were imputed with zeros for those respondents who left the ‘amount’ field blank instead of entering ‘zero’ for alcohol consumption. Zeros were imputed for 49 cases with blank fields on the DDQ, for two cases with blank fields on the item pertaining to
peak drinking episode, and for five cases with blank fields on the HED item. For participants who were missing less than 5% of data, a logical imputation procedure was then used to deduce the value of each missing item based on the score for its most similar item for that measure. As expected, there was a high degree of non-responding for two items on the SACQ (items 26 and 33) that pertain to dormitory and/or communal campus living spaces. Given that 99% of participants reported off-campus living arrangements, these items were deemed inappropriate and omitted from the total scale score (Baker & Siryk, 1999). Other studies using the SACQ have followed the same procedure for these items (e.g., Bailey & Phillips, 2015).

Test of Counterbalancing

To mitigate ordering effects, participants were randomly assigned to three different administrations of the study materials in which the study measures and demographic questionnaire were variably ordered. A one-way multivariate analysis of variance was conducted to determine if results varied by order of administration of the study materials, with the version of the study materials (1-3) as the independent variables and the scores of the DDQ, SACQ, and ISEL as the dependent variables. Despite unequal sample sizes for administrations one through three (Ns = 81, 93, and 62, respectively), there was homogeneity of variances-covariances as assessed by Box’s test of equality of variance matrices (p = .47). The differences between the randomly ordered administrations on the combined dependent variables were not statistically significant, Pillai’s $V = .04, F(6, 464) = 1.46, p = .19$, partial $\eta^2 = .02$, 95% CI [0.0, .03]. Thus, sequencing effects were not evident.

Statistical Assumptions

Data were assessed to determine if they met the statistical assumptions of multiple regression analysis. Examination of the histogram and normal probability plot indicated that the
data were slightly positively skewed. The assumptions of linearity and homoscedascity were also assessed by examining residual scatterplots. The data met the assumption of linearity. However, the spread of the residuals increased as the predicted values increased indicating heteroscedascity. Multiple regression analysis is robust to violations of homoscedascity and normality if not severe (Tabachnick & Fidell, 2007), as in the current study. Thus, the data were not transformed.

The data was also examined for outliers and influential cases via the casewise diagnostics function in SPSS, and identified one case that exceeded critical values for studentized deleted residuals (> |3|), centered leverage (> .05), and standardized dfBeta for alcohol use (> |1|). The regression analysis was conducted both including and excluding the identified case and there was no change in the results. Thus, the case was included in the final analyses to maximize sample size and depict the full range of responses among the sample. Tolerance and VIF values for alcohol use (.94 and 1.06, respectively), adjustment to college (.58 and 1.72, respectively), and social support (.56 and 1.80, respectively) were within acceptable range.

For the regression analyses the study variables were entered as sets to account for multicollinearity. Social support and adjustment to college were significantly correlated ($r = .65, p < .01$). Thus, the regression analysis was run with and without mean-centered scores. Tolerance and VIF values for all major study variables were within the acceptable range once scores were mean-centered. However, because the overall results did not change when scores were mean-centered, non mean-centered scores were retained to ease interpretation of findings.

**Descriptive Statistics**

Participants reported consuming an average of 11.1 drinks per week ($SD = 12.3, Mdn = 8.0$), and reported an average of 1.8 heavy drinking episodes per the prior two weeks’ period ($SD$
Fifty-six percent of participants reported at least one heavy drinking episode in the previous two weeks, and 22% reported three or more heavy drinking episodes. Participants reported that the highest number of drinks they consumed on any one occasion was, on average, 6.9 drinks ($SD = 6.1, Mdn = 5.0$).

Participants reported an average of 4.8 ($SD = 5.3, Mdn = 3.0$) alcohol-related problems occurring in the prior month. Seventy-four percent of participants reported experiencing one or more alcohol-related problems in the past thirty days, and 39.4% of the sample reported five or more problems. The most frequently reported alcohol-related consequences included experiencing a hangover the morning after drinking (50.4%), having less energy or feeling tired after drinking (38.1%), and having said or done embarrassing things while drinking (35.6%). More significant negative consequences were also endorsed; 16.9% of participants reported they were unable to remember large stretches of time while drinking, 8.5% reported they had gotten into regrettable sexual situations because of their drinking, and 5.1% of participants endorsed waking up in an unexpected place after drinking. Notably, 14.8% of participants reported having driven a car when they knew they had too much to drink to drive safely. Participants endorsed alcohol-problems indicative of physical dependence, including increased tolerance (19.9%) and feeling like they needed a drink after awakening (8.5%). Frequencies of all alcohol-related problems reported among the sample are presented in Table 1.

Differences with regard to both measurement of alcohol use/outcomes and terminology used to define samples preclude direct comparison with previous studies. Nonetheless, rates of problematic alcohol-use among the current sample appear somewhat similar if not greater than those reported in previous research with student service members/veterans. For example, Bonar et al (2015) reported that 64% of their sample (i.e., students who were either national guard
service member or veterans) reported at least one heavy drinking episode (defined in their study as > 6 drinks in one sitting) in the prior year (vs. 56% in the current study for the prior two weeks’ period). In Grossbard et al.’s (2014) study, 33% of student veterans reported a heavy drinking episode in the previous two weeks, a comparatively lower figure when contrasted with the proportion of student veterans in the current sample reporting a heavy drinking episode (56%). The percentage of respondents who endorsed drunk driving in the current sample (14.8%) is similar, if not slightly higher than, that reported in previous research (12.4%) with student veterans specifically (Boynton Health Service, 2013). In comparison with one recent study among student service members/veterans, the current sample had notably higher rates of typical weekly drinking ($M_s = 6.2$ drinks per week vs. 11.1, respectively), heavy episodic drinking ($M_s = 1.4$ episodes vs. 1.8, respectively), and alcohol-related problems ($M_s = 1.6$ vs. 4.8, respectively) (Miller et al., 2016).

In comparison with studies among civilian college students, the current sample of student veterans reported notably higher rates of heavy episodic drinking and alcohol-related problems. While 56% of student veterans in the current sample reported at least one heavy episode of drinking in the prior two weeks, only 25.6% of civilian students from the most recent National College Health Assessment (2019) reported a recent prior heavy drinking episode. Among those civilian college students, 49.5% reported at least one alcohol-related problem as compared with 74% of student veterans in the current sample (ACHA, 2019). Roughly 15% of student veterans in the current sample reported driving under the influence of alcohol, as compared with estimates of between twelve and twenty-two percent of civilian college students across different age groups (Hingson et al., 2017). Thus, student veterans in the current sample appear to be as at risk for problem drinking, if not more so than their civilian college student peers.
The mean score for adjustment to college was 376.7 (SD = 79.6) in the current sample. Direct comparison of SACQ scores across studies is not feasible given that two items were omitted due to their high degree of missingness, and one item was erroneously excluded from the survey. A mean aggregate score of 428.2 (SD = 59.8) was reported for the four normative samples (Baker & Siryk, 1999). Even assuming the highest possible scores across all participants for the three missing items (thus, assuming higher levels of overall adjustment), the mean score for student adjustment in the current sample still appears substantially lower than those reported with the normative samples. Participants’ mean score for perceived social support was 79.8 (SD = 23.0). ISEL scores reported in prior research with military veterans (e.g., Lehavot et al., 2018; Rintala et al., 2005) and college students (e.g., Brookings & Bolton, 1988; Cohen & Hoberman, 1983), and in relation to alcohol-outcomes (e.g., Moak & Agrawal, 2009; Sacco et al., 2014) vary widely due to differing forms of the measure as well as variations in scoring procedures, thereby limiting comparison of mean scores across studies.

Correlations

Bivariate correlations (see Table 2) were calculated between the major study variables along with gender, with a critical p-value set at .01 using a Modified Bonferroni Correction (Holland & Copenhaver, 1988). Gender was examined due to the association to drinking outcomes evidenced in prior research (Geisner et al., 2004; Nolen-Hoeksema, 2004), but was not significantly associated with any of the major study variables. Unsurprisingly, alcohol use was highly correlated with alcohol-related problems (r = .62, p < .01), hence its inclusion as a control variable.

Major Analyses

For all tests of hypotheses, the critical p-value was set at α = .0167 using a Modified
Bonferroni correction (Holland & Copenhaver, 1988), which accounts for the tests of the full model, main effects, and the interaction term. Multiple regression analysis was used to test the effects of alcohol use, adjustment to college, social support, and the interaction term (adjustment to college by social support) on alcohol-related problems. For the tests of H1 and H2, the interaction term was excluded in order to establish the unique contribution of alcohol use and adjustment to college, respectively, in predicting alcohol-related problems for student veterans. Collectively, all the predictors in the model (excluding the interaction term) significantly accounted for 42.0% of the variance in alcohol-related problems, $R^2 = .43$, $F(4, 231) = 58.62, p < .000$, $R^2_{adj} = .42$, 95% CI [.33, .49]. The test of H1, alcohol use will predict alcohol-related problems when controlling for adjustment to college and social support, was significant, $F(1, 234) = 124.82, p < .001$, $R^2 = .31, R^2_{adj} = .30$, 95% CI [.23, .39]. That is, alcohol use accounted for 30% of the variance in alcohol-related problems when controlling for the other predictors. The test of H2 was supported, as the effect of adjustment to college on alcohol-related problems when controlling for alcohol use and social support was significant, $F(1, 234) = 12.17, p < .001$, $R^2 = .03, \eta^2_{adj} = .02$, 95% CI [.005, .08]. That is, adjustment to college accounted for 2% of the unique variance in alcohol-related problems, constituting a small effect (Cohen, 1988). The test of H3, the interaction term of adjustment to college and social support as a set will predict alcohol-related problems when controlling for alcohol use, was non-significant, $F(1, 233) = 3.56, p > .06$, $R^2 = .01, R^2_{adj} = 0.0$, 95% CI [0.0, .04]. Thus, H3 was not supported. Because the interaction term was non-significant it was dropped from the subsequent analysis. The test of H3a, the main effect of social support on alcohol-related problems when controlling for alcohol use and adjustment to college, was non-significant, $F(1, 234) = .12, p > .725$, $R^2 = .00, \eta^2_{adj} = 0.0$, 95% CI [0.0, .01]. Thus, H3a was not supported.
Discussion

The primary purpose of this study was to identify risk and protective factors for problem drinking among student veterans or, more specifically, to test the stress-buffering effect of social support in the relation of adjustment to college and alcohol-related problems for student veterans. The current study contributes several descriptive and inferential findings. Descriptively, rates of heavy drinking were somewhat comparable to those reported in other studies with college student veterans, but higher than those reported among civilian students. Alcohol use was a significant unique predictor of alcohol-related problems, and poor adjustment to college appeared to be a risk factor for problem drinking among student veterans in the sample. Additionally, social support did not buffer the relation between adjustment to college and alcohol-related problems for student veterans in this sample, nor did it uniquely predict alcohol-related problems. Major findings, along with practical considerations, implications for future research, and limitations and strengths of the current study, are discussed further below.

Major Findings

The major findings were a) alcohol use significantly predicted alcohol-related problems when controlling for all other predictors, b) adjustment to college significantly predicted alcohol-related problems when controlling for all other predictors, c) results failed to support the hypothesized interaction between adjustment to college and social support on alcohol-related problems, and d) there was no main effect of social support on alcohol-related problems. In sum, alcohol use and adjustment to college each appear to be unique risk factors for problem drinking among student veterans. Inferential and descriptive findings for each study variable will be discussed in the following sections.
**Problem Drinking**

Student veterans in the current sample reported heavy alcohol consumption and significant alcohol-related problems. Moreover, when compared with alcohol use and related-problems reported among prior civilian college student samples, the current sample of student veterans appears particularly at risk for problematic drinking. It is worth noting that in some studies that broadly define any military-affiliated students as student service members/veterans (SSM/Vs), rates of drinking and alcohol-related consequences do not significantly differ between military and civilian students (Barry et al., 2012; Miller et al., 2016). Meanwhile, studies examining student veterans more specifically have found significant differences between them and their civilian peers (Boynton Health Service, 2010, 2012; Widome et al., 2011). The considerable contrast between drinking outcomes reported in the current sample (i.e., a sample that does not include student service members) and those reported in prior research with civilian students appears to support this pattern. Thus, it may be that the experiences of college students who have separated from the military (i.e., veterans) are different from students who remain connected to the military (i.e., student service members), and that those differences are consequential to drinking outcomes. Alcohol-related research, policy, and programming with military-affiliated college students (i.e., student veterans and student service members) should be tailored to address these similar yet distinct populations in order to better understand and address their unique risk and protective factors.

The finding that alcohol use accounted for a significant unique proportion of the variance in alcohol-related problems was expected and is consistent with prior research (Neal & Carey, 2007; Park & Grant, 2005). However statistically significant, perhaps the most notable implication of this finding (i.e., that only 30% of the unique variance in alcohol-related problems
is attributable to alcohol use) is that a considerable proportion of the variance in alcohol-related
problems among the current sample can be attributed to factors outside of drinking. That is,
additional individual factors (e.g., mental health concerns, drinking motives) and/or contextual
variables (e.g., manner of drinking, drinking environment) may be contributing to alcohol-related
problems for student veterans in the current sample, as demonstrated in previous studies with
college students at large (e.g., Martens et al., 2007; 2008) and student service members/veterans
more specifically (e.g., Barry et al., 2012; Whiteman & Barry, 2011). Thus, continued research
into risk factors for alcohol-related problems, above and beyond alcohol use, is warranted.
Overall, the current findings demonstrate a concerning pattern of heavy alcohol use and
associated problems among the current sample of student veterans.

Adjustment to College

This is the first study to examine adjustment to college as a risk factor for alcohol-related
problems among student veterans. The finding that adjustment to college constitutes a risk factor
for problem drinking was expected and is consistent with a small literature on civilian college
students (Labrie et al., 2012; Montgomery & Haemmerlie, 1993). A substantial body of
qualitative research highlights the challenges some student veterans face in higher education and
supports the notion of adjustment to college as a potential stressor (Mobley et al., 2019; Olsen et
al, 2014; Rumann & Hamrick, 2010). The current findings indicate further support for the
tension-reduction hypothesis of alcohol use (Conger, 1956; Cooper et al., 2015) such that
adjustment to college may constitute a source of stress for some student veterans for which they
are motivated to use alcohol to cope, thereby putting them at risk for greater alcohol-related
problems. Future research could further test this theory by extending the current study to include
measures of tension reduction expectancies and/or coping motives among this population.
The relationship of adjustment to problem drinking is bidirectional, as is evidenced in research examining the reciprocal nature of negative affect (e.g., stress, hostility, sadness) and alcohol-related outcomes (e.g., Becker, 2012; Hussong et al., 2001). That is, in the absence of more healthy strategies for coping with adjustment stress, student veterans may find it difficult to manage their alcohol use, which further impacts their adjustment process. This would be consistent with LaBrie et al’s (2012) finding that poor adjustment to college mediates the relation of coping motivated drinking to alcohol-related problems for college students. Future research could explore the potential reciprocal relationship between adjustment to college and alcohol-related outcomes. Overall, the observed effect of adjustment to college on alcohol-related problems in the current study was small. While this effect is arguably meaningful from a clinical standpoint, the finding does suggest that a multitude of individual and/or contextual factors beyond adjustment stress and alcohol use likely interact to predict alcohol-related problems for student veterans, thus highlighting important avenues for future research.

**Social Support**

The major findings that social support had no intervening or main effect on problem drinking were unexpected. That there was no interaction or main effect for social support when examined alongside alcohol use is especially puzzling when contrasted with the pattern of correlations for the major study variables (Table 2). Social support and alcohol-related problems were significantly correlated when considered independently, but the effect became non-significant altogether when alcohol use was included in the model. This suggests that alcohol use may be mediating the relationship of social support to alcohol-related problems. To date this relation has not been tested, thus warranting further research.
**Implications for Practice and Policy**

Higher education administrators, policy makers, and mental health practitioners should be particularly concerned with these findings given that problem drinking among college students is amenable to intervention (see Carey et al., 2007; Miller et al., 2013 for reviews). The current findings suggest that student veterans appear to be at risk for heavy drinking and serious alcohol-related problems, including those with potentially dire consequences. Evidence-based treatments for college students (e.g., brief motivational interventions) that help reduce HED and reduce rates of alcohol-impaired driving (e.g., Teeters et al., 2015) may be especially important for student veterans given the high endorsement in this sample of both heavy episodic drinking and engagement in the most risky drinking behaviors. In practice settings, concerns related to adjustment to college should be considered along with other known risk factors (e.g., individual and contextual factors) for problem-drinking among college students. Additionally, given the potential reciprocal nature of adjustment to college and alcohol-related problems (i.e., heavy and problematic drinking may have an effect on adjustment to college), efforts aimed at preventing heavy and problematic drinking for student veterans may be consequential to their overall success in the college environment.

National organizations aimed at supporting student veteran populations (e.g., Student Veterans of America, Warrior-Scholar Project, Veteran Friendly programming) typically focus on procedures relating to academic and career readiness, admissions and benefits, and broad campus life initiatives (American Council on Education, 2018), and are not universal across college campuses (Kim & Cole, 2013). Prior research has asserted the need for more expansive and comprehensive (i.e., those that address the whole person) services for student veterans (Borsari et al., 2017). Indeed, the current findings suggest that initiatives aimed at improving
adjustment for student veterans may be warranted given the potential to also reduce the risk of problem drinking. Lastly, qualitative research has underscored the sentiment among student veterans that they inhabit two distinct identities, student and veteran (Mobley et al., 2019), whose cultures differ significantly (Naphan & Elliot, 2015). Opportunities to bridge the experiences of soldier and student, and potentially increase their sense of belonging and ‘fit’ on campus appear to be especially beneficial to their adjustment (McAndrew et al., 2019). Given that social support and adjustment to college were highly correlated in the current study, it may be helpful to identify and bolster important sources of support for student veterans to aid their adjustment. Further guidelines for best practice with this population are outlined in previous research (Bonar & Domenici, 2011).

**Directions for Future Research**

Future research may benefit from further examining the relations among the major study variables. When considered alone, both adjustment to college and social support evidenced a significant relation to alcohol-related problems (see Table 2). However, the relation decreased substantially when examining the full model (i.e., including alcohol use), suggesting that alcohol use may be mediating the relationship of adjustment to college and social support to alcohol-related problems (Frazier et al., 2004). That alcohol use may act a mediator in the relation of adjustment to college and alcohol-related problems aligns with prior research. Indeed, negative affect (e.g., associated with poor adjustment to college), in addition to having a direct effect on alcohol-problems (Park & Grant, 2005), also indirectly predicts alcohol-related problems by way of alcohol use (Cooper et al., 1995). Future research could investigate how varying levels of alcohol use determine alcohol-related problems for those student veterans experiencing difficulty
with adjustment to college and, further, if those relations differ depending on levels of social support (i.e., have a conditional direct effect; Hayes & Rockwood, 2017).

Future research may also benefit from exploring differences between student veteran samples and their student service-member peers. The current findings suggest that military veterans who are attending college may differ from military-affiliated (i.e., comprising veterans and active service members) college students in ways that influence their alcohol use and related consequences. Regardless, the distinction (i.e., student veterans vs. student service members/veterans) should be clearly articulated in future research to aid comparison of findings.

As mentioned above, future alcohol-related studies with student veterans should also include a demographic item that inquires about previous combat exposure, length of deployment(s), and PTSD symptoms to rule out the potential effect of factors that predate their enrollment in college.

Further research on student veterans’ adjustment using empirically based, well-validated measures such as the SACQ is clearly needed. Additionally, the use of more brief measures of social support (e.g., ISEL – SF; Payne et al., 2012) in the future may reduce the time burden for completing the study materials and thus prevent participant attrition. Moreover, future research could benefit from examining subscale scores of the SACQ or similar measures to better understand specific domains of risk and resilience for student veterans in the college environment. Similarly, future research into the stress-buffering hypothesis of social support (Cohen, 2004; Cohen & Wills, 1985) may benefit from a more nuanced examination of the potential protective function of specific types (e.g., instrumental, tangible, etc.) and sources (e.g., familial, peer, campus, etc.) of social support on drinking outcomes among student veterans.

Finally, the stress-buffering hypothesis (Cohen, 2004; Cohen & Wills, 1985) is one model of social support among many that seek to explain the effect of relationships on health and well-
being (Feeney & Collins, 2015; Sarason & Sarason, 2009). When considered alongside the large body of research on social support, the current findings are consistent insomuch as the relation to alcohol-related problems remains unclear and thus ripe for further study.

Limitations

Limitations inherent to the study design should be considered along with rival explanations for the current findings. First, temporal or causal inferences cannot be made from cross-sectional data. Second, the obtained sample was smaller than the sample size estimated in the *a priori* power analysis, which can reduce the power to detect a significant interaction effect (Cohen, 1988). However, given that there was no evidence of a direct effect of social support on alcohol-related problems, it is unlikely that the study results are attributable to suboptimal power. Additionally, the use of self-report measures to assess sensitive topics may contribute to biases in participation and responding. Indeed, retrospective self-reports of ‘typical’ drinking behavior tend to underestimate intake (Elkholm, 2004; Livingston & Callinan, 2015; Stockwell et al., 2004), are influenced by impression management motivations (Davis et al., 2010), and, specifically for student service members/veterans, underestimate the magnitude of alcohol-related problems relative to their alcohol use (Barry et al., 2012). Moreover, large-scale population surveys indicate that non-response bias (i.e., opting out of surveys) is significant for more heavy and risk-prone substance users (Lahaut et al., 2002; Studer et al., 2013; Zhao et al., 2009), a crucial point given the low participation rate in the current study relative to the extent of marketing and outreach. Taken together, the limitations specific to measuring alcohol use behavior suggest that the data in the current study may underestimate alcohol use and related outcomes.
Another limitation of the current study was the lack of demographic questions pertaining to combat status and PTSD symptoms. Research indicates that prior OEF/OIF combat exposure (Jacobson et al., 2008) and post-traumatic stress symptoms (Barry et al., 2012) are risk factors for heavy alcohol use and related problems among some military personnel. Moreover, for some student service members/veterans post-traumatic stress predicts poorer outcomes on measures of academic performance, motivation, and persistence (Barry et al.). Thus, a rival explanation for the current findings may be that adjustment difficulties and problem drinking among the current sample are attributable to combat exposure or post-traumatic stress such that difficulty with college adjustment exacerbates alcohol problems for an already at-risk population.

There are limitations associated with the study measures, and their broad use in the current study. First, the erroneous omission of one item pertaining to academic adjustment on the SACQ calls into question the reliability of the measure. However, given that the SACQ is of considerable length (i.e., 66 additional items) and that 23 items assess academic adjustment, it is unlikely that the missing item had a significant impact on the study findings. Regardless, cautious interpretation of the findings for the effect of adjustment to college on alcohol-related problems is warranted. Second, the ISEL and SACQ are ideally suited as multidimensional measures and, as such, researchers are encouraged to examine subscale and total scale scores to yield nuanced data. The use of total scale scores precludes any conclusions about the role of the various domains of social support and adjustment to college as they relate to problem drinking, thus potentially overlooking significant and important effects. Lastly, broad measures of social support such as the ISEL may overlook those types or sources of support (e.g., instrumental, informational, emotional) that are most salient for student veterans in protecting against problem drinking. That is, it may be that a specific source and/or kind of support (e.g., familial/spousal
support, military unit support, etc.) exerts influence on health outcomes (e.g., problem drinking, adjustment, mental health, etc.) as research with student service members/veterans (Campbell & Riggs, 2015; Elliott et al., 2011; Romero et al., 2015), non-matriculated veterans (Wilcox, 2010), and active duty personnel (Bravo et al., 2016) indicates. As with any research study, the reader is encouraged to consider these limitations when interpreting the results.

**Strengths**

The current study advances theoretical understanding of both the tension-reduction hypothesis of alcohol use (Conger, 1956; Cooper et al., 2015) and the stress-buffering hypothesis of social support (Cohen, 2004; Cohen & Wills, 1985) in a unique and underrepresented population. Moreover, this study is unique in that it utilized a national pool of student veterans sampled across various types of higher education institutions (i.e., two and four-year colleges and universities) using various learning formats (i.e., online and on-campus learning platforms) via quantitative analysis.

There are many aspects of the research design that strengthen the viability of theoretical and statistical inferences about the relations among study variables. First, all major constructs are clearly defined and unambiguous. Moreover, all research hypotheses are constructed based on and corresponding with clearly articulated theorizing about the nature of relations among constructs (Wampold et al., 1990). The use of psychological measures such as the ISEL and B-YAACQ, which demonstrate evidence of reliability and validity, reduces measurement error. Additionally, the use of adjusted $p$-values prevents against Type I error. Lastly, adherence to the regression assumptions underlying the statistical tests is a strength such that it prevents over or under-estimation of the magnitude and significance of an effect (Shadish et al., 2002).
Conclusion

The current study indicates that heavy alcohol use among military veterans attending college is associated with significant negative health, legal, and academic consequences. Current findings also suggest that adjustment to college, a stressor for some student veterans, is a risk-factor for alcohol-related problems. Social support, an important protective factor for various health-outcomes, did not buffer the effect of stress on alcohol-related problems in the current study. Apart from initiatives already aimed at facilitating their enrollment in college, student veterans are likely to benefit from those that also support their adjustment to the academic, social, and emotional challenges they face in higher education. Moreover, student veterans are likely to benefit from alcohol-related prevention and intervention efforts. Future alcohol-related research with student veterans is likely to benefit from assessing for risk-factors that predate veterans college matriculation (e.g., combat exposure, PTSD symptoms), exploring potential differences between student veterans and their college peers who remain service-connected, examining specific domains of student adjustment and social support as they relate to alcohol outcomes, and identifying factors that protect against problem-drinking for student veterans. To this point, many student veterans see themselves as a resourceful and resilient group (Mobley et al., 2019) and future research should continue to explore strengths and protective factors unique to the student veterans’ identity or experience.
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Figure 1

![Diagram of hypothesized relationships among Alcohol Use, Adjustment to College, Social Support, and Alcohol-related Problems](image)

*Figure 1. Diagram of hypothesized relationships among Alcohol Use, Adjustment to College, Social Support, and Alcohol-related Problems*
Table 1

*Frequencies of Reported Alcohol-related Problems*

<table>
<thead>
<tr>
<th>Item Number and Description</th>
<th>Percent Yes</th>
<th>Percent No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Had hangover</td>
<td>50.4</td>
<td>49.6</td>
</tr>
<tr>
<td>5. Decreased energy</td>
<td>38.1</td>
<td>61.9</td>
</tr>
<tr>
<td>9. Embarrassing behavior</td>
<td>35.6</td>
<td>64.4</td>
</tr>
<tr>
<td>7. Unplanned drinking</td>
<td>32.6</td>
<td>67.4</td>
</tr>
<tr>
<td>10. Nausea and/or vomiting</td>
<td>26.7</td>
<td>73.3</td>
</tr>
<tr>
<td>16. Felt badly about themselves</td>
<td>25.4</td>
<td>74.6</td>
</tr>
<tr>
<td>15. Wasted time</td>
<td>24.6</td>
<td>75.4</td>
</tr>
<tr>
<td>2. Took foolish risks</td>
<td>22.9</td>
<td>77.1</td>
</tr>
<tr>
<td>21. Difficulty limiting intake</td>
<td>19.9</td>
<td>80.1</td>
</tr>
<tr>
<td>24. Increased tolerance</td>
<td>19.9</td>
<td>80.1</td>
</tr>
<tr>
<td>13. Unwanted weight gain</td>
<td>18.2</td>
<td>81.8</td>
</tr>
<tr>
<td>3. Could not remember large stretches of time</td>
<td>16.9</td>
<td>83.1</td>
</tr>
<tr>
<td>12. Regret over impulsive behaviors</td>
<td>16.5</td>
<td>83.5</td>
</tr>
<tr>
<td>19. Drove after heavy drinking</td>
<td>14.8</td>
<td>85.2</td>
</tr>
<tr>
<td>4. Quality of work or school decreased</td>
<td>14.4</td>
<td>85.6</td>
</tr>
<tr>
<td>8. Physical appearance harmed</td>
<td>14.0</td>
<td>86.0</td>
</tr>
<tr>
<td>22. Passed out</td>
<td>14.0</td>
<td>86.0</td>
</tr>
<tr>
<td>23. Became very rude or obnoxious</td>
<td>14.0</td>
<td>86.0</td>
</tr>
<tr>
<td>11. Absences from work or school</td>
<td>11.4</td>
<td>88.6</td>
</tr>
<tr>
<td>17. Relationship conflict</td>
<td>11.4</td>
<td>88.6</td>
</tr>
<tr>
<td>6. Regrettable sexual situations</td>
<td>8.5</td>
<td>91.5</td>
</tr>
<tr>
<td>18. Needed a drink after waking</td>
<td>8.5</td>
<td>91.5</td>
</tr>
<tr>
<td>14. Awoke in an unexpected place</td>
<td>5.1</td>
<td>94.9</td>
</tr>
</tbody>
</table>
Table 2.

*Pearson Correlations and Internal Consistency Scores for Major Study Variables*

<table>
<thead>
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<th></th>
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<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Alcohol Use</td>
<td>-.12</td>
<td>(.89)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Adjustment to College</td>
<td>.07</td>
<td>-.23*</td>
<td>(.95)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Social Support</td>
<td>.05</td>
<td>-.12</td>
<td>.65*</td>
<td>(.96)</td>
<td></td>
</tr>
<tr>
<td>5. Alcohol-Problems</td>
<td>-.08</td>
<td>.62*</td>
<td>-.35*</td>
<td>-.19*</td>
<td>(.91)</td>
</tr>
</tbody>
</table>

* p < .01
Appendix A

Cover Letter

Dear Student Veteran,

I am a doctoral student at the University at Albany and I am currently working on my dissertation, which examines the experiences of military veterans attending college. I am writing to ask for your participation in this study.

You are eligible to participate in this study if you are:

a) at least 18 years of age,

b) are a veteran of the U.S. military (Army, Navy, Marine Corps, Air Force, and Coast Guard) that has served on active duty, and

c) are currently enrolled full or part time as an undergraduate at a college or university.

Your participation in this study is voluntary and your responses are anonymous. The online questionnaires should take approximately 20-30 minutes to complete and you will be eligible to enter a random drawing for 1 of 10 $25 gift cards to Amazon upon full completion of the study. In addition, $1 will be donated to the Wounded Warriors Project for every person that fully completes the study materials, at a maximum of $250.

If you would like to participate, please click on the following link:

psychdata.com link here

Thank you in advance for your help with this important area of research!

Warmly,
Lindsay Buckner, M.A.
Doctoral Student and Military Spouse
Appendix B

Informed Consent

Thank you for your interest in this study, which explores the experiences of military veterans attending college. The principal investigator for this study is Lindsay C. Buckner, Doctoral Student in the Division of Counseling Psychology at the University at Albany. I am working under the guidance of my Dissertation Chairs, Dr. Jessica Martin and Dr. Michael Ellis, in the Division of Counseling Psychology at the University at Albany.

Purpose
The purpose of this study is to examine the adjustment experiences and alcohol use behaviors of military veterans attending college. You will be asked to complete an anonymous online questionnaire.

Participation
Participation in this study is voluntary. Even after you agree to participate in the research, you may decide to leave the study at any time without penalty. If you choose to participate, a link to the website containing the study materials is provided below. Completing the survey online will take about 20-30 minutes.

Compensation
Upon full completion of the study materials, you can choose to enter a random drawing for 1 of 10 $25 gift cards to Amazon as compensation for your time. Additionally, for every person that fully completes the survey, $1 will be donated to Wounded Warriors, at a maximum of $250.

Compensation is contingent upon full completion of the study materials. If you wish to step away from your computer during the administration of study materials, you may keep your browser window open and remain connected to the study webpage. Logging or closing out of the study webpage will constitute your withdrawal from the study and, as such, you will be ineligible for compensation.

Risks and Benefits
The risks and discomforts associated with participation in this study are minimal. However, one risk related to your participation is that you may be uncomfortable answering questions about your alcohol use and related behaviors. Resources will be provided at the end of the questionnaire should you have questions or concerns about your alcohol use.

One potential benefit of participating is that you may become more aware of your own alcohol use. Additionally, others may ultimately benefit from the knowledge obtained from this research.

Confidentiality
The answers you provide in the study materials are anonymous and confidential, and will be stored in the Dissertation Chair’s password protected psychdata.com account. If you wish to be considered for the random drawing, you will be re-directed to another secure database where you will be asked to provide your contact information so that you can be notified if you are chosen as
one of the winners. Your contact information will be kept separate from your answers to the study materials.

All information obtained in this study is strictly confidential unless disclosure is required by law. In addition, the Institutional Review Board, the sponsor of the study, and the University responsible for monitoring this study may inspect these records.

This project has been approved by the University at Albany Institutional Review Board. Approval of this project only signifies that the procedures adequately protect the rights and welfare of the participants. Please note that absolute confidentiality cannot be guaranteed due to the limited protections of Internet access. Please be sure to close your browser when finished so no one will be able to see what you have been doing.

**Whom do I contact if I have questions about the study?**
If you have any questions about this study, please contact Lindsay C. Buckner, MA, by phone at (860) 882-7561, or by email at lbuckner@albany.edu. Additionally, questions can be directed to the Dissertation Chairs, Dr. Jessica Martin, Assistant Professor in the Division of Counseling Psychology at the University at Albany, by phone at (518) 442-4935, or by email at jlmartin@albany.edu and/or Dr. Michael Ellis, Professor in the Division of Counseling Psychology at the University at Albany, by phone at (518) 442-5048, or by email at mvellis@albany.edu.

**Whom do I contact if I have questions about my rights as a study participant?**
Research at the University Albany involving human participants is carried out under the oversight of the Institutional Review Board (IRB). This research has been reviewed and approved by the IRB. If you have any questions concerning your rights as a research subject or if you wish to report any concerns about the study, you may contact University at Albany Office of Regulatory & Research Compliance at 1-866-857-5459 or hsconcerns@albany.edu.

By clicking “Continue” below, you will be taken to the study questionnaires and you are stating: “I have read the information about this study. I hereby consent to participate in this study.”
Appendix C

Demographic Questionnaire

Directions: Please provide the following information.

1. What is your age (in years): ___

2. What is your gender: __ Male __ Female __ Other

3. What is your current year in school: __ First year __ Second year __ Third year __ Fourth year __ Other

4. Are you a Veteran of the U.S. Military (i.e., you have completed your enlistment, are no longer serving, and completed form DD-214 when you separated)? __ Yes __ No

5. Please indicate your racial group:
   __ American Indian or Alaska Native
   __ Asian or Asian American
   __ Black or African American
   __ Caucasian
   __ Hispanic or Latino
   __ Native Hawaiian or Other Pacific Islander
   __ Biracial/Multiracial
   __ Other (Please Specify):

6. What is your relationship status? __ Married __ Not married __ In a romantic relationship __ Separated or Divorced __ Single

7. Please indicate the type of college or university you currently attend: __ 2 year college or university __ 4 year college or university __ Other (please describe)

8. How do you attend your college courses? __ On-campus only __ On-line only __ Both on-
9. Please indicate your enrollment status at your college/university: __ Part-time __ Full-time

10. Where do you currently live? __ On-campus residence with roommate(s) __ On-campus residence alone __ Off-campus residence with roommate(s) __ Off-campus residence with romantic partner/spouse __ Off campus residence with family member(s) __ Off-campus residence alone

11. What is your current GPA? ______

12. Is your college or university designated as a “veteran friendly campus”? __ Yes __ No __ I Don’t know

13. What was the nature of your discharge from the military? __ Entry level separation (service lasting than 180 days) __ Honorable __ General __ Other than Honorable (OTH) __ __ Bad Conduct __ Dishonorable

14. In which branch of the military did you serve? __ Army __ Navy ___ Marine Corps __ Air Force ___ Coast Guard

15. Did you serve on active duty? __ Yes __ No
Appendix D

Brief Young Adult Alcohol Consequences Questionnaire

Below is a list of things that sometimes happen to people either during or after they have been drinking alcohol. Next to each item, please mark an “X” in either the NO or the YES column to indicate whether that item describes something that has happened to you in the past 30 days.

In the past 30 days....

1. I have had a hangover (headache, sick stomach) the morning after I had been drinking __ NO __ YES
2. I have taken foolish risks when I have been drinking __ NO __ YES
3. I’ve not been able to remember large stretches of time while drinking heavily __ NO __ YES
4. The quality of my work or school has suffered because of my drinking __ NO __ YES
5. I have had less energy or felt tired because of my drinking __ NO __ YES
6. My drinking has gotten me into sexual situations I later regretted __ NO __ YES
7. I often have ended up drinking on nights when I had planned not to drink __ NO __ YES
8. My physical appearance has been harmed by my drinking __ NO __ YES
9. While drinking, I have said or done embarrassing things __ NO __ YES
10. I have felt very sick to my stomach or thrown up after drinking __ NO __ YES
11. I have not gone to work or missed classes at school because of drinking, a hangover, or illness caused by drinking __ NO __ YES
12. When drinking, I have done impulsive things I regretted later __ NO __ YES
13. I have been overweight because of my drinking __ NO __ YES
14. I have woken up in an unexpected place after heavy drinking __ NO __ YES
15. I have spent too much time drinking __ NO __ YES
16. I have felt badly about myself because of my drinking __ NO __ YES
17. My drinking has created problems between myself and my boyfriend/girlfriend/spouse, parents, or other near relatives __ NO __ YES
18. I have felt like I needed a drink after I’d gotten up (that is, before breakfast) __ NO __ YES
19. I have driven a car when I knew I had too much to drink to drive safely __ NO __ YES
20. I have neglected my obligations to family, work, or school because of drinking __ NO __ YES
21. I have often found it difficult to limit how much I drink __ NO __ YES
22. I have passed out from drinking __ NO __ YES
23. I have become very rude, obnoxious, or insulting after drinking __ NO __ YES
24. I have found that I needed larger amounts of alcohol to feel any effect, or that I could no longer get high or drunk on the amount that used to get me high or drunk __ NO __ YES
Appendix E

**Daily Drinking Questionnaire**

**Directions:** Please indicate the number of drinks that you typically consumed on each day of the week over the past 30 days, and how many total hours you spent consuming alcohol. A drink is considered a 12 oz. beer (i.e., most bottled or canned beer), a 5 oz. glass of wine (i.e., a regular-sized glass of wine), or a 1.25 oz. (one shot) drink of hard alcohol.

<table>
<thead>
<tr>
<th></th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
<th>Saturday</th>
<th>Sunday</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drinks:</td>
<td>Drinks:</td>
<td>Drinks:</td>
<td>Drinks:</td>
<td>Drinks:</td>
<td>Drinks:</td>
<td>Drinks:</td>
<td>Drinks:</td>
</tr>
<tr>
<td>Hours:</td>
<td>Hours:</td>
<td>Hours:</td>
<td>Hours:</td>
<td>Hours:</td>
<td>Hours:</td>
<td>Hours:</td>
<td>Hours:</td>
</tr>
</tbody>
</table>

1. In the past two weeks, how many times have you had five or more drinks in one sitting (if you are male), or four or more drinks in one sitting (if you are female)?

2. In the last thirty days, what is the most number of drinks that you have had on any one occasion?
Appendix F

Student Adaptation to College Questionnaire (SACQ)

The contents of the SACQ have been removed prior to publication of the Dissertation per the copyright guidelines of Western Psychological Services.
Appendix G

Interpersonal Support Evaluation List (ISEL) -- General Population

This scale is made up of a list of statements each of which may or may not be true about you. For each statement check “definitely true” if you are sure it is true about you and “probably true” if you think it is true but are not absolutely certain. Similarly, you should check “definitely false” if you are sure the statement is false and “probably false” is you think it is false but are not absolutely certain.

1. There are several people that I trust to help solve my problems.
2. If I needed help fixing an appliance or repairing my car, there is someone who would help me.
3. Most of my friends are more interesting than I am.
4. There is someone who takes pride in my accomplishments.
5. When I feel lonely, there are several people I can talk to.
6. There is no one that I feel comfortable to talking about intimate personal problems.
7. I often meet or talk with family or friends.
8. Most people I know think highly of me.
9. If I needed a ride to the airport very early in the morning, I would have a hard time finding someone to take me.
10. I feel like I’m not always included by my circle of friends.
11. There really is no one who can give me an objective view of how I’m handling my problems.
12. There are several different people I enjoy spending time with.
13. I think that my friends feel that I’m not very good at helping them solve their problems.
14. If I were sick and needed someone (friend, family member, or acquaintance) to take me to the doctor, I would have trouble finding someone.
15. If I wanted to go on a trip for a day (e.g., to the mountains, beach, or country), I would have a hard time finding someone to go with me.
16. If I needed a place to stay for a week because of an emergency (for example, water or electricity out in my apartment or house), I could easily find someone who would put me up.
17. I feel that there is no one I can share my most private worries and fears with.
18. If I were sick, I could easily find someone to help me with my daily chores.
19. There is someone I can turn to for advice about handling problems with my family.
20. I am as good at doing things as most other people are.
21. If I decide one afternoon that I would like to go to a movie that evening, I could easily find someone to go with me.
22. When I need suggestions on how to deal with a personal problem, I know someone I can turn to.
23. If I needed an emergency loan of $100, there is someone (friend, relative, or acquaintance) I could get it from.
24. In general, people do not have much confidence in me.
25. Most people I know do not enjoy the same things that I do.
26. There is someone I could turn to for advice about making career plans or changing my job.
27. I don’t often get invited to do things with others.
28. Most of my friends are more successful at making changes in their lives than I am.
29. If I had to go out of town for a few weeks, it would be difficult to find someone who would look after my house or apartment (the plants, pets, garden, etc.).
30. There really is no one I can trust to give me good financial advice.
31. If I wanted to have lunch with someone, I could easily find someone to join me.
32. I am more satisfied with my life than most people are with theirs.
33. If I was stranded 10 miles from home, there is someone I could call who would come and get me.
34. No one I know would throw a birthday party for me.
35. It would be difficult to find someone who would lend me their car for a few hours.
36. If a family crisis arose, it would be difficult to find someone who could give me good advice about how to handle it.
37. I am closer to my friends than most other people are to theirs.
38. There is at least one person I know whose advice I really trust.
39. If I needed some help in moving to a new house or apartment, I would have a hard time finding someone to help me.
40. I have a hard time keeping pace with my friends.