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Psychological Hardiness and Avoidance Coping Are Related to Risky Alcohol Use in Returning Combat Veterans

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This study examines psychological hardiness and avoidance coping as predictors of risk for alcohol abuse in military personnel following war-zone deployment. U.S. Army soldiers returning from Afghanistan completed questionnaire surveys during their first week home, and again seven to nine months later. The Time 1 survey was administered in paper form during soldier administrative processing to home station. The Time 2 follow-up survey was administered electronically over the Internet. Data were analyzed using blockwise sequential logistic regressions, with age, rank, and combat exposure entered as covariates. Results show that low psychological hardiness, more combat exposure, younger age, and lower rank are associated with increased risk of alcohol abuse soon after return from deployment. At follow-up, avoidance coping was a significant predictor of risky alcohol use. These results suggest that alcohol screening programs for returning veterans may be improved by including assessment of such psychological variables as hardiness and avoidance coping.

Keywords: Hardiness, avoidance coping, alcohol use, combat exposure, military

INTRODUCTION

Alcohol abuse is a serious problem among U.S. military personnel returning from overseas deployments, one that can devastate individual lives while driving up health care costs and degrading military force readiness. According to a recent review, alcohol use and abuse in the military incurs a substantial financial cost and loss in productivity (Schumm & Chard, 2012). By one estimate, excessive alcohol consumption cost the military US$1.2 billion in 2006 (Harwood, Zhang, Dall, Olaiva, & Fagen, 2009), with $425 million spent on increased health care costs, and another $745 million in personnel costs. It accounts for an estimated 320,000 lost work days per year, and more than 34,000 arrests, half of which are for driving under the influence of alcohol (Dall et al., 2007). In addition, alcohol and substance abuse may contribute to a range of other negative outcomes including post-traumatic stress disorder (PTSD), depression, family violence, and suicide (Shipherd, Stafford, & Tanner, 2005). Clearly, alcohol abuse is very costly for the U.S. military.

While alcohol abuse can be a problem for any military member, the risk increases with stress exposure. Research shows that military members who experience more extreme
combat exposure, more frequent deployments, and combat-related injuries are at elevated risk for a range of mental health problems (Hoge et al., 2004). Among U.S. veterans of Iraq and Afghanistan seeking care in Veterans Administration facilities, substance abuse (including alcohol abuse) and PTSD were the most common health problems (Seal, Bertenthal, Miner, Sen, & Marmar, 2007). Recently deployed soldiers are also at higher risk for new-onset heavy and binge drinking and alcohol-related problems. According to one large-scale study of 88,235 veterans of the Iraq conflict, 12% to 15% of soldiers report serious alcohol problems after their return (Milliken, Auchterlonie, & Hoge, 2007). This can be compared with a 12-month prevalence rate of 8.5% showing serious drinking problems in the U.S. population (Hasin, Stinson, Ogburn, and Grant, 2007). The risks are greater for younger and Reserve and National Guard troops (Jacobson et al., 2008).

Although many combat-exposed troops develop stress-related problems, including alcohol and substance abuse, not all do. In fact, the majority adjust quite well. A better understanding is needed of factors that distinguish those who drink excessively from those who do not. The present study investigates hardness and avoidance coping as two psychological variables that may increase the risk for heavy drinking in military personnel following a war-zone deployment.

Psychological hardness has been identified as an individual difference variable that distinguishes healthy from nonhealthy stress responders (Kobasa, 1979; Maddi & Kobasa, 1984). People high in hardness maintain a strong sense of commitment, believing the world is interesting and meaningful; an expectation they can control or influence outcomes; and a sense of challenge, or an adventurous, explorative approach to living.

Research studies with a variety of occupational groups have found that hardness is a significant moderator in the stress–illness relationship (Bartone, 1989; Kobasa, Maddi, & Kahn, 1982). In military groups, hardness has been identified as a significant moderator of combat exposure stress in U.S. Gulf War soldiers, with individuals high in hardness showing better health (Bartone, 2000) and fewer PTSD symptoms (Bartone, 1999). Hardiness has appeared as a stress moderator in other military groups as well, including U.S. Army casualty assistance workers (Bartone, Ursano, Wright, & Ingraham, 1989), peacekeeping soldiers (Bartone, 1996), and Israeli soldiers in combat training (Florian, Mikulincer, & Taubman, 1995).

The health effects of hardness appear to be at least partly due to the different kinds of coping strategies and behaviors used by high-versus low-hardy persons. In responding to stress, people who are high in hardness tend to rely on problem-focused, active coping approaches. When facing a problem, they seek ways to solve it. In contrast, people low in hardness tend to revert to regressive or avoidance coping strategies, which could include excessive alcohol consumption or drug abuse as ways to avoid problems and challenges (Maddi & Kobasa, 1984). A recent meta-analysis of hardness studies also found that low hardness is associated with regressive or avoidance coping, while high hardness is linked to more active, problem-focused coping strategies (Eschleman, Bowling, & Alarcon, 2010).

One early study that examined hardness and alcohol use specifically found that college students low in hardness also drank more alcohol and were more likely to use marijuana and cocaine (Maddi, Wadhwa, & Haier, 1996). More recently, a population-based study of Norwegian defense workers found that hardness and avoidance coping predicted risk for alcohol abuse (Bartone, Hystad, Eid, & Brevik, 2012). It thus seems likely that military personnel who are low in hardness–resilience are at elevated risk for substance abuse problems upon returning from deployment. Additional findings summarized here suggest this risk is higher for young soldiers and for those who experience greater exposure to stressful conditions.

The present study was undertaken to assess the contributions of combat exposure, hardness, and avoidance coping to alcohol abuse risk in a unit of U.S. National Guard soldiers who recently returned from a wartime deployment to Afghanistan. The following hypotheses are tested:

**H1:** Higher levels of combat exposure are associated with increased alcohol abuse risk.

**H2:** Higher levels of hardness are associated with decreased alcohol abuse risk.

**H3:** Higher levels of avoidance coping are associated with increased alcohol abuse risk.

### METHODS

This study was approved by the Institutional Review Board and Human Research Protection Program of the U.S. Army Medical Research and Materiel Command, Fort Detrick, Maryland. Participation was completely voluntary, and informed consent was obtained from all participants.

### Procedure

A voluntary survey was administered to members of a U.S. Army National Guard unit that recently returned from a one-year deployment to Afghanistan. During deployment, soldiers were exposed to a range of potentially stressful experiences, including combat and seeing people killed. Recruitment for the study occurred at the unit’s home base approximately one week following return from deployment. The principal investigator (PTB) briefed the soldiers on the purpose of the study and invited them to participate. It was emphasized that the study was completely voluntary and survey responses would be fully confidential. A total of 214
soldiers (out of 508 present; 42%) completed the Time 1 survey and also agreed to complete one additional survey to be administered electronically later in the year. This is considered a quite good response rate for military veterans, who are becoming increasingly unlikely to complete voluntary surveys for several reasons, including worries about confidentiality of information and “survey fatigue” as a result of the many mandatory surveys they are required to fill out before, during, and after deployments (Coughlin et al., 2011). The Time 1 survey was administered in paper-and-pencil format. Participants also provided an e-mail address to facilitate contact for the follow-up survey.

The Time 2 survey was administered seven to nine months later using an Internet survey methodology. Participants were notified by e-mail and provided with an Internet link where they could complete the survey. This yielded N = 85 completed Time 2 surveys (one case was later discarded due to extensive missing data) for a response rate of 40%. This is also considered quite good for an electronic survey, where response rates tend to be 10% to 20% lower than for paper surveys (Shih & Fan, 2009; Fan & Yan, 2010). A nonresponse analysis found no differences between responders and nonresponders on combat exposure, hardiness, or avoidance coping. However, there was a significant difference on age, with nonrespondents being somewhat younger (M = 26.09, SD = 6.56) than respondents (M = 31.73, SD = 7.93; t = -5.40, p < .001). Also, nonrespondents reported somewhat higher total scores on the Alcohol Use Disorders Identification Test—Consumption (AUDIT-C) at Time 1 (M = 5.05, SD = 2.69) than did respondents (M = 4.29, SD = 2.36; t = 2.37, p < .02).

Sample Demographics

The Time 1 sample (N = 214) was 100% male. Age ranged from 20 to 55 years, with a mean of 28.2 and standard deviation of 7.64. Marital status was 57.5% single, 36.7% married, and 5.8% separated or divorced. The bulk of the sample (61.6%) was from the lower enlisted ranks (E-1 to E-4), 31.3% were noncommissioned officers (NCOs), and 7.1% were officers. For the Time 2 follow-up sample (N = 84), age ranged from 20 to 54 years, with a mean of 31.73 and standard deviation of 7.93. Marital status was 42% single, 51.9% married, and 6.2% separated or divorced. In terms of military rank, 40.5% were lower enlisted, 45.2% were NCOs, and 14.3% were officers.

Instruments

The Time 1 survey included questions on age, sex, marital status, and military rank. In addition to these demographics, the survey contained measures to assess combat exposure, alcohol consumption, avoidance coping tendencies, and psychological hardiness. Only the alcohol consumption items were repeated in the Time 2 survey. These scales are described in more detail below.

Combat exposure. Five survey items assessed exposure. These items were taken from the U.S. Department of Defense Post Deployment Health Assessment (PDHA), a health screening tool completed by all U.S. military personnel after a deployment (Hoge, Auchterlonie, & Milliken, 2006). The items include the following:

1. Did you see any friendly forces wounded, killed, or dead?
2. Did you see any enemy forces wounded, killed, or dead?
3. Did you see any civilians—noncombatants—wounded, killed, or dead?
4. Were you engaged in direct combat where you fired a weapon?
5. Did you ever feel you were in great danger of being killed?

Respondents indicate Yes or No as to whether they were exposed to any of these situations during their deployment. A total combat exposure score was created by summing the Yes responses for all five items. Cronbach’s alpha reliability coefficient for the five-item combat exposure index was .62 in the present sample. While somewhat low, this is acceptable considering that the combat exposure index is not a scale per se but a sum of how many different combat-related situations a soldier was exposed to during the deployment.

Alcohol consumption. To measure risky alcohol use, we used the AUDIT-C (Bradley et al., 2007). The AUDIT-C contains three alcohol consumption items drawn from the (10-item) AUDIT (Saunders, Aasland, Babor, de la Fuente, & Grant, 1993). Items inquire about typical alcohol consumption and are scored from 0 to 4, with high scores indicating greater consumption. The total AUDIT-C score is computed as the sum of responses to these three items and can range from 0 to 12. For the three-item AUDIT-C scale, Cronbach’s alpha reliability coefficient was .75 in the present sample.

While Bradley and colleagues (2007) suggest a total score ≥4 shows a “risky drinking” level of consumption for men (≥3 for women), other studies recommend higher cut points for maximum sensitivity and specificity. Dawson, Grant, and Stinson (2005) report AUDIT-C scores of ≥5 for men and ≥4 for women work best in terms of maximizing sensitivity and specificity. Kelly, Donovan, Chung, Bukstein, and Cornelius (2009) recommended a cut point of ≥6 for men and ≥5 for women, but this was for a sample of 18- to 20-year-olds treated in emergency rooms. For the present research, we used an AUDIT-C cut point of ≥5 to indicate risky levels of alcohol consumption, because the
sample is 100% male with an age range of 20 to 55. With this cut point there were 102 of 188 (54.3%) risky drinkers at Time 1, and 25 of 79 (31.6%) at Time 2.

Avoidance coping. Avoidance is a maladaptive form of coping in which the individual withdraws and seeks to avoid problems and stressors in life. Avoidance coping was assessed using a 10-item subscale of the Coping Style Questionnaire (Joseph, Williams, & Yule, 1992). Sample items include “When facing a difficult situation, I refuse to believe what has happened” and “When facing a difficult situation, I work or do other things to take my mind off it.” Responses are on a 4-point Likert scale from Not at all to All the time. Cronbach’s alpha in the present sample is .77.

Hardiness. To measure hardiness, this study used the Dispositional Resilience Scale (DRS-15), a short, valid, and reliable instrument that has been developed and refined over the past 25 years (Bartone, 1989). The DRS has been used extensively in U.S. military and nonmilitary samples (Bartone et al., 1989; Britt, Adler, & Bartone, 2001). The present study used an updated version of the DRS-15 designed to minimize linguistic and cultural bias (Bartone et al., 2007). This scale shows improved psychometric properties, with confirmatory factor analyses (CFAs) revealing three hardness facets of commitment, control, and challenge nested under a more general hardness factor (Hystad, Eid, Johnsen, Laberg, & Bartone, 2010). In one study with 213 undergraduate students, scores on this scale predicted continued good health under academic stress, with an overall reliability (Cronbach’s alpha) of .71 (Hystad, Eid, Laberg, Johnsen, & Bartone, 2009). The DRS-15 includes 15 items, with a 4-point Likert response scale ranging from Not at all true to Completely true. Sample items are “Most of my life gets spent doing things that are meaningful” and “How things go in life depends on my own actions.” Cronbach’s alpha coefficient in the present sample is .80.

TABLE 1
Percent of Respondents Reporting Combat Exposure in the Present Sample and a Comparison Group

<table>
<thead>
<tr>
<th>Item</th>
<th>USNG (N = 199)a</th>
<th>OEF (N = 16,318)b</th>
</tr>
</thead>
<tbody>
<tr>
<td>Did you see anyone wounded, killed, or dead?</td>
<td>79.9% (161)</td>
<td>38.1% (6,209)</td>
</tr>
<tr>
<td>1. Did you see any friendly forces wounded, killed, or dead?</td>
<td>51.5% (102)</td>
<td>—</td>
</tr>
<tr>
<td>2. Did you see any enemy forces wounded, killed, or dead?</td>
<td>61.9% (122)</td>
<td>—</td>
</tr>
<tr>
<td>3. Did you see any civilians wounded, killed, or dead?</td>
<td>51.5% (102)</td>
<td>—</td>
</tr>
<tr>
<td>4. Were you engaged in direct combat where you fired a weapon?</td>
<td>46.9% (92)</td>
<td>6.2% (1,015)</td>
</tr>
<tr>
<td>5. Did you ever feel in great danger of being killed?</td>
<td>53.8% (197)</td>
<td>24.6% (4,007)</td>
</tr>
</tbody>
</table>

Note. Ns are shown in parentheses. OEF = Operation Enduring Freedom; USNG = U.S. National Guard.
aThe present USNG sample, including all cases with complete data on combat exposure items.
bComparison sample of U.S. Army Soldiers and Marines deployed to OEF (Afghanistan), as reported by Hoge, Auchterlonie, and Miliken (2006).

Analysis

Pearson correlations were used to assess bivariate relations among the study variables. Blockwise sequential logistic regression analyses assessed the contributions of psychological hardiness and avoidance coping to risky alcohol consumption outcomes, controlling first for age and rank, and then combat exposure. The dependent variable in the first regression analysis was risky drinking at Time 1, one week following return from deployment. The second regression analysis included the same predictor variables, but with Time 2 risky drinking (seven to nine months following return) as the dependent variable.

RESULTS

There were 15 respondents who identified as nondrinkers and so were excluded from all subsequent analyses. Table 1 provides a breakdown of positive responses to the combat exposure items, along with those of a reference group of soldiers and Marines drawn from the literature. It is clear from Table 1 that the present sample experienced a high degree of combat exposure. Most (80%) reported seeing someone killed, wounded, or dead, while nearly half (47%) were engaged in direct combat in which they fired their weapons. A majority (54%) reported feeling at some point they were in great danger of being killed.

Table 2 presents descriptive statistics and Pearson correlations among the key study variables. Cronbach’s alpha scale reliability coefficients are shown in the diagonal where appropriate. Correlation results showed that age is significantly associated with risky alcohol use at Time 1 (r = .28, p < .001), with younger soldiers at higher risk. While this trend is still apparent at Time 2, the correlation is nonsignificant. Rank is also correlated with risky drinking at both Time 1 (r = .23, p < .05), with lower ranks being at higher risk. Age and rank are highly intercorrelated (r = .51, p < .001). Marital status is correlated with age...
We refer to Table 3 for hierarchical logistic regression results with age and rank entered at step 1, combat exposure at step 2, and hardiness and avoidance coping at step 3, predicting alcohol risk according to scores on the AUDIT-C at Time 1, one week after return from deployment. The at-risk group is defined as those with AUDIT-C scores of ≥ 5. By this cut point, 102 of 188 (54.3%) soldiers fell into the risky drinking group at Time 1. Age emerged as a significant negative predictor of risk (odds ratio [OR] = .94). Rank is also a significant negative predictor (OR = .49). Combat exposure is a significant positive predictor of Time 1 risky alcohol use (OR = 1.30). Hardiness also is a negative predictor of risk (OR = .92). Thus for each unit decrease in hardiness score, there is an 8% increased chance of being in the at-risk alcohol group. Avoidance coping is not significant in

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the Time 1 model, final model $X^2 = (5) = 34.98, p < .001$; Nagelkerke pseudo $R^2 = .23$; valid $N = 176$.

Logistic regression results for age, rank, combat exposure, hardiness, and avoidance coping predicting alcohol risk at Time 2 are shown in Table 4. Here, a somewhat smaller percentage of soldiers fell into the risky drinking group, 25 of 79 (31.6%). Avoidance coping emerges as the only significant predictor of risky alcohol use, with OR of 1.16. Thus, for each unit increase in avoidance coping scores, there is a 16% increased chance of being in the at-risk alcohol group seven to nine months after return from deployment, final model $X^2 = (5) = 10.79, p < .05$; Nagelkerke pseudo $R^2 = .195$, valid $N = 73$. Although only avoidance coping is significant, the model nevertheless accounts for a substantial portion of variance in alcohol risk ($R^2 = .19$).

**DISCUSSION**

This study finds evidence that psychological hardiness and avoidance coping predict risky alcohol use in military personnel returning from a war zone. In the period immediately following return, hardiness was associated with risky levels of alcohol consumption, after controlling for age and combat exposure, which were also associated with risky drinking. Over a longer time frame, seven to nine months following return, only avoidance coping is associated with alcohol risk.

Age and rank appeared as negative predictors of risk at Time 1 but not at Time 2, indicating that younger and lower-ranking soldiers are more prone to alcohol abuse in the early days after returning home from war. Considering that access to alcoholic beverages is generally restricted for U.S. military personnel during deployment, it is possible that binge drinking accounts for some of this effect in young soldiers returning from a war zone. It is well known that young people are at considerably higher risk for binge drinking (Naimi et al., 2003). While not the same as chronic alcohol abuse, binge drinking is a highly dangerous and destructive activity (Hingson, Heeren, Winter, & Wechsler, 2005) and one the military is interested in reducing. The present findings would suggest that increasing hardiness in soldiers should lead to a reduction in binge drinking following deployments.

Over time, the strongest factor associated with excessive alcohol consumption in returning soldiers is avoidance coping. Given the high comorbidity of alcohol abuse with PTSD symptoms in veterans (Shipperd et al., 2005), it may be that heavy drinking is used by some as a way to avoid disturbing thoughts and memories of their wartime experiences. For some war veterans, alcohol abuse may become a chronic avoidance coping strategy. Interventions for addressing alcohol problems in this group should thus focus on substituting active, problem-focused coping strategies for avoidance strategies (Lazarus & Folkman, 1984). Also, considering that avoidance coping and alcohol abuse are associated with greater suicidal ideation (Woodhead, Cronkite, Moos, & Timko, 2014), this type of program could also help reduce suicide among returning veterans.

Results of this study have implications for improving screening programs to identify military personnel at risk for stress-related alcohol problems. Effective screening is essential for targeting preventive assistance toward those who need it most. Current screening tools used in the U.S. military are not sufficiently sensitive, failing to identify many soldiers at risk for alcohol and other mental health problems (Hoge et al., 2006). These tools, which ask directly about recent drinking behavior, yield many false negatives because (a) access to alcohol is restricted in theater, so service members prone to alcohol abuse have no problem behavior to report upon return; (b) service
members tend to minimize or deny drinking problems for fear of negative career repercussions; and (c) many young service members with a drinking problem fail to recognize it as such. Thus, screening tools that rely on direct questions about drinking behaviors can miss many potential problem drinkers. To add to the problem, most soldiers who test positive for alcohol risk on existing tools are not referred for further evaluation or intervention. One recent population-based study showed that of 333,803 U.S. service members returning from Iraq or Afghanistan 29% screened positive for risky drinking on the AUDIT-C, yet fewer than one-third of these individuals were referred for any kind of follow-up (Larson, Mohr, Adams, Wooten, & Williams, 2014).

With better screening, high-risk subgroups could be targeted for focused prevention efforts, including brief interventions structured to avoid stigma associated with referral to formal military substance abuse programs. For example, Monti, Tevyaw, and Borsari (2005) describe a number of brief interventions used successfully with young adult problem drinkers in a variety of settings. But these authors also note that young problem drinkers tend not to see themselves as having a drinking problem and often are identified only when they encounter legal trouble (e.g., drunk driving) or when seen in an emergency room. This further supports the need for additional screening tools to identify military personnel who are at high risk for alcohol or substance abuse but who may not recognize it in themselves or be willing to admit it openly. Results of the present study suggest that brief screening tests for psychological hardiness and avoidance coping may provide a useful adjunct to traditional alcohol screening programs.

LIMITATIONS AND CONCLUSIONS

One limitation of this study concerns the relatively low response rate of 40% for the Time 2 follow-up survey. Although this is considered quite acceptable for survey research (Keeter, Kennedy, Dimock, Best, & Craighill, 2006), it nevertheless represents a loss of 60% of the Time 1 survey participants. The Time 2 survey was conducted electronically to reach geographically scattered participants. Response rates to electronic surveys are often 10% to 20% lower than paper or telephone surveys for a variety of reasons (Shih & Fan, 2009; Fan & Yan, 2010). Although Internet access is growing, many individuals still have limited or no Internet access. This may have prevented some of our Time 1 participants from responding to the web-based survey at Time 2. Also, participants were notified of the web survey via an e-mail message. With the usual deluge of junk and spam e-mails, many users make use of filters that automatically detect and divert messages that appear to be solicitations. It is thus likely that many of our e-mail contact messages were classified as spam and never seen by the intended recipients. A third factor that may account for the low Time 2 response rate is survey fatigue. Because conducting surveys has become easier and cheaper in the Internet age, people are often asked to complete an excessive number of them, leading many to refuse (Shih & Fan, 2009). Survey fatigue is an even greater problem in military populations, where the number of surveys administered to soldiers has grown exponentially in recent years (Coughlin et al., 2011). An additional factor that may have reduced our Time 2 survey response rate is worries about confidentiality. Despite assurances about the privacy of all survey data, some soldiers may have chosen not to respond out of fear that their responses would be seen by their superiors and could damage their career progression. All of these factors likely contributed to the low Time 2 response rate. Still, this would not be a major problem if the Time 2 sample remained broadly representative of the Time 1 sample. Our nonresponse analysis revealed no differences between the two samples on combat exposure, hardiness, or avoidance coping. However, significant differences were observed in age and drinking behavior, with the Time 1 sample being younger and showing higher levels of risky drinking. Thus, it appears that the Time 2 sample underrepresents young, more risky drinkers. It is possible that these soldiers were more affected by fears about confidentiality and negative repercussions, leading more of them not to respond at Time 2. Consequently, our Time 2 findings should be taken as preliminary and in need of further research.

Another limitation is that this study was conducted with a single U.S. Army National Guard unit returning from deployment and thus may not be representative of all National Guard or all military personnel following deployment. At the same time, risky drinking and alcohol abuse are well known and widespread problems in U.S. military personnel returning from deployment (Seal et al., 2007; Milliken et al., 2007). Indeed, alcohol abuse is even more prevalent among Reserve and National Guard troops (Jacobson et al., 2008). National Guard units differ from active-duty ones in a number of ways. For example, National Guard personnel live in widely dispersed home locations, unlike regular military units who live together at or near their home base. This makes it more difficult for National Guard personnel to access the range of services and social support networks that are readily available to regular units. This relative social isolation from other military personnel and resources could contribute to multiple problems, including alcohol abuse and suicide (Griffith, 2012).

A potential limitation in the present study is the use of self-report methods, which rely on respondents to answer questions honestly. Despite the assurances about confidentiality that were provided to participants, it is possible that alcohol consumption rates were underreported due to fear of negative repercussions from supervisors. However, a fairly sizable proportion of respondents did in fact report
alcohol consumption levels that placed them in the at-risk groups—54% at Time 1 and 32% at Time 2—suggesting that alcohol consumption was reported honestly by those who did respond. Still, it appears that heavier drinkers at Time 1 were more likely to drop out and not complete the Time 2 survey. Thus, our Time 2 sample may underestimate the extent of risky alcohol consumption in soldiers returned from deployment. If riskier drinkers are underrepresented in the Time 2 sample, this would make a Type II error (failing to detect effects that truly exist) more likely than a Type I error (detecting an effect that does not truly exist). While this allows greater confidence in the finding that avoidance error (detecting an effect that does not truly exist) more likely than a Type I error (detecting an effect that does not truly exist). While this allows greater confidence in the finding that avoidance coping is related to increased risky drinking, it underscores the need to regard the Time 2 findings as tentative pending additional research.

The present study examined the total effects of hardness on alcohol use, as opposed to looking at its individual facets. In taking this approach, we are following the original conception of hardness as a distinct dimension that describes a “general orientation toward self and world expressive of commitment, control, and challenge” (Ouellette, 1993, pp. 93–94). The existence of a higher-order hardness construct has also been verified empirically in a number of studies, such as that of Hystad and colleagues (2010), who used CFA to identify a hierarchical structure with a general hardness factor and three nested subdimensions of commitment, control, and challenge. Nevertheless, there have been many studies that have useful examined effects of separate hardness facets on various health and performance outcomes (Bartone, Kelly, & Matthews, 2013; Florian, Mikulincer, & Taubman, 1995; Johnsen, Eid, Pallesen, Bartone, & Nissestad, 2009). Thus, a useful area for future research may be to look at possible separate effects of hardness commitment, control, and challenge on alcohol use and abuse.

Finally, it is important to note that although this study has identified increased risk of alcohol abuse associated with higher levels of avoidance coping, combat exposure, and lower hardness, we have not demonstrated causality. It is possible other variables are unaccounted for in this study that are responsible for these associations, or it may be that increased alcohol use itself has the effect of lowering hardness or increasing avoidance coping tendencies. Additional research is needed to clarify pathways of influence among these variables, including possible mediating and interaction effects.

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