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A Test of Whether Coping Styles Moderate the Effect of PTSD Symptoms on Alcohol Outcomes

Justine A. Grosso^{a,b}, Nathan A. Kimbrel^{a,c,1}, Sara Dolan^{a,b}, Eric C. Meyer^{a,c}, Marc I. Kruse^{a,c,d}, Suzy B. Gulliver^{c,e}, and Sandra B. Morissette^{a,c}

^aVA VISN 17 Center of Excellence for Research on Returning War Veterans, Waco, Texas, USA

^bBaylor University, Waco, Texas, USA

^cTexas A&M Health Science Center, College Station, Texas, USA

^dAustin Fire Department & Austin-Travis County Emergency Medical Services, Austin, TX, USA

^eBraver Institute, Scott and White Healthcare Division of Research, Waco, TX, USA

Abstract

Coping style may partially account for the frequent co-occurrence of posttraumatic stress disorder (PTSD) and alcohol-use disorders (AUD). We hypothesized that PTSD symptom severity, avoidant coping, and action-oriented coping would interact, such that veterans high on PTSD symptoms and avoidant coping and low on action-oriented coping would report more negative alcohol-related consequences and drinking a greater number of drinks per week compared to veterans without all three risk factors. The sample ($N = 128$) of veterans (85.2% male, $M = 37.8$ years old, 63.3% Caucasian) completed a diagnostic assessment and self-report measures assessing PTSD, alcohol use disorders, coping styles, and alcohol outcomes. Consistent with the main hypothesis, a three-way interaction among PTSD symptom severity, avoidant coping, and action-oriented coping was found in the predicted direction. In addition, post-hoc descriptive analyses indicated that Veterans with a current PTSD diagnosis, low action-oriented coping, and high avoidant coping had worse alcohol outcomes and were twice as likely to meet criteria for current AUD compared with Veterans with two or fewer risk factors. These findings suggest that the combination of PTSD and maladaptive coping styles may be more important for understanding alcohol-related outcomes than the presence of any of these variables in isolation.

As many as 63% of Operation Enduring Freedom/Operation Iraqi Freedom (OEF/OIF) veterans with an alcohol (AUD) or drug use disorder who access Veterans Affairs healthcare are estimated to have co-occurring posttraumatic stress disorder (PTSD; Seal et al., 2011). Veterans with co-occurring PTSD-AUD exhibit higher unemployment and less social support compared with veterans with only one of these disorders (Riggs, Rukstalis, Volpicelli, Kalmanson, & Foa, 2003). Thus, elucidating factors that influence comorbid

¹Correspondence concerning this article should be sent to: Dr. Nathan A. Kimbrel, VA VISN 17 Center of Excellence for Research on Returning War Veterans, Central Texas Veterans Healthcare System, 4800 Memorial Drive (151C), Waco, Texas 76711, USA. Phone: 254-297-5232. Nathan.Kimbrel@va.gov.

PTSD-AUD has important implications for understanding the functional recovery of veterans.

The tension-reduction (Keane, Gerardi, Lyons, & Wolfe, 1988) hypothesis has been used to explain PTSD-AUD comorbidity. Another factor that might influence PTSD-AUD is coping style, which has been associated with both PTSD and alcohol use (e.g., Blake, Cook, & Keane, 1992; Yeater, Austin, Green, & Smith, 2010). Despite controversy regarding the optimal coping taxonomy, Kapsou, Panayiotou, Kokkinos, and Demetriou (2010) suggest the presence of at least two higher-order coping factors: one that is action-oriented and social (hereafter “action-oriented”) and one that is avoidant and emotion-focused (“avoidant”). Avoidant coping is associated with PTSD symptom severity among veterans (Blake et al., 1992) and interacts with frequency of combat exposure to predict PTSD severity (Rodrigues and Renshaw, 2010). In addition, Boden, Bonn-Miller, Vujanovic, and Drescher (2012) found that increased avoidant coping and decreased active coping prospectively predicted PTSD symptom severity among veterans in residential treatment for PTSD; however, relatively little is known about the relationship between coping and alcohol outcomes among veterans. Community sample studies offer some insight: this literature has primarily investigated drinking motives (e.g., drinking to reduce negative affect), which are avoidant coping strategies associated with heavy drinking in both traumatized and non-traumatized populations (Rutledge & Sher, 2001; Ullman, Filipas, Townsend, & Starzynski, 2005). The present study expands upon this research by evaluating the relationship between PTSD, avoidant and action-oriented coping styles, and alcohol outcomes.

Hypotheses

We hypothesized that avoidant and action-oriented coping styles would moderate the relationship between PTSD symptom severity and alcohol outcomes among OEF/OIF veterans. Specifically, we hypothesized that veterans high on PTSD symptoms and avoidant coping and low on action-oriented coping would exhibit (H_1) more negative alcohol-related consequences and (H_2) greater quantity of alcohol use. Age and gender were covaried because of their association with drinking quantity and AUD prevalence. Combat exposure was covaried because of its association with both PTSD and avoidant coping.

Method

Participants

This convenience sample included 145 OEF/OIF veterans enrolled in VA healthcare, who were deemed stable on psychotropic medication and in psychotherapy. Participants were recruited via direct mailings and advertisements. Veterans with mental health conditions were oversampled to ensure adequate representation. Of the total sample, 128 were eligible and included in these analyses. Nine participants were excluded because they failed to complete all study procedures, and eight were excluded because they met criteria for an exclusionary diagnosis (i.e., a psychotic disorder or bipolar disorder). Eligible participants were predominantly male (85.2%) and Caucasian (63.3%). Hispanic (25.8%) and African American (18.8%) veterans were also well-represented. On average, participants were 38 years old and had 14 years of education. Forty-two percent of participants met criteria for

current PTSD, and 22.7% met for current AUD. Many participants were receiving treatment for physical (68.5%) or mental health/substance use (49.2%) problems.

Procedures

The study was approved by the Institutional Review Board. Following informed consent, participants completed clinical interviews and self-report measures.

Measures

The Clinical Administered PTSD Scale (CAPS; Blake et al., 1995) was used to diagnose PTSD and assess symptom severity (current study $\alpha = .92$; $M = 44.92$, $SD = 30.21$). Either the Structured Clinical Interview for DSM-IV-TR Axis I Disorders (SCID-I; First, Spitzer, Gibbon, & Williams, 2002) or the Anxiety Disorders Interview Schedule for DSM-IV (ADIS-IV; Brown, DiNardo, & Barlow, 1995) was used to diagnose AUD. Diagnostic consensus was reached via diagnostic review groups supervised by clinical psychologists with expertise in PTSD and AUD.

The Full Combat Exposure Scale (FCES; Hoge et al., 2004) assessed combat exposure ($\alpha = .93$; $M = 23.05$, $SD = 14.67$), the Brief COPE (B-COPE, Carver, 1997) assessed coping style ($\alpha = .74$; $M = 6.30$, $SD = 4.30$), and the Rutgers Alcohol Problems Index (RAPI; White & Labouvie, 1989) assessed negative alcohol-related consequences ($\alpha = .95$; $M = 6.34$, $SD = 12.02$). The RAPI score was skewed (2.25) and kurtotic (4.11), but a log-transformation improved both (1.85 and 2.30, respectively). The Daily Drinking Questionnaire-Revised (DDQ-R; Kruse, Corbin, & Fromme, 2005) assessed typical number of drinks per week during the last four months ($M = 6.16$, $SD = 12.50$). Typical drinks per week was also skewed (3.34) and kurtotic (14.96); log-transformation improved both (.92 and $-.40$, respectively).

Data Analysis Plan

Consistent with recommendation by Carver, Scheier, and Weintraub (1989), principal component analysis (PCA) and unit weighting were used to create the action-oriented and avoidant coping factors from the B-COPE. Moderated hierarchical regression tested H_1 and H_2 . Log-transformed RAPI and typical drinks per week scores were dependent variables. Age, gender, and combat exposure were entered in step 1. Centered CAPS, action-oriented, and avoidant coping scores were entered in step 2. Two-way interaction terms were entered in step 3, and the three-way interaction term was entered in step 4. ANCOVAs and a chi-square test were used to conduct post-hoc descriptive analyses.

Results

PCA was performed on the B-COPE. Parallel analysis indicated that two factors should be extracted that corresponded to action-oriented and avoidant coping¹. The action-oriented

¹A parallel analysis that included the B-COPE Substance Use subscale indicated a two factor solution; however, we opted not to include the Substance Use subscale in the analyses in order to assess the effect of non-substance related coping factors on alcohol outcomes. We re-ran the analyses using the factors that included the B-COPE Substance Use subscale and found that the three-way interaction remained significant in these analyses as well.

coping factor included the following subscales: Positive Reframing (.82), Active Coping (.80), Planning (.77), Instrumental Support (.74), Emotional Support (.72), Acceptance (.68), Religion (.55), Humor (.41), and Distraction (.41). The avoidant coping factor included Behavioral Disengagement (.76), Self-Blame (.75), Denial (.71), and Venting (.63). Unit-weighting was used to create factor scores based on factor score coefficients that were at least 33% as large as the largest factor score coefficient for that factor. The action-oriented coping factor was created by summing Positive Reframing, Active, Emotional Support, Planning, Instrumental Support, and Acceptance, whereas the avoidant coping factor was created by summing Behavioral Disengagement, Venting, Self-Blame, and Denial.

Regression results are presented in Table 1. In the first regression predicting log-transformed RAPI scores, age, $\beta = -.23$, $p = .011$, was a significant predictor in step 1, avoidant coping, $\beta = .29$, $p = .003$, was a significant predictor in step 2, none of the two-way interactions were significant predictors in step 3, and the three-way PTSD by action-oriented by avoidant coping interaction was a significant predictor in step 4, $\beta = -.27$, $p = .005$, $f^2 = .06$ (small effect)¹. As hypothesized, examination of the nature of this interaction indicated that PTSD symptoms were most strongly and positively associated with negative alcohol-related consequences when action-oriented coping was low and avoidant coping was high. In the second regression predicting log-transformed typical drinks per week, no main effects or two-way interactions were significant; however, as hypothesized, the three-way PTSD symptoms by action-oriented by avoidant coping interaction was significant in step 4, $\beta = -.31$, $p = .003$, $f^2 = .07$ (small effect)¹. Again, PTSD symptoms were most strongly and positively associated with drinking quantity when action-oriented coping was low and avoidant coping was high.

Descriptive Comparisons

To better describe the nature and magnitude of the interactions, action-oriented and avoidant coping factors were dichotomized (“high” and “low”) using median splits. Veterans with PTSD who were low on action-oriented coping and high on avoidant coping ($n = 20$) were then compared with the remainder of the sample ($n = 105$). Three participants were excluded from this analysis due to missing data. After controlling for age, gender, and combat exposure, veterans with all three risk factors reported more than twice as many negative alcohol-related consequences, 12.21 vs. 5.47, $F(1, 118) = 4.983$, $p = .027$, $d = .47$ (small effect), and drinking nearly three times as many drinks per week, 14.63 vs. 4.93, $F(1, 115) = 8.854$, $p = .004$, $d = .55$ (medium effect), as veterans with two or fewer factors (Figure 1). These differences remained when the log-transformed alcohol-related consequences and typical drinks per week variables were used. In addition, a significantly greater proportion of veterans with all three factors met criteria for current AUD compared with veterans with two or fewer factors (Figure 1), 40.0% vs. 18.1%, $\chi^2(1) = 4.76$, $p = .035$.

Discussion

As hypothesized, veterans high on PTSD symptom severity and avoidant coping and low on action-oriented coping reported more negative alcohol-related consequences (H_1), greater quantity of alcohol use (H_2), and were more likely to have a current AUD compared with

veterans that did not have all three of these factors. These findings suggests that the combination of high levels of PTSD symptoms, over-reliance on avoidant coping strategies, and underutilization of action-oriented coping strategies collectively increase risk for negative alcohol outcomes among returning veterans.

These findings build upon the limited available research examining relationships among avoidant coping, PTSD, and alcohol-related problems by demonstrating the importance of action-oriented coping. Examining three-way interaction effects in addition to main and two-way interaction effects accounted for an additional 5.5% of the variance in negative alcohol-related consequences and 7.2% of the variance in typical drinks per week. Although these represent small statistical effects, they substantially increased the total amount of variance accounted for by these models. While these findings lend some credence to the tension-reduction hypothesis, they also suggest that this hypothesis may oversimplify the relationship between PTSD and alcohol outcomes. That is, findings suggest that the *combination* of PTSD symptoms and avoidant and action-oriented coping styles may be more important than the presence of any of these variables in isolation.

Several limitations should be considered when interpreting these results. The sample was primarily Caucasian, male, and comprised entirely of veterans enrolled in VA healthcare. Thus, the degree to which these findings might generalize to other trauma-exposed populations is unclear. As with all cross-sectional research, these findings cannot be temporally associated. Prospective studies are necessary to determine the impact of PTSD and coping styles on negative alcohol-related consequences, drinking quantity, and AUD.

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Figure 1.

Estimated marginal means between veterans with and without all three risk factors present. Participants in the “All 3 Factors Present” were identified as having: (1) a current diagnosis of PTSD, (2) low action-oriented coping based on a median split, and (3) high avoidant coping based on a median split. Group differences on negative alcohol-related consequences, $F(1, 118) = 4.983$, $p = .027$, typical drinks per week, 14.63 vs. 4.93, $F(1, 115) = 8.854$, $p = .004$, and alcohol-use disorders, $\chi^2(1) = 4.76$, $p = .035$, were all statistically significant ($p < .05$).

Table 1
Summary of the Regression Analyses of Action Coping, Avoidant Coping, and PTSD
Predicting Drinking Outcomes

	<i>Negative Alcohol-Related Consequences</i>				<i>Typical Drinks Per Week</i>			
	<i>B</i>	<i>SE</i>	<i>β</i>	<i>R</i> ²	<i>B</i>	<i>SE</i>	<i>β</i>	<i>R</i> ²
Step 1				.08 *				.04
Age	-.99	.00	-.23 *		-.00	.01	-.09	
Gender	.02	.03	.06		.26	.14	.18	
Combat Exposure	.02	.02	.11		-.08	.06	-.12	
Step 2				.09 **				.02
PTSD Symptoms	.00	.00	-.05		.00	.00	.12	
Action-oriented coping	-.00	.00	-.12		-.01	.01	-.05	
Avoidant coping	.02	.01	.29 **		.00	.03	.02	
Step 3				.01				.03
Action × Avoidant	.00	.00	-.02		.00	.01	.05	
Action × PTSD	-.00	.00	-.03		-.00	.00	-.18	
Avoidant × PTSD	.00	.00	.08		-.00	.00	-.01	
Step 4				.06 **				.07 **
Action × Avoidant × PTSD	.00	.00	-.27 **		-.00	.00	-.31 **	
Total <i>R</i> ²				.24				.16

Note:

PTSD symptoms were measured using the CAPS, action-oriented and avoidant coping were measured using the B-COPE, negative alcohol-related consequences were measured using mean log-transformed RAPI scores, and typical drinks per week was log-transformed and measured using the DDQ-R.

* $p < .05$;

** $p < .01$.