

Alcohol Use among Trauma-Exposed College Students:
Associations with Sleep and Distress Tolerance

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Introduction

- Alcohol misuse and sleep disturbance are prevalent public health concerns among college students and are elevated among those who report trauma exposure.
- Previous work has documented associations between coping motivated alcohol use, sleep disturbance, and alcohol misuse (Kenney et al., 2013)
- Distress tolerance (DT), defined as the perceived ability to withstand negative emotional states, is a related and malleable transdiagnostic factor.
- Previous literature has documented low levels of DT have been significantly associated with greater sleep disturbance, especially among those who misuse alcohol.
- Across populations, DT has a demonstrated influence on the association between PTSD, alcohol use, and coping motives
- Those with lower levels of DT who drink to cope may experience more severe alcohol misuse outcomes.
- This relationship has not been examined among trauma exposed college students, who may be more vulnerable to sleep disturbances and alcohol misuse.

Hypotheses

- Sleep disturbance will demonstrate an indirect effect on alcohol use severity through coping motivated alcohol use.
- In this mediation, DT will moderate the association between coping motivated alcohol use and alcohol use severity (b path), such that individuals with lower levels of DT will experience more severe alcohol use.

Method

- Participants:**
- 2066 trauma-exposed undergraduate students who endorsed lifetime alcohol consumption
 - $M_{\text{age}} = 22.3 \pm 5.0$ years)
 - Recruited from a large public university in the southern U.S.
 - Gender: 77.8% female, 21.8% male, 0.4% transgender
 - Race: 49.8% White, 21.4% Asian, 13.5% Black/African American, 12.6% Other, 2.0% American Indian/Alaskan Native, 0.6% Native Hawaiian/Pacific Islander
 - Ethnicity: 37.2% Hispanic or Latinx
 - Trauma load: $M = 4.8 \pm 2.9$ traumatic event types experienced
 - 393 (19.0%) meet criteria for PTSD (based upon PCL-5 cutoff of 33)
 - 490 (23.7%) meet criteria for AUD (based upon AUDIT cutoff of 8)

- Procedure:**
- Participants completed a single session online survey about stress and health behaviors among college students.
 - Participants were awarded 2 SONA credits for extra credit in their courses for participating.
 - Data were collected continuously for 4 years.

- Measures:**
- Pittsburgh Sleep Quality Index (PSQI: Buysse, Reynolds, Monk, Berman, & Kupfer, 1989)
 - Distress Tolerance Scale (DTS: Simons & Gaher, 2005)
 - Alcohol Use Disorders Identification Test (AUDIT: Saunders, Aasland, Babor, De La Fuente, & Grant, 1993)
 - Drinking Motives Questionnaire Revised Short Form (DMQ-R-SF: Cooper, 2004)
 - Life Events Checklist Version-5 (LEC-5: Weathers, Blake, Schnurr, Kaloupek, Marx, & Keane, 2013)
 - Risk Assessment Battery (RAB: Metzger, 1993)

- Analyses:**
- Coping-motivated alcohol use was examined as a mediator of the association between sleep disturbance and alcohol use severity at various levels of DT.

Acknowledgements

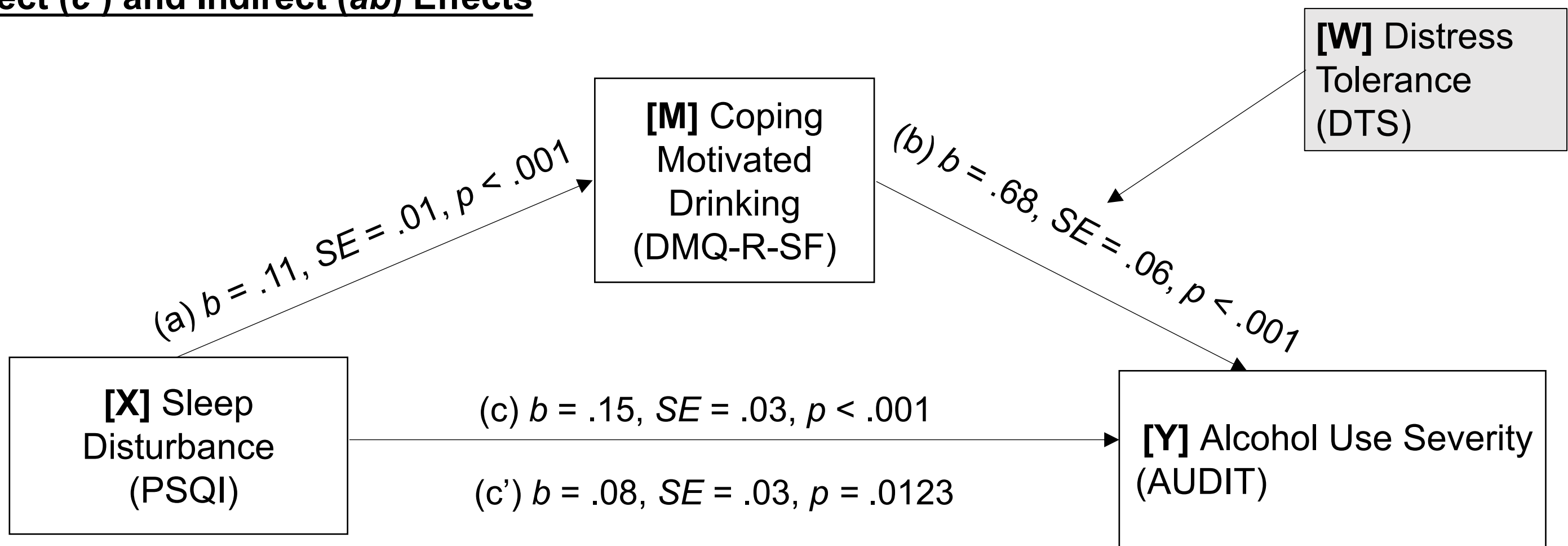
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Results

Table 1. Bivariate correlations of study variables.										
	1	2	3	4	5	6	7	8	9	10
1. Sleep Disturbance (PSQI Global) ^a	-									
2. Alcohol Use Severity (AUDIT Total) ^b	.179**	-								
3. Perceived DT (DTS Total) ^c	-.197**	-.124**	-							
4. Coping Motivated Alcohol Use (DMQ-R-SF Coping Subscale) ^d	.269**	.460**	-.281**	-						
5. Conformity Motivated Alcohol Use (DMQ-R-SF Conformity Subscale) ^e	.108**	.332**	-.203**	.376**	-					
6. Enhancement Motivated Alcohol Use (DMQ-R-SF Enhancement Subscale) ^e	.119**	.441**	-.116**	.531**	.300**	-				
7. Social Motivated Alcohol Use (DMQ-R-SF Social Subscale) ^e	.057**	.335**	-.069**	.385**	.325**	.651**	-			
8. Gender ^e	.073**	-.106**	-.081**	0.026	-0.020	-0.016	-0.023	-		
9. Trauma Load (LEC-5 Total) ^e	.246**	.138**	-0.019	.091**	0.033	.044*	-0.002	-.099**	-	
10. Past Month Substance Use (RAB items A-O) ^e	.087**	.264**	-0.039	.115**	.125**	.162**	.088**	-.045*	.125**	-
Mean/ <i>n</i>	9.50	5.62	47.55	4.63	4.00	5.44	6.04	1608	4.82	0.45
Standard Deviation/%	3.08	4.89	12.20	1.81	1.46	1.59	1.96	77.83	2.92	1.48

Note. ** $p < 0.01$; * $p < 0.05$; ^a Predictor. ^b Outcome. ^c Moderator. ^d Mediator. ^e Covariate. Gender = % listed as female (Coded: 0 = female, 1 = male, 3 = transgender); PSQI = Pittsburgh Sleep Quality Index; AUDIT = Alcohol Use Disorders Identification Test; DTS = Distress Tolerance Scale; DMQ-R-SF = Drinking Motives Questionnaire Revised Short Form; LEC-5 = Life Events Checklist for DSM-5; RAB = Risk Assessment Battery

Figure 2. Direct (c') and Indirect (ab) Effects



- Hypothesis 1**

Indirect Effect (ab): $b = .0740, SE = .0110, CI [.0539, .0971]$
- Hypothesis 2**

Index of Moderated Mediation: $b = .0002, SE = .0006, CI [-.0011, .0014], NS$
- Covariates:**

 - Gender
 - Trauma load
 - Past month substance use
 - Social, Conformity, and Enhancement DMQ-R-SF subscales

Post Hoc Analyses

In addition to coping, the DMQ-R-SF social, conformity, and enhancement subscales were examined as mediators, while controlling for all other DMQ-R-SF subscales. Coping was the only subscale to yield significant results.

Discussion

- Hypothesis 1** was supported; these findings provide support for the mediating role of coping motivated alcohol use in the association between sleep disturbance and alcohol use severity among trauma-exposed college students.
 - These findings are consistent with extant literature on alcohol use and sleep disturbance among college students
 - Sleep disturbance is a key consequence of trauma, which can lead to impaired executive functioning, risky behaviors, and impaired decision making related to increased alcohol use.
 - Substance and alcohol use are common coping mechanisms among trauma exposed individuals putting them at higher risk for alcohol misuse to cope with the consequences of sleep disturbances such as negative emotional states and inability to cope with stress.
- Hypothesis 2** was not supported; the moderated-mediation model was not significant.
 - DT may be more significantly related to alcohol consequences rather than alcohol use severity. Alcohol use severity is not inherently correlated with alcohol consequences. For those drinking to cope with negative emotions, low DT may make them more likely to engage in maladaptive behaviors regardless of the amount of alcohol consumed. Future research may seek to explore nuances of alcohol use (consequences, drinking urges) rather than alcohol use severity.
 - This study only used one self-report measure of DT, but future research including a behavioral measure of DT could help clarify the role of perceived DT in this model.

Limitations and Future Directions

- This sample reported generally low levels of alcohol use severity (AUDIT $M = 5.6 \pm 4.9$, scores range from 0-40), whereas previous work has examined the mediating role of coping motivated alcohol use among students with more severe alcohol use.
- These data were collected via self report. Future research may use clinical interviews to assess diagnostic status.
- These data were collected cross sectionally, future longitudinal research is needed to establish causal relationships.
- Due to gender differences in the experience of trauma and DT, future research may explore the role of gender in this model.