

Examining potential links in the relationship between sleep disturbance, depression, and anxiety: The roles of cognitive fusion, distress tolerance, and anxiety sensitivity

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INTRODUCTION

- Sleep disturbance has been associated with both anxiety and depression¹; limited research, however, has examined the mechanisms that underlie this relationship.
- Cognitive fusion (CF), distress tolerance (DT), and anxiety sensitivity (AS) are three such potential mechanisms, which have been associated with the onset and severity of anxiety and depression,^{1,2} as well as the severity of sleep disturbance.³
- These findings have scarcely been integrated, though, and further work is needed to investigate whether CF, DT, or AS link sleep to anxiety or depression, and the specificity of these relationships.
- The present study thus examined CF, DT, and AS as mediators of the relationship between sleep disturbance, depression and anxiety symptoms.
- We hypothesized CF, DT, and AS would be associated with insomnia, anxiety, and depressive symptoms, and that CF, DT, and AS would differentially mediate the relationship between sleep, anxiety and depressive symptoms.

METHODS

- First, independent models were run for each construct (CF; Cognitive Fusion Questionnaire⁵), distress tolerance (DT; Distress Tolerance Scale⁶), and anxiety sensitivity (AS; Anxiety Sensitivity Index-Version 3⁷) mediating the prediction of depressive or anxiety symptoms by insomnia severity.
- A large sample of undergraduate students (N=253) completed measures of insomnia severity (IS; Insomnia Severity Index), CF, DT, and AS. Hypotheses were investigated at the .05 alpha level with zero-order correlations and mediation analyses in PROCESS.⁷
- Independent models were run with each OCS dimension predicted by IS, and CF, DT, and AS entered separately as mediators. Then, a parallel model was then run with mediators entered concurrently.

RESULTS

- Depression, anxiety, and sleep disturbance were all moderately correlated with moderate to strong associations with CF, DT, and AS.
- In the independent models, the relationship between insomnia and depressive symptoms was significantly mediated by CF, DT, and AS. CF, DT, and AS also independently mediated the relationship between sleep disturbance and anxiety.
- In the final model, only the indirect path for CF emerged as significant for the relationship between sleep and depression, while both CF and AS emerged as significant, simultaneous mediators of the relationship between sleep and anxiety, with a trending effect for DT (p = .06).

DISCUSSION

- Our results suggests that the mechanisms that link sleep disturbance to anxiety or depressive symptoms may both overlap and differ, with CF representing a transdiagnostic factor to consider and AS as a specific consideration in the context of anxiety symptoms.
- Limitations include the use a cross-sectional survey and convenience sample of college undergraduates in a single university setting, limiting our ability to infer causal relationships among variables and potentially the generalizability of our findings to other populations.
- In the long-term, this work may help inform our conceptualization and treatment of sleep disturbance, anxiety, and depressive disorders.
- Next steps for research may include replication in different settings and populations, including individuals with clinically significant anxiety, depression, and/or insomnia symptoms.

Findings from a cross-sectional survey study in college students suggests both shared and distinct factors connecting sleep disturbance with anxiety and depressive symptoms, with cognitive fusion representing a transdiagnostic factor and anxiety sensitivity an anxiety symptom specific factor.



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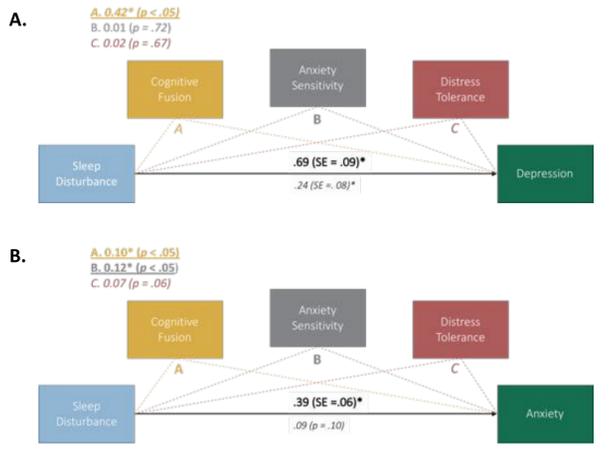
Table 1. Sociodemographic characteristics

	M (SD)	Range
Age	18.99 (1.85)	17 - 32
	N	%
Gender		
Female	159	62.8
Male	93	36.8
Gender nonconforming	1	0.4
Other	0	0
Race & Ethnicity		
African American or Black	31	12.3
American Indian or Alaska Native	2	0.8
Asian American or Asian	34	13.4
Hispanic or Latino	16	6.3
Middle Eastern	3	1.2
Multiracial	5	2
White or Caucasian	160	63.2
Other	2	0.8

Table 2. Correlation Matrix

	1	2	3	4	5	6	7
1. DASS-Depression	-						
2. DASS-Anxiety	.53*	-					
3. PSQI	.44*	.38*	-				
4. ISI	.44*	.41*	.70*	-			
5. CFQ	.70*	.58*	.45*	.49*	-		
6. DTS	-.53*	-.53*	.47*	-.48*	-.70*	-	
7. ASI	.45*	.60*	.36*	.35*	.61*	-.60*	-

Figure 1. Combined meditation model with cognitive fusion, anxiety sensitivity, and distress tolerance in the link between sleep disturbance, depression, and anxiety.



References

1. Cox, Rebecca C., and Bunmi O. Olatunji. "A systematic review of sleep disturbance in anxiety and related disorders." *Journal of anxiety disorders* 37 (2016): 104-129.
2. Fergus, T. A., Valentiner, D. P., Gillen, M. J., Hiraoka, R., Twohig, M. P., Abramowitz, J. S., & McGrath, P. B. (2012). Assessing psychological inflexibility: The psychometric properties of the Avoidance and Fusion Questionnaire for Youth in two adult samples. *Psychological assessment*, 24(2), 402.
3. Blakey, S. M., Jacoby, R. J., Reuman, L., & Abramowitz, J. S. (2016). The relative contributions of experiential avoidance and distress tolerance to OC symptoms. *Behavioural and cognitive psychotherapy*, 44(4), 460-471.
4. Deacon, B., & Abramowitz, J. (2006). Anxiety sensitivity and its dimensions across the anxiety disorders. *Journal of anxiety disorders*, 20(7), 837-857.
5. Gillanders, D. T., Bolderston, H., Bond, F. W., Dempster, M., Flaxman, P. E., Campbell, L., ... & Masley, S. (2014). The development and initial validation of the cognitive fusion questionnaire. *Behavior therapy*, 45(1), 83-101.
6. Simons, J. S., & Gaher, R. M. (2005). The Distress Tolerance Scale: Development and validation of a self-report measure. *Motivation and Emotion*, 29(2), 83-102.
7. Taylor, S., Zvolensky, M. J., Cox, B. J., Deacon, B., Heimberg, R. G., Ledley, D. R., ... & Coles, M. (2007). Robust dimensions of anxiety sensitivity: development and initial validation of the Anxiety Sensitivity Index-3. *Psychological assessment*, 19(2), 176.
8. Hayes, A. F. (2017). *Introduction to mediation, moderation, and conditional process analysis second edition: A regression-based approach*.
9. Paterson, J. L., Reynolds, A. C., Ferguson, S. A., & Dawson, D. (2013). Sleep and obsessive-compulsive disorder (OCD). *Sleep Medicine Reviews*, 17(6), 465-474.
10. Cox, R. C., Cole, D. A., Kramer, E. L., & Olatunji, B. O. (2018). Prospective associations between sleep disturbance and repetitive negative thinking: the mediating roles of focusing and shifting attentional control. *Behavior therapy*, 49(1), 21-31.