

# Teasing Apart the Proximal, Distal, and Directional Effects of Negative Cognitions, Stress, and Depressive Symptoms on Daily Sleep



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## BACKGROUND

The correlation between depression and sleep problems is well-established. But how these factors influence each other remains unclear. Some studies show depression drives sleep problems, some show sleep problems drive depression and some show a bi-directional relationship. Progress toward understanding the temporal association between these factors likely has been slowed by issues related to research design and measurement – type of measurement, time of measurement, and control variables.

## DESIGN & MEASURES

Daily Diary Design - 14 days, measures 6pm-8pm

Distal: cognitive style (CSQ, RRS), depressive symptoms (BDI), sleep (PSQI), stress (ALEQ)

Proximal: daily negative cognitions, daily depressive symptoms, daily sleep quality and hours, daily stress

## PARTICIPANTS

N = 47

Gender: 26 female, 19 male, 2 unreported

Race/Ethnicity: 64% white, 13% Hispanic, 13% Asian, 9% African American; 1% Other

## RESULTS

Predictors	Outcome 1	Outcome 2	Outcome 3		Predictors	Outcome 1	Outcome 2	Outcome 3
<b>Entered Individually</b>	<b>Daily Sleep Hours</b>	<b>Daily Sleep Quality</b>	<b>Daily Depressive Symptoms</b>		<b>Entered Simultaneously</b>	<b>Daily Sleep Hours</b>	<b>Daily Sleep Quality</b>	<b>Daily Depressive Symptoms</b>
Baseline Negative Cognitive Style			X		Baseline Negative Cognitive Style			
Baseline Brooding			X		Baseline Brooding			
Baseline Depressive Symptoms		X	X		Baseline Depressive Symptoms		X	X
Baseline Stress		X	X		Baseline Stress			X*
Baseline Sleep Quality		X			Baseline Sleep Quality			
Daily Negative Cognitions (proximal)			X		Daily Negative Cognitions (proximal)			X*
Daily Depressive Symptoms (proximal)	X	X	--		Daily Depressive Symptoms (proximal)			--
Daily Stress (proximal)	X	X			Daily Stress (proximal)	X	X	
Daily Hours Slept (proximal)	--	--			Daily Hours Slept (proximal)	--	--	
Daily Perceived Sleep Quality (proximal)	--	--	X		Daily Perceived Sleep Quality (proximal)	--	--	

Note. Left Panel - Results when predictors entered individually. Right Panel - Results when all predictors entered in full model. "X" = statistically significant finding (p<.05). "--" = not applicable for model. "X\*" = statistically significant finding (p<.05), but only when baseline symptoms were removed from model.

The best predictor of daily depressive symptoms was baseline symptoms, negative cognitive style and stress (but not sleep). The best predictors of daily hours of sleep were proximal daily stress and negative cognitions.

## DISCUSSION

Findings illustrate how researchers' degrees of freedom can lead to literature with mixed findings.

Results depend on type of sleep measure (subjective quality vs. hours), timing (distal vs proximal), and covariates used (e.g., stress, negative cognitive style).

Life stress may account for sleep – depression associations