

Examining the Effects of Co-Occurring Cognitive Vulnerabilities and Comorbid Anxiety and Depression

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Introduction

Anxiety and depression are highly comorbid disorders. Kessler et al. (2008) reports that individuals with an anxiety disorder are 7.5 times more likely to have major depression and vice versa. Comorbid anxiety and depression warrants particular attention because it is associated with more severe symptoms of both disorders, treatment resistance, poorer treatment outcomes, and increased risk for suicide (Lydiard, & Brawman-Mintzer, 1998). Individuals with comorbid anxiety and depression use more medical resources, have more somatic symptoms, take longer to recover, relapse more often, require more psychiatric hospitalizations, and are more impaired in work and psychosocial functioning than people with either anxiety or depression alone (Hirschfeld, 2001). Given the high rate of occurrence and large impact of comorbid anxiety and depression, it is imperative to study potential antecedent vulnerability factors of such disorders.

We postulated that having more than one cognitive risk factor places an additional burden on coping resources that results in additional self-regulatory depletion (Schmeichel & Baumeister, 2004) that increases risk of developing more severe depression and anxiety disorders. It is noteworthy in this regard that in a recent study, we found evidence for a synergistic effect investigating the effects of LCS and ASI on the stress generation process (Riskind, Shahar, & Black, 2010). However, no study to date has examined the impact of having both cognitive vulnerabilities on the severity of comorbid anxiety and depression symptoms. This study will specifically examine the combined effects of Alloy & Abramson's (1999) negative inferential style, in which negative events are attributed to global and stable causes and Riskind's (2000) Looming Cognitive Style, in which threat stimuli are perceived as rapidly approaching.

Hypotheses

Hypothesis 1: The co-occurrence of the Negative Inferential Style and Looming Cognitive Style will predict higher severity of comorbid anxiety and depression symptoms.

Hypothesis 2: The co-occurrence of a Negative Inferential Style and Looming Cognitive Style will predict higher levels of potential diagnostic prevalence of anxiety and depression.

Method

Participants and Procedure

The sample included 309 undergraduates (88.3% female) enrolled at a diverse suburban university with a mean age of 21.64 years (range 18-48). Participants completed the measures online as part of a larger study in exchange for extra course credit. Table 1 displays relevant sample demographics.

Table 1. Sample demographics

Race	Percentage
White	50.48%
Asian	19.23%
African-American	9.62%
American Indian	0.48%
Native Hawaiian	0.96%
Other	14.90%

Measures

Negative Inferential Style: Negative inferential style will be assessed using the Cognitive Style Questionnaire (CSQ; Alloy et al., 2000), measures individual's styles for inferring causes, consequences, and self characteristics for each of 12 hypothetical events, divided evenly between achievement and interpersonal events.

Looming Cognitive Style: Looming Cognitive Style will be assessed using the Looming Maladaptive Style Questionnaire (LMSQ; Riskind et al., 2000), a validated measure of individuals' tendency to generate mental scenarios of potentially threatening situations that are rapidly rising in risk or intensifying in danger.

Diagnosis and Severity of Depression and Anxiety: Depression and anxiety was measured using the Depression and Anxiety Scales (DASS; Lovibond & Lovibond, 1995), a set of three self-report scales designed to measure the negative emotional states of depression, anxiety and stress.

Results

We conducted two sets of analyses to determine the ability of co-occurring cognitive vulnerabilities to predict separate anxiety and depression as well as co-morbid mood disorders in terms of symptom severity and probable diagnosis. Means, standard deviations, and intercorrelations of all study variables are reported in table 2.

Table 2. Means, standard deviations, and intercorrelations of all study variables

	CSQ	LMSQ	Anxiety	Depression	Stress	Co-Occur
LMSQ	.20***	-				
DASS Anxiety	.08	.06	-			
DASS Depression	.15**	.03	.80***	-		
DASS Stress	.14*	.13*	.81***	.80***	-	
Symptom Co-Occurrence	.12**	.05	.94***	.95***	.84***	-
Mean	3.01	6.56	9.81	10.52	14.88	20.34
SD	0.42	0.73	8.85	9.45	9.94	17.35

Note: CSQ = Cognitive Style Questionnaire; LMSQ = Looming Maladaptive Style Questionnaire; DASS Anxiety and Depression Symptoms = Depression and Anxiety subscales from the Depression, Anxiety, and Stress Scales; DASS Co-Occurring Symptoms = Sum of DASS anxiety and depression. * = p < .05; ** = p < .01

Symptom Severity

A series of hierarchical regressions were used to examine the relationship between co-occurring cognitive vulnerabilities and increased symptom severity. All variables in the interaction term were standardized according to the recommendations of Aiken and West (1991). First, we examined the ability of the interaction between CSQ and LMSQ in predicting symptoms of anxiety and depression. Table 3 shows the results of these analyses and figures 1 and 2 show the plot that results from probing these interactions.

Table 3. Results of linear regression analyses on depression and anxiety symptoms

	DASS Depression		DASS Anxiety	
	β	t	β	t
Block 1				
CSQ	1.93	3.17**	2.78	2.47*
LMSQ	0.07	0.12	0.55	0.54
Block 2				
CSQxLMSQ	1.29	2.40*	2.00	2.01*

Note: CSQ = Cognitive Style Questionnaire; LMSQ = Looming Maladaptive Style Questionnaire; DASS Anxiety and Depression Symptoms = Depression and Anxiety subscales from the Depression, Anxiety, and Stress Scales. * = p < .05; ** = p < .01

Figure 1. Interaction between CSQ and LMSQ predicting severity of depression symptoms

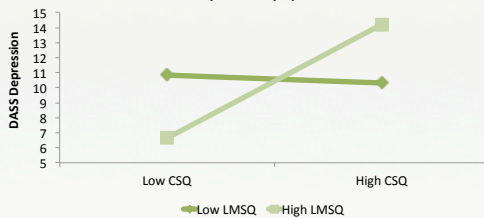
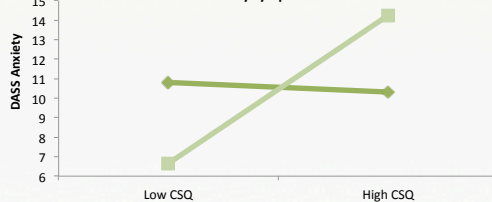


Figure 2. Interaction between CSQ and LMSQ predicting severity of anxiety symptoms



Prevalence of Possible Diagnosis

The presence or absence of a possible anxiety disorder, depression disorder, or comorbid disorder was estimated based on DASS cutoff scores following recommendations of Nieuwenhuis et al. (2003). Logistic regression analyses were conducted to examine the effects of CSQ and LMSQ on possible diagnoses. Comorbidity was defined as the presence of both an anxiety and depression diagnosis. Table 4 shows that CSQ had a significant main effect on the estimated presence of depression and comorbid disorders, while LMSQ had no significant main effects. Most importantly, the synergistic interaction between CSQ and LMSQ predicted the presence of comorbidity. Participants who were high in both CSQ and LMSQ were far more likely to have estimated comorbidity than participants who were only high in one risk factor or the other. Seen differently, CSQ was predicting the presence of comorbidity as well as depression at high levels of LMSQ. But, no effect of CSQ was evident at low levels of LMSQ.

Table 4. Logistic regression predicting possible anxiety, depression, and co-morbid disorders estimated from DASS norms

	B	Wald	p	OR	95% CI
Anxiety					
CSQ	0.20	2.22	.136	1.22	0.94 – 1.58
LMSQ	0.16	1.68	.194	1.18	0.92 – 1.50
CSQxLMSQ	0.25	4.29	.038	1.29	1.01 – 1.63
Depression					
CSQ	0.38	7.74	.005	1.47	1.12 – 1.92
LMSQ	-0.11	0.45	.387	0.90	0.70 – 1.15
CSQxLMSQ	0.37	8.92	.003	1.44	1.14 – 1.83
Comorbidity					
CSQ	0.32	5.54	.019	1.38	1.06 – 1.81
LMSQ	-0.06	0.25	.615	0.938	0.73 – 1.20
CSQxLMSQ	0.34	8.13	.004	1.41	1.11 – 1.78

Note: CSQ = Cognitive Style Questionnaire; LMSQ = Looming Maladaptive Style Questionnaire; DASS Anxiety and Depression Symptoms = Depression and Anxiety subscales from the Depression, Anxiety, and Stress Scales; DASS Co-Occurring Symptoms = Sum of DASS anxiety and depression.

Discussion

In this study, we found that those who have compounded vulnerabilities (Looming Cognitive Style and Negative Inferential Style) were at risk for more intense symptom levels of depression and anxiety and possible diagnoses of comorbid anxiety and depression. Possible diagnoses were estimated from norms on the DASS provided by Nieuwenhuis et al. (2003) and must be regarded with caution. The interaction effect suggests that participants who have high CSQ were at risk for more intense levels of anxiety and depression and for the possible diagnoses for co-morbid anxiety and depression based upon the DASS norms. However, it is not clear that LMSQ and CSQ created an additional risk of comorbidity in excess of the effects on possible depression and anxiety diagnoses alone.

Oddly, the DASS anxiety scale and the LMSQ did not correlate as has previously been found with the many other measures of anxiety, fear, and worry (Riskind & Williams, 2006). This may be a result of poor face validity in the DASS anxiety subscale, since the DASS stress scale did, in fact, demonstrate a significant correlation with LMSQ as well as DASS Depression and CSQ (see Table 2).

Limitations and Future Directions

Given that this study was cross-sectional, we were not able to determine a temporal relationship between cognitive vulnerabilities and probable diagnoses. Additionally, the DASS only measured overall symptomatology relating to psychopathology and did not directly assess diagnosis. Future studies should use a structured clinical diagnostic measure such as the SCID or SADS. Finally, the CSQ and LMSQ are vulnerability X stress models and it is possible that assessing the influence of negative events and their interaction with the vulnerabilities would yield more evidence for synergy.

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