Anxiety, Stress, & Coping, 2014
Vol. 27, No. 3, 347–359, http://dx.doi.org/10.1080/10615806.2013.853048

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Negative cognitive style and looming cognitive style synergistically predict stress generation

Evan M. Kleiman* and John H. Riskind

Department of Psychology, George Mason University, Mail Stop 3F5, Fairfax, VA 22030, USA

(*Received 15 January 2013; accepted 3 October 2013*)

There is a growing body of evidence that suggests that cognitive vulnerabilities to depression or anxiety may lead individuals to generate negative interpersonal life events. However, there has been no study to date that examines the effects of co-occurring vulnerabilities to depression and anxiety. In a sample of 304 participants, we examined the potential interaction of co-occurring negative cognitive style, a vulnerability to depression and looming cognitive style, vulnerability to anxiety. Results indicate that co-occurring cognitive vulnerabilities synergistically predict higher levels of negative interpersonal life events six weeks later, even when controlling for initial levels of stressful life events and symptoms of depression and anxiety. Thus, co-occurring vulnerabilities may have stronger stress generating effects than would be expected from the additive effects of each vulnerability considered separately. This finding highlights the importance of examining cognitive vulnerabilities as interactive effects rather than as individual vulnerabilities.

Keywords: cognitive vulnerabilities; stress generation; negative cognitive style; looming cognitive style; anxiety; depression

There has been considerable research over the past 20 years that individuals who are depressed, and to a lesser extent, anxious, experience more negative life events than those who do not suffer from such psychopathology (for reviews see Liu, 2013; Liu & Alloy, 2010). This *Stress Generation Effect* (Hammen, 1991) refers to the role that depressed individuals play in generating negative life events. Although stress generation has been almost exclusively studied in depression, a few researchers have examined the role of comorbid anxiety and depression. For example, Harkness and Luther (2001) found that among depressed women, those who had comorbid anxiety experienced more stress generation than those who were only depressed. Relatedly, Connolly, Eberhart, Hammen, and Brennan (2010) found that while adolescents with purely depression experienced more stress generation than adolescents with purely anxiety, adolescents with comorbid depression and anxiety experienced more stress generation than either the pure depression or anxiety group. Thus, the general conclusion is that although individuals with comorbid anxiety and depression symptoms experience more negative life events, the effect is most strongly driven by depression and multiplied or augmented by the presence of anxiety symptoms.

There has been more recent examination into the role cognitive vulnerabilities to anxiety and depression play in stress generation, because cognitive vulnerabilities predict

*Corresponding author. Email: ekleiman@gmu.edu

stressful life events above and beyond symptoms of depression (Safford, Alloy, Abramson, & Crossfield, 2007). Again, the primary focus has been on cognitive vulnerabilities to depression, with less attention to the role anxiety may play. There is a relatively large body of literature linking cognitive vulnerabilities to depression with stress generation. Such vulnerabilities include negative cognitive style (also called negative inferential or attributional style; Kercher & Rapee, 2009; Liu, Choi, Boland, Mastin, & Alloy, 2013; Safford, et al., 2007; Simons, Angell, Monroe & Thase, 1993), hopelessness (Joiner, Wingate, Gencoz, & Gencoz, 2005; Joiner, Wingate, & Otamendi, 2005), and maladaptive schemas (Caldwell, Rudolph, Troop-Gordon, & Kim, 2004; Eberhart, Auerbach, Bigda-Peyton, & Abela, 2011). There have been some, albeit less, studies examining cognitive vulnerabilities to anxiety as a factor in the generation of interpersonal stress. Such cognitive vulnerabilities to anxiety linked to stress generation include looming cognitive style and anxiety sensitivity (Riskind, Black, & Shahar, 2010; Riskind, Kleiman, Weingarden, & Danvers, 2013), anxious attachment styles (Hankin, Kassel, & Abela, 2005), and low perceived control (Auerbach, Richardt, Kertz, & Eberhard, 2012).

Co-occurring cognitive vulnerabilities in the stress generation process

Although researchers have examined cognitive vulnerabilities to depression and to a lesser extent, anxiety, as predictors of stress generation, the combined effects of co-occurring cognitive vulnerabilities to anxiety and depression in stress generation have not yet been studied. This is particularly important because of the high overlap in anxiety and depression symptoms and comorbidity of anxiety and depression diagnoses (Kessler et al., 1994; Mineka, Watson, & Clark, 1998). Moreover, anxiety and depression are often more severe when they are comorbid (Kessler, Chiu, Demler, & Walters, 2005), and it is possible that this is due in part to a co-occurrence of their corresponding cognitive vulnerabilities. The purpose of the present study is to examine the role negative cognitive style (Abramson, Metalsky, & Alloy, 1989; Alloy et al., 2000), a vulnerability to depression, and looming cognitive style (Riskind, Williams, Gessner, Chrosniak, & Cortina, 2000), a vulnerability to anxiety, play in the generation of stressful life events. Briefly, the negative cognitive style involves making global and stable attributions, and expecting negative consequences following the occurrence of a negative life event (Abramson et al., 1989). The looming cognitive style involves imagining real or perceived threat stimuli as rapidly intensifying, approaching, and rising in risk (Riskind et al., 2000). Specifically, we hypothesize that high negative cognitive style and high looming cognitive style will synergistically predict high levels of negative life events in a short-term prospective study.

We chose negative cognitive style and looming cognitive style as opposed to other cognitive vulnerabilities for several reasons. First, negative cognitive style is arguably one of the most widely supported cognitive vulnerabilities in both the depression and stress generation literature. Looming cognitive style is arguably one of the most widely supported cognitive vulnerabilities in both the anxiety and stress generation literature. Second, previous research (Kleiman & Riskind, 2012) finds that negative cognitive style and looming cognitive style synergistically predict anxiety and depression symptoms over time and this framework could also be expanded to stress generation. Third, previous studies find that looming cognitive style interacts with other vulnerabilities to anxiety

(e.g., anxiety sensitivity) to predict stress generation (Riskind et al., 2010). We expanded upon this logic to see if looming cognitive style also interacted with vulnerabilities to other psychopathology to predict the generation of stressful life events.

Negative cognitive style

According to the Hopelessness Theory of Depression (Abramson et al., 1989), those who make global and stable attributions, make negative self-inferences, and expect negative consequences following the occurrence of a negative life event are more likely to become depressed. This style of creating attributions for negative life events, the negative cognitive style has been found to predict the onset of depression (Alloy et al., 2000) as well as the generation of stressful life events (for reviews see Liu, 2013; Liu & Alloy, 2010). Specifically, Safford et al. (2007) found that a negative cognitive style in combination with dysfunctional attitudes prospectively predicted dependent and interpersonal stressors, but not independent or noninterpersonal stressors in a behavioral high risk sample. Kercher and Rapee (2009) had similar findings to Safford et al. (2007), but showed the stress generation effects of negative cognitive style in conjunction with rumination, rather than dysfunctional attitudes. Other researchers have examined negative cognitive style as an individual predictor in stress generation, ignoring other relevant synergistic factors. For example, Shih, Abela, and Starrs (2008) found stress generation effects in children of parents with a history of depression, and Simons et al. (1993) found stress generation effects in a sample of adults diagnosed with depression. Finally, a related cognitive style, the enhancing attributional style, a tendency to create global and stable attributions for positive (as opposed to negative) life events has been linked to decreased generation of stress (Kleiman, Liu, & Riskind, 2012).

Looming cognitive style

The looming cognitive style (Riskind et al., 2000, 2010; Riskind, Rector, & Cassin, 2011) is a type of cognitive threat overestimation bias in which individuals imagine real or perceived threat as rapidly intensifying, approaching, and rising in risk and urgency faster than they may be able to cope or respond. The looming cognitive style has been found to be a retrospective (Black, Riskind, & Kleiman, 2010) and prospective predictor of anxiety symptoms (Adler & Strunk, 2009; Riskind et al., 2000; Riskind, Tzur, Williams, Mann, & Shahar, 2007). There has been some support for looming cognitive style as a factor in predicting stress generation when it interacts with anxiety sensitivity, another cognitive vulnerability to anxiety (Riskind et al., 2010, 2013). These factors augmented (i.e., magnified) each other's effects in predicting increases in stressful life events over time. However, there has been no study to investigate whether looming cognitive style interacts with vulnerabilities to depression in the generation of stressful life events.

Mechanisms of the synergistic stress generation effect of looming cognitive style and negative cognitive style

In focusing on interactions between anxiety-related cognitive vulnerabilities, Riskind et al. (2010) drew on parts of Baumeister's ego depletion model (Baumeister, Vohs, & Tice, 2007; Muraven & Baumeister, 2000). This model assumes that the experience of stress causes

depletion (and eventual exhaustion) of a person's self-control coping resources. As a result, the person will be less likely to succeed when dealing with subsequent problems. Riskind et al. hypothesized that looming cognitive style (which induces higher levels of anxiety) would interact with and augment the anxiety and stress caused by anxiety sensitivity (which induces greater anxiety about anxiety). By playing off of one other in this way, the two cognitive vulnerabilities would synergistically deplete coping resources and produce stress generation above and beyond the additive effects that each has alone. We found support for this reasoning in two recent stress generation studies (Riskind et al., 2010, 2013).

For similar reasons, we presently hypothesized that looming cognitive style and negative cognitive style could also interact and magnify each other's stress generation effects. Relatedly, we found in a recent short-term prospective study that co-occurring negative cognitive style and looming cognitive style synergistically predict increases in anxiety and depression symptoms above and beyond their additive effects (Kleiman & Riskind, 2012). We reasoned that each of these vulnerabilities would drain self-control resources that would make it more difficult to cope with stressful challenges created by the other. In addition, they might play off (and augment and magnify) each other's effects by producing a more extreme negative interpretative bias than either would have alone. On the one hand, looming cognitive style leads a given person to envision negative life events (e.g., a romantic breakup) as more rapidly approaching; whereas, on the other, the negative cognitive style leads a person to expect more devastating consequences for such negative life events. As a result, the person could expect a romantic breakup, and in addition, expect this breakup to prove they are altogether unlovable and will never have another relationship. Compounding the problem, the person's responses to such distorted expectations of life events and the subsequent feelings of stress could lead to further stress generation. For example, to avoid the trauma and embarrassment of an expected breakup, the person may isolate themselves from the significant other, start new conflict, or end the relationship prematurely. Based on this reasoning, we predicted that the two cognitive vulnerabilities augment and magnify each other's effects on stress generation, much as they do for anxiety and depression symptoms (Kleiman & Riskind, 2012).

The present study

To the best of our knowledge, this is the first study of the role that co-occurring cognitive vulnerabilities to depression and anxiety play in the stress generation process. Based on previous research and the aforementioned reasoning, we hypothesized that negative cognitive style and looming cognitive style interact to augment each other's effects in the prediction of negative interpersonal life events above and beyond their main effects and the effects of symptoms of anxiety and depression. Our main hypothesis was for interpersonal life events and we framed our predictions for negative achievement life events as more exploratory. This was partly due to the highly interpersonal nature of depression (Coyne, 1976). It also reflected the mixed evidence of stress generation of achievement life events. One early study (e.g., Simons et al., 1993) found stress generation of negative achievement life events, but more recent studies (e.g., Hankin et al., 2005; Rudolph et al., 2000) have failed to support stress generation effects in the prediction of achievement life events.

Method

Participants

An initial sample of 585 participants completed baseline measures, and of those individuals, 325 participants completed the second time point (55.6%). As the study was for course credit, such an attrition rate is typical because participants do not return for the second part of the study if they already earned their required course credit after the first time point. We have experienced similar rates of attrition in other samples using this population. There were no significant differences between the completers and non-completers on either of the main predictor variables (Cognitive Style Questionnaire [CSQ]: $F[1,584] = 0.71$, $p = .400$; Looming Maladaptive Style Questionnaire [LMSQ]: $F[1,584] = 1.11$, $p = .292$). Of the 325 remaining participants, 304 participants (93.5%) met criteria to be used in the analyses. Only participants who had endorsed at least one negative life event during the six months before the study period were selected for further analyses. Endorsing no moderate- to large- negative life events in a six-month period is likely a reflection of a participant quickly clicking through the online study, and these participants were excluded to increase data fidelity.

The age of the final 304 participants ranged from 18 to 47 years ($M = 21.27$, SD = 4.95). Approximately 50% of the sample described themselves as Caucasian, 19% Asian, 10% African-American, 1% Native Hawaiian, and the rest described themselves as another ethnicity. Seventy-five percent of the sample was female and 15.5% of the sample was male, however, due to a computer error, 9.5% of the participants' gender did not get recorded. There were no significant age or gender differences in any of the predictor variables or in time 2 negative interpersonal life events.

Procedure

Participants completed two online-administered time points as part of an Internal Review Board (IRB)-approved study. The first time point contained an informed consent, demographics screener, and a set of measures that included the Life Events scale (LES; Saxe & Abram, 1987), the CSQ (Haeffel et al., 2008), and the LMSQ (Riskind et al., 2000). Six weeks after participants completed the first time point, participants received an email with a link to complete the second time point.

Materials

Negative cognitive style at time 1 was measured using the negative scale of the CSQ (Haeffel et al., 2008). The CSQ assesses the tendency to make global and stable attributions after a negative life event occurs. The CSQ is a self-report measure that presents 12 negative life events and asks participants to indicate a potential cause and consequence of each event. A composite was created of stable and global responses from the 12 items to create an overall index of negative cognitive style. Adequate internal consistency was found for the CSQ ($\alpha = .87$).

Looming cognitive style at time 1 was measured using the LMSQ (Riskind et al., 2000), an 18-item self-report measure of tendency to appraise threats as dynamically and rapidly rising in risk and progressively worsening. The LMSQ includes six vignettes describing a range of potentially stressful situations including physical illness, financial problems, social rejection, and being trapped or hurt. Individual item scores are

aggregated such that higher scores indicate higher levels of looming cognitive style. The LMSQ has been found to be a valid and reliable measure (Riskind et al., 2000). In the present study, adequate internal consistency was found for the LMSQ (α = .86).

Negative life events were measured at both time points using the LES (Saxe & Abram, 1987). The LES includes 47 moderate to large scale negative interpersonal life events (e.g., getting in a fight with a roommate or breakup of a relationship) and eight negative achievement life events (e.g., told you would fail in your academic pursuits). Participants indicated whether or not an event occurred over the six months before the study period at time 1 and whether or not the event occurred since the administration of time 1 at time 2.

Depression and anxiety symptoms were measured at time 1[1] using the depression and anxiety scales from the Depression, Anxiety, and Stress Scales (DASS; Lovibond & Lovibond, 1995). The DASS is a 42-item self-report instrument that measures of depression, anxiety and stress. In the present study, the 14-item anxiety and depression scales were used as control variables. Adequate internal consistency was found for anxiety (α = .88) and depression (α = .86). Interestingly, the mean scores for depression (11.54, SD = 7.32) and anxiety (10.53, SD = 6.52) in the present sample were considerably higher that the means reported for nonclinical volunteers in a validation study of the DASS (Antony, Bieling, Cox, Enns, & Swinson, 1998; M_{dep} = 2.18, SD = 2.83; M_{anx} = 1.43, SD = 1.86). However, the scores were still lower than the mean scores for clinical groups with panic disorder (M_{dep} = 12.76, SD = 9.47; M_{anx} = 16.19, SD = 9.96) and major depressive disorder (M_{dep} = 29.74, SD = 8.42; M_{anx} = 12.58, SD = 8.67) reported in the same study (Antony et al., 1998). These scores may reflect a wide range of symptom levels in the current sample, ranging from minimal symptom levels similar to nonclinical volunteers to sub-clinical symptom levels approaching that of a clinical group.

Results

Means, standard deviations, and intercorrelations among study variables are presented in Table 1. Depression symptoms were positively correlated with anxiety symptoms, looming cognitive style, and negative cognitive style at time 1, and negative interpersonal and achievement life events at both time points. Anxiety symptoms were positively correlated with looming cognitive style at time 1, and negative interpersonal and achievement life events at both time points. Looming cognitive style was positively correlated with negative cognitive style at time 1 and was weakly correlated with negative interpersonal life events at both time points. Negative cognitive style was correlated with negative interpersonal and success life events at time 1. Finally, both negative interpersonal and achievement life events at both time points were all positively correlated.

Table 2 presents the results of a hierarchical multiple regression analysis in which T2 negative interpersonal life events were regressed onto depressive and anxiety symptoms, T1 negative interpersonal life events, and the main effects of negative cognitive style and looming cognitive style (Block 1) and the interaction between perceived negative cognitive style and looming cognitive style (Block 2). Negative cognitive style and looming cognitive style scores were centered prior to calculating the interaction according to the recommendations of Aiken & West (1991). Block 1 accounted for 45% of the

Table 1. Descriptives and intercorrelations between the study variables.

	1	2	3	4	5	6	7	8
1. Depression symptoms (DASS)	–							
2. Anxiety symptoms (DASS)	.74***	–						
3. Looming cognitive style (LMSQ)	.18**	.17**	–					
4. Negative cognitive style (CSQ)	.06	.01	.24***	–				
5. T1 Negative interpersonal events (LES)	.25***	.24**	.12*	.14**	–			
6. T2 Negative interpersonal events (LES)	.35***	.31***	.12*	.09	.63***	–		
7. T1 Negative achievement events (LES)	.21***	.20***	.03	.21***	.65***	.54***	–	
8. T2 Negative achievement events (LES)	.23***	.24***	.06	.09	.40***	.65***	.63***	–
Mean	11.54	10.53	19.59	3.98	9.43	9.38	0.89	0.71
SD	7.32	6.52	3.43	0.61	6.61	6.00	1.02	0.94
Skewness	0.84	0.83	0.11	−0.07	0.91	1.13	1.22	1.56
Kurtosis	1.53	1.58	0.55	0.96	0.79	0.97	1.49	3.56
Range	0–42	0–36	10.75–30	1.67–6.08	0–33	2–31	0–5	0–6

DASS, Depression, Anxiety, and Stress Scales; LMSQ, Looming Maladaptive Style Questionnaire; CSQ, Cognitive Style Questionnaire; LES, Life Events Scale.
*$p < .05$, **$p < .01$, ***$p < .001$.

Table 2. Results of linear regression analyses predicting time 2 negative interpersonal life events.

	B	SE B	*T*	R^2 Δ
Block 1				.45***
Depression symptoms (DASS)	0.14	0.06	2.39*	
Anxiety symptoms (DASS)	0.05	0.06	0.74	
T1 negative interpersonal life events (LES)	0.56	0.05	12.19***	
Looming cognitive style (LMSQ)	0.09	0.29	0.32	
Negative cognitive style (CSQ)	−0.06	0.29	−0.20	
Block 2				.01*
Looming × Negative cognitive style interaction	0.58	0.26	2.21*	

DASS, Depression, Anxiety, and Stress Scales; LMSQ, Looming Maladaptive Style Questionnaire; CSQ, Cognitive Style Questionnaire; LES, Life Events Scale.
*p < .05, ***p < .001.

variance of T2 negative interpersonal life events. Depressive symptoms and T1 negative interpersonal life events were the only significant predictors in the block. Block 2 accounted for additional 1% of the variance of time 2 negative interpersonal life events, and the interaction between negative cognitive style and looming cognitive style was significant.

We plotted and probed the interaction between looming cognitive style and negative cognitive style predicting time 2 negative interpersonal life events, given that it was significant to better understand the pattern of results. As shown in Figure 1, under high levels of negative cognitive style (one standard deviation above the mean), looming cognitive style was positively associated with T2 negative interpersonal life events (standardized simple slope = 0.21, p < .05). However, under low levels of negative cognitive style (one standard deviation below the mean), the association between looming cognitive style and T2 negative interpersonal life events was nonsignificant (standardized simple slope = −0.13, p = .25). These patterns are consistent with the hypothesis that negative cognitive style and looming cognitive style augment each other's effect on stress generation.

Table 3 presents the results of a hierarchical multiple regression analysis that was identical to the analyses in Table 2, but examined looming cognitive style and negative

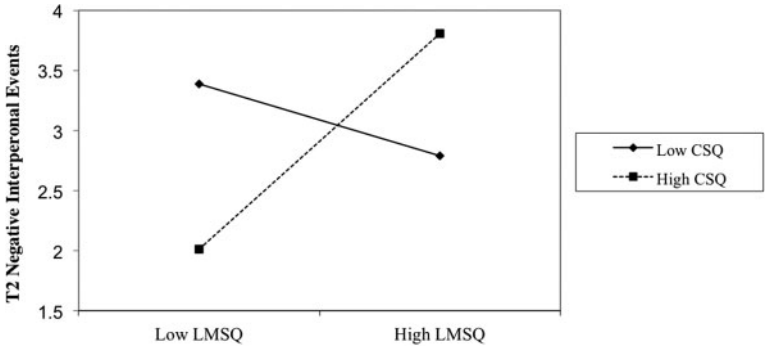

Figure 1. The relationship between looming cognitive style and time 2 negative interpersonal life events as a function of high vs. low (±1 SD) levels of negative cognitive style.

Table 3. Results of linear regression analyses predicting time 2 negative achievement life events.

	B	SE B	*t*	R^2 Δ
Block 1				.42***
Depression symptoms (DASS)	0.01	0.01	0.82	
Anxiety symptoms (DASS)	<0.01	0.01	0.84	
T1 negative achievement life events (LES)	0.58	0.04	13.42***	
Looming cognitive style (LMSQ)	0.01	0.01	0.81	
Negative cognitive style (CSQ)	−0.08	0.07	−1.16	
Block 2				<.01
Looming × Negative cognitive style interaction	0.03	0.02	1.77	

DASS, Depression, Anxiety, and Stress Scales; LMSQ, Looming Maladaptive Style Questionnaire; CSQ, Cognitive Style Questionnaire; LES, Life Events Scale.
***$p < .001$.

cognitive style as synergistic predictors of T2 negative achievement life events instead of negative interpersonal life events. T1 negative achievement life events and the main effects of negative cognitive style and looming cognitive style were in Block 1, and the interaction between negative cognitive style and looming cognitive style were in Block 2. Block 1 accounted for 42% of the variance of T2 negative achievement life events, and time 1 negative achievement life events was the only significant predictor. Block 2 did not significantly account for any additional variance in T2 negative achievement life events, and accordingly the interaction between negative cognitive style and looming cognitive style was not significant. These nonsignificant findings support our hypothesis that the synergistic stress generation effect of looming cognitive style and negative cognitive style is specific to negative interpersonal, but not achievement, life events.

Discussion

We found that in a short-term prospective study of 304 college students, a cognitive vulnerability to depression, the negative cognitive style, and a cognitive vulnerability to anxiety, the looming cognitive style, augment each other to predict negative interpersonal, but not achievement, life events. These findings provide further support that maladaptive cognitive styles have stress generation effects above the effects of anxiety or depression symptoms. Previous researchers have examined the stress generation effect focusing only on individual symptoms of depression or anxiety or disorder-specific cognitive vulnerabilities to depression (Safford et al., 2007) and anxiety (Riskind et al., 2010, 2013) predicting stressful life events, without examining potential compounding effects of their co-occurrence of these vulnerabilities.

In two previous studies, we have shown that co-occurring cognitive vulnerabilities to anxiety (e.g., looming cognitive style and anxiety sensitivity) interact and magnify each other's effects on stress generation (Riskind et al., 2010, 2013). The present study is the first to our knowledge to investigate the insidious effects of co-occurring cognitive vulnerabilities to different disorders, in this case anxiety and depression, in the stress generation process. This is an important issue to study in light of the prevalence of symptom co-morbidity and the likelihood that cognitive vulnerabilities may seldom occur in a vacuum. In a more specific context, our findings also provide further evidence of the

role of looming cognitive style in stress generation and indicate that it is a moderator of the effect of a depressive cognitive style as well as of anxiety sensitivity.

The findings further highlight the importance of examining cognitive vulnerabilities, rather than symptoms or psychological disorders alone as predictors of stress generation. As Safford et al. (2007) note, cognitive vulnerabilities may be better predictors of stress generation because they are stable and trait-like while symptoms of depression can fluctuate over time. Examining vulnerabilities rather than symptoms also allows the inclusion of nondepressed or anxious individuals in a model of stress generation. As discussed by Joiner et al. (2005) even nondepressed individuals who are cognitively vulnerable for depression (and by extension, anxiety) can generate stressful life events. These stressful life events can interact with cognitive vulnerabilities to generate further life events and increase such symptoms. Clinically, such results suggest that cognitive behavioral interventions designed to alter cognitive styles can potentially reduce depression or anxiety in part through reducing the occurrence of self-generated negative life events.

Several unanswered questions remain that could be addressed in further research. First, this study joins a small set of studies that examined the synergistic effects of co-occurring cognitive vulnerabilities in stress generation. However, it is unclear if other cognitive vulnerabilities, such as rumination or hopelessness, interact in similar fashions. Another question that remains is what mechanisms mediate this process. We hypothesized two processes through synergistic depletion of regulatory resources that need to cope with stress and avoid creating new stress and through an increased negative interpretation bias. Research is needed to actually test these mechanisms and explore other possible mechanisms not discussed.

An emerging line of research examines stress generation as part of a meditational chain between vulnerabilities to depression and anxiety and subsequent depressive and anxious symptoms (e.g., Auerbach et al., 2012; Eberhart et al., 2011). We were unable to test the possibility that the generation of negative interpersonal life events mediated the relationship between negative cognitive style and looming cognitive style and subsequent anxiety or depressive symptoms because our data were only collected at two time points. A third time point or daily/weekly diary data would be needed to test this hypothesis. Thus, it would be interesting to examine this idea with future datasets capable of such analysis.

Strengths and limitations

The present study has several limitations that should be acknowledged. First, we used a checklist, rather than interview, measure of life events. In the criteria set by Hammen, Mayol, DeMayo, and Marks (1986), the gold standard for an ideal stress generation study would include an interview measure of stressful life events. However, as noted by Liu and Alloy (2010), many highly cited studies on stress generation use self-report measures. Future studies that include an interview measure of stressful life events could strengthen our present findings. Second, our two time point design required retrospective recall of life events which can be inaccurate. Future studies using daily diary methodology would help eliminate this limitation. Third, we used a relatively small sample of unselected undergraduates that did not experience clinically significant levels of depression and anxiety. Future researchers could replicate our hypotheses using a larger sample of

clinical patients. Fourth, our findings should be interpreted in the context of the relatively small amount of variance in negative interpersonal life events that the interaction between looming cognitive style and negative cognitive style predicted. Finally, although we found no stress generation effect for negative achievement life events, the available negative interpersonal life events outnumbered negative achievement life events nearly six to one. Thus, future studies are needed that use a more balanced measure of negative achievement life events. In addition to the limitations, the present study had several strengths. It showed stress generation effects of negative cognitive style and looming cognitive style in a short-term prospective design, while still controlling for depression and anxiety, demonstrating that these effects could be found in a relatively short period of time.

Note

1. Depression and anxiety symptoms were also measured at time 2, but were not utilized in the current study.

References

Abramson, L. Y., Metalsky, G. I., & Alloy, L. B. (1989). Hopelessness depression: A theory-based subtype of depression. *Psychological Review*, *96*, 358–372. doi:10.1037/0033-295X.96.2.358

Adler, A. D., & Strunk, D. R. (2009). Looming maladaptive style as a moderator of risk factors for anxiety. *Cognitive Therapy and Research*, *34*, 59–68. doi:10.1007/s10608-008-9221-y

Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Thousand Oaks, CA: Sage.

Alloy, L. B., Abramson, L. Y., Hogan, M. E., Whitehouse, W. G., Rose, D. T., Robinson, M. S., … Lapkin, J. B. (2000). The Temple-Wisconsin Cognitive Vulnerability to Depression Project: Lifetime history of axis I psychopathology in individuals at high and low cognitive risk for depression. *Journal of Abnormal Psychology*, *109*, 403–418. doi:10.1037/0021-843X.109.3.403

Antony, M. M., Bieling, P. J., Cox, B. J., Enns, M. W., & Swinson, R. P. (1998). Psychometric properties of the 42-item and 21-item versions of the Depression Anxiety Stress Scales in clinical groups and a community sample. *Psychological Assessment*, *10*, 176–181. doi:10.1037/1040-3590.10.2.176

Auerbach, R. P., Richardt, S., Kertz, S., & Eberhart, N. K. (2012). Cognitive vulnerability, stress generation, and anxiety: Symptom clusters and gender differences. *International Journal of Cognitive Therapy*, *5*(1), 50–66. doi:ijct.2012.5.1.50

Baumeister, R. F., Vohs, K. D., & Tice, D. M. (2007). The strength model of self-control. *Current Directions in Psychological Science*, *16*, 351–355. doi:10.1111/j.1467-8721.2007.00534.x

Black, D., Riskind, J. H., & Kleiman, E. M. (2010). Lifetime history of anxiety and mood disorders predicted by cognitive vulnerability to anxiety. *International Journal of Cognitive Therapy*, *3*, 215–227.

Caldwell, M. S., Rudolph, K. D., Troop-Gordon, W., & Kim, D.-Y. (2004). Reciprocal influences among relational self-views, social disengagement, and peer stress during early adolescence. *Child Development*, *75*, 1140–1154. doi:10.1111/j.1467-8624.2004.00730.x

Connolly, N. P., Eberhart, N. K., Hammen, C. L., & Brennan, P. A. (2010). Specificity of stress generation: A comparison of adolescents with depressive, anxiety, and comorbid diagnoses. *International Journal of Cognitive Therapy*, *3*, 368–379. doi:10.1521/ijct.2010.3.4.368

Coyne, J. C. (1976). Depression and the response of others. *Journal of Abnormal Psychology*, *85*, 186–193. doi:10.1037/0021-843X.85.2.186

Eberhart, N. K., Auerbach, R. P., Bigda-Peyton, J., & Abela, J. R. Z. (2011). Maladaptive schemas and depression: Tests of stress generation and diathesis-stress models. *Journal of Social and Clinical Psychology*, *30*, 75–104. doi:10.1521/jscp.2011.30.1.75

Haeffel, G. J., Gibb, B. E., Metalsky, G. I., Alloy, L. B., Abramson, L. Y., Hankin, B. L., … Swendsen, J. D. (2008). Measuring cognitive vulnerability to depression: Development and validation of the cognitive style questionnaire. *Clinical Psychology Review*, *28*, 824–836.

Hammen, C. (1991). Generation of stress in the course of unipolar depression. *Journal of Abnormal Psychology*, *100*(4), 555–561.

Hammen, C., Mayol, A., DeMayo, R., & Marks, T. (1986). Initial symptom levels and the life-event depression relationship. *Journal of Abnormal Psychology*, *95*(2), 114–122. doi:10.1037/0021-843X.95.2.114

Hankin, B. L., Kassel, J. D., & Abela, J. R. Z. (2005). Adult attachment dimensions and specificity of emotional distress symptoms: Prospective investigations of cognitive risk and interpersonal stress generation as mediating mechanisms. *Personality & Social Psychology Bulletin*, *31*, 136–151. doi:10.1177/0146167204271324

Harkness, K. L., & Luther, J. (2001). Clinical risk factors for the generation of life events in major depression. *Journal of Abnormal Psychology*, *110*, 564–572. doi:10.1037/0021-843X.110.4.564

Joiner, T. E., Wingate, L. R., Gencoz, T., & Gencoz, F. (2005). Stress generation in depression: Three studies on its resilience, possible mechanism, and symptom specificity. *Journal of Social and Clinical Psychology*, *24*, 236–253. doi:jscp.24.2.236.62272

Joiner, T. E., Wingate, L. R., & Otamendi, A. (2005). An interpersonal addendum to the hopelessness theory of depression: Hopelessness as a stress and depression generator. *Journal of Social and Clinical Psychology*, *24*, 649–664. doi:jscp.2005.24.5.649

Kercher, A., & Rapee, R. M. (2009). A test of a cognitive diathesis-stress generation pathway in early adolescent depression. *Journal of Abnormal Child Psychology*, *37*, 845–855. doi:10.1007/s10802-009-9315-3

Kessler, R. C., Chiu, W. T., Demler, O., & Walters, E. E. (2005). Prevalence, severity, and comorbidity of 12-month DSM-IV disorders in the national comorbidity survey replication. *Arch Gen Psychiatry*, *62*(6), 617–627.

Kessler, R. C., McGonagle, K. A., Zhao, S., Nelson, C. B., Hughes, M., Eshleman, S., … Kendler, K. S. (1994). Lifetime and 12-month prevalence of DSM-III-R psychiatric disorders in the United States: Results from the National Comorbidity Survey. *Archives of General Psychiatry*, *51*, 8–19. doi:10.1001/archpsyc.1994.03950010008002

Kleiman, E. M., Liu, R. T., & Riskind, J. H. (2012). Enhancing attributional style as a resiliency factor in depressogenic stress generation. Anxiety, *Stress & Coping*, *26*, 467–474. doi:10.1080/10615806.2012.684381

Kleiman, E. M., & Riskind, J. H. (2012). Cognitive vulnerability to comorbidity: Looming cognitive style and depressive cognitive style as synergistic predictors of anxiety and depression symptoms. *Journal of Behavior Therapy and Experimental Psychiatry*, *43*, 1109–1114. doi:j.jbtep.2012.05.008

Liu, R. T. (2013). Stress generation: Future directions and clinical implications. *Clinical Psychology Review*, *33*, 406–416. doi:j.cpr.2013.01.005

Liu, R. T., & Alloy, L. B. (2010). Stress generation in depression: A systematic review of the empirical literature and recommendations for future study. *Clinical Psychology Review*, *30*, 582–593. doi:10.1016/j.cpr.2010.04.010

Liu, R. T., Choi, J. Y., Boland, E. M., Mastin, B. M., & Alloy, L. B. (2013). Childhood abuse and stress generation: The mediational effect of depressogenic cognitive styles. *Psychiatry Research*, *206*, 217–222. doi:10.1016/j.psychres.2012.12.001

Lovibond, P. F., & Lovibond, S. H. (1995). *Manual for the Depression Anxiety Stress Scales*. Sydney: Psychology Foundation.

Mineka, S., Watson, D., & Clark, L. A. (1998). Comorbidity of anxiety and unipolar mood disorders. *Annual Review of Psychology*, *49*, 377–412. doi:10.1146/annurev.psych.49.1.377

Muraven, M., & Baumeister, R. F. (2000). Self-regulation and depletion of limited resources: Does self-control resemble a muscle?. *Psychological Bulletin*, *126*, 247. doi:10.1037/0033-2909.126.2.247

Riskind, J. H., Black, D., & Shahar, G. (2010). Cognitive vulnerability to anxiety in the stress generation process: Interaction between the looming cognitive style and anxiety sensitivity. *Journal of Anxiety Disorders*, *24*, 124–128. doi:10.1016/j.janxdis.2009.09.007

Riskind, J. H., Kleiman, E. M., Weingarden, H., & Danvers, A. (2013). Cognitive vulnerability to anxiety in the stress generation process: Further investigation of the interaction effect between the looming cognitive style and anxiety sensitivity. *Journal of Behavior Therapy and Experimental Psychiatry*, *44*, 381–387. doi:10.1016/j.jbtep.2013.03.002

Riskind, J. H., Rector, N. A., & Cassin, S. E. (2011). Examination of the convergent validity of looming vulnerability in the anxiety disorders. *Journal of Anxiety Disorders*, *25*, 989–993. doi:10.1016/j.janxdis.2011.06.004

Riskind, J. H., Tzur, D., Williams, N. L., Mann, B., & Shahar, G. (2007). Short-term predictive effects of the looming cognitive style on anxiety disorder symptoms under restrictive methodological conditions. *Behavioral Research and Therapy*, *45*, 1765–1777. doi:10.1016/j.brat.2006.12.007

Riskind, J. H., Williams, N. L., Gessner, T. L., Chrosniak, L. D., & Cortina, J. M. (2000). The looming maladaptive style: Anxiety, danger, and schematic processing. *Journal of Personality and Social Psychology*, *79*, 837–852. doi:10.1037/0022-3514.79.5.837

Rudolph, K. D., Hammen, C., Burge, D., Lindberg, N., Herzberg, D., & Daley, S. E. (2000). Toward an interpersonal life-stress model of depression: The developmental context of stress generation. *Development and Psychopathology*, *12*, 215–234. doi:10.1017/S0954579400002066

Safford, S. M., Alloy, L. B., Abramson, L. Y., & Crossfield, A. G. (2007). Negative cognitive style as a predictor of negative life events in depression-prone individuals: A test of the stress generation hypothesis. *Journal of Affective Disorders*, *99*, 147–154. doi:16/j.jad.2006.09.003

Saxe, L. L., & Abram, L. Y. (1987). *The negative life events questionnaire: Reliability and validity.* Unpublished manuscript.

Shih, J. H., Abela, J. R. Z., & Starrs, C. (2008). Cognitive and interpersonal predictors of stress generation in children of affectively ill parents. *Journal of Abnormal Child Psychology*, *37*, 195–208. doi:10.1007/s10802-008-9267-z

Simons, A. D., Angell, K. L., Monroe, S. M., & Thase, M. E. (1993). Cognition and life stress in depression: Cognitive factors and the definition, rating, and generation of negative life events. *Journal of Abnormal Psychology*, *102*, 584–591.