Cognitive vulnerability to anxiety in the stress generation process: Further investigation of the interaction effect between the Looming Cognitive Style and Anxiety Sensitivity

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ABSTRACT

Background and objectives: The goal of the present study was to replicate and extend previous research on the relationship between stress generation and two well-documented anxiety related cognitive vulnerabilities, Looming Cognitive Style (LCS) and Anxiety Sensitivity (AS). We first sought to replicate findings that LCS and AS augment each other's stress generation effect. Next, we expanded upon these findings by conducting fine grained analyses not possible in the prior study, by using the third edition of the Anxiety Sensitivity Index (Taylor et al., 2007) and examined the individual facets of AS, which includes: Mental Incapacitation (fear of mental impairment), Physical (fear of catastrophic outcomes such as death), and Social (fear of being noticed for trembling, blushing) facets.
Methods: We followed 99 female undergraduates who were assessed twice over a six-week interval.
Results: First, the results replicated a previous study and showed that LCS and AS magnified each other's impact on stress generation. Second, analyses using the individual subscales of AS indicated significant interactions between LCS and the Mental Incapacitation and Physical facets of AS but not the Social facet.
Limitations: Limitations of the present study include reliance on self-report measures and the use of a female only sample. Using such a sample is consistent with previous literature, but limits generalizability to males.
Conclusions: The present findings are consistent with the emerging view that stress generation is an active, transactional process and that anxiety-related cognitive styles (much like depressive styles) contribute to stress generation.

1. Introduction

There is considerable evidence that individuals who are depressed, and to a lesser extent anxious, experience more negative life events than those without such psychopathology (Hammen, 1991; for reviews, see Liu, 2013; Liu & Alloy, 2010). Moreover, such individuals may behave in ways that generate stressful events (so called "negative dependent events"), which in turn perpetuate or exacerbate their symptoms (e.g., Connolly, Eberhart, Hammen, & Brennan, 2010; Hammen, 1991). This stress generation effect (Hammen, 1991) has become increasingly studied in relation to cognitive-affective personality characteristics that predict negative dependent events, even when controlling for levels of depressive symptoms. For example, negative cognitive styles related to

depression, such as depressive inferential styles (Kercher & Rapee, 2009; Safford, Alloy, Abramson, & Crossfield, 2007; Shih, Abela, & Starrs, 2009), hopelessness (Joiner, Wingate, & Otamendi, 2005), and rumination (Flynn, Kecmanovic, & Alloy, 2010; McIntosh, Gillanders, & Rodgers, 2010), act as predictors of negative dependent events above and beyond symptoms of depression (Safford et al., 2007).

Although the prior studies established stress generating effects of depression-related cognitive styles (Kercher & Rapee, 2009; Safford et al., 2007; Shih et al., 2009), a study by Riskind, Black, and Shahar (2010) presented evidence that anxiety-related cognitive styles also contribute to stress generation. They investigated the stress generating effects of two relatively distinct and moderately correlated anxiety-related cognitive styles: the Looming Cognitive Style and Anxiety Sensitivity. Looming Cognitive Style (LCS; Riskind et al., 2010; Riskind & Williams, 2005; Riskind, Williams, Gessner, Chrosniak, & Cortina, 2000) refers to a bias in overestimating the progress of threatening outcomes, and it emphasizes mental

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simulation of growing threats. That is, individuals with anxiety generate mental scenarios and expectations of threats that are intensifying and approaching faster than they can cope or respond. Accordingly, individuals with the LCS interpret innocuous or ambiguous situations as rapidly developing and rising in risk (Riskind & Williams, 2005; Riskind et al., 2000). LCS is found across the anxiety spectrum (Riskind, Rector, & Cassin, 2011), predicts gains in anxiety and worry symptoms over time, and is less associated with depression than anxiety (Adler & Strunk, 2010; Riskind, Tzur, Williams, Mann, & Shahar, 2007; Riskind & Williams, 2005; Riskind et al., 2000). Anxiety Sensitivity (AS; Reiss, Peterson, Gursky, & McNally, 1986; Taylor et al., 2007) is a related but distinct cognitive style that leads individuals to exaggerate the adverse consequences of anxiety reactions. For example, individuals perceive anxiety and interpret physical anxiety sensations such as rapid heart rate as signs of catastrophic outcomes, such as dying or going crazy.

Either of the anxiety-related cognitive styles might predict stress generation. On theoretical grounds, Riskind et al. (2010) hypothesized that LCS, which induces increased anxiety symptoms, would augment or magnify the depletion effect of AS, which makes anxiety symptoms especially feared. This interaction effect hypothesis was based partly on Baumeister's model of self-regulatory strength (Gailliot, Schmeichel, & Baumeister, 2006; Schmeichel, Vohs, & Baumeister, 2003; Vohs, Baumeister, & Ciarocco, 2005), which contends that self-control resources can be depleted by stress to a point of exhaustion (like an "exhausted muscle" to use his analogy). When a person's self-control resources are depleted, decreases in the ability to solve problems or cope with stress, inhibit unwanted thoughts, and manage impressions can occur. Riskind et al. (2010) hypothesized that because of the synergistic effects of LCS and AS (one creating symptoms and the other magnifying the extent that symptoms are threatening), a person with both vulnerabilities would become the most likely to reach a point of dysfunctional depletion. In other words, LCS and AS might each separately deplete coping resources, but the interaction between these two cognitive styles would synergistically magnify the depletion of self-regulatory strength above and beyond the additive sum of their main effects. In line with that hypothesis, Riskind et al. (2010) found that LCS and AS interact with one another to augment and magnify each other's effects on stress generation over a four-month time period.

1.1. The present study

The primary goal of the present study was to replicate and extend Riskind et al. (2010) by examining whether LCS and AS interact to synergistically predict increased negative dependent events, as well as to examine the question of whether different facets of AS are differentially involved in this stress generating interaction. To this end, the present study used the third edition of the Anxiety Sensitivity Index (ASI; Taylor et al., 2007). The newer edition includes reliable and empirically validated measures of three facets associated with AS (Li & Zinbarg, 2007; Stewart, Taylor, & Baker, 1997; Zinbarg, Barlow, & Brown, 1997) that differentially correlate with disorders and symptoms. These three facets are the Mental Incapacitation facet, the Physical facet, and the Social Concerns facet.

The *Mental Incapacitation* facet captures concerns about insanity or going crazy and is cross-sectionally elevated in generalized anxiety disorder (GAD) and depression (Cox, Enns, & Taylor, 2001; Rector, Szacun-Shimizu, & Leybman, 2007; Zinbarg et al., 1997) and prospectively predictive of panic symptoms (Li & Zinbarg, 2007; Schmidt, Lerew, & Jackson, 1998) and hopelessness (Schmidt, Lerew, & Joiner, 1998). In a recent structural equation modeling

study, the Mental Incapacitation facet was found to load onto a broad "general distress" factor comprised of common symptoms shared by all anxiety and depression symptoms (Lewis et al., 2010).

The *Physical Concerns* facet measures a fear that physical reactions can lead to catastrophic outcomes such as heart attacks or strokes. The physical facet has been found to be elevated in panic disorder (Rector et al., 2007), and it is prospectively predictive of depression (Grant, Beck, & Davila, 2007; Hayward, Killen, Kraemer, & Taylor, 2000) and panic symptoms (Grant et al., 2007; Hayward et al., 2000). Additionally, structural equation modeling showed that the Physical facet predicted a latent variable comprising fears associated with anxiety disorders including panic and phobias; it also had variance specific to depression (Lewis et al., 2010).

Unlike the former two facets, the *Social Concerns* facet − which measures fears of having anxiety noticed by others − is elevated in social anxiety disorder (SAD), but has not been found to be predictive of future social anxiety or other anxiety symptoms (Grant et al., 2007). Furthermore, structural equation modeling found that this facet was not positively predictive of general distress, anxiety or depression symptoms at any level, but it was even paradoxically predictive of lower levels of fears (Lewis et al., 2010).

In comparing the facets, the Mental Incapacitation and Physical Concerns facets are more strongly associated with psychopathology than the Social Concerns facet. Furthermore, the Mental Incapacitation and Physical Concerns facets may capture fears of particularly catastrophic and irrevocable outcomes in comparison to the Social Concerns facet (e.g., insanity or death versus being noticed for blushing). Finally, individuals with elevated anxiety sensitivity to Social Concerns may be able to avoid social situations that would trigger interpersonal anxiety. On the other hand, individuals with elevated anxiety sensitivity to Mental Incapacitation or Physical Concerns have much less control over triggers of these fear domains. On the basis of these considerations, we hypothesized that the interaction effect between LCS and AS for stress generation would emerge for the Mental Incapacitation and Physical facets but would not be significant for the Social facet.

A secondary goal of the present study was to evaluate stress generation effects of LCS and AS using a shorter-term six-week time interval rather than the four-month interval in the original study of Riskind et al. (2010). This methodological change allowed us to examine the robustness and generalizability of the findings of Riskind et al. (2010) to a much shorter time frame.

2. Material and methods

2.1. Participants

Ninety-nine female college students participated in the study for course credit. Their ages ranged from 18 to 48 years ($M = 21.25$, $SD = 5.06$). Approximately 50% of the sample described themselves as Caucasian, 20% Asian, 12% African American, 4% Native Hawaiian, and the rest described themselves as another ethnicity. The student body of the university is diverse and contains full-time day students, older students returning part time after another career or serving in the military, and foreign students.

2.2. Procedure

Participants were recruited and compensated with course credit for a short-term prospective study on "stress and interpersonal relationships" with two online-administered time points. Participants completed a demographics screener and a set of measures that included the Looming Maladaptive Style Questionnaire (Riskind et al., 2000), the Anxiety Sensitivity Index-3 (Taylor et al., 2007), the Depression Anxiety and Stress Scales (Lovibond &