Published in final edited form as:
Anxiety Stress Coping. 2014 November ; 27(6): 695–711. doi:10.1080/10615806.2014.909927.

Vulnerability-specific stress generation: An examination of negative cognitive and interpersonal styles

Richard T. Liu*, **Lauren B. Alloy**, **Becky M. Mastin**, **Jimmy Y. Choi**, **Elaine M. Boland**, and **Abby L. Jenkins**
Department of Psychology, Temple University, 1701 N. 13th St., Philadelphia, PA 19122

Abstract

Although there is substantial evidence documenting the stress generation effect in depression (i.e., the tendency for depression-prone individuals to experience higher rates of life stress to which they contribute), additional research is required to advance current understanding of the specific types of dependent stress (i.e., events influenced by characteristics and attendant behaviors of the individual) relevant to this effect. The present study tested an extension of the stress generation hypothesis, in which the content of dependent stress that is produced by depression-prone individuals is contingent upon, and matches, the nature of their particular vulnerabilities. This extension was tested within the context of two cognitive models (i.e., hopelessness theory [Abramson, Metalsky, & Alloy, 1989] and Cole's [1990, 1991] competency-based model) and two interpersonal models (i.e., Swann's [1987] self-verification theory and Coyne's [1976] interpersonal theory) of depression. Overall, support was obtained for vulnerability-specific stress generation. Specifically, in analyses across vulnerability domains, evidence of stress-generation specificity was found for all domain-specific cognitive vulnerabilities except self-perceived social competence. The within-domain analyses for cognitive vulnerabilities produced more mixed results, but were largely supportive. Additionally, excessive reassurance-seeking was specifically predictive of dependent stress in the social domain, and moderated, but did not mediate, the relation between negative inferential styles overall and in the interpersonal domain and their corresponding generated stress. Finally, no evidence was found for a stress generation effect with negative feedback-seeking.

Keywords

stress generation; cognitive styles; interpersonal styles; depression

Introduction

Although an extensive body of research has established that stressful life events significantly increase the risk for developing depression (see Hammen, 2005; Kessler, 1997; Paykel, 2003 for reviews), relatively recently, researchers also have given theoretical and empirical consideration to the possibility of a more complex, transactional relation between stress and

*Corresponding author. Richard T. Liu, Department of Psychology, Temple University, 1701 N. 13th St., Philadelphia, PA 19122 (Tel.: +1 215 204 4935; Fax: +1 215 204 5539; richard.t.liu@gmail.com).

depression. According to Hammen's (1991) stress generation hypothesis, individuals vulnerable to depression are not simply passive respondents to stressful life events, but active agents in the generation of life stress. That is, depression-prone individuals are likely to experience higher rates of negative dependent events (i.e., events to which they at least partly contributed), particularly within interpersonal domains, but not independent or fateful events (i.e., events outside their control). As dependent or interpersonal events, compared to independent ones, may be more predictive of depression (Hammen, Marks, Mayol, & DeMayo, 1985; Kendler, Karkowski, & Prescott, 1999), the generation of interpersonal and dependent life stresses, in turn, may potentially maintain current depression or increase the likelihood of subsequent depression onset and recurrence (Hammen, 1991; Joiner, Wingate, & Otamendi, 2005b). Thus, stress generation, in some measure, may account for the often chronic course of depression (Belsher & Costello, 1988; Solomon et al., 2000).

Support for the stress generation perspective has been found in both clinical samples (Hammen, 1991; Hammen, Shih, & Brennan, 2004) and non-clinical samples (Joiner, Wingate, Gencoz, & Gencoz, 2005a; Kercher & Rapee, 2009). The consistent emerging trend is that depressed individuals are significantly more likely to experience high levels of stress, and that this effect is specific to dependent life events, particularly interpersonal ones, rather than independent life events (see Liu & Alloy, 2010 for a review).

Cognitive and Interpersonal Vulnerabilities Relevant to Stress Generation

Depression alone, however, does not adequately account for the stress generation pattern, as heightened levels of dependent stress have been found to occur during depressive remission (Hammen, 1991; Hammen & Brennan, 2002). Indeed, maladaptive behaviors and characteristics (e.g., cognitive styles, personality traits, attachment styles) of the individual have been hypothesized to have a role in stress generation (Hammen, 1991, 2006). Several researchers have examined this possibility with depressogenic cognitive styles (e.g., Gibb, Beevers, Andover, & Holleran, 2006; Joiner et al., 2005a, 2005b; Kercher & Rapee, 2009; Safford, Alloy, Abramson, & Crossfield, 2007; Shih, Abela, & Starrs, 2009). According to the hopelessness theory of depression (Abramson et al., 1989), when faced with a negative event, individuals who tend to attribute the event to stable and global causes, and infer negative consequences and self-characteristics, are at greater risk for experiencing cognitions of hopelessness, which, in turn, leads to the development of hopelessness depression. Several studies have implicated hopelessness (Joiner et al., 2005a, 2005b) and negative cognitive styles (Kercher & Rapee, 2009; Safford et al., 2007; Shih et al., 2009; but see Gibb et al., 2006 for an exception) in the stress generation effect. Negative interpersonal styles have also been studied in relation to stress generation. Specifically, attachment styles (Bottonari, Roberts, Kelly, Kashdan, & Ciesla, 2007; Hankin, Kassel, & Abela, 2005), excessive reassurance-seeking (Birgenheir, Pepper, & Johns, 2010; Potthoff, Holahan, & Joiner, 1995; Shih et al., 2009), and poor social problem-solving skills (Davila, Hammen, Burge, Paley, & Daley, 1995) have been linked with stress generation.

An Extension of the Stress Generation Hypothesis

Overall, there is some support for the role of cognitive and interpersonal vulnerabilities in stress generation, though further research is required to tease apart the specific components

of these constructs that are relevant to the stress generation effect. An important possible extension of the stress generation hypothesis not yet adequately explored is that the content or domains of dependent stresses produced by depression-prone individuals may match their particular vulnerabilities. That is, differences in vulnerabilities may predict different patterns of stress. For example, two individuals, differing in terms of cognitive vulnerability, may generate high levels of dependent stress that are relatively distinct from the other's in content, but each consistent with their own underlying vulnerability. An examination of this possibility may help to address the need to extend beyond the broad approach of focusing on *overall* levels of stress towards more refined analyses involving *domains* of stress in relation to depressogenic risk factors (Shahar, Joiner, Zuroff, & Blatt, 2004); such an approach may help to clarify the specific type of stressors involved in stress generation (Hammen, 2006). Moreover, this extension of the stress generation effect may enhance our understanding of its possible role in the onset, maintenance, and recurrence of depression; insofar as specificity in the match between stresses and underlying vulnerability is important in placing individuals at significantly greater likelihood for developing depression (i.e., event congruency hypothesis; Beck, 1983, and specific vulnerability hypothesis; Abramson, Alloy, & Metalsky, 1995), those who generate the very life events specific to their vulnerability represent a particularly high risk group. Thus, this extension of the stress generation hypothesis may be conceptualized as a double-risk model of depression.

Relevant to this extended model of stress generation are a few stress generation studies involving personality traits, such as sociotropy and autonomy. According to Beck's (1983) formulation of these two constructs, highly sociotropic individuals' sense of self-worth is unduly dependent on interpersonal interactions, making them especially sensitive to criticism and rejection from others. In contrast, highly autonomous individuals' self-worth is heavily based on independence and goal attainment, making them susceptible to depression when confronted with loss of control or personal failure. In one study, Nelson et al. (2001) found that the autonomy subscale of need for control predicted increases in chronic interpersonal stress, whereas sociotropy interacted with poor problem solving or poor self-views of interpersonal competence to predict increases in chronic achievement stress. In contrast, Shih (2006) found that sociotropy predicted higher episodic dependent interpersonal stress, and neither sociotropy nor autonomy predicted episodic dependent achievement stress. These mixed results, in some measure, may be due to the differing focus between studies on chronic (Nelson et al., 2001) or episodic stress (Shih, 2006). Nevertheless, they collectively highlight the need for further research.

The purpose of the present study was to assess the possibility of vulnerability-specific stress generation based on cognitive and interpersonal vulnerabilities. The hopelessness theory of depression (Abramson et al., 1989) offers a promising theoretical framework in which to evaluate this possibility. The specific vulnerability hypothesis of the hopelessness theory (Abramson et al., 1995) posits that individual variability may exist across different domains (e.g., interpersonal or achievement) in the tendency to form negative inferences. Some individuals may form negative inferences only in response to negative interpersonal events, whereas others may respond in similar fashion but only to negative achievement events. There is some support for the specific vulnerability hypothesis (Metalsky, Halberstadt, &

Abramson, 1987; Abela, 2002), but no studies exist examining it within the context of stress generation. To the degree that domain specificity exists in individuals' negative inferential styles, assessing the correspondence between these domains and the domains in which subsequent dependent stress is generated may further elucidate the role of this cognitive vulnerability in stress generation.

Cole's (1990, 1991) competency-based model of depression in children and adolescents offers another interesting cognitive framework in which to test this extension of the stress generation hypothesis. This model suggests that an individual's cognitive self-schemata, in the form of self-perceived competencies in various domains, develop during childhood, and that the construction of these self-schemata is influenced by information in the child's environment, especially evaluative feedback from others (e.g., teachers, and peers). Negative events, particularly in terms of competency feedback, negatively affect the formation of children's self-perceptions, which in turn increase their risk for depression. This mediational model has received considerable empirical support (e.g., Cole, Martin, & Powers, 1997; Tram & Cole, 2000).

Within the context of the present study, Cole's (1990, 1991) competency-based model allows for several interesting possibilities. First, as of yet, no studies have considered whether this model may in part account for the stress generation effect. That low self-perceived social competence has been found to relate to increases in chronic interpersonal stress, even after controlling for past psychopathology, lends weight to this possibility (Herzberg et al., 1998).

Second, in acknowledging the multidimensional nature of self-concept (Wylie, 1974), Cole's (1990, 1991) competency-based model of depression conceptualizes self-perceived competency in a similarly multifaceted manner. Several studies have provided support for this multidimensional view of self-competency (Cole, 1991; Seroczynski, Cole, & Maxwell, 1997). Thus, this model offers a useful framework in which to evaluate the vulnerability-specific extension of stress generation. To the extent that separate domains of self-perceived competence constitute distinct aspects of cognitive vulnerability, and to the extent that depressogenic cognitive schemata influence the manner in which an individual navigates their environment as well as the stresses they might encounter, it would not be unreasonable to suspect that negative self-appraisal of competence in a specific domain will lead to generation of more congruent stressful life events than incongruent ones (Beck, 1983; Monroe & Simons, 1991). Finally, although Cole's (1990, 1991) model has been extensively studied in youth, only one study (Uhrlass & Gibb, 2007) has assessed it in adults, and none within a longitudinal framework.

Interpersonal Vulnerabilities – Specific Stress Generation Effect

Based on the literature on self-fulfilling prophecies (e.g., Kuklinski & Weinstein, 2001), individuals with a low self-concept in a given domain may act in ways that ultimately confirm their self-expectations and maintain their self-schemata. Consistent with this view, Swann's (1987) self-verification theory argues that individuals seek to maintain their self-concepts by selectively soliciting (Swann & Read, 1981), attending to (Swann & Read, 1981), and believing (Swann, Griffin, Predmore, & Gaines, 1987) feedback from others that

is consistent with their self-perceptions. This tendency holds even for individuals predisposed to depression, who strive to verify their negative self-views by seeking negative feedback, leading to negative interpersonal interactions (Joiner, 2000) and increases in depressive symptoms (Joiner, 1995). Negative feedback-seeking has also been proposed as a possible mechanism of stress generation (Joiner, 2000), though this relation has yet to be tested.

Excessive reassurance-seeking, a similarly self-propagatory interpersonal vulnerability of particular relevance to Coyne's (1976) interpersonal theory of depression, may also play a role in the generation of domain-consistent stress. Coyne (1976) has suggested that individuals susceptible to depression seek reassurance from others in an attempt to confirm their self-worth, as well as the care and interest of significant others. These individuals, however, tend to discount the initial reassurance they receive as being insincere, leading them to solicit additional reassurance. The repetitive pattern of seeking and discounting reassurance continues until frustration is experienced by others, leading to deterioration of the relationship and rejection of the depression-prone individual, ironically appearing to confirm their negative self-views and doubts regarding the initial feedback. Indeed, studies have shown excessive reassurance-seeking is linked with depression and interpersonal rejection (see Starr & Davila, 2008 for a review). Of relevance to the current study, excessive reassurance-seeking has been found to predict the generation of interpersonal stress (Birgenheir et al., 2010; Potthoff et al., 1995; Shih et al., 2009).

Both negative feedback-seeking and excessive reassurance-seeking may exert a greater effect in domains of low self-perceived competence. For example, an individual who feels assured of their ability in intellectual domains, but is concerned about their physical attractiveness, may be more motivated to seek feedback or reassurance in the latter domain than the former. Additionally, the effects of these interpersonal styles may be more pronounced in interpersonal domains than achievement-oriented ones to the degree that they differ in the availability of more objective feedback (e.g., test scores). That these perseverative processes have been theorized and found specifically to be associated with negative interpersonal interactions is certainly consistent with this possibility (Starr & Davila, 2008).

The Present Study

In summary, the current study examined the specificity of the relation between depressogenic vulnerabilities, in the form of negative inferential styles and self-perceived competence domains, and prospectively generated stress, as well as the role of negative feedback-seeking and excessive reassurance-seeking as potential mediating or moderating mechanisms. Specifically, it was hypothesized that negative inferential styles and low self-perceived competence would predict higher levels of prospective dependent, but not independent, episodic stress. To assess the vulnerability-specific stress generation model *between* vulnerability domains, the second hypothesis was that negative inferential styles and low self-perceived competence, respectively, within a given domain would predict more matching dependent stress than would other vulnerability domains. Third, to evaluate the specificity of stresses generated *within* vulnerability domains, it was hypothesized that

negative inferential styles and low self-perceived competence, respectively, within a given domain would predict more domain-congruent than domain-incongruent dependent stress. Fourth, negative feedback-seeking and excessive reassurance-seeking were hypothesized to predict subsequent dependent, but not independent, episodic stress, and these relations were predicted to be stronger for social stress than stress in other domains. Finally, both interpersonal styles were assessed as potential mediators and moderators of the relation between negative inferential styles and low self-perceived competence, respectively, and the generation of domain-congruent dependent stress.

Method

Participants

Participants were recruited from the Temple University undergraduate population through psychology courses and flyers posted in the campus community. Participants received either research credits in partial fulfillment of their class research requirements or a small monetary compensation for their participation. Of the 203 participants who completed baseline (Time 1) assessment, 185 (91%) completed the follow-up phase (Time 2) of the study and constitute the final sample. A series of independent samples *t* tests and chi-square tests was conducted to assess potential differences between attritors and non-attritors on demographic and baseline study variables (i.e., age, gender, ethnicity, depressive symptoms, excessive reassurance-seeking, negative feedback-seeking, self-perceived competence in academic, social, and appearance domains, as well as overall negative inferential styles, and in achievement, interpersonal, and appearance domains). Relative to non-attritors, attritors scored lower on baseline depressive symptoms ($t = 2.167$, $p < .05$, $d = .30$), reassurance-seeking ($t = 2.263$, $p < .05$, $d = .31$) and negative feedback-seeking ($t = 2.198$, $p < .05$, $d = .30$). The demographic and descriptive statistics for participants who completed Time 2 are presented in Table 1.

Measures

Depressive Symptoms—The Beck Depression Inventory-II (BDI-II; Beck, Brown, & Steer, 1996) is a 21-item self-report questionnaire used to assess baseline depressive symptoms, with higher scores indicating greater severity. The BDI-II has been shown to have high internal consistency ($\alpha = .89$; Whisman, Perez, & Ramel, 2000), and test-retest reliability (Beck et al., 1996). The internal consistency was similarly found to be good in the current sample ($\alpha = .89$).

Depression History—Past episodes of Diagnostic and Statistical Manual-Fourth Edition-Text Revision (DSM-IV-TR; American Psychiatric Association, 1994) Major Depressive Disorder (MDD) were assessed with the Schedule for Affective Disorders and Schizophrenia-Lifetime version (SADS-L; Endicott & Spitzer, 1978). The SADS-L is a widely used semi-structured diagnostic interview for lifetime history of psychopathology that has demonstrated high inter-rater reliability (Endicott & Spitzer, 1978). For the current study, an expansion of the SADS-L, allowing for the assessment of DSM-IV diagnoses (Alloy et al., 2000), was used. The expanded SADS-L has shown high inter-rater reliability (kappa ≥ .95 for MDD diagnoses).

Negative Inferential Styles—The Cognitive Style Questionnaire (CSQ; Alloy et al., 2000; Haeffel et al., 2008) is a modified version of the Attributional Style Questionnaire (ASQ; Peterson et al., 1982) used to assess individuals' tendency to make internal, global, and stable attributions, and to infer negative consequences and characteristics about themselves following the occurrence of a negative life event. A composite score was calculated for inferences (mean ratings for the globality, stability, consequences, and self-implication dimensions) in response to the hypothetical events, with higher scores reflecting more negative inferential styles. The CSQ was originally composed of two subscales assessing negative inferential styles in achievement and interpersonal domains. Drawing from items in the Adolescent Cognitive Style Questionnaire (ACSQ; Hankin & Abramson, 2002), it was modified in the current study to include negative hypothetical events involving physical appearance so as to allow for assessment of a third cognitive vulnerability domain. Adequate internal consistency was demonstrated with the current sample for the overall negative composite score (α = .96), as well as each of the negative composite scores for the individual subscales (α = .91 for the achievement domain, α = .92 for the interpersonal domain, and α = .92 for the physical appearance domain). In previous studies, the CSQ has exhibited good test-retest reliability over one year (r = .80; Alloy et al., 2000).

Self-Perceived Competence—The Self-Perception Profile for College Students (SPPCS; Neemann & Harter, 1986) is a self-report measure of global self-worth and self-perceived competence in 12 domains relevant to college-aged students. In the current study, only three of the domain-specific scales were included (i.e., academic competence, social competence, and physical appearance), chosen specifically because of their correspondence to scales in the Self-Perception Profile for Children (SPPC; Harter, 1985) and the Self-Perception Profile for Adolescents (SPPA; Harter, 1988). These scales on the SPPC and SPPA have been widely used in previous research on Cole's (1990, 1991) competency-based model of depression (e.g., Seroczynski et al., 1997; Tram & Cole, 2000). Items are scored on a 4-point Likert scale, with higher total scores reflecting higher self-perceived competence. The SPPCS has demonstrated high reliability and validity (Neemann & Harter, 1986; Uhrlass & Gibb, 2007). In the current sample, internal consistency for each subscale was adequate (α = .82 for academic competence, .82 for social competence and .84 for physical appearance).

Excessive Reassurance-Seeking—The Reassurance Seeking Scale (RSS; Joiner & Metalsky, 1995, 2001) is a 4-item questionnaire that measures the tendency to seek reassurance from close others as formulated in Coyne's (1976) interpersonal theory of depression. Each item is rated on a 7-point Likert scale ranging from 1(*"no, not at all"*) to 7 (*"yes, very much"*). Higher scores indicate higher reassurance-seeking. This measure has shown high reliability, with alpha coefficients ranging from 0.85 to 0.95 (Shahar et al., 2004), and has adequate internal consistency in the current sample (α = .83). The RSS has shown adequate criterion and construct validity (Joiner & Metalsky, 2001).

Negative Feedback-Seeking—The Feedback Seeking Questionnaire (FSQ; Swann, Wenzlaff, Krull, & Pelham, 1992) assesses participants' preference for feedback from close others within five domains (i.e., social, intellectual, artistic/musical, physical appearance,

and sports). From participants' responses to this measure, a composite score is created by summing the number of negatively framed items selected, with higher scores reflecting a greater preference for negative feedback. The FSQ has demonstrated adequate reliability, with an alpha coefficient of .78 (Weinstock & Whisman, 2004), and .66 in the current sample.

Negative Life Events—The Life Events Scale (LES; Safford et al., 2007) and Life Events Interview (LEI; Safford et al., 2007) are a combination of questionnaire and semi-structured interview designed to assess the occurrence of stressful life events spanning a wide range of content domains relevant to college students (e.g., school, family, relationships, finances). They were used in the current study to assess events that occurred between the initial visit and four-month follow-up period. This four-month follow-up interval was chosen based on previous findings that recollection of non-severe stressors tend to become less reliable after about half a year (Brown & Harris, 1982), while also being of sufficient duration to allow for meaningful variability in the types of life stressors under consideration, particularly within the academic domain (e.g., finals). The LES was modified to cover more comprehensively life events relevant to the three vulnerability domains assessed in the CSQ and SPPCS. In particular, the number of academic-relevant events was expanded to include negative oral feedback (e.g., negative comments from an authority figure regarding performance) in addition to more typical written evaluative feedback (e.g., poor grades). Minor events were also removed, because although there is generally strong and consistent support for the role of major life stressors in depressive onset (Monroe & Reid, 2008), the evidence linking hassles to depression has been relatively weak and inconsistent (Harkness, 2008). Moreover, and mirroring these findings from stress exposure studies of depression, cognitive vulnerabilities may be associated more with the generation of major dependent stressors (Safford et al., 2007) than with minor daily hassles (Gibb et al., 2006).

Following completion of the LES, participants were interviewed with the LEI by a trained research assistant or graduate student. The LEI serves as a reliability and validity check on the LES, as it allows for life events to be more objectively identified in order to reduce potential subjective report biases. The LEI includes explicit criteria for event definition and *a priori* probes to help the interviewer determine whether reported events on the LES meet the event definition criteria. It also allows for obtaining additional information regarding the nature and context in which the event occurred. Any event that did not meet the event definition criteria were disqualified, as were events that started or occurred before the initial study visit.

Finally, each event was separately coded by three raters blind to participants' diagnoses, depression symptoms, and vulnerabilities. Using the contextual threat method of Brown and Harris (1978), the objective impact of each qualifying event was rated on a 3-point scale (0 = mild; 1 = moderate; 2 = major) for the amount of objective impact it would have on most people in the same circumstance. As in past studies utilizing the LES and LEI (Safford et al., 2007), all life events were assessed by independent raters in terms of independence vs. dependence on a 3-point scale (1 = mostly independent of participant; 2 = at least partly dependent on participant; 3 = mostly dependent on participant). Objective impact and dependence ratings were each averaged across the three raters. Based on its average

dependence rating, each event was then dichotomized as either independent, or at least partly dependent, on the participant. Similarly, each event was dichotomized, based on its average impact rating, as either mild or non-mild. As non-mild life stressors were the primary focus of the current study, averaged objective impact ratings essentially functioned as another means to identify and screen out mild life stressors that had been endorsed. Thus, events rated on average as minor were excluded from all analyses.

Past studies have found the LES and LEI to exhibit good reliability and validity (Needles & Abramson, 1990; Safford et al., 2007). In the current study, inter-rater reliabilities (i.e., intra-class correlations) were .87 for dependence ratings and .85 for objective impact ratings.

Procedure

Participants were assessed at two time-points, separated by four months (M = 117.28 days, SD = 9.67). During the initial assessment (Time 1), they completed the BDI-II, CSQ, SPPCS, RSS, and FSQ. At the follow-up (Time 2), participants completed the LES. They also completed two semi-structured interviews: SADS-L and LEI.

Results

Preliminary Analyses

Correlations among the main study variables are presented in Table 2. As baseline BDI-II scores were positively skewed, they were submitted to a square root transformation to satisfy assumptions of normality. To control for potential stress generation effects associated with depression itself, baseline BDI-II scores and past depression were covaried in all analyses. Additionally, to account for the possibility that stress in certain domains of competence occurred with greater frequency than stress in other domains, a consideration of particular relevance to analyses involving comparisons between stress domains, z-scores were calculated for participants' stress sum in each stress domain.

Test of General Stress Generation Effect with Cognitive Vulnerabilities

To determine whether overall and domain-specific negative inferential styles and low self-perceived competences predicted subsequent overall dependent, but not independent, episodic stress, separate sets of regression analyses were conducted. For each domain of cognitive vulnerability, dependent and independent stress, respectively, were regressed on to the cognitive vulnerability, controlling for baseline BDI-II scores and past depression (see Table 3). More negative inferential styles overall, and in each of the domains, predicted greater dependent stress. In contrast, none of the predictors was significantly associated with independent stress. Additionally, low self-perceived competence in the academic domain, but not in the social or appearance domains, predicted higher overall dependent stress. None of the self-perceived competence domains predicted independent stress.

Test of Stress Generation Specificity Between Domains of Cognitive Vulnerability

To examine whether a negative inferential style within a given domain would predict more domain-congruent dependent stress than would negative inferential styles in other domains, three stepwise regression analyses were conducted. Baseline BDI-II scores and history of

depression were entered as covariates and cognitive vulnerabilities incongruent with the stress domain of interest were entered as the predictor variables in Step 1, with domain-specific dependent stress as the criterion variable. The domain-congruent cognitive vulnerability was then entered as the predictor in Step 2. As detailed in Table 4, negative inferential styles in the achievement, interpersonal, and appearance domains predicted domain-congruent dependent stress in the final regression model, indicating that each negative inferential style predicted domain-congruent dependent stress over and above what could be accounted for by domain-incongruent negative inferential styles. For each of the three vulnerability domains, a more negative inferential style predicted greater domain-congruent dependent stress. Moreover, in each case, negative inferential styles in the two incongruent domains were not predictive of domain-specific dependent stress in the final regression model, indicating that any variance in the criterion variable accounted for by domain-incongruent negative inferential styles was better explained by the domain-congruent negative inferential style.

Although none of the predictors evidenced multicollinearity based on their Variance Inflation Factors (VIFs), suppressor effects were observed in two of the regression analyses (for more details regarding suppressor variables, see Tzelgov & Avishai, 1991). Specifically, a negative inferential style in the interpersonal domain positively correlated with dependent stress in the academic domain ($r = .218$, $p < .01$), but had a negative regression coefficient in the regression model with negative inferential styles in the achievement and appearance domains also entered as predictors. Similarly, a negative inferential style in the achievement domain positively correlated with dependent stress in the appearance domain ($r = .214$, $p < .01$), but had a negative regression coefficient when considered simultaneously with negative inferential styles in interpersonal and appearance domains as predictors in a regression model. To address this issue, the relevant regression analyses were repeated with a negative inferential style in the interpersonal domain excluded from the first model, and a negative inferential style in the achievement domain excluded from the second model. The results remained unchanged.

As for cognitive vulnerability as formulated in Cole's (1990, 1991) model, self-perceived competence in both academic and appearance domains predicted domain-congruent dependent stress in the final regression models, indicating that both vulnerabilities of interest predicted domain-congruent dependent stress over and above what could be accounted for by domain-incongruent vulnerabilities (see Table 4). In both cases, lower self-perceived competence was associated with more domain-congruent dependent stress, and domain-incongruent self-perceived competence did not predict domain-specific dependent stress in the full regression model. In contrast, however, self-perceived competence in the social domain was not predictive of subsequent domain-congruent dependent stress. Self-perceived competence in the academic and appearance domains were similarly non-predictive of dependent stress in the social domain.

Although self-perceived social competence was only moderately correlated with self-perceived competence regarding appearance ($r = .317$, $p < .001$) and not correlated with self-perceived academic competence ($r = .122$, *ns*), suppressor effects were also evident in these analyses. Specifically, self-perceived competence in the social domain was negatively

correlated with dependent stress in academic (r = -.029, *ns*), social (r = -.132, *ns*), and appearance domains (r = -.055, *ns*), although none of these associations was significant. In the three regression models with dependent stress in each of the three domains as criterion variables, however, self-perceived social competence had a positive regression coefficient. Removing this variable from analyses in the case of dependent stress in academic and appearance domains, and removing the domain-incongruent predictors in the case of stress in the social domain did not alter the results.

Test of Stress Generation Specificity Within Domains of Cognitive Vulnerability

In order to assess the vulnerability-specific stress generation model within domains of vulnerability, a series of regression analyses was conducted with each stress domain regressed on to each negative inferential style domain, controlling for initial depressive symptoms and history of clinical depression. Given the number of analyses conducted, an adjustment to the critical α value was made to reduce the likelihood of Type I errors. It should be noted, however, that a specific pattern of results was predicted, for which a null result in most analyses would be *more* supportive of the hypothesis under consideration. For this reason, and to reduce the likelihood of Type II errors, a Bonferroni correction was made for the number of independent tests within each cognitive vulnerability domain (n = 3), producing a critical α value of .016 (.05/3).

The results of these analyses are presented in Table 5. A negative inferential style within the achievement domain predicted greater domain-congruent dependent stress, but also more dependent stress in the social domain. It was, however, not predictive of events in the appearance domain. A negative inferential style in the interpersonal domain was prospectively associated with more dependent stress in the matching social domain and appearance domain, but not the academic domain. Similarly, a negative inferential style in the appearance domain predicted greater dependent stress in its own and the social domains, but not in the academic domain.

Next, the SUEST command in Stata was used to examine the relative strength of the relations between domain-specific cognitive vulnerabilities and dependent stress in different domains. This analysis was conducted only for stress domains that were found to be associated with a domain-specific cognitive vulnerability. No difference was found in the paired comparisons. Specifically, a negative inferential style for achievement events was equally predictive of dependent stress in the matching domain and in the social domain (χ^2 = .69, p = .405); a negative inferential style in the interpersonal domain did not differ in the strength of its association with dependent events in the matching domain relative to those in the appearance domain (χ^2 = 1.90, p = .169); and a negative inferential style in the appearance domain was equally associated with dependent events in the matching and social domains (χ^2 = .02, p = .875).

A set of regression analyses was also conducted with self-perceived competences replacing negative inferential styles as predictor variables, again controlling for baseline BDI-II scores and history of depression. An adjusted critical α value of .016 (.05/3) was also used for this set of analyses. As illustrated in Table 5, low self-perceived competence in academic and appearance domains predicted higher rates of domain-congruent but not domain incongruent

dependent stress. Contrasting with these findings, however, self-perceived social competence was not associated with dependent stress in any of the three domains.

Test of General and Domain-Specific Stress Generation with Interpersonal Vulnerabilities

For each interpersonal vulnerability, a pair of regression analyses was conducted with overall dependent and independent stress as the criterion variable, respectively, controlling for baseline BDI-II scores and past depression (see Table 6). Excessive reassurance-seeking predicted greater overall dependent, but not independent, stress. Negative feedback-seeking, however, did not predict overall dependent or independent stress.

To evaluate the specificity of interpersonal vulnerabilities to dependent stress in the social domain, two sets of regression analyses were conducted with each stress domain regressed on to excessive reassurance-seeking and negative feedback-seeking, respectively, controlling for baseline BDI-II scores and depression history (see Table 7). As before, an adjusted critical α value of .016 (.05/3) was used for these sets of analyses. Excessive reassurance-seeking predicted higher rates of dependent stress in the social, but not academic nor appearance, domain. Negative feedback-seeking did not predict dependent stress in any domain.

Test of Interpersonal Vulnerabilities as Mediators of the Association Between Cognitive Vulnerabilities and Stress Generation

To evaluate the hypothesis that interpersonal vulnerabilities mediate the relation between cognitive vulnerabilities and generated stress, the 95% confidence interval around the product of the two components of the mediational pathway was computed using the PRODCLIN program (MacKinnon, Fritz, Williams, & Lockwood, 2007).[1] Tests of mediation were only considered for dependent stress domains in cases where the interpersonal and domain-congruent cognitive vulnerabilities were significant predictors in earlier analyses. Specifically, excessive reassurance-seeking was assessed as a mediator of the relation between an overall negative inferential style and overall dependent stress, and between negative inferential style for interpersonal events and dependent stress in the social domain. As an additional step required to test these associations, the unstandardized coefficient and standard error for the pathway from the predictor to the mediator were determined by regressing excessive reassurance-seeking on to overall and interpersonal-specific negative inferential styles, respectively, controlling for baseline BDI-II scores and past depression. The unstandardized coefficient and standard error for the pathway from the mediator to the dependent variable were calculated by regressing dependent stress overall and in the social domain, respectively, on to excessive reassurance-seeking, controlling for the relevant predictor variable, baseline BDI-II, and past depression. Entering these values in the PRODCLIN program yielded a 95% confidence interval of -.0001 and .0011 for

[1]This program tests for the significance of the indirect effect in a mediational model by dividing the product of the two unstandardized path coefficients by their pooled standard error (i.e., $\alpha\beta/\sigma_{\alpha\beta}$), around which a 95% confidence interval is then calculated. A confidence interval that does not include zero is indicative of statistically significant mediation at $p < .05$. As the shape of the sampling distribution of the indirect effect tends to be asymmetric (MacKinnon, Lockwood, & Williams, 2004; Shrout & Bolger, 2002), the distribution of the products approach utilized by the PRODCLIN program similarly yields asymmetric confidence intervals. This method for testing mediation has demonstrated greater power and reduced Type I error rates than commonly used procedures for testing for significant mediation that assume a normal distribution of the indirect effect (MacKinnon, 2008).

mediation of the relation between an overall negative inferential style and dependent stress, indicating that excessive reassurance-seeking was not a significant mediator. Excessive reassurance-seeking was not evaluated as a mediator of the relation between a negative inferential style and dependent stress in the social domain as it was not predicted by interpersonal-specific negative inferential style after covarying baseline BDI-II scores and past depression (t = 1.649, p = .101).

Test of Interpersonal Vulnerabilities as Moderators of the Association Between Cognitive Vulnerabilities and Stress Generation

Also considered was the alternative possibility that excessive reassurance-seeking moderated, rather than mediated, the association between cognitive vulnerability and dependent stress both overall and in the social domain. In each case, dependent stress overall and in the social domain, respectively, were regressed on to excessive reassurance-seeking, the domain-congruent negative inferential style and the interaction between the two risk factors, with baseline BDI-II scores and past depression covaried (see Table 8). As shown in Figure 1, higher excessive reassurance-seeking predicted greater rates of overall dependent stress in individuals with an overall highly negative inferential style (t = 2.229, p < .05, f^2 = .06), but not in those with an overall less negative inferential style (t = -.087, p = .931). Similarly, as illustrated in Figure 2, excessive reassurance-seeking predicted greater dependent stress in the social domain among individuals with a highly negative inferential style for interpersonal events (t = 2.499, p < .05, f^2 = .07), but not those with a less negative inferential style in this domain (t = .627, p = .532).

Discussion

The current study sought to test a conceptual extension of the stress generation hypothesis by examining whether specificity exists in the relation between depressogenic vulnerabilities, within the context of cognitive and interpersonal theories of depression, and the dependent stress that they generate. This is also the first study of stress generation to evaluate negative inferential styles separately from other cognitive vulnerabilities in adults. Additionally, it extended the stress generation literature by providing the first test of this phenomenon within the framework of Cole's (1990, 1991) competency-based model of depression and Swann's (1987) self-verification theory, respectively. In doing so, it also provided the first longitudinal assessment of Cole's (1990, 1991) model in adults.

As a preliminary step prior to examining the main study hypotheses, the general stress generation hypothesis was tested. Consistent with previous research (Birgenheir et al., 2010; Kercher & Rapee, 2009; Potthoff et al., 1995; Safford et al., 2007), an overall negative inferential style and excessive reassurance-seeking predicted greater dependent stress. As not all past studies have fully assessed the stress generation hypothesis by establishing the specificity of the relation between vulnerabilities and dependent, rather than independent, stress, the current study extended the extant literature by also showing that neither overall negative inferential style nor excessive reassurance-seeking predicted independent stress. In examining individual domains of cognitive vulnerability in relation to overall dependent stress, we found an identical pattern of results for all three domains of negative inferential

styles, with negative inferential styles in achievement, interpersonal and appearance domains each prospectively predicting greater overall dependent, but not independent, stress. In terms of self-perceived competence, however, this pattern of results was found only for low self-perceived competence within the academic domain. In contrast, self-perceived competence within the appearance domain marginally predicted higher rates of overall dependent ($p = .054$), but not independent, episodic stress, whereas self-perceived competence within the social domain failed to predict either overall dependent or independent stress. Additionally, no indication of a general stress generation effect was found for negative feedback-seeking.

In analyses examining between domains of cognitive vulnerability, we found general support for the vulnerability-specific model of stress generation. That is, negative inferential styles in the achievement, interpersonal, and appearance domains prospectively predicted higher rates of domain-congruent dependent stress when controlling for negative inferential styles in incongruent domains. Furthermore, in all cases, the domain-incongruent negative inferential styles were not predictive of dependent stress in the domain of interest, after controlling for the effect of the domain-congruent negative inferential style. With regards to self-perceived competence, an identical pattern was found for low self-perceived competence in the academic and appearance domains, but not for self-perceived social competence.

Analyses assessing within specific domains of cognitive vulnerabilities produced slightly more mixed results, yet remained largely consistent with study hypotheses. The pattern that emerged within domain-specific negative inferential styles was partially supportive of the vulnerability-specific model of stress generation, with each negative inferential style domain equally predicting higher rates of dependent stress within its own domain and one of the others. More specifically, negative inferential styles in the achievement and appearance domains were equally predictive of greater dependent stress within their own and in the social domains. A negative inferential style in the social domain predicted dependent stress significantly and equally within its own and the appearance domains. In terms of cognitive vulnerability as conceptualized in Cole's (1990, 1991) competency-based model of depression, low self-perceived competence in the academic and appearance domains only predicted domain-congruent dependent stress. In contrast, but also consistent with between-domain analyses, self-perceived social competence did not predict dependent stress in any domain.

Evaluating the specificity of the relation between interpersonal vulnerabilities and generated stress to the social domain yielded supporting evidence for excessive reassurance-seeking, but not for negative feedback-seeking. That is, excessive reassurance-seeking predicted higher levels of dependent stress in the social, but not academic or appearance, domain. Conversely, yet in line with findings for overall generated stress, negative feedback-seeking failed to predict dependent stress in any domain. Finally, excessive reassurance-seeking moderated, but did not mediate, the relation between overall and interpersonal-specific negative inferential styles, respectively, and their corresponding dependent stress.

Thus, the results were largely supportive of a vulnerability-specific stress generation effect, with the evidence appearing to be the strongest in analyses between cognitive vulnerability domains; within vulnerability domains for self-perceived competence; and for the association between excessive reassurance-seeking and generated social stressors.

Several points may be noted regarding the current findings. Although in line with the primary study hypothesis, the finding that a negative inferential style in the academic domain was found prospectively to predict domain-matching generated stress is, in some measure, inconsistent with previous studies that have failed to document a relation between an overall negative inferential style and later achievement-related stress (Safford et al., 2007) and non-interpersonal dependent stress (Shih et al., 2009). Moreover, that this inconsistency may have resulted from differences between achievement-specific and overall negative inferential styles seems not to be the case, as a follow-up analysis revealed an overall negative inferential style also to be predictive of dependent stress in the achievement domain, even after controlling for baseline BDI-II scores and past depression ($t = 2.409$, $p < .05$, $f^2 = .03$).

A likely explanation for these divergent findings is that the measure of academic-related stress used in the current study was expanded to include negative verbal evaluations (e.g., being told you are not cut out for a major) as well as the standard written forms of feedback regarding academic performance (e.g., poor exam grades), so as more comprehensively to document stresses within this domain. Indeed, when academic stress was limited to written evaluations and consequences of performance, the results were consistent with previous findings, with an overall negative inferential style no longer predicting dependent academic stress ($t = 1.415$, $p = .159$). Also worth mentioning, however, is that domain-specific negative cognitive styles, characterized by achievement-related negative inferential style and low self-perceived competence, respectively, remained significantly associated with higher rates of generated academic stress ($t = 2.360$, $p < .05$, $f^2 = .03$ for achievement-specific negative inferential style, and $t = -2.624$, $p < .01$, $f^2 = .04$ for low self-perceived academic competence). In addition to the need for more fine-grained analyses of cognitive vulnerability in a variety of domains, these findings illustrate the importance of incorporating non-written evaluations in measures of dependent academic or achievement stress. This consideration may be of particular relevance in studying achievement-related stress generation with adults in non-academic work settings, where formal evaluations may occur with reduced frequency and informal verbal feedback occur with greater frequency.

The failure to detect a stress generation effect with low self-perceived social competence, either in terms of general or domain-congruent dependent stress, is curious, given the evidence of stress generation with the other negative inferential style and self-perceived competence domains. Interestingly, this lack of finding for self-perceived social competence parallels recent research examining this same construct within the context of a stress-diathesis model of depression and Beck's (1983) event congruency hypothesis (Uhrlass & Gibb, 2007). In this study, self-perceived academic competence, but not self-perceived social competence, interacted with domain-congruent negative events to account for depression symptoms. Previous stress generation studies have also yielded mixed results. Mirroring the results of the current study, Segrin (2001) found little evidence of a relation

between self-perceived interpersonal competence and later social stress. In contrast, Caldwell et al. (2004) reported a relation between negative relational self-schemata, characterized as a composite of social self-worth and self-competence, and prospective peer-related stressors. These results, however, also differed from findings from another study that found *high* self-perceived interpersonal competence to interact with trait hostility to predict greater daily dependent stress (Sahl, Cohen, & Dasch, 2009). Given this wide range of results, more research is required before firm conclusions can be drawn regarding the potential role of self-perceived social competence in stress generation.

Also worth noting is that support for the vulnerability-specific model of stress generation appeared somewhat stronger for self-perceived competences than for depressogenic inferential styles, particularly in within-vulnerability analyses. This difference in specificity patterning in the stress generation effect may in large part be reflective of corresponding differences in cognitive vulnerability as conceptualized by the hopelessness theory (Abramson et al., 1989) and Cole's (1990, 1991) competence-based model of depression. Cole et al. (1990, 1991) and Harter (1999) have conceptualized competence as a multidimensional construct, with significant variability being possible across several relatively distinct domains. For this reason, an overall competence score cannot be derived by a simple summation of competency ratings across several domains. This multidimensional model of cognitive vulnerability has received empirical support (Cole, 1991; Seroczynski et al., 1997). The results of the current study are also consistent with this conceptualization. What is more, in the current sample, self-perceived academic competence was not significantly correlated with self-perceived competence in the social (r = .122, p = .099) or appearance (r = .121, p = .103) domains. In addition, self-perceived social competence was significantly, but modestly, correlated with self-perceived competence in the appearance domain (r = .317, p < .001). In the case of negative inferential styles, the specific vulnerability hypothesis (Abramson et al., 1995) posits that individuals with a negative inferential style in a particular domain are at increased risk of depression when confronted with a domain-congruent negative life event, implying a significant degree of distinctiveness between inferential style domains. Vulnerability-stress studies testing the specific vulnerability hypothesis have yielded mixed but generally supportive results (Abela, 2002; Abela & Seligman, 2000; Metalsky et al., 1987). Interestingly, and paralleling results from the current study, Abela (2002) found negative inferential styles in both achievement and interpersonal domains to be related to depressive symptoms when confronted with an achievement stressor, but this interaction was stronger for an achievement-specific negative inferential style. Collectively, these findings suggest that negative inferential styles in different domains may be significantly interrelated, yet still relatively distinct, constructs. Consistent with this view, the correlations between the three domain-specific negative inferential styles in the current study were moderately strong (rs = .695 to .715, ps < .001).

The current study is characterized by several strengths. Perhaps chief among them is the use of diagnostic interviews and rigorous context-based life events interviews (for information regarding the importance of interview-based measures of diagnostic and life event data, as well as limitations inherent in self-report approaches, see Hammen, Mayol, deMayo, & Marks, 1986; Liu & Alloy, 2010; Monroe & Reid, 2008). Additionally, the four-month

prospective interval was ideal in terms of mitigating memory biases and errors associated with more long-term recall (Brown & Harris, 1982), while also of sufficient duration to allow for meaningful variability in the occurrence of life events.

The present findings, however, must also be interpreted within the context of its limitations. First, the study sample was predominantly female, limiting the generalizability of the findings to males, and precluding the possibility of examining gender interactions. Given the evidence of a degree of gender specificity in stress generation (Liu & Alloy, 2010; Shih, 2006), this is an important consideration for future research. Just as there may be vulnerability processes specific to stress generation in females, it is important also to uncover processes specific to males (Shih, 2006). Second, although the present sample was diverse and a sizeable percentage had a history of depression, additional research is required to replicate current findings with clinical samples. Third, and of particular clinical relevance, the current study provided only a partial assessment of the etiological chain underlying the chronicity of depression articulated in the stress generation hypothesis. Specifically, although cognitive and interpersonal vulnerabilities were assessed in relation to generated stress, the degree to which this stress, in turn, precipitates future depressive episodes is unclear. As only one study to date has examined clinical depression as a pathological consequence of generated stress (Bos, Bouhuys, Geerts, van Os, & Ormel, 2007), there is a need to address this gap in the literature.

Overall, the results from the current study provide a more nuanced understanding of the stress generation effect, and reflect the need for more fine-grained studies of this phenomenon (Hammen, 2006; Shahar et al., 2004). When dependent stress was analyzed according to content domain, general support was found for a degree of specificity in the relation between the nature of a particular vulnerability and the dependent stress that it generates. Inasmuch as individual vulnerabilities generate stress preferentially within their own domains, and inasmuch as the specificity in the match between stressors and underlying vulnerability increases risk for depression within a stress-diathesis framework (Beck, 1983; Abramson et al., 1995), the present study offers an advancement in current understandings of the manner in which stress generation may influence the onset, maintenance, and recurrence of this often chronic condition.

In terms of clinical implications of the current findings, they are suggestive of the importance of assessing depressogenic vulnerability and functioning in multiple domains within treatment settings. To the degree that subsequently generated stress is specific to vulnerability domain, dependent stress within the congruent domain may provide a clear and very focused goal and measure of progress in treatment. In contrast to attempting to reduce stress more generally, this greater precision in targeting maladaptive cognitions and characteristics, and in measuring progress and therapeutic gains, allows for greater customization of treatment to client-specific needs. Thus, the current extension of the stress generation model highlights the importance of similar specificity in identifying vulnerabilities and stress domains as targets and outcome measures of treatment and prevention efforts.

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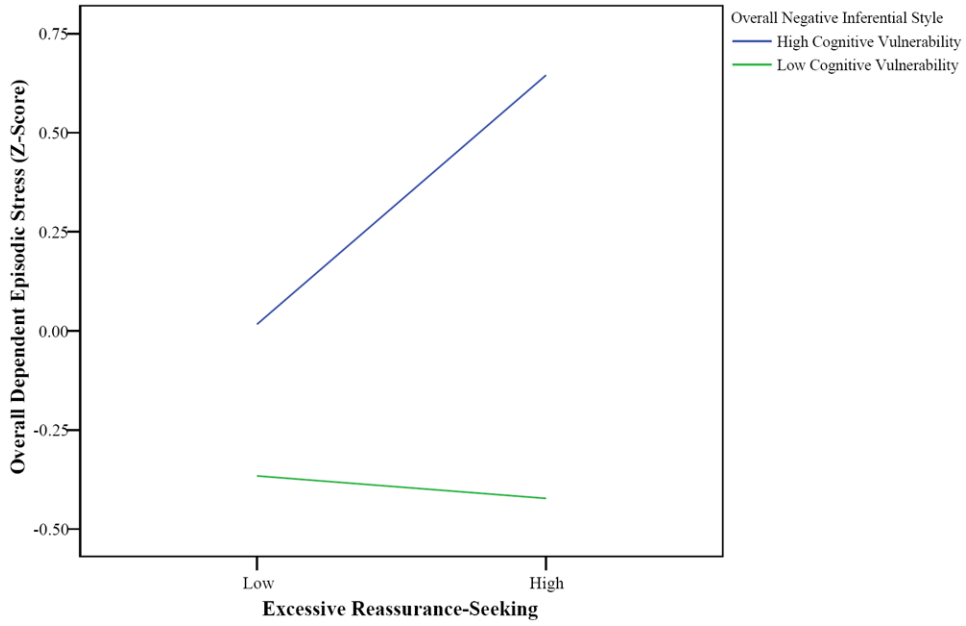

Figure 1.

Interaction between excessive reassurance-seeking and overall negative inferential style in predicting overall dependent episodic stress.

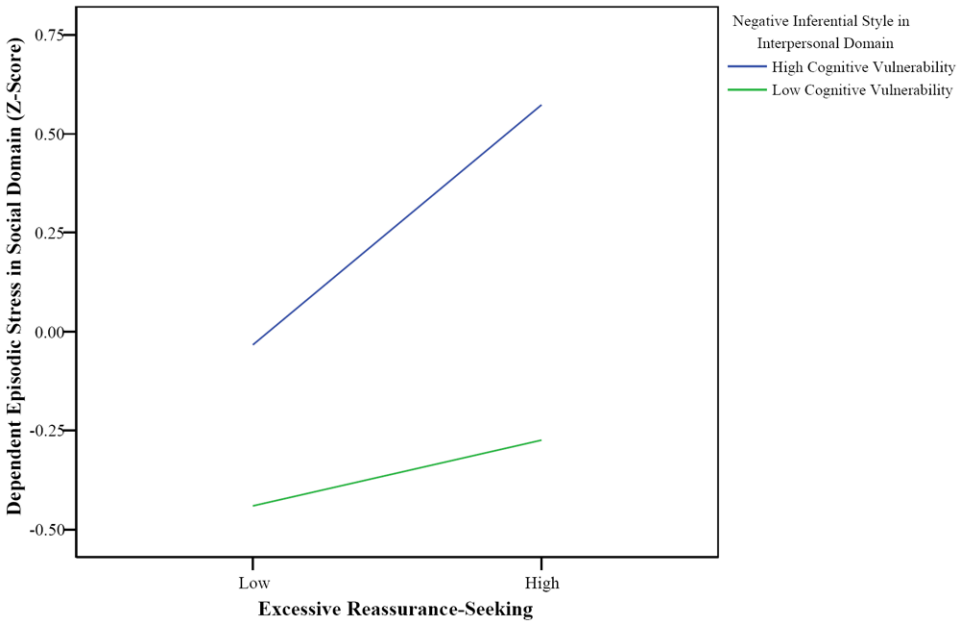

Figure 2.

Interaction between excessive reassurance-seeking and interpersonal-specific negative inferential style predicting dependent episodic stress in social domain.

Table 1

Demographic and descriptive characteristics of the sample.

Variable	*N*	*M (SD)*	%
Gender (female)	140		75.7
Ethnicity			
Caucasian	104		56.2
African-American	44		23.8
Asian-American	23		12.4
Latino-American	9		4.9
Other	5		2.7
Age (years)		19.65 (1.49)	
Education (years)		13.19 (1.02)	
Depression			
History of clinical depression			33.5
Baseline BDI-II		8.19 (7.15)	
Cognitive Vulnerability Variables			
Overall Negative Inferential Style		132.96 (46.86)	
In Achievement Domain		49.62 (17.87)	
In Interpersonal Domain		42.90 (17.62)	
In Appearance Domain		40.32 (16.65)	
Self-Perceived Competence in Academic Domain		11.96 (2.62)	
Self-Perceived Competence in Social Domain		12.45 (2.85)	
Self-Perceived Competence in Appearance Domain		11.09 (2.88)	
Interpersonal Vulnerability Variables			
Excessive Reassurance-Seeking		11.92 (5.46)	
Negative Feedback-Seeking		2.83 (1.97)	
Episodic Stress			
Independent stress		0.75 (0.92)	
Overall Dependent Stress		3.11 (2.84)	
Dependent Stress in Academic Domain		1.11 (1.26)	
Dependent Stress in Social Domain		1.71 (1.67)	
Dependent Stress in Appearance Domain		0.24 (0.70)	

Table 2

Summary of intercorrelations between main study variables.

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	Baseline BDI-II	–															
2	Past depression	.232^{c}	–														
3	CSQ – Overall composite score	.484^{c}	.089	–													
4	CSQ – Achievement	.463^{c}	.091	.896^{c}	–												
5	CSQ – Interpersonal	.372^{c}	.087	.900^{c}	.708^{c}	–											
6	CSQ – Appearance	.427^{c}	.034	.892^{c}	.695^{c}	.715^{c}	–										
7	SPPCS – Academic	-.349^{c}	-.064	-.179^{a}	-.196^{a}	-.141	-.157^{a}	–									
8	SPPCS – Social	-.319^{c}	-.065	-.426^{c}	-.361^{c}	-.478^{c}	-.305^{c}	.122	–								
9	SPPCS – Appearance	-.236^{c}	-.026	-.464^{c}	-.327^{c}	-.409^{c}	-.529^{c}	.121	.317^{c}	–							
10	RSS	.258^{c}	.024	.242^{c}	.172^{a}	.189^{a}	.282^{c}	-.085	-.219^{b}	-.220^{b}	–						
11	FSQ	.322^{c}	.149^{a}	.349^{c}	.342^{c}	.341^{c}	.252^{c}	-.159^{a}	-.399^{c}	-.231^{b}	.099	–					
12	Independent stress	.165^{a}	.192^{b}	.147	.195^{b}	.126	.084	-.125	-.017	-.027	-.044	-.046	–				
13	Dependent stress – general	.436^{c}	.368^{c}	.491^{c}	.470^{c}	.408^{c}	.431^{c}	-.281^{c}	-.111	-.216^{b}	.261^{c}	.195^{b}	.268^{c}	–			
14	Dependent stress – academic	.362^{c}	.183^{a}	.324^{c}	.363^{c}	.218^{b}	.286^{c}	-.317^{c}	-.029	-.104	.113	.132	.127	.738^{c}	–		
15	Dependent stress – social	.346^{c}	.341^{c}	.467^{c}	.430^{c}	.416^{c}	.383^{c}	-.194^{b}	-.132	-.179^{a}	.291^{c}	.195^{b}	.288^{c}	.852^{c}	.348^{c}	–	
16	Dependent stress – appearance	.262^{c}	.171^{a}	.301^{c}	.214^{b}	.264^{c}	.332^{c}	-.116	-.055	-.238^{c}	.128	.091	.137	.627^{c}	.339^{c}	.387^{c}	–

$^{a}p < .05$,

$^{b}p < .01$,

$^{c}p < .001$

Note. BDI-II = Beck Depression Inventory II; CSQ = Cognitive Style Questionnaire; SPPCS = Self-Perception Profile for College Students; RSS = Reassurance-Seeking Scale; FSQ = Feedback Seeking Questionnaire; Spearman correlations are reported for past depression and Pearson correlations for all remaining variables.

Table 3

Cognitive vulnerability domains predicting overall dependent and independent episodic stress.

Cognitive Vulnerability Domain	Dependent Episodic Stress					Independent Episodic Stress				
	Beta	**S.E.**	***t***	***p***	f^2	**Beta**	**S.E.**	***t***	***p***	f^2
Negative inferential styles										
CSQ – Overall Composite Score	.373	.002	5.338	< .001	.16	.097	.002	1.151	.251	-
CSQ – Achievement Domain	.342	.004	4.958	< .001	.14	.155	.005	1.901	.059	-
CSQ – Interpersonal Domain	.299	.004	4.343	< .001	.11	.078	.005	.979	.329	-
CSQ –Appearance Domain	.313	.004	4.542	< .001	.12	.033	.005	.399	.691	-
Self-Perceived Competence										
SPPCS – Academic Domain	-.149	.026	-2.189	.030	.03	-.077	.029	-.998	.320	-
SPPCS – Social Domain	-.032	.024	.465	.642	-	.041	.027	.541	.589	-
SPPCS – Appearance Domain	-.128	.023	-1.943	.054	-	.008	.026	.105	.916	-

Note. CSQ = Cognitive Style Questionnaire; SPPCS = Self-Perception Profile for College Students.

Anxiety Stress Coping. Author manuscript; available in PMC 2014 November 01.

Table 4

	Beta	S.E.	*t*	*p*	f^2		Beta	S.E.	*t*	*p*	f^2
Predicting dependent episodic stress in academic domain											
Step 1						Step 1					
Baseline BDI-II	.288	.060	3.590	<.001		Baseline BDI-II	.366	.056	4.862	< .001	
History of clinical depression	.100	.154	1.372	.172		History of clinical depression	.091	.150	1.290	.199	
CSQ – Interpersonal domain	.007	.006	.067	.946		SPPCS – Social domain	.111	.027	1.473	.143	
CSQ – Appearance domain	.143	.006	1.373	.172		SPPCS – Appearance domain	-.051	.026	-.698	.486	
Step 2						Step 2					
Baseline BDI-II	.238	.061	2.909	.005		Baseline BDI-II	.292	.058	3.757	< .001	
History of clinical depression	.100	.151	1.392	.186		History of clinical depression	.094	.147	1.353	.178	
CSQ – Achievement domain	.276	.006	2.467	.015	.04	SPPCS – Academic domain	-.218	.028	-3.023	.003	.05
CSQ – Interpersonal domain	-.102	.006	-.928	.355		SPPCS – Social domain	.111	.026	1.508	.133	
CSQ – Appearance domain	.047	.007	.430	.668		SPPCS – Appearance domain	-.043	.025	-.592	.554	
Predicting dependent episodic stress in social domain											
Step 1						Step 1					
Baseline BDI-II	.096	.057	1.239	.217		Baseline BDI-II	.233	.055	3.129	.002	
History of clinical depression	.245	.140	3.617	<.001		History of clinical depression	.274	.145	4.011	< .001	
CSQ – Achievement domain	.258	.005	2.654	.009		SPPCS – Academic domain	-.081	.027	-1.138	.257	
CSQ – Appearance domain	.149	.005	1.584	.115		SPPCS – Appearance domain	-.109	.024	-1.586	.114	
Step 2						Step 2					
Baseline BDI-II	.096	.056	1.252	.212		Baseline BDI-II	.234	.057	3.048	.003	
History of clinical depression	.238	.139	3.541	.001		History of clinical depression	.274	.146	4.000	< .001	
CSQ – Achievement domain	.169	.006	1.608	.110		SPPCS – Academic domain	-.081	.027	-1.135	.258	
CSQ – Interpersonal domain	.218	.006	2.114	.036	.03	SPPCS – Social domain	.007	.026	.092	.927	
CSQ – Appearance domain	.056	.006	.549	.584		SPPCS – Appearance domain	-.110	.025	-1.551	.123	
Predicting dependent episodic stress in appearance domain											
Step 1						Step 1					
Baseline BDI-II	.169	.065	1.993	.048		Baseline BDI-II	.236	.061	2.886	.004	
History of clinical depression	.125	.163	1.672	.096		History of clinical depression	.130	.156	1.771	.078	
CSQ – Achievement domain	-.041	.006	-.372	.710		SPPCS – Academic domain	-.029	.029	-.379	.705	

	Beta	S.E.	*t*	*p*	f^2		Beta	S.E.	*t*	*p*	f^2
CSQ – Interpersonal domain	.217	.006	2.097	.037		SPPCS – Social domain	.033	.027	.437	.663	
Step 2						Step 2					
Baseline BDI-II	.136	.064	1.634	.104		Baseline BDI-II	.205	.060	2.538	.012	
History of clinical depression	.144	.159	1.977	.050		History of clinical depression	.137	.153	1.901	.059	
CSQ – Achievement domain	-.163	.006	-1.434	.154		SPPCS – Academic domain	-.020	.029	-.273	.786	
CSQ – Interpersonal domain	.073	.006	.649	.517		SPPCS – Social domain	.090	.027	1.175	.242	
CSQ – Appearance domain	.340	.007	3.042	.003	.06	SPPCS – Appearance domain	-.213	.026	-2.846	.005	.05

Note. BDI-II = Beck Depression Inventory II; CSQ = Cognitive Style Questionnaire; SPPCS = Self-Perception Profile for College Students.

Table 5

Summary of domain-specific regression analyses of cognitive vulnerability domains predicting dependent episodic stress.

Cognitive Vulnerability Domain	Dependent Academic Stress					Dependent Social Stress					Dependent Appearance Stress				
	Beta	**S.E.**	***t***	***p***	f^2	**Beta**	**S.E.**	***t***	***p***	f^2	**Beta**	**S.E.**	***t***	***p***	f^2
Negative inferential styles															
CSQ – Achievement Domain	.248	.004	3.242	.001	.06	.342	.004	4.761	<.001	.13	.121	.005	1.503	.135	-
CSQ – Interpersonal Domain	.099	.004	1.306	.193	-	.349	.004	4.968	<.001	.14	.200	.004	2.578	.011	.04
CSQ –Appearance Domain	.156	.005	2.040	.043	-	.303	.004	4.175	<.001	.10	.282	.005	3.632	<.001	.08
Self-Perceived Competence															
SPPCS – Academic Domain	-.218	.028	-3.030	.003	.05	-.086	.027	-1.200	.232	-	-.029	.029	-.375	.708	-
SPPCS – Social Domain	.097	.026	1.338	.182	-	-.024	.025	-.337	.736	-	.033	.026	.433	.665	-
SPPCS – Appearance Domain	-.023	.025	-.322	.748	-	-.112	.024	-1.634	.104	-	-.191	.025	-2.647	.009	.04

Note. CSQ = Cognitive Style Questionnaire; SPPCS = Self-Perception Profile for College Students.

Table 6

Interpersonal vulnerabilities predicting overall dependent and independent episodic stress.

Interpersonal Vulnerability	Dependent Episodic Stress					Independent Episodic Stress				
	Beta	**S.E.**	***t***	***p***	f^2	**Beta**	**S.E.**	***t***	***p***	f^2
Excessive Reassurance-Seeking	.160	.012	2.425	.016	.03	-.093	.014	-1.243	.215	-
Negative Feedback-Seeking	.045	.035	.665	.507	-	-.122	.039	-1.609	.109	-

Table 7

Interpersonal vulnerabilities predicting domain-specific dependent episodic stress.

Interpersonal Vulnerability	Dependent Academic Stress					Dependent Social Stress					Dependent Appearance Stress				
	Beta	**S.E.**	***t***	***p***	f^2	**Beta**	**S.E.**	***t***	***p***	f^2	**Beta**	**S.E.**	***t***	***p***	f^2
Excessive Reassurance-Seeking	.022	.013	.303	.762	-	.217	.012	3.214	.002	.06	.065	.013	.882	.379	-
Negative Feedback-Seeking	.011	.037	.151	.880	-	.076	.036	1.077	.283	-	-.001	.038	-.018	.985	-

Anxiety Stress Coping. Author manuscript; available in PMC 2014 November 01.

Table 8

Regression models of excessive reassurance-seeking moderating the relation between negative inferential styles and dependent episodic stress.

	Beta	S.E.	*t*	*p*	f^2
Predicting overall dependent episodic stress					
Baseline BDI-II	.179	.053	2.534	.012	
History of clinical depression	.247	.131	4.046	<.001	
CSQ – Overall composite score	-.044	.003	-.282	.778	
RSS	-.391	.035	-2.105	.037	
CSQ – Overall composite score × RSS	.734	<.001	2.839	.005	.05
Predicting dependent episodic stress in social domain					
Baseline BDI-II	.095	.052	1.342	.182	
History of clinical depression	.255	.133	3.945	<.001	
CSQ – Interpersonal domain	-.092	.009	-.558	.578	
RSS	-.309	.033	-1.723	.087	
CSQ – Interpersonal domain × RSS	.716	.001	2.817	.005	.05

Note. BDI-II = Beck Depression Inventory II; CSQ = Cognitive Style Questionnaire; RSS = Reassurance-Seeking Scale.