

MALADAPTIVE SCHEMAS AND DEPRESSION: TESTS OF STRESS GENERATION AND DIATHESIS-STRESS MODELS

NICOLE K. EBERHART
RAND Corporation

RANDY P. AUERBACH AND JOSEPH BIGDA-PEYTON
Harvard Medical School–McLean Hospital

JOHN R. Z. ABELA*
Rutgers University

There is strong evidence that life stress is associated with vulnerability to depression; however, the specific mechanism of this effect is unclear. The current study aimed to address this gap in the literature by examining both diathesis-stress and stress generation models of vulnerability to depressive symptoms in a sample of emerging adults assessed weekly over a six-week period. In support of the stress generation perspective, idiographic multilevel modeling analyses indicated that a number of different schemas (encompassing emotional deprivation, mistrust/abuse, social isolation, defectiveness, failure, and subjugation) predicted interpersonal stress generation, which in turn predicted depressive symptoms. Results indicated partial support for the diathesis-stress model, as moderation analyses revealed a trend in which dependent interpersonal stress interacted with self-sacrifice schemas in predicting depressive symptoms. While both diathesis-stress and stress generation perspectives contribute to our understanding of depression's etiology, the results provide preliminary evidence that stress generation may be a particularly important mechanism through which maladaptive schemas impact depressive symptoms.

The research reported in this article was supported by a Canadian Psychiatric Research Foundation (CPRF) Award granted to John Abela.

Address correspondence to Nicole K. Eberhart, RAND Corporation, 1776 Main Street, P.O. Box 2138, Santa Monica, CA 90407-2138; E-mail: eberhart@rand.org.

*Deceased.

Decades of research has provided strong evidence that life stress is associated with vulnerability to depression (e.g., see Brown & Harris, 1989; Hammen, 2005; Paykel, 2003). What is unclear, however, is the *mechanism* through which stress exerts its effect. Diathesis-stress models (e.g., Ingram & Luxton, 2005) posit that individuals have pre-existing vulnerabilities that contribute to depressive symptoms and diagnoses only in the presence of life stress (e.g., Abela, Aydin, & Auerbach, 2006; Flett, Hewitt, Blankstein, & Mosher, 1995; Metalsky & Joiner, 1992; Spangler, Simons, Monroe, & Thase, 1997). In contrast, stress-generation models (Hammen, 1991) posit that vulnerability factors make individuals more likely to contribute to the occurrence of stressors in their lives which in turn increase their vulnerability to depressive symptoms and disorders (e.g., Auerbach, Eberhart, & Abela, 2010; Bottonari, Roberts, Kelly, Kashdan, & Cieśla, 2007; Hankin, Kassel, & Abela, 2005; Holahan, Moos, Holahan, Brennan, & Schutte, 2005; Shahar, Joiner, Zuroff, & Blatt, 2004). Importantly, these two mechanisms are not mutually exclusive; rather, both may increase an individual's vulnerability to depression. It is difficult, however, to assess the relative contributions of these approaches as they have rarely been examined in the same sample. The current study addresses this gap by examining both diathesis-stress and stress generation models of the impact of maladaptive schemas on vulnerability to depressive symptoms.

STRESS GENERATION AND DEPRESSION

Diathesis-stress models have contributed a great deal to our understanding of vulnerability to depressive symptoms and disorders through their examination of how environmental stressors differentially impact individuals with varying degrees of vulnerability. At the same time, a limitation of such models is that they do not explicitly address how individuals affect their environments by shaping the stressors they experience (Hammen, 1991). Hammen (1991) was the first to examine this alternative approach to understanding vulnerability to depression in a study which found that women with a history of depressive disorder experienced higher levels of dependent stressors, stressors that are dependent in part on the actions of the individual, as compared to women with bipolar disorder and medical illness. The term stress generation was coined to describe this phenomenon.

Several studies have replicated the finding that depressive symptoms and diagnoses are associated with higher levels of dependent stress (e.g., Chun, Cronkite, & Moos, 2004; see Hammen, 2005, for a review; Harkness, Monroe, Simons, & Thase, 1999; Shih, 2006). Relatively few studies, however, have examined the mechanisms of increased stress generation. Given that individuals with a history of depression contribute to stress generation even when they are not currently in a depressive episode (e.g., Daley et al., 1997; Hammen, 1991), it seems that the cognitions and behaviors that contribute to dependent stressors may not be specifically associated with the depressive state; rather, they may be more enduring characteristics of individuals who have experienced depression. Indeed, Hammen and colleagues have hypothesized that more stable traits, behaviors, and social contexts of individuals with a history of depression make them more likely to contribute to stressors, and that these stressors, in turn, contribute to depression (e.g., Daley et al., 1997; Hammen, 1991). Yet, in contrast to the more extensive research examining main effect and diathesis-stress models, relatively few studies have examined the factors that contribute to this stress generation process. In particular, while cognitive vulnerability factors have been extensively examined in main effect and diathesis-stress models of depressive symptoms and diagnoses (e.g., Abela et al., 2006; Alloy et al., 2006; Hankin, Abramson, & Siler, 2001; Hankin, 2008; Iacoviello, Alloy, Abramson, Whitehouse, & Hogan, 2006), there is a paucity of research delineating the potential role of cognitions in stress generation (see Auerbach et al., 2010; Safford, Alloy, Abramson, & Crossfield, 2007; Shih, Abela, & Starrs, 2009, for exceptions).

THE ROLE OF MALADAPTIVE SCHEMAS

Past research on cognitive vulnerability has found evidence that maladaptive schemas are associated with higher levels of depressive symptoms (e.g., Glaser, Campbell, Calhoun, Bates, & Petrocelli, 2002; Harris & Curtin, 2002). A schema may be defined as “any broad organizing principle for making sense of one’s life experience” (Young, Klosko, & Weishar, 2003, p. 7). While schemas can provide useful heuristics with which to organize the world, they can also be maladaptive when they involve pervasive, inflexible, and dysfunctional cognitions (e.g., Young, 1990). Expanding upon

Beck's (1967, 1983) cognitive theory of depression, Young (Young, 1990, 1994; Young et al., 2003) has suggested that there are a number of specific maladaptive schemas that develop in childhood and are elaborated throughout life that place individuals at increased risk for psychopathology.

Indeed, studies of both clinical and university samples have provided evidence that maladaptive schemas in all five domains identified by Young are associated with higher current levels of depressive symptoms, including schemas in the domain of: (a) disconnection and rejection, encompassing emotional deprivation, abandonment, mistrust/abuse, social isolation, and defectiveness/shame (e.g., Cooper, Rose, & Turner, 2005; Cukor & McGinn, 2006; Glaser et al., 2002; Harris & Curtin, 2002; McGinn, Cukor, & Sanderson, 2005; Petrocelli, Glaser, Calhoun, & Campbell, 2001; Schmidt, Joiner, Young, & Telch, 1995; Shah & Waller, 2000; Simmons, Cooper, Drinkwater, & Stewart, 2006; Welburn, Coristine, Dagg, Pontefract, & Jordan, 2002; Wright, Crawford, & Del Castillo, 2009), (b) impaired autonomy and performance including schemas related to failure, dependence/incompetence, vulnerability to harm, and enmeshment (e.g., Cooper et al., 2005; Glaser et al., 2002; Harris & Curtin, 2002; McGinn et al., 2005; Petrocelli et al., 2001; Schmidt, et al., 1995; Shah & Waller, 2000; Simmons et al., 2006; Welburn et al., 2002; Wright et al., 2009), (c) other-directedness including subjugation and self-sacrifice (Glaser et al., 2002; McGinn et al., 2005; Petrocelli et al., 2001; Shah & Waller, 2000; Simmons et al., 2006; Welburn et al., 2002; Wright et al., 2009), (d) impaired limits specifically related to insufficient self-control (Cooper et al., 2005; Glaser et al., 2002; Harris & Curtin, 2002; McGinn et al., 2005; Shah & Waller, 2000; Simmons et al., 2006; Welburn et al., 2002), and (e) over-vigilance domain including emotional inhibition and unrelenting standards (Cooper et al., 2005; Glaser et al., 2002; McGinn et al., 2005; Shah & Waller, 2000; Simmons et al., 2006). However, it is important to note that past research examining specific schemas as vulnerability factors for depressive symptoms has largely examined main effect models rather than diathesis-stress or stress generation explanatory models. Thus, there remain key gaps in our knowledge of how Young's schemas impact depressive symptoms.

Indeed, the question remains, how do schemas make individuals vulnerable to depression? A number of studies have provided evidence that cognitive vulnerability factors confer risk for depressive symptoms and episodes in the presence of stressors (e.g., Abela et

al., 2006; Hankin et al., 2001; Metalsky & Joiner, 1992; see Scher, Ingram, & Segal, 2005, for a review). For instance, one study found evidence that dependent and self-critical schemas interact with stressors in predicting depression (Hammen, Marks, Mayol, & deMayo, 1985). Most notably, there is substantial evidence that dysfunctional attitudes, which are another form of cognitive vulnerability, predict depressive symptoms when activated by stressful life events (e.g., Dykman & Johll, 1998; Hankin, Abramson, Miller, & Haefffel, 2004; again, see Scher et al., 2005, for a review). This line of research has provided global evidence that maladaptive schemas predict depression when activated by stressful life events. However, previous research has not identified the specific schemas that may be problematic in interaction with stress. Young (1994) has suggested that it is important to identify the particular schemas that are implicated in disorders like depression, as they could then be specifically targeted in cognitive therapy. Furthermore, from a theoretical perspective, if different schema domains are differentially associated with depressive symptoms, this may tell us something about the etiology of depression. For instance, it could be the case that cognitive vulnerability to depressive symptoms is not characterized by a way of thinking that is universally applied, but rather by specific kinds of thoughts which occur in specific schema domains. Understanding how these specific domains contribute to depressive symptoms in combination with stress may help us understand more about the nature of depression vulnerability. However, diathesis-stress models have not been examined in relation to Young's specific maladaptive schemas.

Another possibility is that maladaptive schemas lead individuals to contribute to more stress in their lives, which in turn makes them more susceptible to depressive symptoms and episodes. Indeed, Young's theory (Young 1990; Young et al., 2003) suggests that maladaptive schemas contribute to a variety of difficulties that increase susceptibility to psychopathology, but this conceptual pathway has not been empirically operationalized and tested. To this end, research on stress generation may help explain how schemas impact depressive symptomatology. Indeed, there is evidence that other cognitive vulnerability factors such as attributional style, self-criticism, perceived control, and hopelessness contribute to stress generation (e.g., Auerbach et al., 2010; Joiner, Wingate, & Otamendi, 2005; Priel & Shahar, 2000; Safford et al., 2007; Shahar et al., 2004; Simons, Angell, Monroe, & Thase, 1993), and in turn, depressive

symptoms (e.g., Joiner et al., 2005; Priel & Shahar, 2000). Further, there is evidence that interpersonal vulnerability factors such as anxious attachment, sociotropy/dependency, and reassurance-seeking contribute to stress generation and subsequent depressive symptoms (e.g., Eberhart & Hammen, 2010; Hankin et al., 2005; Potthoff, Holahan, & Joiner, 1995; Shih, 2006). This body of research suggests that both cognitive and interpersonal vulnerability factors are implicated in stress generation processes that contribute to depressive symptomatology. Consequently, there are both conceptual and empirical reasons to posit that schemas, and interpersonal schemas in particular, may help us better understand these processes. Existent research, however, has not empirically examined this issue in relation to Young's maladaptive schemas. Furthermore, diathesis-stress and stress generation models utilizing Young's schemas have not been examined in the same sample, which would enable comparison of the models.

THE CURRENT STUDY

In sum, while there is a large body of research examining cognitive vulnerability to depression, and a smaller body of research examining schemas in particular, there are still some key gaps in our knowledge of the mechanisms through which schemas impact depression. The current study aimed to address these gaps by examining a wide array of specific maladaptive schemas in both stress generation and diathesis-stress models. Further, the study examined stress and depressive symptoms on a weekly basis, which enabled an idiographic examination of individual fluctuations in levels of stress and symptomatology. The study also integrated cognitive and interpersonal perspectives on depression by examining interpersonal schemas, in particular.

The current study examined depressive symptoms in an analogue sample of female university students assessed weekly over a six-week period. The study examined young women because females are more likely than males to experience both depressive episodes (e.g., Nolen-Hoeksema & Girgus, 1994) and interpersonal stressors (e.g., Shih, Eberhart, Hammen, & Brennan, 2006). Further, the study specifically focused on schemas with an interpersonal component as research indicates that interpersonal factors play important roles

in both stress generation and depressive symptoms (e.g., Eberhart & Hammen, 2010; Hankin et al., 2005). Therefore, schemas encompassing the domains of disconnection and rejection, impaired autonomy and performance, and other-directedness were examined, and additionally, consistent with the focus on the interpersonal schemas, interpersonal stressors were examined. The study focused on interpersonal stressors, as a wide body of research has found that interpersonal stressors are strongly associated with depressive symptoms and episodes in women (see Hammen, 2003, for a review) and may be particularly relevant to a college-aged sample where developing close relationships is an important developmental task during the transition to adulthood (e.g., Erikson, 1950). Further, interpersonal stressors have been emphasized in both stress generation (e.g., see Hammen, 2006, for a review; Hankin et al., 2005) and diathesis-stress (e.g., Mazure, Bruce, Maciejewski, & Jacobs, 2000; Shahar et al., 2004) models of depression. In particular, rather than focusing on major stressors, the current study examines how minor, everyday hassles affect subclinical symptom fluctuations, given evidence that hassles commonly occur (e.g., Maybery, Neale, Arentz, & Jones-Ellis, 2007; McIntyre, Korn, & Matsuo, 2008) and contribute to depressive symptoms (e.g., Hutchinson & Williams, 2007; Sherry, Hewitt, Flett, & Harvey, 2003). Thus, hassles seem to be important to understand, yet relatively little research on diathesis-stress and stress generation models of depression has examined minor, everyday hassles, as compared to stressors of greater magnitude.

Consistent with past research, the study's first step was to test main effect models in order to confirm that the maladaptive schemas examined conferred vulnerability to depressive symptoms. In order to better understand the relationship between schemas, dependent stress, and depressive symptoms, both diathesis-stress models and stress generation models of vulnerability were analyzed. To test the diathesis-stress perspective, the study examined a moderation model in which specific maladaptive schemas interact with dependent interpersonal stressors to predict depressive symptoms. When examining a stress generation perspective, the study first examined specific maladaptive schemas as predictors of dependent interpersonal stressors, and then tested a mediation model in which the relationship between schemas and depressive symptoms is in part explained by the mediating role of dependent stress.

METHOD

PARTICIPANTS

The participants in the current study were recruited through an upper-level psychology course at McGill University. Participation was completely voluntary, and participants were informed that they could cease participation at any time. In return, participants received an additional 2.5% on their final grade. Students who chose not to participate were given an option of earning extra credit by completing an alternate assignment (refusal rate was 3.4%). The final sample consisted of 118 female university students. Participants' ages ranged from 19 to 27 (mean = 21.28). The sample was 68.6% Caucasian, 9.3% Asian, 1.4% African-American, 1.4% Hispanic, and 18.6% other.

PROCEDURE

Approval for the study was granted by McGill University's ethics board, and the treatment of participants was in accordance with APA ethical standards. During the initial assessment participants completed a demographics form, consent forms, and the following questionnaires: (1) Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977), (2) General Hassles Scale for Students—Dependent Interpersonal Hassles Subscale (GHSS; Blankstein & Flett, 1993), and (3) Young Schema Questionnaire—Short Form (YSQ; Young, 1998). Follow-up assessments occurred once a week for five weeks, and participants completed self-report measures assessing depressive symptoms and dependent interpersonal stress. Participant retention and compliance during the follow-up assessments ranged from 94% to 98%.

MEASURES

Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977). The CES-D is a 20-item self-report measure that assesses levels of depressive symptoms. Examples of questions include: "I felt sad," "I felt hopeless about the future," and "I felt lonely." Items on the scale ranged from 0 to 3 with higher scores reflecting greater

depressive symptomology. While the CES-D was administered every 6 weeks, participants reported how they felt during the past week by using the following scale: rarely (<1 day), some or a little of the time (1-2 days), occasionally or a moderate amount of time (3-4 days), and most or all of the time (5-7 days). The CES-D has been shown across numerous studies to have strong test-retest reliability and high correlations with other measures of depressive symptoms (Geisser, Roth, & Robinson, 1997). In the current study, the Cronbach's alpha ranged from .88 to .95 across administrations which indicates high internal consistency.

General Hassles Scale for Students (GHSS; Blankstein & Flett, 1993). The GHSS is a self-report questionnaire that was developed to assess social and academic hassles occurring in the past week. A consensus team rated whether each item was (a) dependent and (b) interpersonal in nature. Items were considered dependent if they were at least in part dependent on the actions of the individual. Based on this operational definition, events that were equally due to the subject and factors outside the subject's control were considered dependent. Items were considered interpersonal if they predominately involved relationships with other people. Items were only included in the present study if all members of the consensus rating team evaluated them as being both dependent and interpersonal. In other words, only items for which there was unanimous agreement were utilized. A total of 4 items were rated as both dependent and interpersonal, and thus were included in the present analyses. These items encompassed hassles in relationships with family, friends, and romantic partners. Participants were asked to rate the persistence of hassles, which refers to their frequency and duration, on a scale ranging from 0 (no hassle, not at all present) to 6 (extreme hassle, very high frequency and/or duration) with higher scores reflecting a greater frequency and/or duration of hassles.

Young Schema—Short Form (YSQ; Young, 1998). The YSQ is a 75-item self-report questionnaire that assesses the presence of schemas from five theoretical domains. The three domains with the strongest interpersonal component will be examined in the current study. The first domain, disconnection and rejection, is composed of items assessing: (1) abandonment/instability, (2) mistrust/abuse, (3) emotional deprivation, (4) defectiveness/shame; and (5) social isolation/alienation. The second domain, impaired autonomy, and performance, consists of (1) dependence/incompetence, (2) vul-

nerability to harm/illness, (3) failure, and (4) enmeshment/undeveloped self. Finally, the other-directedness domain includes (1) subjugation, and (2) self-sacrifice. In the current study, Cronbach's alphas ranged from .75 to .92 indicating moderate to high internal consistency.

RESULTS

PRELIMINARY ANALYSES

Means, standard deviations, and correlations among all Time 1 measures are reported in Table 1. Intercorrelations between the various schemas examined were largely moderate, and ranged from .09 to .61.

OVERVIEW OF ANALYTIC STRATEGY

Several sets of analyses were conducted using SAS (version 9.2) mixed procedure. Maximum likelihood estimation was used to model missing data (e.g., Enders, 2001; Schafer & Graham, 2002). All of the idiographic, multilevel analyses examined two-level models in which level 1 estimated within-subject differences and level 2 examined between-subject differences. The dependent variable, a level 1 variable, was within-subject fluctuations in depressive symptoms_(Time T) during the follow-up interval. Symptom scores were centered around each participant's individual mean (i.e., group-mean centered) such that scores reflected upwards or downwards fluctuations in an individual's level of depressive symptoms compared to his or her mean level of symptoms over the course of the study. The primary predictors of follow-up depressive symptom_(Time T) scores were schemas and fluctuations in hassles_(Time T-1) during the follow-up period. Participants' between-subject, level 2 scores on measures of maladaptive schemas were grand-mean centered in order to enhance interpretability (i.e., high versus low vulnerability can be interpreted based on whether scores are above or below the grand mean). Similar to symptoms, hassles_(Time T-1) is a within-subjects, level 1 variable. As such, scores were centered around each participant's mean so that they reflect upwards or downwards fluctuations in an individual's reported occurrence

TABLE 1. Means, Standard Deviations, and Pearson Correlations for All Time 1 Study Variables

	1	2	3	4	5	6	7	8	9	10	11	12	13
1 Depressive Symptoms	—	.41*	.31*	.34*	.33*	.42*	.37*	.29*	.25*	.22*	.12	.26*	.15
2 Dependent Interpersonal Stress		—	.21†	.34*	.40*	.26*	.12	.20†	.27*	.28*	.24*	.26*	.18†
3 Emotional Deprivation			—	.43*	.45*	.46*	.50*	.47*	.42*	.24*	-.08	.32*	.12
4 Abandonment				—	.62*	.45*	.40*	.43*	.41*	.47*	.27*	.42*	.28*
5 Mistrust/Abuse					—	.52*	.50*	.45*	.37*	.41*	.22*	.40*	.23*
6 Social Isolation						—	.61*	.55*	.43*	.32*	.21†	.59*	.09
7 Defectiveness							—	.56*	.43*	.44*	.20†	.45*	.17†
8 Failure								—	.54*	.35*	.32*	.57*	.23*
9 Dependence/Incompetence									—	.45*	.22*	.55*	.26*
10 Vulnerability to Harm										—	.27*	.41*	.32*
11 Enmeshment											—	.46*	.33*
12 Subjugation												—	.29*
13 Self Sacrifice													—
Mean	13.35	6.55	9.98	11.41	11.06	10.55	7.86	9.31	8.45	8.99	7.72	9.14	15.69
Standard Deviation	8.16	4.68	5.60	5.38	5.17	5.34	4.32	4.48	3.70	3.94	3.42	4.19	4.97

Note. *df* = 141, †*p* < .05, **p* < .01.

of hassles as compared to his or her mean level of hassles. Thus, we examined whether individuals who reported higher levels of hassles at time T-1 as compared to their own mean level of hassles experienced higher levels of depressive symptoms at time T. In other words, the time-lagged models examined whether individuals experience increases in depressive symptoms following increases in stress the prior week.

Commonly used covariance structures in studies in which multiple responses are obtained from the same individual over time (and consequently within-subject residuals over time are likely to be correlated) include heterogeneous autoregressive, autoregressive, banded Toeplitz, and compound symmetry. In order to select one of these covariance structures for our analyses, we fitted models utilizing each structure and chose the best fit based on Akaike information criterion (AIC and AICC) and Schwarz Bayesian criterion (BIC).

Baseline depressive symptoms were controlled for in all analyses, in order to partial out the effects of initial symptomatology.¹ This enabled the study to distinguish the effects of the predictors (i.e., schemas) from the effects of baseline depressive symptoms on the dependent variables, particularly stress generation. This approach is consistent with previous research on cognitive and interpersonal predictors of stress generation (e.g., Hankin et al., 2005; Holahan et al., 2005; Potthoff et al., 1995; Shih, 2006).

We utilized the following data analytic approach to examine our hypotheses. First, we examined whether maladaptive schemas predicted higher levels of depressive symptoms during the follow-up period. Second, in order to examine the diathesis-stress models, we used Baron and Kenny's (1986) guidelines for testing moderation. More specifically, we examined whether maladaptive schemas interacted with higher levels of dependent interpersonal stressors to predict higher levels of depressive symptoms over time. Last, mediation was tested according to Bauer, Preacher, and Gil's (2006) guidelines for evaluating indirect effects in multilevel models. In doing so, analyses examined maladaptive schemas as predictors of

1. All analyses were run both with and without controlling for baseline depressive symptoms, and the results were comparable using both approaches. However, as controlling for baseline levels of depressive symptoms is standard when examining the stress generation framework, depressive symptoms are included as a covariate in the results presented. Including depressive symptoms as a covariate provides a more conservative and stringent approach for examination of all hypotheses.

dependent interpersonal stress. Dependent interpersonal stress was then examined as a predictor of depressive symptoms. Finally, the study tested dependent interpersonal stress as a mediator of the relationships between specific maladaptive schemas and depressive symptoms. It is important to note that while the mediation models are described in a step-by-step fashion, the final model that tests for mediation is estimated in a single, simultaneous model. Such an approach is ideal for examining mediation models that include repeated measures as one can directly estimate the covariance of the random effects that are encompassed in different Level 1 and Level 2 models.

In order to reduce Type I error, a conservative alpha of .01 was used as the cutoff for statistical significance in tests of study hypotheses, which provides 99% confidence that a given result is not due to chance. Effects at the .05 level were considered marginally significant. Random intercepts, random slopes, and covariance structures were included in models when at least marginally significant ($p \leq .05$).

MALADAPTIVE SCHEMAS AS PREDICTORS OF DEPRESSIVE SYMPTOMS

Multilevel modeling analyses were conducted to examine maladaptive schemas as predictors of fluctuations in depressive symptoms over the follow-up period. Additionally, baseline depressive symptoms were entered in the first step of all analyses in order to examine prospective changes in symptomatology over the follow-up period. This first step was the same for all the analyses. In the second step, each type of schema was individually examined in a series of separate models, controlling for the effect of baseline depressive symptoms. All models utilized an autoregressive covariance structure and included a random intercept, both of which were highly significant ($p < .0001$) in each model.

Results of these analyses are summarized in Table 2. A number of different maladaptive schemas predicted increases in depressive symptoms over the follow-up period. In the domain of disconnection and rejection, schemas related to mistrust/abuse, social isolation, and defectiveness all predicted depressive symptoms ($p < .01$), while abandonment schemas did not. Emotional deprivation was a marginally significant predictor of depressive symptoms ($p < .05$).

TABLE 2. Maladaptive Schemas as Predictors of Depressive Symptoms

	<i>b</i>	<i>SE</i>	<i>t</i>
Step 1: Baseline Depressive Symptoms	4.64	.69	6.71**
Step 2: Individual Schemas			
Disconnection and Rejection			
Emotional Deprivation	1.89	.72	2.62 [†]
Abandonment	1.18	.74	1.59
Mistrust/Abuse	2.61	.72	3.65**
Social Isolation	2.15	.76	2.85*
Defectiveness	3.42	.69	4.93**
Impaired Autonomy and Performance			
Failure	1.95	.73	2.69*
Dependence/Incompetence	1.39	.71	1.95
Vulnerability to Harm	1.20	.72	1.66
Enmeshment	-.39	.73	-.54
Other-Directedness			
Subjugation	1.65	.76	2.17 [†]
Self Sacrifice	.98	.72	1.36

Notes. All Step 2 analyses controlled for the effect of initial depressive symptoms, entered in Step 1. All models included a random intercept and autoregressive covariance structure, both of which were highly significant ($p < .0001$). $df = 112$, [†] $p < .05$, * $p < .01$, ** $p < .001$.

In the domain of impaired autonomy and performance, only failure schemas significantly predicted increases in depressive symptoms ($p < .01$). Schemas related to vulnerability to harm and enmeshment did not predict changes in depressive symptoms. In the domain of other-directedness, subjugation schemas marginally predicted increases in depressive symptoms over the follow-up period ($p < .05$), but self-sacrifice schemas did not.

DIATHESIS-STRESS (MODERATION) ANALYSES PREDICTING DEPRESSIVE SYMPTOMS

The next set of analyses examined whether the interactions between specific maladaptive schemas and dependent interpersonal stress were significant predictors of changes in levels of depressive symptoms, after controlling for the main effects of the schema and dependent stress, as well as baseline depressive symptoms. Once

again, these models examined each maladaptive schema separately. All models included a random intercept ($p < .001$), a random slope ($p \leq .05$), and an autoregressive heterogeneous covariance structure ($p < .0001$).

The results of these moderation analyses are summarized in Table 3. It is important to note that only one marginally significant 2-way, cross-level interaction emerged. Specifically, there was a trend in which higher levels of dependent interpersonal stress interacted with self-sacrifice schemas in predicting higher levels of depressive symptoms ($b = .29$, $SE = .11$, $t(447) = 2.38$, $p < 0.05$). The fixed effects model was utilized to plot predicted follow-up depressive symptom scores for individuals with low or high self-sacrifice scores (plus or minus 1.5 between-subject standard deviations) who reported a low or high occurrence of dependent interpersonal stress (plus or minus 1.5 within-subject standard deviations; see Figure 1). Analyses were conducted for each self-sacrifice condition examining whether the slope of the relationship between follow-up dependent interpersonal stress and self-sacrifice significantly differed from 0. While follow-up dependent interpersonal stress was associated with increases in follow-up depressive symptoms for individuals possessing high levels of self-sacrifice ($b = 0.75$, $SE = 0.22$, $t(447) = 3.50$, $p < 0.001$), it was not associated with such symptoms for individuals who reported low levels of self-sacrifice ($b = -0.12$, $SE = 0.22$, $t(447) = -0.54$, *ns*). All the other interaction terms were nonsignificant.

MALADAPTIVE SCHEMAS AS PREDICTORS OF DEPENDENT INTERPERSONAL STRESS

The next set of analyses examined maladaptive schemas as prospective predictors of dependent interpersonal stress. Once again, baseline depressive symptoms were entered in the first step in all analyses, and the individual maladaptive schemas were examined in a second step, which controlled for baseline depressive symptoms. All models utilized a compound symmetry covariance structure and included a random intercept, which were both highly significant ($p < .0001$) in each model.

The results of these analyses are presented in Table 4. With the exception of self-sacrifice, the remaining maladaptive schemas were significant predictors of dependent interpersonal stress generation over the follow-up period. In the domain of disconnection and re-

TABLE 3. Diathesis-Stress (Moderation) Analyses Predicting Depressive Symptoms

	<i>b</i>	<i>SE</i>	<i>t</i>
Step 1: Baseline Depressive Symptoms	4.64	.69	6.71**
Step 2: Main Effects and Interactions			
Disconnection and Rejection			
Emotional Deprivation	1.74	.70	2.49 [†]
Dependent Interpersonal Stress	.32	.12	2.61*
<i>Emotional Deprivation X Stress</i>	.17	.12	1.46
Abandonment	1.05	.72	1.46
Dependent Interpersonal Stress	.31	.13	2.44 [†]
<i>Abandonment X Stress</i>	.11	.12	.95
Mistrust/Abuse	2.56	.69	3.71**
Dependent Interpersonal Stress	.28	.12	2.25 [†]
<i>Mistrust/Abuse X Stress</i>	.18	.11	1.65
Social Isolation	2.10	.73	2.88*
Dependent Interpersonal Stress	.33	.12	2.61*
<i>Social Isolation X Stress</i>	.02	.12	.14
Defectiveness	3.33	.67	4.96**
Dependent Interpersonal Stress	.33	.12	2.67*
<i>Defectiveness X Stress</i>	.11	.13	.86
Impaired Autonomy and Performance			
Failure	2.00	.70	2.87*
Dependent Interpersonal Stress	.33	.13	2.61*
<i>Failure X Stress</i>	.02	.12	.87
Dependence/Incompetence	1.42	.69	2.06 [†]
Dependent Interpersonal Stress	.33	.13	2.59*
<i>Dependence/Incompetence X Stress</i>	-.01	.12	-.06
Vulnerability to Harm	1.22	.70	1.74
Dependent Interpersonal Stress	.33	.13	2.60*
<i>Vulnerability to Harm X Stress</i>	.04	.12	.30
Enmeshment	-.21	.71	-.30
Dependent Interpersonal Stress	.32	.12	2.61*
<i>Enmeshment X Stress</i>	-.14	.12	-1.15
Other-Directedness			
Subjugation	1.68	.73	2.29 [†]
Dependent Interpersonal Stress	.33	.12	2.63*
<i>Subjugation X Stress</i>	-.06	.13	-.50
Self Sacrifice	.96	.70	1.37
Dependent Interpersonal Stress	.32	.12	2.63*
<i>Self Sacrifice X Stress</i>	.29	.12	2.38 [†]

Notes. *df* = 112 for baseline depressive symptoms and each schema, *df* = 447 for dependent interpersonal stress and the interaction term. All Step 2 analyses controlled for the effect of initial depressive symptoms, entered in Step 1. [†]*p* < .05; **p* < .01; ***p* < .001.

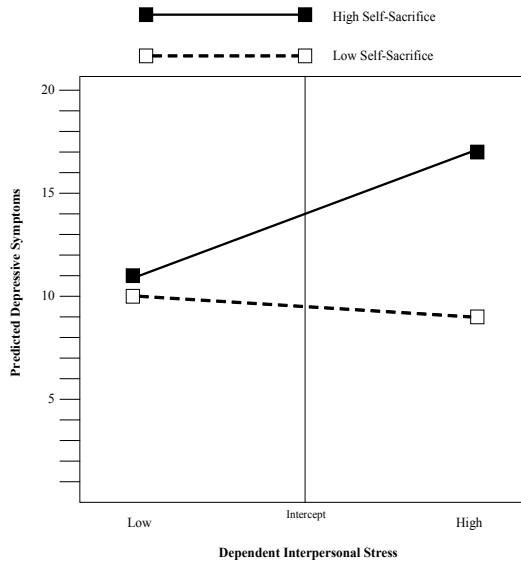


FIGURE 1. Interaction Between Self-Sacrifice and Dependent Interpersonal Stress in Predicting Depressive Symptoms.

jection, schemas related to abandonment, mistrust/abuse, social isolation, and defectiveness all significantly predicted dependent interpersonal stress ($p < .01$), while emotional deprivation was a marginal ($p < .05$) predictor of stress. With respect to the impaired autonomy and performance domain, schemas related to failure and vulnerability to harm significantly predicted dependent interpersonal stress ($p < .01$), while dependence/incompetence and enmeshment were marginal predictors ($p < .05$). In the other-directedness domain, subjugation schemas significantly predicted stress ($p < .001$).

DEPENDENT INTERPERSONAL STRESS AS A PREDICTOR OF DEPRESSIVE SYMPTOMS

The autoregressive covariance structure and random intercept were highly significant ($p < .0001$), and the random slope was marginally significant ($p < .05$). After controlling for baseline depressive symptoms in the first step, $b = 4.64$, $SE = .69$, $t(112) = 6.71$, $p < .001$, higher levels of dependent interpersonal stress significantly pre-

TABLE 4. Maladaptive Schemas as Predictors of Dependent Interpersonal Stress

	<i>b</i>	<i>SE</i>	<i>t</i>
Step 1: Baseline Depressive Symptoms	1.15	.33	3.45**
Step 2: Individual Schemas			
Disconnection and Rejection			
Emotional Deprivation	.71	.34	2.09 [†]
Abandonment	1.16	.33	3.46**
Mistrust/Abuse	1.07	.34	3.15*
Social Isolation	1.10	.35	3.13*
Defectiveness	1.06	.34	3.06*
Impaired Autonomy and Performance			
Failure	1.27	.33	3.83**
Dependence/Incompetence	.80	.33	2.39 [†]
Vulnerability to Harm	1.24	.32	3.84**
Enmeshment	.69	.34	2.05 [†]
Other-Directedness			
Subjugation	1.59	.33	4.78**
Self Sacrifice	.53	.34	1.55

Note. *df* = 112, All Step 2 analyses controlled for the effect of initial depressive symptoms, entered in Step 1. [†]*p* < .05, **p* < .01, ***p* < .001.

dicted higher levels of depressive symptoms, $b = .36$, $SE = .12$, $t(448) = 2.87$, $p < .001$.

STRESS GENERATION (MEDIATION) ANALYSES PREDICTING DEPRESSIVE SYMPTOMS

As dependent interpersonal stress predicted within-subjects changes in depressive symptoms, mediation was then examined for the specific maladaptive schemas that significantly ($p < .01$) or marginally ($p < .05$) predicted both dependent interpersonal stress and depressive symptoms, in accordance with Baron and Kenny's (1986) recommendations. As stated earlier, we utilized Bauer et al.'s (2006) approach which evaluates mediation using a single, simultaneous equation.

The results of these analyses are summarized in Table 5. Note that the significant ($p < .0001$) effects of initial depressive symptoms on both dependent interpersonal stress and depressive symptoms were controlled for in each model tested, but are not included in the table for the sake of simplicity. According to Bauer et al. (2006), mediation occurs when both the paths from the independent variable to the

TABLE 5. Stress Generation (Mediation) Analyses Predicting Dependent Interpersonal Stress and Depressive Symptoms

	<i>b</i>	<i>SE</i>	<i>t</i>
Disconnection and Rejection			
Emotional Deprivation → Dependent Interpersonal Stress	.71	.34	2.07 [†]
Dependent Interpersonal Stress → Depressive Symptoms	.35	.09	3.79 ^{**}
Emotional Deprivation → Depressive Symptoms	1.66	.69	2.39 [†]
Mistrust/Abuse → Dependent Interpersonal Stress	1.08	.34	3.16 [*]
Dependent Interpersonal Stress → Depressive Symptoms	.34	.09	3.74 ^{**}
Mistrust/Abuse → Depressive Symptoms	2.23	.70	3.19 [*]
Social Isolation → Dependent Interpersonal Stress	1.10	.35	3.12 [*]
Dependent Interpersonal Stress → Depressive Symptoms	.35	.09	3.76 ^{**}
Social Isolation → Depressive Symptoms	1.78	.73	2.42 [†]
Defectiveness → Dependent Interpersonal Stress	1.05	.34	3.05 [*]
Dependent Interpersonal Stress → Depressive Symptoms	.35	.09	3.82 ^{**}
Defectiveness → Depressive Symptoms	3.07	.68	4.53 ^{**}
Impaired Autonomy and Performance			
Failure → Dependent Interpersonal Stress	1.26	.33	3.82 ^{**}
Dependent Interpersonal Stress → Depressive Symptoms	.35	.09	3.74 ^{**}
Failure → Depressive Symptoms	1.52	.71	2.15 [†]
Other-Directedness			
Subjugation → Dependent Interpersonal Stress	1.59	.33	4.75 ^{**}
Dependent Interpersonal Stress → Depressive Symptoms	.36	.11	3.38 ^{**}
Subjugation → Depressive Symptoms	1.11	.80	1.39

Notes. *df* = 1006 except for Other-Directedness analyses for which *df* = 777. All analyses controlled for the effects of initial depressive symptoms on both dependent interpersonal stress and depressive symptoms. Schemas for Abandonment, Vulnerability to Harm, Enmeshment, and Self-Sacrifice were not included in this table because they did not predict depressive symptoms and/or interpersonal stress, and thus were not examined in the mediation analyses. [†]*p* < .05, ^{*}*p* < .01, ^{**}*p* < .001.

mediator, and from the mediator to the outcome, are significant in this simultaneous equation. There is full mediation when the effect of the independent variable on the outcome becomes nonsignificant when the pathway from the mediator to the outcome is controlled; otherwise, there is partial mediation.

Results of mediation analyses are presented in Table 5. Analyses indicated that dependent interpersonal stress fully mediated the relationship between subjugation schemas (an aspect of other-directedness) and depressive symptoms. More specifically, subjugation significantly predicted dependent interpersonal stress ($p < .0001$), dependent interpersonal stress predicted depressive symptoms ($p < .0001$), and the direct effect of subjugation on depressive symptoms was nonsignificant.-

Additionally, dependent interpersonal stress partially mediated the relationship between a number of disconnection and rejection schemas and depressive symptoms (see Table 5). The relevant schemas that played a role in the partial mediation process included emotional deprivation, mistrust/abuse, social isolation, defectiveness. Dependent also partially mediated the relationship between failure schemas, an aspect of impaired autonomy and performance, and depressive symptoms. In each of these mediation models, schemas marginally or significantly predicted dependent interpersonal stressors ($p < .05$), which in turn predicted depressive symptoms ($p < .001$), but the direct effect of the schema on depressive symptoms did not become nonsignificant in the simultaneous model ($p < .05$).

DISCUSSION

The current study examined two different etiological models through which maladaptive schemas and stress impact depressive symptoms: a diathesis-stress model in which maladaptive schemas only confer vulnerability to depressive symptoms when interacting with higher levels of stressors and a stress generation model in which maladaptive schemas predict increases in interpersonal stress generation, which in turn predicts increased depressive symptoms. These effects were examined over a 6-week period in a sample of female university students. Overall, results from multilevel modeling analyses provided support for the stress generation perspective and limited support for the diathesis-stress perspective.

In line with Young's (1990) theory, the study found evidence that a number of maladaptive schemas related to disconnection and rejection (i.e., mistrust/abuse, social isolation, and defectiveness) and impaired autonomy and performance (i.e., failure) were significantly associated with increases in depressive symptoms. Additionally, other-directedness (i.e., subjugation) and emotional deprivation (an additional disconnection and rejection schema) were marginally associated with symptomatology. These dysfunctional schemas encompass expectations that (a) one's relational needs will not be adequately met (disconnection and rejection), (b) beliefs related to inadequacy in relation to peers (autonomy and performance), and (c) excessive focus on others' needs at the expense of one's own needs (other-directedness). Such results are consistent with a number of past studies that have found that these maladaptive schemas

are associated with depressive symptoms (e.g., Cooper et al., 2005; Glaser et al., 2002; Harris & Curtin, 2002; McGinn et al., 2005; Petrocelli et al., 2001; Schmidt et al., 1995; Shah & Waller, 2000; Simmons et al., 2006; Welburn et al., 2002; Wright et al., 2009). Further, the study expands on past research by providing evidence that schemas prospectively influence changes in individual's levels of depressive symptoms over time.

The current study also examined potential mechanisms through which maladaptive schemas impact depressive symptoms following the occurrence of stress. Limited support, however, emerged for the diathesis-stress perspective as there was only marginal evidence that higher levels of dependent interpersonal stress interacted with self-sacrifice schemas to predict depressive symptoms, and the study was not able to detect evidence that other schemas interacted with stress to prediction symptoms. Specifically, the relationship between stressors and depressive symptoms was marginally stronger for individuals with higher levels of self-sacrifice. This finding tentatively suggests that focusing on the needs of others rather than meeting one's own needs may make individuals more likely to experience elevated levels of depressive symptoms in response to dependent stress. Indeed, focusing on others' needs may not be problematic under normal circumstances, but it may become troublesome during periods of stress when it is vital to attend to on one's own needs. While a number of studies have provided evidence that global measures of dysfunctional schemas interact with stress in predicting depressive symptoms (e.g., Dykman & Johll, 1998; Hankin et al., 2004), to our knowledge, this is the first study to test a diathesis-stress model of vulnerability to depressive symptoms using Young's specific schemas. The results of the current study suggest that the diathesis-stress model may be less applicable to specific maladaptive schemas as compared to more global measures of cognitive vulnerability. However, it is possible that our failure to find significant results is in part due to limitations of the current study, described below; thus, replication is needed before strong conclusions can be drawn.

In contrast, the study found support for stress generation as a mechanism through which maladaptive schemas adversely impact depressive symptoms. More specifically, a number of maladaptive schemas in the domains of disconnection and rejection, impaired autonomy and performance, and other-directedness predicted the generation of dependent, interpersonal stressors. These dependent

interpersonal stressors, in turn, predicted increases in depressive symptoms. Moreover, there was evidence that these stressors mediated the relationships between maladaptive schemas and depressive symptoms. In particular, mediation effects were observed for subjugation schemas, failure schemas, and a number of schemas related to disconnection and rejection. These schema findings fit with previous evidence that other forms of cognitive vulnerability (e.g., Joiner et al., 2005; Priel & Shahar, 2000), as well as aspects of interpersonal style (e.g., Eberhart & Hammen, 2009; Eberhart & Hammen, 2010; Hankin et al., 2005; Pothoff et al., 1995), contribute to stress generation and successive depressive symptomatology. However, the current study expanded upon these findings as it combined the cognitive and interpersonal perspectives by extending the results to cognitions that are interpersonal in nature. Further, it examined a wide variety of schemas related to relationships with others, thus expanding the literature beyond dependency schemas and attachment cognitions.

In particular, it seems that interpersonally-oriented cognitions, including beliefs that one needs to suppress one's own needs or emotions and surrender control to others (i.e., subjugation), beliefs that one is inadequate in comparison to peers (i.e., failure), and expectations that one's needs will not be reliably met in relationships (i.e., disconnection and rejection) lead individuals to generate stress in their interpersonal relationships, which predicts subsequent increases in depressive symptoms. Therefore, it appears that interpersonal stress generation is a key mechanism through which maladaptive interpersonal schemas assert their effect on depressed mood. This support for a stress generation perspective is notable in that much research examining cognitive vulnerability to depressive symptoms and diagnoses utilizes a diathesis-stress perspective, and thus would focus on activation of schemas following stress. In contrast, the current study suggests that schemas do not necessarily need to be activated by the occurrence of stressors in order to have negative effects on symptomatology. Indeed, dependent interpersonal stressors seem to have effects that are largely independent of rather than interactive with schemas, and an individual's set of beliefs about relationships may play a key role in creating these stressors.

Further, the current study's findings that individuals' interpersonal schemas contribute to the occurrence of stressors that subsequently impact their symptoms may have implications for treatment of depression. If the findings are replicated in a clinical sample, it

could indicate that the problematic schemas identified in the current study may be practical targets for therapeutic interventions, which might focus on helping clients identify and alter maladaptive schemas (e.g., Young et al., 2003). Therapy often focuses on helping individuals cope with stressors, in line with a diathesis-stress conceptualization. However, the results for the stress generation model suggest that therapeutic interventions could potentially help individuals better recognize patterns with regard to how their cognitive vulnerabilities shape the stressors they experience in their lives. There is a great deal of empirical evidence that cognitive approaches focused on challenging maladaptive beliefs are effective in treating depression (e.g., see Strunk & DeRubeis, 2001, for a review), and, if replicated, the current results may suggest that focusing on challenging interpersonal schemas in particular may serve to decrease stress and symptomatology. Further, the prospective relationship between these schemas, stress generation, and future depressive symptoms suggests that the problematic schemas identified in the current study may also be appropriate targets for prevention and early intervention efforts.

The current study had some notable strengths, including the prospective assessment of participants at six time points and the use of a multilevel data analytic strategy. The study, however, also had limitations. To begin, the sample was limited in that it consisted of female university students. As such, it is unclear whether the results would extend to non-college populations, or to young men. In particular, college students tend not to have as extreme scores on vulnerability factors, stress, and depressive symptoms, so it will be important for future research to replicate these findings in clinical or high risk community samples. Future research should also examine potential gender differences in these effects, especially in light of evidence that the relationship between interpersonal stress and depression differs among males and females (e.g., Shih et al., 2006).

The study was also limited in that it utilized self-report measures of stress and depressive symptoms. Self-report life event checklists are more prone to errors than interview-based methods, which represent the gold-standard for stress assessment (e.g., see Monroe, 2008, for a review). In particular, it should be noted that the measure utilized in the current study relies on individuals to rate the occurrence and persistence of stressors, and such assessments may be impacted by individuals' mood and cognitions (e.g., Monroe, 2008). As such, it is possible that participants with higher levels of nega-

tive maladaptive schemas perceived their environments as being more stressful, regardless of whether they actually experience more dependent stress. Further, the particular measure of stress the current study utilized was not a measure of serious stressors, but rather a measure of hassles. It is possible that these relatively minor hassles did not sufficiently activate latent maladaptive schemas, contributing to our lack of significant findings for the diathesis-stress model. Nonetheless, self-report and interview measures of stress are highly correlated (e.g., Lewinsohn, Joiner, & Rohde, 2001; Wagner, Abela, & Brozina, 2006), and there is evidence self-reports of minor stressors such as hassles are associated with depressive symptoms (e.g., D'Angelo & Wierzbicki, 2003; Hutchinson & Williams, 2007), suggesting that the method of stress assessment used in the present study still has some utility.

Similarly, while we hypothesize that the models tested are applicable to the etiology of both symptoms and disorders, it is unclear whether the current study's results predicting self-report depressive symptoms can be extended major depression. In particular, the measure of depressive symptoms used in the current study (the CES-D) does not encompass some of the diagnostic criteria for depression, such as suicidality, guilt, and psychomotor, sleep, and appetite disturbances. Thus, the current research should be replicated in studies that examine depressive diagnoses. However, there is evidence that depressive symptoms are predictive of major depressive disorder among both adolescents (e.g., Georgiades, Lewinsohn, Monroe, & Seeley, & 2006) and adults (e.g., Forsell, 2007), and in particular, that CES-D symptom scores predict depressive episodes (e.g., Cuijpers, Smit, & Willemse, 2005; Lewinsohn, Solomon, Seeley, Zeiss, 2000). Further, even subclinical levels of depressive symptoms are associated with significant impairment in functioning (e.g., Gotlib, Lewinsohn, & Seeley, 1995; Judd, Akiskal, & Paulus, 1997; Kessler, Zhao, Blazer, & Swartz, 1997), and thus merit research.

The study was also limited in the type of stressors it examined, in that it focused on dependent, interpersonal stress and did not assess independent stress. In particular, it is possible that the diathesis-stress findings would have been stronger if a different type of stress was examined. Future research would benefit from contrasting dependent and independent stressors, in order to determine whether the results are specific to self-generated stress.

Finally, while the current study compares the utility of diathesis-stress and stress generation models in understanding the link be-

tween maladaptive schemas and depressive symptoms, it should be noted that both models undoubtedly contribute to our understanding of the etiology of depressive symptoms and disorders. Indeed, it is likely that these two models can be meaningfully integrated into a more comprehensive model of depression vulnerability (e.g., Hankin & Abramson, 2001). Future research should strive to develop broader models of depression that encompass both diathesis-stress and stress generation processes.

In sum, the results of the present study suggest that both diathesis-stress and stress generation perspectives contribute to our understanding of the etiology of depressive symptoms. However, stress generation seems to be a particularly important mechanism through which various maladaptive, interpersonal schemas impact depressive symptomatology.

REFERENCES

- ▶ Abela, J. R. Z., Aydin, C., & Auerbach, R. P. (2006). Operationalizing the “vulnerability” and “stress” components of the hopelessness theory of depression: A multi-wave longitudinal study. *Behaviour Research and Therapy, 44*, 1565-1583.
- ▶ Alloy, L. B., Abramson, L. Y., Whitehouse, W. G., Hogan, M. E., Panzarella, C., & Rose, D. T. (2006). Prospective incidence of first onsets and recurrences of depression in individuals at high and low cognitive risk for depression. *Journal of Abnormal Psychology, 115*, 145-145.
- ▶ Auerbach, R. P., Eberhart, N. K., & Abela, J. R. Z. (2010). Cognitive vulnerability to depression in Canadian and Chinese adolescents. *Journal of Abnormal Child Psychology, 38*, 57-68.
- ▶ Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51*, 1173-1182.
- ▶ Bauer, D. J., Preacher, K. J., & Gil, K. M. (2006). Conceptualizing and testing random indirect effects and moderated mediation in multilevel models: New procedures and recommendations. *Psychological Methods, 11*, 142-163.
- Beck, A. T. (1967). *Depression: Clinical, experimental, and theoretical aspects*. New York: Harper & Row.
- Beck, A. T. (1983). Cognitive therapy of depression: New perspectives. In P. J. Clayton & J. E. Barrett (Eds.), *Treatment of depression: Old controversies and new approaches*. New York: Raven Press.
- Blankstein, K. R., & Flett, G. L. (1993). Development of the general hassles scale for students. Unpublished manuscript, University of Toronto at Mississauga.
- ▶ Bottonari, K. A., Roberts, J. E., Kelly, M. A. R., Kashdan, T. B., & Ciesla, J. A. (2007). A prospective investigation of the impact of attachment style on stress generation among clinically depressed individuals. *Behaviour Research and Therapy, 45*, 179-188.

- Brown, G.W., & Harris, T.O. (1989). Depression. In G. W. Brown & T. O. Harris (Eds.), *Life events and illness* (pp. 49-93). New York: Guilford.
- ▶ Chun, C., Cronkite, R. C., & Moos, R. H. (2004). Stress generation in depressed patients and community controls. *Journal of Social and Clinical Psychology, 23*, 390-412.
 - ▶ Cooper, M. J., Rose, K. S., & Turner, H. (2005). Core beliefs and the presence or absence of eating disorder symptoms and depressive symptoms in adolescent girls. *International Journal of Eating Disorders, 38*, 60-64.
 - ▶ Cuijpers, P., Smit, F., & Willemse, G. (2005). Predicting the onset of major depression in subjects with subthreshold depression in primary care: A prospective study. *Acta Psychiatrica Scandinavica, 111*, 133-138.
 - ▶ Cukor, D., & McGinn, L. K. (2006). History of child abuse and severity of adult depression: The mediating role of cognitive schema. *Journal of Child Sexual Abuse, 15*, 19-34.
 - ▶ Daley, S. E., Hammen, C., Burge, D., Davila, J., Paley, B., Lindberg, N., & Herzberg, D. S. (1997). Predictors of the generation of episodic stress: A longitudinal study of late adolescent women. *Journal of Abnormal Psychology, 104*, 251-259.
 - ▶ D'Angelo, B., & Wierzbicki, M. (2003). Relations of daily hassles with both anxious and depressed mood in students. *Psychological Reports, 92*, 416-418.
 - ▶ Dykman, B. M., & Johll, M. (1998). Dysfunctional attitudes and vulnerability to depressive symptoms: A 14-week longitudinal study. *Cognitive Therapy and Research. Special Issue: Cognitive Processes and Vulnerability to Affective Problems, 22*, 337-352.
 - ▶ Eberhart, N. K., & Hammen, C. L. (2009). Interpersonal predictors of stress generation. *Personality and Social Psychology Bulletin, 35*, 544-556.
 - ▶ Eberhart, N. K., & Hammen, C. L. (2010). Interpersonal style, stress, and depression: An examination of transactional and diathesis-stress models. *Journal of Social and Clinical Psychology, 29*, 23-38.
 - ▶ Enders, C.K. (2001). A primer on maximum likelihood algorithms available for use with missing data. *Structural Equation Modeling, 8*, 128-141.
 - ▶ Erikson, E. H. (1950). *Childhood and society*. New York: W. W. Norton & Co.
 - ▶ Flett, G. L., Hewitt, P. L., Blankstein, K. R., & Mosher, S. W. (1995). Perfectionism, life events, and depressive symptoms: A test of a diathesis-stress model. *Current Psychology, 14*, 112-112.
 - ▶ Forsell, Y. (2007). A three-year follow-up of major depression, dysthymia, minor depression and subsyndromal depression: Results from a population-based study. *Depression and Anxiety, 24*, 62-65.
 - ▶ Geisser, M. E., Roth, R. S., & Robinson, M. E. (1997). Assessing depression among persons with chronic pain using the center for epidemiological studies-depression scale and the beck depression inventory: A comparative analysis. *Clinical Journal of Pain, 13*, 163-170.
 - ▶ Georgiades, K., Lewinsohn, P., Monroe, S., & Seeley, J. (2006). Major depressive disorder in adolescence: The role of subthreshold symptoms. *Journal of the American Academy of Child & Adolescent Psychiatry, 45*, 936-944.
 - ▶ Glaser, B. A., Campbell, L. F., Calhoun, G. B., Bates, J. M., & Petrocelli, J. V. (2002). The early maladaptive schema questionnaire-short form: A construct validity study. *Measurement and Evaluation in Counseling and Development, 35*, 2-13.

- ▶ Gotlib, I. H., Lewinsohn, P. M., & Seeley, J. R. (1995). Symptoms versus a diagnosis of depression: Differences in psychosocial functioning. *Journal of Consulting and Clinical Psychology, 65*, 90-100.
- ▶ Hammen, C. L. (1991). The generation of stress in the course of unipolar depression. *Journal of Abnormal Psychology, 100*, 555-561.
- ▶ Hammen, C. (2003). Interpersonal stress and depression in women. *Journal of Affective Disorders. Special Issue: Women and Depression, 74*, 49-57.
- ▶ Hammen, C. (2005). Stress and depression. *Annual Review of Clinical Psychology, 1*, 293-319.
- ▶ Hammen, C. (2006). Stress generation in depression: Reflections on origins, research, and future directions. *Journal of Clinical Psychology, 62*, 1065-1082.
- ▶ Hammen, C., Marks, T., Mayol, A., & deMayo, R. (1985). Depressive self-schemas, life stress, and vulnerability to depression. *Journal of Abnormal Psychology, 94*, 308-308.
- ▶ Hankin, B. L. (2008). Cognitive vulnerability-stress model of depression during adolescence: Investigating depressive symptom specificity in a multi-wave prospective study. *Journal of Abnormal Child Psychology, 36*, 999-1014.
- ▶ Hankin, B. L., & Abramson, L. Y. (2001). Development of gender differences in depression: An elaborated cognitive vulnerability-transactional stress theory. *Psychological Bulletin, 127*, 773-796.
- ▶ Hankin, B. L., Abramson, L. Y., Miller, N., & Haefel, G. J. (2004). Cognitive vulnerability-stress theories of depression: Examining affective specificity in the prediction of depression versus anxiety in three prospective studies. *Cognitive Therapy and Research, 28*, 309-309.
- ▶ Hankin, B. L., Abramson, L. Y., & Siler, M. (2001). A prospective test of the hopelessness theory of depression in adolescence. *Cognitive Therapy and Research, 25*, 607-632.
- ▶ 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 and Social Psychology Bulletin, 31*, 136-151.
- ▶ Harkness, K. L., Monroe, S. M., Simons, A. D., & Thase, M. E., (1999). The generation of life events in recurrent and non-recurrent depression. *Psychological Medicine, 29*, 135-144.
- ▶ Harris, A. E., & Curtin, L. (2002). Parental perceptions, early maladaptive schemas, and depressive symptoms in young adults. *Cognitive Therapy and Research, 26*, 405-416.
- ▶ Holahan, C. J., Moos, R. H., Holahan, C. K., Brennan, P. L., & Schutte, K. K. (2005). Stress generation, avoidance coping, and depressive symptoms: A 10-year model. *Journal of Consulting and Clinical Psychology, 73*, 658-666.
- ▶ Hutchinson, J. G., & Williams, P. G. (2007). Neuroticism, daily hassles, and depressive symptoms: An examination of moderating and mediating effects. *Personality and Individual Differences, 42*, 1367-1378.
- ▶ Iacoviello, B. M., Alloy, L. B., Abramson, L. Y., Whitehouse, W. G., & Hogan, M. E. (2006). The course of depression in individuals at high and low cognitive risk for depression: A prospective study. *Journal of Affective Disorders, 93*, 61-61.
- ▶ Ingram, R. E., & Luxton, D. D. (2005). Vulnerability-stress models. In B. L. Hankin & J. R. Z. Abela (Eds.), *Development of Psychopathology: A Vulnerability-Stress Perspective* (pp. 32-46). Thousand Oaks, CA: Sage Publications, Inc.

- ▶ Joiner, T. E., Jr., 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 & Clinical Psychology, 24*, 649-664.
- ▶ Judd, L., Akiskal, H., & Paulus, M. (1997). The role and clinical significance of subsyndromal depressive symptoms (SSD) in unipolar major depressive disorder. *Journal of Affective Disorders, 45*, 5-17.
- ▶ Kessler, R. C., Zhao, S., Blazer, D. G., & Swartz, M. (1997). Prevalence, correlates, and course of minor depression and major depression in the national comorbidity survey. *Journal of Affective Disorders, 45*, 19-30.
- ▶ Lewinsohn, P. M., Joiner, T. E., Jr., & Rohde, P. (2001). Evaluation of cognitive diathesis-stress models in predicting major depressive disorder in adolescents. *Journal of Abnormal Psychology, 110*, 203-215.
- ▶ Lewinsohn, P., Solomon, A., Seeley, J., & Zeiss, A. (2000). Clinical implications of "subthreshold" depressive symptoms. *Journal of Abnormal Psychology, 109*, 345-351.
- ▶ Maybery, D.J., Neale, J., Arentz, A., & Jones-Ellis, J. (2007). The negative event scale: Measuring frequency and intensity of adult hassles. *Anxiety, Stress & Coping, 20*, 163-176.
- ▶ Mazure, C. M., Bruce, M. L., Maciejewski, P. K., & Jacobs, S. C. (2000). Adverse life events and cognitive-personality characteristics in the prediction of major depression and antidepressant response. *American Journal of Psychiatry, 157*, 896-903.
- ▶ McIntyre, K. P., Korn, J. H., & Matsuo, H. (2008). Sweating the small stuff: How different types of hassles result in the experience of stress. *Stress and Health, 24*, 383-392.
- ▶ McGinn, L. K., Cukor, D., & Sanderson, W. C. (2005). The relationship between parenting style, cognitive style, and anxiety and depression: Does increased early adversity influence symptom severity through the mediating role of cognitive style? *Cognitive Therapy and Research, 29*, 219-242.
- ▶ Metalsky, G. I., & Joiner, T. E. (1992). Vulnerability to depressive symptomatology: A prospective test of the diathesis-stress and causal mediation components of the hopelessness theory of depression. *Journal of Personality and Social Psychology, 63*, 667-667.
- ▶ Monroe, S. M. (2008). Modern approaches to conceptualizing and measuring human life stress. *Annual Review of Clinical Psychology, 4*, 33-52.
- ▶ Nolen-Hoeksema, S., & Girgus, J. S. (1994). The emergence of gender differences in depression during adolescence. *Psychological Bulletin, 115*, 424-443.
- ▶ Paykel, E. S. (2003). Life events and affective disorders. *Acta Psychiatrica Scandinavica, 108*, 61-66.
- ▶ Petrocelli, J. V., Glaser, B. A., Calhoun, G. B., & Campbell, L. F. (2001). Cognitive schemas as mediating variables of the relationship between the self-defeating personality and depression. *Journal of Psychopathology and Behavioral Assessment, 23*, 183-183.
- ▶ Potthoff, J. G., Holahan, C. J., & Joiner, T. E. (1995). Reassurance seeking, stress generation, and depressive symptoms: An integrative model. *Journal of Personality and Social Psychology, 68*, 664-670.
- ▶ Priel, B., & Shahar, G. (2000). Dependency, self-criticism, social context and distress: Comparing moderating and mediating models. *Personality and Individual Differences, 28*, 515-525.

- ▶ Radloff, L. S. (1977). The CES-D scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement, 1*, 385-401.
- ▶ 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.
- ▶ Schafer, J.L., & Graham, J.W. (2002). Missing data: Our view of the state of the art. *Psychological Methods, 7*, 147-177.
- ▶ Scher, C. D., Ingram, R. E., & Segal, Z. V. (2005). Cognitive reactivity and vulnerability: Empirical evaluation of construct activation and cognitive diatheses in unipolar depression. *Clinical Psychology Review, 25*, 487-510.
- ▶ Schmidt, N. B., Joiner, T. E., Young, J. E., & Telch, M. J. (1995). The schema questionnaire: Investigation of psychometric properties and the hierarchical structure of a measure of maladaptive schemas. *Cognitive Therapy and Research, 19*, 295-295.
- ▶ Shah, R., & Waller, G. (2000). Parental style and vulnerability to depression: The role of core beliefs. *Journal of Nervous and Mental Disease, 188*, 19-25.
- ▶ Shahrar, G., Joiner, T. E. J., Zuroff, D. C., & Blatt, S. J. (2004). Personality, interpersonal behavior, and depression: Co-existence of stress-specific moderating and mediating effects. *Personality and Individual Differences, 36*, 1583-1596.
- ▶ Sherry, S., Hewitt, P., Flett, G., & Harvey, M. (2003). Perfectionism dimensions, perfectionistic attitudes, dependent attitudes, and depression in psychiatric patients and university students. *Journal of Counseling Psychology, 50*, 373-386.
- ▶ Shih, J. H. (2006). Sex differences in stress generation: An examination of sociotropy/autonomy, stress, and depressive symptoms. *Personality and Social Psychology Bulletin, 32*, 434-446.
- ▶ Shih, J. H., Abela, J. R. Z., & Starrs, C. (2009). Cognitive and interpersonal predictors of stress generation in children of affectively ill parents. *Journal of Abnormal Child Psychology, 37*, 195-208.
- ▶ Shih, J.H., Eberhart, N. K., Hammen, C. L., & Brennan, P. A. (2006). Differential exposure and reactivity to interpersonal stress predict sex differences in adolescent depression. *Journal of Clinical Child and Adolescent Psychology, 35*, 103-115.
- ▶ Simmons, J., Cooper, M. J., Drinkwater, J., & Stewart, A. (2006). Cognitive schemata in depressed adolescent girls and their mothers. *Behavioural and Cognitive Psychotherapy, 34*, 219-232.
- ▶ 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.
- ▶ Spangler, D. L., Simons, A. D., Monroe, S. M., & Thase, M. E. (1997). Comparison of cognitive models of depression: Relationships between cognitive constructs and cognitive diathesis-stress match. *Journal of Abnormal Psychology, 106*, 395-395.
- Strunk, D. R., & DeRubeis, R. J. (2001). Cognitive therapy for depression: A review of its efficacy. *Journal of Cognitive Psychotherapy. Special Issue: Review of Cognitive Behavioral Therapy, 15*, 289-297.
- ▶ Wagner, C., Abela, J. R. Z., & Brozina, K. (2006). A comparison of stress measures in children and adolescents: A self-report checklist versus an objectively rated interview. *Journal of Psychopathology and Behavioral Assessment, 28*, 251-261.

- ▶ Welburn, K., Coristine, M., Dagg, P., Pontefract, A., & Jordan, S. (2002). The schema questionnaire-short form: Factor analysis and relationship between schemas and symptoms. *Cognitive Therapy and Research, 26*, 519-519.
- ▶ Wright, M. O., Crawford, E., & Del Castillo, D. (2009). Childhood emotional maltreatment and later psychological distress among college students: The mediating role of maladaptive schemas. *Child Abuse & Neglect, 33*, 59-68.
- Young, J. E. (1990). *Cognitive therapy for personality disorders: A schema-focused approach*. Sarasota, FL: Professional Resource Exchange, Inc.
- Young, J. E. (1994). *Cognitive therapy for personality disorders: A schema-focused approach*. Sarasota, FL: Professional Resource Press/Professional Resource Exchange.
- Young, J. E. (1998). *Young schema questionnaire-short form*. New York: Cognitive Therapy Center of New York.
- Young, J. E., Klosko, J. S., & Weishaar, M. E. (2003). *Schema therapy: A practitioner's guide*. New York: Guilford.