

Attributional Style and Self-Esteem in Vulnerability to Adolescent Depressive Symptoms Following Life Stress: A 14-Week Prospective Study

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This study tested G. I. Metalsky, T. E. Joiner, T. Hardin, and L. Abramson's (1993) integrated model of attributional style, self-esteem, and life stress in vulnerability to depressive symptoms among adolescents (N = 115) using a 14-week prospective design. This model posits that individuals with both a negative attributional style and low self-esteem are particularly sensitive to developing depressive symptoms subsequent to life stress. Results of hierarchical multiple regression analyses were consistent with this hypothesis for initially asymptomatic participants, but not for those who were already experiencing mild levels of symptoms at the start of the study. Specifically, among initially asymptomatic participants, the three-way interaction between attributional style, self-esteem, and life stress predicted changes in depressive symptoms; initially asymptomatic participants who had a negative attributional style, low self-esteem, and high life stress showed the greatest increase in depressive symptoms. These findings suggest that self-esteem and attributional style play a role in vulnerability to the onset of depressive symptoms, though different pathways seem to be involved in determining the course of already existing symptoms.

KEY WORDS: depressive symptoms; adolescence; self-esteem; attributional style; life stress.

It is becoming increasingly clear that adolescence is a time of considerable vulnerability to depressive symptomatology. Although the prevalence of depression is low during childhood, it increases substantially during adolescence when it approximates rates found in adult samples (Lewinsohn, Duncan, Stanton, & Hautzinger, 1986; Lewinsohn, Rohde, Seeley, & Hops, 1991; Kashani, Carlson, Beck, & Hooper, 1987; for a review see Compas, Ey, & Grant, 1994). Furthermore, some studies have suggested that adolescent onset depression is associated with elevated risk for future depressive episodes during adulthood (Hammen, 1992; Harrington, Fudge,

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Rutter, Pickles, & Hill, 1990). It may be that the negative cognitive styles theoretically involved in vulnerability to depression develop and become entrenched during adolescence (Cole & Kaslow, 1988; Hammen, 1992; Rose & Abramson, 1992).

The hopelessness theory of depression (Abramson, Metalsky, & Alloy, 1989) proposes that specific types of attributions (i.e., causal inferences that a person makes following life events) can play an important causal role in the onset of depression. The model posits that individuals who are at risk for developing depression have a consistent style in which they make internal, stable, and global attributions for negative events. These negative attributions act as a cognitive vulnerability or diathesis that is hypothesized to contribute to the onset of depression following stressful life events. According to this theory, persons with a negative attributional style are more likely to develop depression in the presence (but not in the absence) of life stressors (Abramson, Metalsky, & Alloy, 1989).

Only a few prospective studies have tested the hypothesis that attributional style is associated with vulnerability to depression. A number of these studies employed a similar methodology in which perceived failure on an academic examination was treated as the stressor and individual differences in depressive mood reactions were the dependent variable. Metalsky, Halberstadt, and Abramson (1987) found that attributional style interacted with academic stress in predicting depressive mood following the receipt of grades. Specifically, academic disappointment had a greater impact on depressive mood among individuals with a negative attributional style than among those with more positive styles. On the other hand, other studies have failed to replicate these findings (Follete & Jacobson, 1987; Hunsley, 1989). Using a somewhat different methodology, a 5-week prospective study found that self-reported stressful life events interacted with attributional style to predict changes in depressive symptoms (Metalsky & Joiner, 1992). Consistent with the model, life stress had a greater depressogenic impact on participants with negative attributional styles than on those with more positive styles. Likewise, two recent studies using short-term prospective designs found that stressful life events had a greater impact on those with more negative attributional styles than on those with more positive styles (Alloy & Clements, 1998; Metalsky & Joiner, 1997; see also Alloy, Just, & Panzarella, 1997; Steinsmeier-Pelster, 1989), though there have been failures to replicate as well (e.g., Cook, Ahrens, & Pearson, 1995; Johnson & Miller, 1990).

Substantial evidence supports the association between negative attributional styles and depression in children and adolescents (see Gladstone & Kaslow, 1995; Joiner & Wagner, 1995, for meta-analytic reviews). However, as with adult research, only a few prospective studies have investigated the interaction between attributional style and life stress in prospectively predicting depression in children. Dixon and Ahrens (1992) studied troubled children at summer camp, and their results showed that daily hassles resulted in higher levels of depressive symptoms among children with negative attributional styles than among those with more positive styles. Using a grade-stress methodology, Hilsman and Garber (1995) found that academic disappointment predicted increased depressive symptoms more strongly among children with negative attributional styles than among those with more positive styles. Likewise, a 5-year investigation conducted with assessments every 6 months found that negative attributional styles increased risk for depression following life stress

after children reached the fifth grade, but not before (Nolen-Hoeksma, Girgus, & Seligman, 1992). However, another recent study failed to find a significant interaction between attributional style and life stress in predicting depressive symptoms among children and adolescents (Bennett & Bates, 1995).

In addition to attributional style, self-esteem deficits are also thought to play a role in vulnerability to depression (Brown & Harris, 1978; see Roberts & Monroe, 1994, 1999, for reviews). Consistent with this perspective, numerous studies have found correlations between depression and low self-esteem among adults (see Bernet, Ingram, & Johnson, 1993, for a review). However, results of prospective studies have been mixed at best. Several studies have found that among clinically depressed individuals relatively low self-esteem predicts a poor course of depression (Dent & Teasdale, 1988; Roberts, Shapiro, & Gamble, 1999), whereas high self-esteem prospectively predicts improvement and full remission (Brown, Bifulco, & Andrews, 1990b). In addition two investigations found that the interaction between major stressful life events and low self-esteem predicted onset of depressive episodes among women in the community (Brown, Bifulco, & Andrews, 1990a; Miller, Kreitman, Ingham, & Sashidharan, 1989). However, other studies failed to find a significant prospective relationship between self-esteem and depression. For example, three studies found that the interaction between self-esteem and life stress was not a significant prospective predictor of changes in depressive symptoms (Roberts & Gotlib, 1997; Roberts & Kassel, 1997; Roberts & Monroe, 1992). In addition, Hammen, Marks, deMayo, and Mayol (1985) found that negative self-schemas did not increase the risk for depression either alone or in interaction with life stress, whereas Whisman and Kwon (1993) found that life stress had a more depressive impact on individuals with higher (as opposed to lower) levels of self-esteem.

In terms of the role of self-esteem as a vulnerability to childhood and adolescent depression, limited research has addressed this question. Many studies have found that low self-esteem or self-concept is correlated with childhood depression (e.g., Kaslow, Rehm, & Siegel, 1984; Prieto, Cole, & Tageson, 1992; Strauss, Forehand, Frame, & Smith, 1985), but as with attributional style, few studies have investigated the role of self-esteem in prospectively predicting depression. Work by Hammen (1988; Hammen & Goodman-Brown, 1990) in the area of self-schemas has found some support for the hypothesis that a negative view of oneself can moderate the impact of life stress on depression onset. However, overall the evidence that self-esteem moderates the impact of life stress in prospectively predicting depressive symptoms among children and adolescents is limited and inconclusive.

The studies discussed above tested either negative attributional style or self-esteem as a diathesis for depressive symptoms, and found mixed support for each. However, because attributional style and self-esteem are somewhat independent constructs (Joiner & Rudd, 1996), examination of their joint effects in vulnerability to depression may prove to be more valuable than the examination of each separately. In this vein, Metalsky, Joiner, Hardin, and Abramson (1993) proposed an integrated model in which cognitive vulnerability involved the combination of a negative attributional style and low self-esteem. They suggested that high self-esteem might serve as a buffer that protects against the depressogenic effects of a negative attributional style when faced with stress. In support of this model, these investigators found

that changes in depressive symptoms were predicted by the three-way interaction of attributional style, self-esteem, and perceived failure on a college examination. In particular, results suggested that negative attributional styles were a potent diathesis among individuals with low self-esteem, whereas they had little effect on participants with higher self-esteem. Likewise, Robinson, Garber, and Hilsman (1995) found that the three-way interaction of attributional style, self-esteem, and life stress (events and daily hassles) predicted follow-up depression among children (ages 11–12). Specifically, children with a negative attributional style *and* low self-esteem experienced the greatest increase in depressive symptoms in response to life stress. Although there has been a failure to replicate these findings (Ralph & Mineka, 1998), these studies suggest that the combination of a negative attributional style *and* low self-esteem makes individuals particularly sensitive to the effects of stressful life events and, consequently, vulnerable to depressive symptoms.

In addition to examining the interactive roles of negative attributional style and self-esteem, it may prove important to consider participants' initial symptom status. Several recent studies have explored how the impact of psychosocial risk factors such as life stress, self-esteem, and other negative cognitions can vary as a function of participants' initial symptomatology. For example, Monroe (1982) found that psychological symptoms increased after undesirable life stress, but only for participants classified as "non-cases" based on the absence of initial symptomatology. Likewise, Dykman and Johll (1998) found that dysfunctional attitudes acted as a diathesis among initially nondepressed participants, but not among those who were already relatively symptomatic. Finally, two studies found that labile (temporally unstable) self-esteem moderated the effects of stress in predicting changes in depressive symptoms, but only for initially asymptomatic participants (Roberts & Kassel, 1997; Roberts & Monroe, 1992). Each of these studies found that the Diathesis \times Life Stress interaction was more powerful in prospectively predicting changes in depressive symptoms among initially asymptomatic participants than among those who were already relatively symptomatic at the outset of the study. These findings suggest that cognitive style may play a greater role in the onset of depressive symptoms rather than in the maintenance, exacerbation, and/or recovery from already existing symptoms. They also suggest that failure to examine the role of initial symptomatology could cloud findings from prospective studies, perhaps resulting in the mixed and inconclusive findings from the studies discussed previously.

PURPOSE

This study had two major goals. First, consistent with Metalsky et al. (1993) and Robinson et al. (1995), we tested the hypothesis that changes in depressive symptoms would be predicted by a Self-Esteem \times Attributional Style \times Life Stress three-way interaction. We posited that the combination of low self-esteem, high negative attributional style, and high stress would result in the greatest increases in depressive symptomatology. Second, on an exploratory basis, we were interested in investigating how level of initial depressive symptomatology would influence these effects.

METHOD

Participants and Procedure

Participants were students attending two suburban high schools in the Buffalo, New York area. Students in four social sciences classes at a large public high school, and four English classes at a private parochial school were invited to participate. The first assessment included 163 students ($n = 163$), the second assessment (14 weeks later) yielded follow-up data on 133 ($n = 133$) of these individuals. Attrition was due to students' absence from class on the second session. Individuals who did not complete the second assessment did not differ significantly on any Time 1 (T1) measure from those participants who completed both sessions of the protocol. Participants with incomplete data on any measure included in this study were dropped from analyses, leaving a final sample of 115 participants (58 female) who had a mean age of 16.5 years ($SD = 1.2$, range 14–19 years at the first assessment). Ninety-eight percent of the students were Caucasian, whereas 2% were Asian or Hispanic.

Testing sessions were conducted in the students' regular classrooms in groups of 15–25 participants. At the first session (T1), the researcher verbally announced the study as one of "adolescent thoughts and feelings" and the voluntary and confidential nature of the study was explained. The second session (T2) was conducted exactly 14 from the first date, and the assessments at the two schools were scheduled less than 1 week apart.

MEASURES

Attributional Style

The Children's Attributional Style Questionnaire (CASQ) is a 48-item self-report measure of explanatory style (Kaslow, Tannebaum, & Seligman, 1978) that was completed at T1. Each item presents a hypothetical event and two possible explanations for why the event occurred. Participants are instructed to imagine the event happening to them, and then to choose which of the two explanations best described why the imagined event occurred. For each event, one causal dimension (either internality, globality, or stability) is varied while the other two are held constant. Consistent with Robinson et al. (1995), a negative composite score was derived by adding across the three dimensions for the 24 items describing negative events. Higher scores on this composite reflect more internal, global, and stable attributions for negative events. Coefficient alpha was .53 in the present sample. Similar modest levels of internal consistency are commonly reported with this instrument. For example, internal consistency was .43 in the Robinson et al. (1995) study, .37 in the Hilsman and Garber (1995) study, .19 in the Dixon and Ahrens (1992) study, and the median internal consistency across nine testing sessions was .56 in the Nolen-Hoeksema et al. (1992) study. On the other hand, amongst eight-grade students, the instrument demonstrated good test-retest reliability over a 6-month period ($r = .60$; Nolen-Hoeksema et al., 1992) suggesting that these styles are relatively stable.

Self-Esteem

Rosenberg Self-Esteem Scale (RSE; Rosenberg, 1979) is a 10-item measure that assesses global self-esteem. Participants are instructed to answer questions based on how they generally feel about themselves (e.g., "I take a positive attitude toward myself"). Each question is answered on a 5-point scale ranging from 1 (*strongly agree*) to 5 (*strongly disagree*). Higher scores indicate more positive self-esteem. This measure was completed at T1, and had a coefficient alpha of .71. Test-retest reliabilities of .85 and .88 have been reported for 2-week intervals (Rosenberg, 1979).

Life Events

The Life Event Schedule (LES) is a measure of 45 potentially stressful life events that are relevant to school-aged children. Similar versions of this unpublished instrument developed by Garber and her colleagues have been used in several previous studies (e.g., Little & Garber, 2000; Robinson et al., 1995). Participants are instructed to answer "yes" or "no" to indicate whether or not each event had occurred in the previous 14 weeks. For each event that occurred, participants are asked to rate its severity on a 5-point scale (e.g. 1 = *not bad at all*, 5 = *horrible*). Examples of events include "your parents separated or divorced," "you got into serious trouble at school," and "someone in your family was attacked or robbed." There are an additional three blanks for participants to list any serious events that were not included, and to again rate their severity on the 5-point scale. This instrument was completed at T2 and covered the time period between the two sessions. In this study, a total score was calculated based on the number of events endorsed in order to minimize potential subjective bias associated with severity ratings (see Monroe & Simons, 1991). This total score reflects the number of stressful life events that occurred during the 14-week interval between the two assessments.

Depressive Symptoms

The Beck Depression Inventory (BDI; Beck, Steer, & Garbin, 1988) is a 21-item self-report measure of the severity of cognitive, affective, motivational, and physiological symptoms of depression in the past week. Its use in adolescent samples has been validated for both clinical and student populations (Beck et al., 1988). Respondents are instructed to answer "the way you have been feeling in the last past week, including today." Because of anticipated concerns from school administrators, the item that discusses suicidal ideation and intent (Item 9) was omitted, leaving 20 items. Cronbach alpha coefficients were .91 at T1 and .94 at T2.

RESULTS

Preliminary Analysis

Preliminary analyses were conducted to determine if any of the measures of cognitive style, stress, or symptoms varied as a function of age or gender. None of the correlations between age and depressive symptoms, life events, negative attributional

Table I. Descriptive Statistics and Correlations

	Mean	SD	Age	T1 BDI	T2 BDI	Stress	CASQ	RSE
Age	16.5	1.19	1.00	-.05	-.05	-.17	.01	-.01
T1 BDI	8.66	8.35	.91	1.00	0.62***	0.33***	0.35***	-0.69***
T2 BDI	7.97	9.18	.94		1.00	0.48***	0.30**	-0.54***
Stress	3.79	2.81				1.00	0.00	-0.17
CASQ	9.05	2.97	.53				1.00	-0.40***
RSE	36.94	8.05	.71					1.00

Note. BDI = Beck Depression Inventory, BAI = Beck Anxiety Inventory, Stress = number of stressful life events, CASQ = Children's Attributional Style Questionnaire, RSE = Rosenberg Self-Esteem Scale. ** $p < .01$. *** $p < .001$.

style, or self-esteem were statistically significant. However, independent samples t -tests revealed that compared with males, female adolescents reported higher levels of depressive symptoms at T1, 10.2 vs. 7.1; $t(113) = 2.04$, $p < .05$, and at T2, 10.3 vs. 5.6; $t(113) = 2.78$, $p < .01$. Compared to males, females also reported more stressful events, 4.4 vs. 3.2; $t(113) = 2.44$, $p < .05$.

As shown in Table I, levels of depressive symptoms were moderately stable over the 14-week prospective interval ($r = .62$, $p < .001$), and paired samples t tests revealed that mean values were not significantly different at the two time periods, $t < 1$. Table I also shows that stressful life events were not significantly correlated with either self-esteem ($r = -.17$) or negative attributional style ($r = .00$), suggesting that these theoretical diatheses did not bias stress ratings (see Monroe & Simons, 1991). However, life events were correlated with depressive symptoms at both T1 ($r = .33$, $p < .001$) and T2 ($r = .48$, $p < .001$), which could reflect the causal effect of depressive symptoms on life events (i.e., stress generation), the causal effect of life events on depressive symptoms, or self-report biases.

Stress and Cognitions Predicting Depressive Symptoms

Our major hypothesis suggests a three-way interaction between negative attributional style, self-esteem, and life stress in predicting subsequent changes in depressive symptoms. To test this hypothesis, we conducted a multiple hierarchical regression analysis with T2 depressive symptoms as the dependent variable. The first block included T1 BDI scores to control for initial depressive symptoms. The second block included stressful life events, self-esteem, and negative attributional style. The set of two-way interactions (LES \times CASQ, LES \times RSE, RSE \times CASQ) was entered as the third block, and finally the three-way interaction (LES \times CASQ \times RSE) was entered as the fourth block. This analysis was first conducted for the sample as a whole, and subsequently separately for participants who began the study with either very low initial depressive symptoms or mild initial symptoms. In each of the regression analyses reported, Cook's Distances were all < 1 , suggesting that results were not driven by unduly influential data points.

As can be seen in the left hand section of Table II, initial depressive symptoms was a significant predictor of T2 depressive symptoms, $F(1, 113) = 71.07$, $p < .001$, R^2 change = .386, $pr = .62$, for the sample as a whole. The second block of self-esteem, negative attributional style, and stressful life events was a significant predictor

Table II. Multiple Hierarchical Regression, Prediction of T2 Depressive Symptoms

Block	Predictors in set	Entire sample ($n = 115$)			Low initial depression ($n = 57$)			Mild initial depression ($n = 58$)		
		<i>F</i> change	Within set <i>t</i>	<i>pr</i>	<i>F</i> change	Within set <i>t</i>	<i>pr</i>	<i>F</i> change	Within set <i>t</i>	<i>pr</i>
1	T1 BDI	71.07***		.62	6.27*		.32	20.13***		.51
2	Main effects	9.21***			3.56*			5.90**		
	Stress		4.67***	.41		1.74, $p = .09$.24		4.05***	.49
	CASQ		1.36	.13		1.51	.21		0.56	.08
	RSE		2.29*	-.21		1.87, $p = .07$	-.25		1.56	-.21
3	Two-way interactions	1.15			4.99**			1.22		
	Stress \times CASQ		0.52	-.05		0.29	.04		0.20	-.03
	Stress \times RSE		0.50	.05		0.32	.05		1.84, $p = .07$.25
	CASQ \times RSE		1.84, $p = .07$	-.18		3.79**	-.48		0.54	-.08
4	Stress \times CASQ \times RSE	2.64, $p = .11$.16	6.39*		-.34	0.04		-.03

Note. BDI = Beck Depression Inventory, Stress = number of stressful life events, CASQ = Children's Attributional Style Questionnaire, RSE = Rosenberg Self-Esteem Scale, *pr* = partial correlation.

* $p < .05$. ** $p < .01$. *** $p < .001$.

of residual change in depressive symptoms, $F(3, 110) = 9.21, p < .001, R^2$ change = .123. Both self-esteem, $t(110) = 2.29, p < .05, pr = -0.21$, and stressful life events, $t(110) = 4.67, p < .001, pr = .41$, made significant unique contributions to the prediction of residual change in depressive symptoms. Adolescents with greater stress and lower self-esteem reported higher levels of depressive symptoms at T2 after controlling for initial symptoms. The third block consisting of the set of two-way interactions was not predictive of change in depressive symptoms, $F(3, 107) = 1.15, p > .05, R^2$ change = .015. Most important, the hypothesized three-way interaction of stress, self-esteem, and attributional style was not significant, $F(1, 106) = 2.64, p = .11, R^2$ change = .012, $pr = .16$.³

Differential Impact of Initial Depressive Symptoms

Prior studies indicate that the cognitive diathesis–stress interaction may vary based on initial depression levels (e.g., Dykman & Johll, 1998; Roberts & Kassel, 1997; Roberts & Monroe, 1992). To examine the possibility that initial level of depressive symptoms could affect the diathesis–stress response, we separated participants into initially low depressive symptoms (T1 BDI < 7; Mean = 2.6) and initially mild depressive symptoms (T1 BDI ≥ 7; Mean = 14.6) subgroups based on median splits.

Low Initial Depressive Symptoms Group

The results of the regression analysis predicting T2 depressive symptoms for the low initial depression group are shown in the middle section of Table II. The main effect of initial depressive symptoms was a significant predictor of variance in T2 depressive symptoms, $F(2, 55) = 6.27, p < .05, R^2$ change = .102, $pr = .32$. The second block of attributional style, self-esteem, and stress accounted for significant residual change in T2 depressive symptoms, $F(3, 52) = 3.56, p < .05, R^2$ change = .153. However, none of the individual variables made statistically significant *unique* contributions. The set of two-way interactions predicted follow-up depressive symptoms, $F(3, 49) = 4.99, p < .005, R^2$ change = .174. Within this set, only the Self-esteem × Negative Attributions interaction made a significant contribution to changes in T2 depressive symptoms, $t(49) = 3.79, p < .001, pr = -.48$. Of most relevance, for this subsample the hypothesized three-way interaction (LES × CASQ × RSE) significantly predicted follow-up depressive symptoms, $F(1, 48) = 6.39, p < .05, R^2$ change = .067, $pr = -.34$.^{4,5}

³Additional analyses were conducted on each separate dimension of the CASQ to determine whether individual components might interact with self-esteem and life events in predicting depressive symptoms. The three-way interaction was statistically significant in the case of Stability, $F(1, 103) = 4.68, pr = -.21, p < .05$, and showed a marginal trend in the case of Globality, $F(1, 102) = 3.41, pr = -.18, p < .07$. On the other hand, the three-way interaction failed to predict depressive symptoms in the case of Internality, $F(1, 103) = 0.023, pr = -.02, p = .88$.

⁴The Self-Esteem × Attributional Style interaction, $t(48) = 3.70, pr = -.47, p < .005$, and the Self-Esteem × Attributional Style × Life Stress three-way interaction, $F(1, 47) = 5.70, pr = -.33, p < .05$, remained statistically significant when gender was statistically controlled in the first step of this regression analysis.

⁵Additional analyses found that none of the three dimensions of the CASQ on their own interacted with self-esteem and life events in predicting depressive symptoms among these initially asymptomatic participants: Stability, $F(1, 46) = 1.00, pr = .15, p = .32$; Globality, $F(1, 45) = 0.02, pr = -.02, p = .89$; Internality, $F(1, 46) = 0.28, pr = .08, p = .60$.

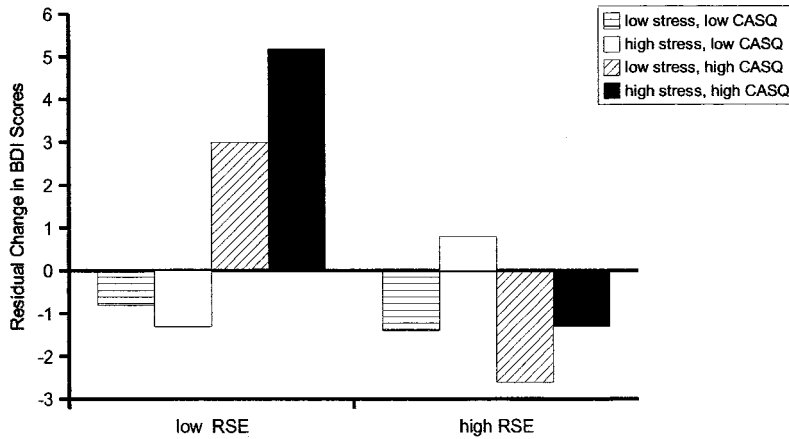


Fig. 1. Residual change in depressive symptoms as a function of stress, attributional style, and self-esteem.

To examine the form of this three-way interaction between attributional style, self-esteem and stress, median splits were conducted on attributional style, self-esteem, and stress among participants in the low initial depressive symptoms subgroup. The mean residual BDI score for each of these groups is reported in Fig. 1. Consistent with our hypothesis, residual increases in depressive symptoms were largely limited to individuals with both a negative attributional style and low self-esteem, particularly when combined with life stress. In contrast, each of the other groups experienced either little to no residual change or residual decreases in depressive symptoms.

Mild Initial Depressive Symptoms Group

The results of the regression analysis predicting T2 depressive symptoms for the mild initial depressive symptoms group are shown in the right-hand section of Table II. For these participants, the first block of T1 depressive symptoms contributed significantly to follow-up depression levels, $F(1, 56) = 20.13, p < .001, R^2 \text{ change} = .264, pr = .51$. At Step 2, the set of stressful life events, self-esteem, and negative attributional style was significant, $F(3, 53) = 5.90, p < .005, R^2 \text{ change} = .184$. Within this set, life stress was the only uniquely significant predictor, $t(53) = 4.05, p < .001, pr = .49$. Participants with more stressful life events had higher levels of depressive symptoms at T2 (with T1 symptoms statistically controlled). Neither the set of two-way interactions nor the three-way interactions (blocks 3 and 4) significantly predicted later depressive symptoms.⁶

⁶It is possible that different patterns of findings between our initially asymptomatic and initially mildly depressed subgroups were the result of differences in variance among measures across these subgroups. For example, if there were restricted variance in self-esteem, attributional style, life stress, or T2 depression among the initially mildly depressed adolescents, it would have been difficult to detect effects (including the three-way interaction) in this group. In contrast to this possibility, Levene's Test for Equality of Variances indicated that initially mildly depressed adolescence had *greater* variance in T2 depression, $F = 20.89, p < .001$, and stressful life events, $F = 5.44, p < .05$, compared to the initially asymptomatic adolescents, and did not significantly differ in terms of variance in self-esteem or attributional style.

DISCUSSION

This prospective study was designed to test Metalsky et al.'s integrated model of cognitive vulnerability to depressive symptoms among adolescents (Metalsky et al., 1993). This model posits that negative attributional style increases the depressogenic impact of life stress more strongly among individuals with low self-esteem than among those with high self-esteem. In testing this model, we examined whether results would vary as a function of whether participants were relatively symptom-free versus mildly symptomatic at the outset of the study.

Results were consistent with Metalsky et al.'s integrated model (Metalsky et al., 1993), but only among initially asymptomatic participants. In particular, among adolescents who were low in depressive symptoms at the start of the study, the three-way interaction between attributional style, self-esteem, and life stress significantly predicted residual change in depressive symptoms over the 14-week prospective interval. Among these participants, low self-esteem amplified the impact of a negative attributional style, whereas high self-esteem buffered the vulnerability associated with a negative attributional style. The most highly vulnerable participants in our sample (i.e., those with high negative attributional style, low self-esteem, and high stress) experienced residual increases in depressive symptoms, whereas participants who were theoretically less vulnerable either experienced residual decreases in symptoms or no change whatsoever. The importance of the combined roles of self-esteem and attributional style was also supported by results of the two-way interactions (Attributional Style \times Life Stress and Self-Esteem \times Life Stress), which failed to significantly predict residual change in depressive symptoms. In other words, neither of these factors acted as a diathesis when examined in isolation from the other. These results suggest that core vulnerability to the onset of depressive symptoms following life stress involves the combination of both a negative attributional style *and* low self-esteem.

Together with Metalsky et al. (1993) and Robinson et al. (1995), our results suggest that self-esteem moderates the degree of vulnerability associated with negative attributional styles. In particular, vulnerability to the onset of depressive symptoms appears to involve the combination of low self-esteem *and* a negative attributional style. Furthermore, as a result of the moderate correlation ($r = -.4$) between these variables, it appears that for many adolescents low self-esteem will work hand in hand with a negative attributional style in putting them at risk for depression. But why is the interaction of these factors important? Why would negative attributions be more harmful among persons with low self-esteem than among those with relatively high self-esteem? Metalsky et al. (1993) suggest that high self-esteem breaks the link between negative attributions and further processes, such as generalized hopelessness, that contribute to the onset of depression. But how does this work?

Clearly, these high self-esteem, negative attributional style individuals present an enigma that demands further clarification. Although their tendency to attribute negative life events to internal, stable, and global causes should lead them to the expectation of highly aversive outcomes in the future (hopelessness), they appear to be resilient to the development of depressive symptoms in the face of stress. We would raise the possibility that these individuals experience what has variously been referred to as noncontingent self-esteem or unconditional positive self-regard (Rogers, 1961). Because their sense of value as a person is strongly internalized, they are capable

of simultaneously expecting that serious negative events will surround them both now and in the future (as a result of their negative attributional styles) *and* distance themselves from those problems (as a result of noncontingent self-esteem). Relatedly, these individuals may ascribe little importance of these anticipated negative events to their personal goals and core identity, which may prevent them from experiencing a diminished sense of self (Roberts & Monroe, 1994). Along these lines, it may prove useful to consider a multifaceted view of hopelessness (e.g., Snyder, Haridi, Michael, & Cheavens, 2000), including hopelessness about external situations (e.g., the expectation of future stressors) and hopelessness about the self (e.g., the expectation of not ever being a competent, lovable, valuable person or achieving goals central to one's identity). It may be that these paradoxical individuals experience more of the latter form of hopelessness and less of the former. Within this framework, we suggest that hopelessness about external situations is not as important in understanding the onset of depression as hopelessness about the self. In addition, it may be that these individuals with a negative attributional style, but relatively high self-esteem, have heightened self-efficacy, which would lead them to expect that they can cope with and get through these anticipated adversities. These speculative ideas need to be explicitly tested in future research.

Our findings also suggest the possibility that previous null results with attributional style (e.g., Bennett & Bates, 1995; Cook, Ahrens, & Pearson, 1995; Follete & Jacobson, 1987; Hunsley, 1989; Johnson & Miller, 1990) were the consequence of high negative attributional style participants varying in terms of self-esteem: To the extent that a sample includes participants with a negative attributional style, but relatively high self-esteem, the effect of attributional style will be attenuated. Recently, Haaga et al. (1995) explored other participant characteristics that could moderate the association between negative attributional style and depression. These investigators found that individuals who tend to think extensively about the causes of life events, as well as those who tend to see life events as arising from single causes, show stronger relations between attributional style and depression than those who tend to think less about the causes of events and those who ascribe events to multiple causes. Future research might explore the degree to which these attributional characteristics are associated with lower self-esteem. It may be that the same at-risk individuals are identified either by low self-esteem or by attributional rumination and low attributional complexity.

Interestingly, our results varied as a function of initial symptom status. Among participants who began the study with mild levels of depressive symptoms, the interactions between stressful life events, self-esteem, and negative attributional style (including the hypothesized three-way interaction) failed to significantly predict residual change in symptomatology. Instead, life stress was the only measured variable that predicted residual change in depressive symptoms: Individuals who experienced more stressful life events tended to remain relatively depressed 14 weeks later. These results suggest that a high frequency of negative life events are involved in the maintenance of mild depressive symptomatology. It may be that mildly depressed individuals are prone to generating stressful events in their lives. For example, Hammen (1991) documented how clinically significant depression can contribute to future life stressors that potentially maintain the disorder. Likewise, other research has

demonstrated that mild levels of depressive symptoms can contribute to stress generation that in turn predicts future depression (e.g., Davila, Bradbury, Cohan, & Tochluk, 1997; Potthoff, Holahan, & Joiner, 1995).

The fact that the three-way interaction did not predict follow-up depressive symptoms among initially mildly symptomatic participants suggests that the integrated model of depression may not adequately explain the role of cognitive style in the maintenance, exacerbation, and recovery from already existing depressive symptoms among adolescents. Importantly, neither Metalsky et al. (1993) nor Robinson et al. (1995) examined the effects of initial symptomatology on their findings. It may be that by analyzing only the entire sample, these studies masked important differences among participants based on initial symptoms. It seems quite likely that different causal pathways are involved in determining the course of already existing depressive symptomatology compared to those involved in triggering the onset of initial symptoms. For example, several studies have found that although recovery from depressive episodes involves aspects of attributional style and life events, the specifics of these are quite different than what seems to be the case for the onset of symptoms. In particular, the interaction between attributional style for positive events and the experience of positive life events have been found to predict recovery (Edelman, Ahrens, & Haaga, 1994; Johnson, Crofton, & Feinstein, 1996; Johnson, Han, Douglas, Johannet, & Russell, 1998; Needles & Abramson, 1990). Depressed individuals who have a more adaptive attributional style for positive events (i.e., they attribute positive events to internal, stable, and global causes) experience greater improvements in symptomatology following positive events than those with a less adaptive attributional style for positive events.⁷ To the extent that different processes are involved in determining the onset versus the course of depression, mixed samples that include both initially nondepressed and initially mildly depressed individuals are potentially uninformative (unless these subgroups are specifically examined in analyses). Logically, studies testing models of vulnerability to the onset of depressive symptomatology should use samples that are initially low in symptoms, whereas studies testing models of recovery should use samples that are initially higher in symptoms (see Dykman & Jhll, 1998).

We should note several limitations to this study. First, participants were students attending high school, and as such they experienced considerably milder depressive symptoms than would be the case in a clinical population. Although it would be important to replicate these results in a more clinically relevant sample, our findings paradoxically suggest that cognitive style has a greater impact on individuals who are relatively asymptomatic than on those who are already suffering from depressive symptoms. Consequently, prospective investigation of clinical relapse among previously depressed adolescents might prove to be a particularly suitable design for testing this model. Second, our sample was relatively small in size and extremely homogenous; testing this model in a larger and more diverse sample (e.g., among non-Caucasians) is necessary to determine the degree to which these findings generalize

⁷It may be that these processes were operating among the relatively symptomatic individuals in our sample, though we were not able to test these specific propositions because positive life events were not assessed in our study.

to the adolescent population at large. Relatedly, statistical power in this study was limited to detecting interactions with medium to large effect sizes. Third, while this study involved a prospective design, the 14-week interval between assessments was a relatively short time frame to examine major changes in depressive symptoms; longer intervals might provide a better opportunity to investigate more serious changes in functioning. Fourth, our measure of negative attributional style had low internal consistency ($\alpha = .53$), as is true with virtually every published study that has used this instrument. Such psychometric problems likely attenuate effects, and future studies should work on improving measurement of attributional style among adolescents (see Thompson, Kaslow, Weiss, & Nolen-Hoeksema, 1998). Finally, our self-report measure of life stress was potentially subject to recall and memory biases (see Monroe & Roberts, 1990). In order to minimize this subjective bias, we operationalized life stress as the quantity of events instead of incorporating perceived severity ratings. Future studies might consider the use of interview-based approaches that are relatively objective, but are still sensitive to evaluating the severity of events (see Brown & Harris, 1978).

In summary, this study found that self-esteem moderated the degree to which negative attribution style acted as a diathesis to depressive symptoms following life stress, but only among initially asymptomatic adolescents. Specifically, among participants who began the study relatively symptom-free, those with the combination of a negative attributional style, low self-esteem, and high life stress experienced the greatest increases in depressive symptoms. For participants who were initially relatively symptomatic, only life stress and self-esteem (marginally) predicted changes in depressive symptoms. These results suggest that cognitive vulnerability involving the combination of low self-esteem and a negative attributional style might be more relevant to understanding the onset of depressive symptoms, as opposed to the course of already existing adolescent depressive symptomatology.

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