

A Prospective Test of the Hopelessness Theory of Depression in Children

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Providing a developmental extension of the cognitive theories of depression, researchers and theorists (e.g., Cole & Turner, 1993; Rose & Abramson, 1992) have suggested that during early to middle childhood, attributional styles may mediate rather than moderate the association between negative life events and the development of depression. Within the context of the hopelessness theory of depression (e.g., Abramson, Metalsky, & Alloy, 1989), we tested this hypothesis in a 6-month longitudinal study of 4th- and 5th-grade children. Using path analysis, we found support for the mediating role of attributional styles among both 4th and 5th graders. Supporting recent refinements in the hopelessness theory, the best fitting mediation model was one in which depressive symptoms exhibited reciprocal relations with the other variables. Specifically, attributional styles partially mediated the link between verbal victimization and residual change in depressive symptoms. In addition, initial depressive symptoms predicted negative changes in children's attributional styles and increases in verbal victimization across the follow-up. Contrary to our hypothesis, we also found support for the moderating role of attributional styles, although this was significant only among 5th graders.

According to both the reformulated theory of learned helplessness (Abramson, Seligman, & Teasdale, 1978) and the hopelessness theory (Abramson, Metalsky, & Alloy, 1989), individuals with negative attributional styles should be vulnerable to developing depression in the presence, but not absence, of negative life events. In both theories, therefore, negative attributional styles are hypothesized to moderate the relation between negative life events and the development of depression.

The theories' attributional vulnerability-stress hypothesis has received considerable support among adults and adolescents (for a review, see Abramson et al., 2002; Gibb & Coles, 2005). In contrast, there is only mixed support for the attributional vulnerability-stress hypothesis in predicting the development of depression in children (for reviews, see Gibb & Coles, 2005; Joiner & Wagner, 1995). Cole and Turner (1993; Turner & Cole, 1994) suggested that these mixed findings might be due to the assumption, in the vulnerabil-

ity-stress theories, of a relatively stable, trait-like vulnerability factor. Inasmuch as children's attributions may not develop into relatively stable styles until late childhood or early adolescence (see Nolen-Hoeksema, Girgus, & Seligman, 1992), Cole and Turner (1993; Turner & Cole, 1994) hypothesized that attributional styles may mediate, rather than moderate, the association between negative life events and the development of depression during early to middle childhood. This view is consistent with Rose and Abramson's (1992) developmental extension of the hopelessness theory in which they hypothesized that negative events in childhood, particularly verbal victimization (e.g., teasing, rejection, humiliation), would contribute to the development of a negative attributional style, which would then leave the individual vulnerable to the development of depression. Thus, according to both Cole and Turner (1993; Turner & Cole, 1994) and Rose and Abramson (1992), it is only once children reach a certain level of cognitive development (e.g., concrete or formal operational thought) and their attributional styles become relatively stable that attributional styles shift from a role of mediating to one of moderating the relation between negative life events and the development of depression.

Despite the mixed results obtained for studies examining the attributional vulnerability-stress hypothesis in children, there is some evidence to suggest that

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the predictive ability of the attributional vulnerability-stress interaction does increase as children age (see Abela, 2001; Conley, Haines, Hilt, & Metalsky, 2001; Nolen-Hoeksema et al., 1992). To our knowledge, however, only one study has directly compared the mediating versus moderating role of attributional styles in the association between negative life events and depression in early to middle childhood. In this cross-sectional study, Cole and Turner (1993) found that attributional styles mediated, rather than moderated, the relation between negative life events and depressive symptoms among fourth, sixth, and eighth graders. Examining the three grade levels separately, Turner and Cole (1994) found support for the moderating role of negative attributional styles only among eighth graders. These results support the hypothesis that during early to middle childhood, attributional styles mediate rather than moderate the association between negative life events and the development of depression. Despite the strengths of Cole and Turner's (1993; Turner & Cole, 1994) studies, however, they are limited by their cross-sectional design. Therefore, although the results are consistent with the developmental models tested, they did not actually examine changes in any of the variables.

Our primary goal in this study, therefore, was to examine whether attributional styles mediate versus moderate the relation between verbal victimization and depressive symptoms using data from a 6-month longitudinal study of children. A 6-month time interval was chosen for two reasons. First, we wanted to maximize our chances of detecting significant changes in children's attributional style, without making the follow-up interval so long that potential effects of victimization and attributional style on depressive symptoms would be obscured. Second, our study was designed in large part to replicate and extend the findings of Nolen-Hoeksema et al. (1992), who used 6 months as their follow-up interval. We focused our investigation on children between the ages of 9 and 11 to optimize our power of observing the mediating role of attributional styles given evidence from previous studies suggesting that attributional styles become relatively more stable around age 12 (e.g., Nolen-Hoeksema et al., 1992). In this age range, therefore, we predicted that we would find support for the mediating, but not moderating, role of attributional styles.

We chose to focus specifically on verbal victimization (i.e., rejection and teasing) as our measure of negative life events because theory and research have suggested that it may be more strongly related to depressive thinking and symptoms than other forms of negative life events. Specifically, Rose and Abramson (1992) hypothesized that verbal victimization would be more likely to contribute to the development of negative attributional styles than other forms of negative life events because, with verbal victimization, the de-

pressive cognitions are directly supplied to the child. In contrast, with other forms of negative life events, the child must supply his or her own explanations for the event's occurrence, which may allow more opportunity for the child to make more benign attributions. Supporting Rose and Abramson's hypothesis, a number of studies have suggested that verbal victimization is more strongly related to depressive cognitions, symptoms, and diagnoses than are other negative life events (e.g., Gibb, Alloy, Abramson, & Marx, 2003; Gibb et al., 2001; Gibb, Butler, & Beck, 2003; Reinherz, Giaconia, Hauf, Wasserman, & Paradis, 2000; Rudolph, Hammen, & Burge, 1994; Stone, 1993).

In conducting our analyses, we first tested the hopelessness theory's (Abramson et al., 1989) vulnerability-stress hypothesis. Specifically, using path analysis, we tested the hypothesis that children's attributional styles at the initial assessment would moderate the relation between levels of verbal victimization occurring during the 6-month follow-up and residual changes in children's depressive symptom levels over the follow-up. Given findings from previous studies within this age range, we predicted that this model would not provide a good fit to the data.

Second, based on Cole and Turner's (1993; Turner & Cole, 1994) findings as well as Rose and Abramson's (1992) theory, we tested a mediation model. Specifically, we specified a model in which (a) verbal victimization occurring during the follow-up predicted residual change in children's attributional styles over the follow-up, (b) attributional styles at Time 1 predicted residual change in children's depressive symptoms over the follow up, and (c) attributional styles assessed at Time 1 mediated the link between verbal victimization reported as having occurred in the 6 months preceding Time 1 and residual change in depressive symptom levels between Time 1 and Time 2. According to this model, therefore, experiences of verbal victimization contribute to the development of negative attributional styles, which then leave the children vulnerable to developing depression. In contrast to the moderation model, we hypothesized that the mediation model would provide a good fit to the data.

Although researchers have typically focused on the role of negative life events and attributional styles in the development of depression, there is evidence that depressive symptoms may also contribute to the development of negative attributional styles as well as to increases in negative life events. For example, there is increasing evidence that depressive symptoms contribute to the development of negative attributional styles among children (e.g., Bennett & Bates, 1995; Johnson & Miller, 1990; Nolen-Hoeksema et al., 1992). In addition, there is growing evidence that depressed individuals may contribute to the generation of stressful events, particularly negative interpersonal events, in their lives (Daley et al., 1997; Davila, Hammen, Burge,

Paley, & Daley, 1995; Hammen, 1991; Potthoff, Hollahan, & Joiner, 1995; Rudolph et al., 2000). There is also evidence that depressed children are more likely to be teased and rejected than are nondepressed children (see Boivin, Hymel, & Hodges, 2001). Given these findings, our secondary goal in this study was to examine the potential reciprocal relations between depressive symptoms and both verbal victimization and attributional styles. In testing this reciprocal effects model, we modified the mediation model by adding direct paths from Time 1 depressive symptoms to Time 2 attributional styles and verbal victimization. This model is consistent with recent refinements to the hopelessness theory of depression (Abramson et al., 1989) in which transactional, rather than unidirectional, relations are hypothesized among the links in the hopelessness theory's etiological chain (Hankin & Abramson, 2001). We hypothesized that the reciprocal effects mediation model would provide a significantly better fit to the data than the pure mediation model.

Method

Participants

Consent forms were sent to the parents of fourth- and fifth-grade children from Philadelphia-area public and private schools. Of the 578 consent forms returned, 507 parents gave consent for their children to participate and 71 parents declined participation. Of those children whose parents provided consent, 448 children participated in the Time 1 assessment and 415 completed the Time 2 assessment, an attrition rate of 7%. Children's attrition from the study was due almost entirely to children moving to a different school (81%). A series of *t* tests was conducted to determine if attriting children differed from nonattritors on any of the variables included in this study. None of these analyses was significant. At the initial assessment, the average age of the children was 9.77 years ($SD = 0.72$). Two hundred sixty (58%) of the children were girls and 253 (56.5%) were in the fourth grade. In terms of racial and ethnic composition, 227 (50.7%) were African American, 106 (23.7%) were Caucasian, 44 (9.8%) were Hispanic, and the remaining 71 (15.8%) were from other racial and ethnic groups.

Measures

A modified version of the Childhood Trauma Questionnaire-Emotional Abuse subscale (CTQ-EA; Bernstein et al., 1994) was used to assess children's levels of verbal victimization. A number of studies have supported the reliability and validity of the CTQ-EA in both clinical and community samples (e.g., Bernstein, Ahluvalia, Pogge, & Handelsman, 1997; Bernstein et al., 1994, 2003; Scher, Stein, Asmundson, McCreary,

& Forde, 2001). For this study, a modified version of the CTQ-EA (CTQ-VV) was used. The CTQ-EA was modified for this study by (a) asking children to only report events occurring in the prior 6 months, (b) not limiting the assessment of victimization to that committed by parents, and (c) omitting one item ("I believe that I was emotionally abused"). Total scores on the CTQ-VV can range from 4 to 20, with higher scores indicating higher levels of verbal victimization. In this study, the internal consistency of the CTQ-VV was .70 at Time 1 and Time 2.

The Revised Children's Attributional Style Questionnaire (CASQ-R; Kaslow & Nolen-Hoeksema, 1991), a 24-item forced choice questionnaire, was used to assess children's attributional styles. For each item, hypothetical events are presented and the child must pick one of two attributional explanations for the event. In each pair of attributional explanations, one of the attributional dimensions varies (internality, stability, or globality), whereas the other two are held constant. Twelve of the items present positive events (e.g., "You get an 'A' on a test") and 12 of the items present negative events (e.g., "A person steals money from you"). Responses to the CASQ-R are used to create an overall composite score (CASQ-OC), which represents the extent to which children attribute negative events to internal, stable, and global causes and positive events to external, unstable, and specific causes. Scores on the CASQ-OC can range from -12 to 12, with lower scores indicating a more negative attributional style. In validating the CASQ-R, Thompson, Kaslow, Weiss, and Nolen-Hoeksema (1998) administered the instrument to a sample of 9- to 12-year-olds at two time points, separated by 6 months. In their sample, CASQ-OC scores were fairly stable over 6 months ($r = .53$) and exhibited fair internal consistency ($\alpha = .61$ at both Time 1 and Time 2). In this study, the CASQ-OC also exhibited fair internal consistency ($\alpha = .53$ and .62 at Time 1 and Time 2, respectively).¹

The Children's Depression Inventory (CDI; Kovacs, 1981), a 27-item self-report inventory, was used to assess children's levels of depressive symptoms.

¹Although the hopelessness theory focuses primarily on stable, global attributions for negative events (i.e., Generality Composite for Negative Events), the low internal consistency of this composite ($\alpha = .31$ and .38 at Times 1 and 2, respectively) precluded its examination. Given this, as well as Joiner and Wagner's (1995) meta-analytic results showing that the CASQ composite based on attributions for both positive and negative events exhibited stronger concurrent and predictive relations with depression than did the composites based on attributions for negative or positive events alone, we also conducted analyses using the Generality Composite for Negative and Positive events (created by summing the number of stable, global responses to negative events and subtracting these from the sum of stable, global responses to positive events; $\alpha = .44$ and .56 at Times 1 and 2, respectively). The results of these analyses were virtually identical to those reported for the Overall Composite. Therefore, only results obtained using the Overall Composite are reported.

Each item on the CDI inquires about the presence of a depressive symptom in the previous 2 weeks. The CDI was designed to assess symptoms of depression in children between the ages of 8 and 17, and numerous studies have supported its reliability and validity (e.g., Kovacs, 1981, 1985; Smucker, Craighead, Craighead, & Green, 1986). Consistent with previous studies (e.g., Nolen-Hoeksema et al., 1992; Smucker et al., 1986), Item 9 on the CDI, which assesses suicidal ideation, was not administered, because of concerns previously expressed by school officials. Excluding Item 9, total scores on the CDI can range from 0 to 52, with higher scores indicating more severe levels of depressive symptoms. In this study, the CDI exhibited good internal consistency ($\alpha = .87$ at Time 1 and Time 2).²

Procedure

Participants were recruited from Philadelphia-area public and private schools. Letters inviting participation in the study were sent home to parents of fourth- and fifth-grade children in participating schools (18 public and 6 private schools). Children whose parents provided written informed consent were asked for their assent to participate in the study. Children providing written assent to participate in the study were administered the CTQ-VV, CASQ-R, and CDI. These measures were administered in a group format and were read aloud as the children followed along and answered the questions. All measures were administered twice, approximately 6 months apart—once in the fall and once in the spring. The mean interval between the initial and follow-up assessments was 5.90 months ($SD = 0.79$).

Data Analytic Strategy

The mediation and moderation models were tested using path analyses in AMOS 5 (Arbuckle, 2003). Consistent with the recommendations of Shrout and Bolger (2002), bootstrap procedures were used to provide robust standard errors for the parameter estimates in these models. According to the moderation model, reports of verbal victimization occurring over the follow-up would be more likely to contribute to the development of depressive symptoms among children with relatively negative attributional styles than among chil-

dren with relatively positive attributional styles. In testing the moderation model, we specified a path analytic model in which (a) Time 1 CTQ-VV, CASQ-OC, and CDI predicted its Time 2 counterpart; (b) Time 1 CASQ-OC, and Time 2 CTQ-VV, and the Time 1 CASQ-OC \times Time 2 CTQ-VV interaction term predicted Time 2 CDI scores; (c) each of the exogenous variables were allowed to correlate with one another; (d) the interaction term was allowed to correlate with Time 1 CASQ-OC and the error term for Time 2 CTQ-VV; and (e) all of the error terms were allowed to correlate. As suggested by Aiken and West (1991), all variables were mean centered prior to analysis to reduce multicollinearity in the model. The interaction term was then created by taking the product of the centered Time 1 CASQ-OC and Time 2 CTQ-VV scores. Although we examined overall model fit, our focus in this analysis was whether the Time 1 CASQ-OC \times Time 2 CTQ-VV interaction term significantly predicted residual change in children's depressive symptoms over the follow-up.

Next, the mediation models were tested. According to the mediation model, experiences of verbal victimization contribute to the development of negative attributional styles, which then leave the children vulnerable to developing depression. In conducting these analyses, we tested both full and partial mediation models. In testing the full mediation model, a path analysis model was specified in which (a) each Time 1 variable predicted its Time 2 counterpart, (b) Time 1 CTQ-VV scores predicted Time 1 CASQ-OC and CDI scores, (c) Time 2 CTQ-VV scores predicted Time 2 CASQ-OC, and (d) Time 1 CASQ-OC scores predicted Time 2 CDI scores. In addition, the error terms associated with CASQ-OC and CDI scores were allowed to correlate with each other within each time point. Two conditions were necessary for the mediation hypothesis to be supported. First, the overall model had to provide a good fit to the data. Second, the indirect path from Time 1 CTQ-VV to Time 2 CDI through Time 1 CASQ-OC scores had to be significant. In addition to this full mediation model, we tested partial mediation models to examine the impact of adding direct paths from (a) Time 1 CTQ-VV to Time 2 CDI scores, and (b) Time 2 CTQ-VV to Time 2 CDI scores. Because the partial mediation models differed from the full mediation model only in terms of paths being added, their relative fit to the data could be directly examined using nested model comparisons (χ^2 difference test).

Finally, we tested the reciprocal effects mediation model. As mentioned previously, this model was identical to the mediation model except that direct paths were added from Time 1 CDI scores to Time 2 CTQ-VV and CASQ scores. Because this model differed from the mediation model only in terms of two paths being added, its relative fit to the data could be directly examined using nested model comparisons.

²Two additional sets of analyses were also conducted with subsets of CDI items. First, analyses were conducted using a subset of CDI items specifically hypothesized to be part of hopelessness depression (Items 1, 3, 7, 8, 10, 13–17, and 24; cf. Abela & D'Allesandro, 2001; Abramson et al., 1989). Second, given that some of the CDI items assess cognitive symptoms of depression, analyses were also conducted with the cognitive items (i.e., Items 2, 3, 5, 7, 8, 24, and 25; cf., Nolen-Hoeksema, Girgus, & Seligman, 1986) removed. The results of these analyses were virtually identical to those obtained using the full CDI. Therefore, only results obtained using the full CDI are reported.

Table 1. Correlations, Means, and Standard Deviations for Study Variables

Variables	1	2	3	4	5	M	SD	Range
1. T1 CTQ-VV	—					9.72	3.87	4 to 20
2. T2 CTQ-VV	.48	—				9.32	3.69	4 to 20
3. T1 CASQ-OC	-.21	-.14	—			4.98	3.04	-5 to 12
4. T2 CASQ-OC	-.23	-.29	.48	—		5.39	3.27	-8 to 12
5. T1 CDI	.53	.35	-.46	-.43	—	9.38	7.53	0 to 47
6. T2 CDI	.38	.47	-.35	-.51	.65	8.26	7.20	0 to 47

Note: CTQ-VV = Childhood Trauma Questionnaire—Verbal Victimization subscale; CASQ-OC = Revised Children's Attributional Style Questionnaire—Overall Composite; CDI = Children's Depression Inventory. All correlations are significant at $p < .01$.

Recently, Cole and Maxwell (2003) suggested a series of steps in evaluating mediation using structural equation modeling with longitudinal data. Specifically, they suggested that researchers first specify a completely saturated (i.e., zero degrees of freedom) model in which (a) all exogenous variables are allowed to correlate with one another, (b) direct paths are specified from each exogenous variable to every endogenous variable, and (c) each of the error terms associated with endogenous variables are allowed to correlate with one another. The fit of the hypothesized models are then compared to that of the saturated model. The benefit of Cole and Maxwell's approach is that it allows one to systematically examine the impact of omitted paths from the fully saturated model and to determine whether any important paths have been excluded in the hypothesized models. In testing our mediation and reciprocal effects models, therefore, we first specified a fully saturated model as specified previously. We then evaluated the fit of our hypothesized mediation and reciprocal effects models compared to this fully saturated model.

Results

Correlations among each of the variables, as well as their means and standard deviations, are presented in Table 1. As can be seen in the table, all of the correlations were significant. In addition, the levels of negative attributional styles and depressive symptoms observed in this study were similar to those found in other studies of nonclinical children (e.g., Abela, 2001; Nolen-Hoeksema et al., 1986, 1992; Smucker et al., 1986; Thompson et al., 1998). This said, however, there was also a considerable range of scores on each of the variables. In addition, a significant percentage of children scored in the clinical range in terms of depressive symptoms (21.5% and 14.0% at Time 1 and 2, respectively; see Timbremont, Braet, & Dreessen, 2004).³ Thus, although drawn from a community sample, the children in this

³Timbremont, Braet, and Dreessen (2004) identified a cut score of 16 as optimizing sensitivity and specificity in the prediction of major depression. Because we omitted one CDI item (Item 9) from our study, scores were prorated to determine the percentage of children meeting this cutoff.

study exhibited a wide range of symptoms with quite a few likely meeting criteria for major depression.

Next we tested the moderation and mediation models. Although multigroup comparisons were conducted for all models tested to determine whether children's gender or race moderated the models' fit, none of these comparisons was significant.⁴ Therefore, only results for the full sample, collapsed across gender and race, are reported. The first model tested was the moderation model. Specifically, in line with the hopelessness theory's vulnerability-stress hypothesis, we examined whether attributional styles assessed at Time 1 moderated the relation between reports of verbal victimization during the follow-up and residual change in children's depressive symptoms. This model provided an equivocal fit to the data, $\chi^2(5, N=448)=37.65, p < .001$, comparative fit index (CFI) = .96, root mean squared error of approximation (RMSEA) = .12, standardized root mean squared residual (SRMR) = .06 (cf. Hu & Bentler, 1999). Specifically, although the chi-square was significant, this is not uncommon for well-fitting models with large sample sizes (Kline, 1998). The values of the CFI and SRMR, which are less dependent on the size of the sample, suggested that the model provided a good fit to the data. However, the RMSEA value suggests a poor fit. Importantly, the interaction term was not significantly related to Time 2 CDI scores, $\beta = -.05, p = .18$ (see Figure 1).

Given this, exploratory analyses were then conducted to determine whether, as hypothesized by Cole and Turner (Cole & Turner, 1993; Turner & Cole, 1994), the moderation effect might be stronger for relatively older children than for younger children. In testing this hypothesis, a multigroup comparison was conducted in which the interaction term was either constrained to be equal across fourth and fifth graders or was allowed to vary freely.⁵ The constrained model

⁴Because of limited representation of some racial and ethnic groups, the analyses involving children's race were limited to African American and Caucasian children.

⁵In this analysis, we chose to focus on children's grade rather than age because (a) we did not have enough power to look at each age separately and (b) theorists (e.g., Turner & Cole, 1994; Rose & Abramson, 1992) have suggested that the key variable in this type of analysis is children's level of cognitive development rather than simply their age, which is more nearly approximated by grade level.

HOPELESSNESS THEORY

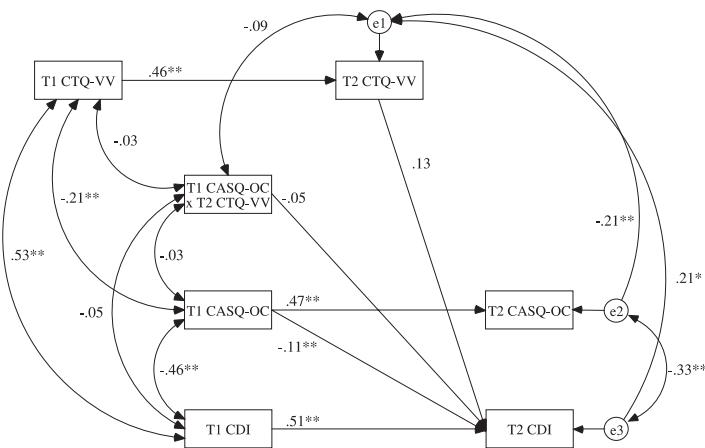


Figure 1. Moderation model. CTQ–VV = Childhood Trauma Questionnaire–Verbal Victimization subscale; CASQ–OC = Revised Children’s Attributional Style Questionnaire–Overall Composite; CDI = Children’s Depression Inventory. * $p < .05$. ** $p < .01$.

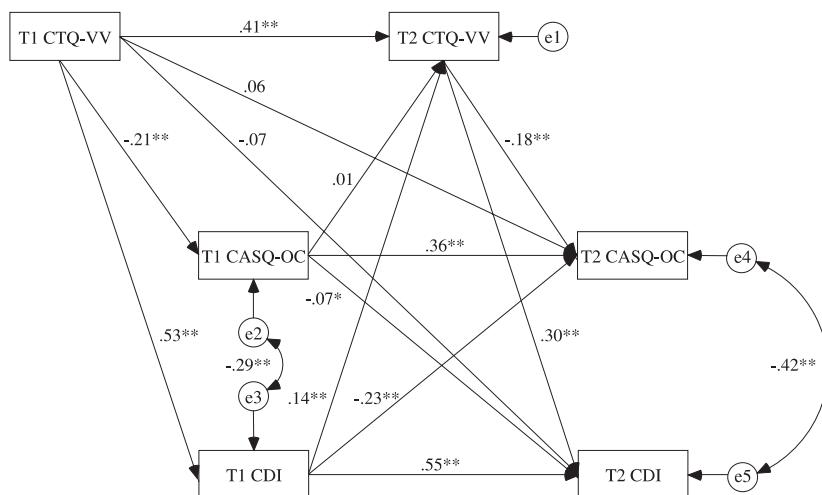


Figure 2. Fully saturated mediation model. CTQ–VV = Childhood Trauma Questionnaire–Verbal Victimization subscale; CASQ–OC = Revised Children’s Attributional Style Questionnaire–Overall Composite; CDI = Children’s Depression Inventory. * $p < .05$. ** $p < .01$.

provided a significantly worse fit than the unconstrained model, $\chi^2(1) = 4.77, p = .03$. In this analysis, the interaction term was significantly related to Time 2 CDI scores among fifth graders, $\beta = -.14, p = .02$, but not fourth graders, $\beta = .004, p = .96$. Indeed, the moderation model provided a good fit to the data among fifth graders, $\chi^2(5, N = 195) = 9.06, p = .11$, CFI = .99, RMSEA = .07, SRMR = .04, but not fourth graders, $\chi^2(5, N = 253) = 31.48, p < .001$, CFI = .95, RMSEA = .15, SRMR = .07. To determine the pattern of the moderation effect among fifth graders, we conducted a final multigroup comparison using a median split on Time 2 CTQ–VV scores. Specifically, a model was tested among fifth graders with relatively high Time 2 CTQ–VV scores versus those with relatively low Time 2 CTQ–VV scores in which (a) Time 1 CTQ–VV,

CASQ–OC, and CDI predicted its Time 2 counterpart; (b) Time 1 CASQ–OC and Time 2 CTQ–VV predicted Time 2 CDI scores; (c) each of the exogenous variables were allowed to correlate with one another; and (d) all of the error terms were allowed to correlate. In this analysis, Time 1 CASQ–OC scores were significantly related to Time 2 CDI scores among fifth graders with relatively high Time 2 CTQ–VV scores, $\beta = -.26, p = .002$, but not among those with relatively low CTQ–VV scores, $\beta = -.08, p = .44$.

Next, we tested the mediation models. Following the recommendations of Cole and Maxwell (2003) outlined previously, our first step in testing these models was to specify a fully saturated model. Because this model was fully saturated, fit indexes were not calculated. However, as can be seen in Figure 2, each of the

paths specified in this model was significant with the exception of the path linking Time 1 CASQ-OC to Time 2 CTQ-VV and the paths linking Time 1 CTQ-VV to Time 2 CASQ-OC and Time 2 CDI. We then tested the full mediation model. This model provided a poor fit to the data, $\chi^2(6, N = 448) = 89.47, p < .001$, CFI = .90, RMSEA = .18, SRMR = .09, and fit significantly worse than the fully saturated model, $\chi^2(6) = 89.47, p < .001$. Next, we tested the partial mediation models. Not surprisingly given the results of the fully saturated model, adding a direct path from Time 1 CTQ-VV to Time 2 CDI did not significantly improve model fit compared to the full mediation model, $\chi^2(1) = 2.07, p = .15$, and this path was not significant, $\beta = .06, p = .18$. We then examined the addition of a direct path from Time 2 CTQ-VV to Time 2 CDI. This model provided an equivocal fit to the data, $\chi^2(5, N = 448) = 29.55, p < .001$, CFI = .97, RMSEA = .11, SRMR = .05, and provided a significantly better fit than the full mediation model, $\chi^2(1) = 59.92, p < .001$. In addition, all of the paths in this model were significant and, using Sobel's (1982) method, we found that the indirect effect of Time 1 verbal victimization on Time 2 depressive symptom levels through Time 1 attributional styles was significant, $z = 2.16, p = .03$. However, the partial mediation model fit the data significantly worse than the fully saturated model, $\chi^2(5) = 29.55, p < .001$, indicating that important paths had been omitted from the partial mediation model, which may have contributed to its equivocal fit.

We then tested the reciprocal effects mediation model. This model was identical to the partial mediation model except that direct paths were added from Time 1 CDI to Time 2 CTQ-VV and Time 2 CASQ-OC scores. This model provided an excellent fit to the data, $\chi^2(3, N = 448) = 3.33, p = .34$, CFI = 1.00, RMSEA = .02, SRMR = .01, and, as can be seen in Figure 3, all of the paths were significant. As hypothesized, this model also provided a

significantly better fit to the data than the partial mediation model, $\chi^2(2) = 26.22, p < .001$. In addition, the reciprocal effects model provided an equivalent fit to the data compared to the fully saturated model, $\chi^2(3) = 3.33, p = .34$, suggesting that no important paths were omitted (cf. Cole & Maxwell, 2003). In this model, the total indirect effects of Time 1 verbal victimization on Time 2 attributional style ($\beta = -.26, p = .001$) and Time 2 depressive symptoms ($\beta = .42, p = .001$) were significant. In addition, the model explained significant portions of the variance in Time 2 attributional style ($R^2 = .31, p = .003$) and Time 2 depressive symptoms ($R^2 = .49, p = .002$).

As before in the test of moderation, exploratory analyses were conducted to determine whether children's grade might be a significant moderator of the indirect effect of Time 1 CTQ-VV scores on Time 2 CDI scores. Specifically, according to Cole and Turner's (1993; Turner & Cole, 1994) developmental hypothesis, we might expect the indirect (mediation) effect to be stronger among relatively younger children. In testing this possibility, a model identical to the reciprocal effects mediation model was specified in which the indirect effect of Time 1 CTQ-VV to Time 2 CDI was either constrained to be equal across the fourth and fifth graders or was allowed to vary freely. The results of the nested model comparison were nonsignificant, $\chi^2(2) = 2.50, p = .29$, indicating that the strength of the indirect effect did not differ significantly based on children's grade.

Finally, given the results reported previously, we tested a combined mediation-moderation model. This model was identical to the reciprocal effects mediation model presented earlier except that the Time 1 CASQ-OC \times Time 2 CTQ-VV interaction term was added as a predictor of Time 2 CDI scores. As with the test of moderation, this interaction term was allowed to correlate with the other exogenous variables and with the error term for Time 2 CTQ-VV. In the full sample,

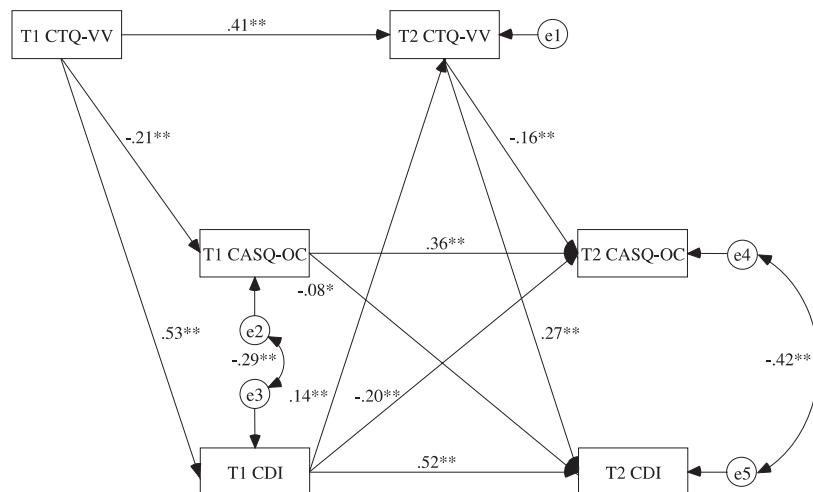


Figure 3. Reciprocal effects mediation model. CTQ-VV = Childhood Trauma Questionnaire—Verbal Victimization subscale; CASQ-OC = Revised Children's Attributional Style Questionnaire—Overall Composite; CDI = Children's Depression Inventory. * $p < .05$. ** $p < .01$.

this combined model provided a good fit to the data, $\chi^2(4, N = 448) = 3.35, p = .50$, CFI = 1.00, RMSEA = .00, SRMR = .01, and all of the paths were significant except the path from the interaction to Time 2 CDI scores, $\beta = -.04, p = .30$. As before, the results of a nested model comparison, $\chi^2(1) = 4.61, p = .03$, suggested that the path from the interaction term was significant among fifth graders, $\beta = -.13, p = .01$, but not fourth graders, $\beta = .01, p = .82$.

Discussion

In this 6-month longitudinal study, we explored the relations among children's reports of verbal victimization, attributional styles, and symptoms of depression. Specifically, within the framework of the hopelessness theory of depression, our primary aim was to test Cole and Turner's (1993; see also Rose & Abramson, 1992) hypothesis that attributional styles would mediate rather than moderate the relation between negative life events and symptoms of depression among children. Consistent with this hypothesis, we found no support for the moderating role of attributional styles when examining the sample as a whole. However, the results of exploratory analyses indicated that the vulnerability-stress interaction was significant among fifth graders but not among fourth graders. Specifically, Time 1 attributional styles predicted residual change in depressive symptoms across the follow-up among fifth graders with relatively high levels of verbal victimization between the two assessment points but not among fifth graders with relatively low levels of verbal victimization.

We also found support for our reciprocal effects mediation model. Specifically, we found that verbal victimization reported as having occurred during the follow-up predicted residual change in children's attributional styles and depressive symptoms over the follow-up and that attributional styles at Time 1 mediated the relation between verbal victimization in the 6 months preceding Time 1 and residual change in children's depressive symptoms over the follow-up. In addition, initial depressive symptoms predicted residual change in levels of verbal victimization and attributional styles over the follow-up. Although we also examined whether children's grade moderated the indirect effect of Time 1 verbal victimization on Time 2 depressive symptoms, this analysis was nonsignificant, suggesting that the magnitude of the indirect effect did not differ based on children's grade level.

These results have potentially important implications for current cognitive models of depression among children. First, this is the first longitudinal study of which we are aware to directly compare the mediating versus moderating role of negative attributional styles among children. As such, it builds on the cross-sec-

tional results of Cole and Turner (1993; Turner & Cole, 1994) and offers further support for a developmentally appropriate refinement of the cognitive theories of depression (e.g., Abramson et al., 1989). Specifically, the results support researchers and theorists (e.g., Cole & Turner, 1993; Rose & Abramson, 1992) who have suggested that attributional styles develop over the course of childhood and that before reaching a relatively stable level in late childhood or early adolescence, attributional styles may mediate the negative life event-depression relationship. That is, during early to middle childhood, negative events, particularly experiences of verbal victimization, are hypothesized to contribute to the development of a negative attributional style, which then leaves the child vulnerable to developing depression (Rose & Abramson, 1992). Thus, among fourth graders in our study, attributional styles mediated, but did not moderate, the relation between verbal victimization and residual change in depressive symptoms. In contrast, among fifth graders, attributional styles both mediated and moderated the verbal victimization-depression link. Consistent with Cole and Turner's developmental hypothesis, we would expect that the moderating role of attributional styles would increase and the mediating role would decrease as children age. To more definitively test this hypothesis, however, studies are needed that follow children with regular assessments over a longer period of time to determine when during development attributional styles shift from a mediating to a moderating role.

Second, the results are consistent with recent refinements in the hopelessness model of depression suggesting transactional relations among negative life events, attributional style, and depressive symptoms (see Hankin & Abramson, 2001). Specifically, the results are consistent with a growing body of literature suggesting that depressed individuals often contribute to the generation of stressful events, particularly negative interpersonal events, in their lives (Daley et al., 1997; Davila et al., 1995; Hammen, 1991; Potthoff et al., 1995; Rudolph et al., 2000) as well as evidence that elevated depressive symptom levels may contribute to the development of negative attributional styles, particularly among children (Bennett & Bates, 1995; Johnson & Miller, 1990; Nolen-Hoeksema et al., 1992). The relations among verbal victimization, attributional style, and depressive symptoms, therefore, may be more complicated than that originally proposed in the hopelessness theory (Abramson et al., 1989) and may be better described by a transactional than a unidirectional model (see Hankin & Abramson, 2001).

In addition to the theoretical implications, there are also potential clinical implications of these results. Specifically, although preliminary, they suggest that cognitive-behaviorally based prevention trials for youth depression should consider focusing on younger children. Specifically, these prevention trials have typi-

cally included children no younger than fifth grade with the majority focusing on older youth (e.g., Clarke et al., 1995; Jaycox, Reivich, Gillham, & Seligman, 1994; Merry, McDowell, Wild, Bir, & Cunliffe, 2004; Pattison & Lynd-Stevenson, 2001; Pössel, Horn, Groen, & Hautzinger, 2004; Roberts, Kane, Thompson, Bishop, & Hart, 2003; Spence, Sheffield, & Donovan, 2003). One goal of these prevention programs is to reduce the negativity of children's attributional styles. However, these results suggest that attributional styles may have started shifting from a mediating to a moderating role by fifth grade (age 10–11). Therefore, it may be useful to explore the efficacy of these programs with younger children, among whom attributional styles should exhibit greater flexibility.

This study had a number of strengths, including its longitudinal design and large, racially and ethnically diverse sample. Despite these strengths, however, there were several limitations as well. First, our assessment of each construct was based on children's self-reports, which may have been subject to recall or reporting biases, particularly for reports of verbal victimization. To the extent that such biases occurred, the relations between verbal victimization and both attributional styles and depressive symptoms at each time point could have been inflated. Giving us some confidence in the accuracy of children's reports of verbal victimization, the CTQ has shown good criterion-related validity with therapists' ratings of maltreatment (Bernstein et al., 2003). Another limitation of a monomethod assessment is that the relations among variables may have been inflated due to shared method variance. Future studies, therefore, would benefit from multimethod assessments of each construct. This would allow the use of latent variable analysis rather than relying on scores from a single source to identify each construct and would allow researchers to account for the influence of shared method variance across constructs (cf. Cole & Maxwell, 2003).

Another limitation of this study is that the attributional style measure exhibited low reliability, which may have attenuated the strength of relations between attributional styles and the other measures, particularly for the indirect and interaction effects (Cole & Maxwell, 2003; Shrout & Bolger, 2002). This said, however, it should be noted that the internal consistency of the CASQ-R in this study was similar to that obtained in previous studies (e.g., Abela, 2001; Conley et al., 2001; Nolen-Hoeksema et al., 1992; Thompson et al., 1998). Thus, although the effects obtained in this study were small to medium, which is the norm in psychological research (Cohen, 1988), future studies would benefit from the development and use of more reliable measures of children's attributional styles. For example, future studies should consider using the Children's Attributional Style Interview (Conley et al., 2001) or the Youth Attributional Style Questionnaire (Brozina

& Abela, 2003), both of which have exhibited stronger internal consistency than the CASQ.

Third, only two assessment points were included, and mediation models of this type are best tested with at least three time points. Specifically, tests of mediation assume that the predictor variable (verbal victimization in this study) temporally precedes the proposed mediator (change in attributional style), which also precedes the proposed outcome variable (change in depressive symptoms). In our study, although verbal victimization was assessed at Time 1 and 2 (along with attributional styles and depressive symptoms), children were asked to report events occurring in the previous 6 months. Therefore, we have some confidence that the events reported preceded the assessment of attributional styles and depressive symptoms. In addition, we were able to examine whether verbal victimization reported as occurring during the follow-up predicted residual change in attributional styles, as well as whether attributional styles at Time 1 predicted residual change in depressive symptoms across the follow-up (cf. Cole & Maxwell, 2003). However, we were not able to specifically test whether change in attributional styles mediated the relation between initial verbal victimization and change in depressive symptoms, which would have required a third assessment. Our inclusion of only two assessment points requires us to make the assumption that the path between attributional style at Time 1 and depressive symptoms at Time 2 would be equivalent to that between attributional styles at Time 2 and depressive symptoms at Time 3 (Cole & Maxwell, 2003). Although we have no reason to doubt this assumption, future research would benefit from a greater number of assessment points to more definitively test the mediation hypothesis.

Finally, we should note that we assessed only one of the three cognitive vulnerabilities featured in the hopelessness theory (Abramson et al., 1989)—attributions for the causes of events. The other two hypothesized vulnerability factors are the tendency to infer either negative consequences or negative self-characteristics following the occurrence of negative life events. Future studies should include all three vulnerabilities featured in the hopelessness theory. In so doing, researchers should keep in mind findings from studies testing Abela's "weakest link" hypothesis (e.g., Abela & Payne, 2003; Abela & Sarin, 2002). Specifically, Abela hypothesized that these three forms of cognitive vulnerability become more internally consistent across development and that, during childhood, an individual may be as vulnerable to depression as his or her weakest link or most negative attributional or inferential style. Thus, studies focusing only on attributional styles may underestimate a child's true vulnerability to depression. Supporting this weakest link hypothesis, Abela and Payne and Abela and Sarin found that changes in children's depressive symptom levels are

best predicted by the interaction of negative life events and the child's most negative of their three attributional or inferential styles, rather than any single specific attributional or inferential style. Interestingly, there is some evidence that attributional styles about the causes of events may develop as a vulnerability factor (weakest link) later than other vulnerability factors (i.e., inferences about self-characteristics; see Abela & Sarin, 2002). Future longitudinal studies, therefore, should seek to examine the relative influence of the three cognitive vulnerabilities identified by the hopelessness theory, focusing not just on the vulnerabilities individually but also identifying which one might be a particular child's weakest link leaving the child most vulnerable to developing depression.

In summary, this is the first longitudinal study of which we are aware to specifically examine the mediating versus moderating role of attributional styles in children. As such, it supports recent developmental extensions of the cognitive theories of depression (see Cole & Turner, 1993; Rose & Abramson, 1992), in which attributional styles are thought to develop during early to middle childhood, shifting from a role of mediating to one of moderating the link between negative life events and depressive symptoms. In addition, results from this study support recent refinements of the hopelessness theory (Hankin & Abramson, 2001) suggesting transactional, rather than unidirectional, relations among negative life events, attributional styles, and depressive symptoms. Specifically, these results suggest that in addition to attributional styles partially mediating the link between verbal victimization and the development of depressive symptoms, the depressive symptoms themselves may contribute to the increasing negativity of children's attributional styles as well as to increases in verbal victimization, thus creating a vicious cycle. Future research is needed not only to provide a more definitive test of this transactional model but also to more definitively identify when in the course of children's development attributional styles shift from a role of mediating to one of moderating the link between verbal victimization and the development of depression.

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