

## **The Development of Depressogenic Cognitive Styles: The Role of Negative Childhood Life Events and Parental Inferential Feedback**

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This study examined the role of childhood negative life events and parental inferential feedback in the development of cognitive vulnerability to depression. Students with negative cognitive styles, previously shown to be at high cognitive risk for depression, were predicted to have a greater history of negative childhood life events and negative parental inferential feedback than were students at low cognitive risk for depression. It was further predicted that parental inferential feedback would moderate the relationship between negative childhood life events and cognitive risk for depression. Finally, the associations between subsets of childhood negative life events and cognitive risk for depression were examined. No significant main effects were found for childhood negative life events or parental inferential feedback. The interaction of these 2 variables was significantly associated with cognitive risk status. Specifically, high levels of negative childhood life events in combination with negative maternal inferential feedback were associated with students' cognitive risk for depression. When the negative childhood life events were divided into subsets, no main effects or interactions were found.

**I**n attempting to understand the antecedents of depression, researchers have increasingly emphasized the importance of cognitive processes. Two major cognitive theories of depression have played an important role in this research. According to the hopelessness theory of depression (Abramson, Metalsky, & Alloy,

1989; Alloy, Abramson, Metalsky, & Hartlage, 1988), individuals who characteristically attribute negative life events to stable and global causes infer that further negative consequences will follow a negative event and believe that the occurrence of a negative event means that they are deficient or unworthy are hypothesized to be vulnerable to depression when they experience negative life events. Beck's (1967, 1987) theory also maintains that particular negative cognitive styles increase individuals' vulnerability to depression when they encounter negative life events. In Beck's theory, maladaptive self-schemata containing dysfunctional beliefs involving themes of loss, inadequacy, failure, and worthlessness constitute the cognitive vulnerability to depression. Examples of such dysfunctional attitudes include beliefs that happiness and worth depend on being perfect and on other people's approval.

Recent studies have provided considerable support for the cognitive vulnerability hypotheses of depression (see Alloy et al., 1999; Ingram, Miranda, & Segal, 1998 for reviews). Of considerable importance to the current study are findings from the Temple-Wisconsin Cognitive Vulnerability to Depression (CVD) Project (Alloy & Abramson, 1999). The CVD Project is a 5-year prospective study that followed individuals (with no Axis I diagnoses) at high and low risk for depression based on the cognitive vulnerabilities delineated in hopelessness and Beck's theories. Findings from this study indicated that cognitively high risk (HR) participants were significantly more likely than cognitively low risk (LR) participants to develop both first onsets and recurrent episodes of major and minor depression during the first 2.5 years of follow-up, as specified by the *Diagnostic and Statistical Manual, Third Edition-Revised* (DSM III-R; American Psychiatric Association, 1987) and Research Diagnostic Criteria (RDC) (Spitzer, Endicott, & Robbins, 1978; Alloy, Abramson, Whitehouse, et al., 2001). Furthermore, HR participants were also more likely to exhibit suicidality mediated by hopelessness during the 2.5 year follow-up than were LR participants (Abramson et al., 1998).

Given that negative cognitive styles do confer vulnerability for depression and suicidality, it becomes important to identify the developmental origins of these cognitive styles. Several factors are likely to contribute to the development of cognitive vulnerability to depression, including genetics, social learning, and early traumatic events (see Garber & Flynn, 1998; Haines, Metalsky, Cardamone & Joiner, 1999; Rose & Abramson, 1992). The current study expands this body of research by addressing the role of negative life events in childhood and parental inferential feedback in the development of depressogenic cognitive styles.

### Negative Events in Childhood

Research examining the developmental origins of cognitive vulnerability to depression has proposed that negative events in childhood may contribute to the development of a depressogenic cognitive style. Beck (1967, 1987) suggested that negative childhood events might result in the development of maladaptive self-schemata. However, he did not speculate about the process by which this might occur. In contrast, Rose and Abramson (1992), in extending the etiological chain of the hopelessness theory, suggested a pathway by which negative life events may lead to the development of a negative cognitive style. They hypothesized that when a negative

event occurs in a child's life, the child initially tends to make hopefulness-inducing (e.g., unstable, specific) attributions about its cause. However, when the negative events are chronic and widespread, as in the case of childhood maltreatment, the child may come to make hopelessness-inducing (e.g., stable, global) attributions and inferences about its occurrence. Over time, repetition of the negative cognitive process may result in the formation of a more general negative cognitive style.

Several authors have addressed the role of childhood maltreatment in the development of cognitive vulnerability to depression. For example, Gold (1986) found that women who reported childhood sexual abuse exhibited more depressogenic cognitive styles than did women without a history of childhood sexual abuse. Similarly, in a sample of children and adolescents with a documented history of sexual maltreatment, Feiring, Taska, and Lewis (1998) found that the number of maltreatment events experienced was positively correlated with the negativity of the participants' cognitive styles. Finally, using CVD Project data, Gibb, Alloy, Abramson, & Marx (2001) examined whether a reported history of childhood maltreatment (emotional, physical, or sexual) was associated with the presence of depressogenic cognitive styles in young adults. Gibb, Alloy, Abramson, & Marx, (2001) found that college students who exhibited high cognitive risk for depression reported higher levels of childhood emotional maltreatment than did those at low cognitive risk for depression, even after statistically controlling for depressive symptom levels. Controlling for depressive symptoms, there were no risk group differences on either reported childhood physical or sexual maltreatment.

Whereas these authors focused their attention on the occurrence of childhood maltreatment, Peterson and Seligman (1984) theorized about children's traumatic experiences more generally. They hypothesized that children's first traumatic experience may define their attributional style for life. Specifically, intense, stable, and global traumas, such as the loss of a parent, may create a propensity to make stable, global attributions about negative events, because the child has no control over the loss or ability to relieve the suffering. Peterson and Seligman emphasized the child's first loss, but this hypothesis could be extended to include prolonged or intense exposure to other negative events early in life.

In a cross-sectional study, Rose, Abramson, Hodulik, Halberstadt, and Leff (1994) examined the links between certain developmental events, including parenting style and history of sexual abuse and depressed inpatients' maladaptive cognitive styles. Controlling for severity of depression, these life events were associated with a more negative cognitive style. In a prospective study of early adolescents, Garber and Flynn (2001) found that higher levels of negative life events in the previous year predicted a more depressogenic attributional style over time, controlling for the adolescents' attributional style at Time 1 and maternal history of depression. In contrast to these studies, a longitudinal study by Nolen-Hoeksema, Girkus, and Seligman (1992) found that there was only a small effect for negative life events to predict unfavorable changes in children's attributional style over time. Furthermore, this effect was only significant in two of seven analyses. Thus, although it is reasonable to speculate that exposure to negative life events in childhood will lead to the development of negative cognitive styles, the findings to date are inconclusive.

### Parental Inferential Feedback

In addition to the research concerning the role of childhood life events in the development of cognitive vulnerability to depression, there is also a small body of research focusing on the role of parental inferential feedback. When negative events occur in a child's life, parents often communicate their own inferences about the causes and consequences of the events in their child's life. These inferences may be positive in nature, as characterized by unstable, specific attributions and positive consequence feedback for negative events in their child's life. Alternatively, they may be negative in nature, as characterized by stable, global attributions and negative consequence feedback for their child's negative event. In the presence of these continued communications, children may develop inferential styles consistent with the parental feedback.

The few findings to date consistently support the feedback hypothesis. A study by Fincham and Cain (1986) indicated that third graders who attributed academic failure to external causes had parents who had attributed their child's failures to their own lack of effort, a cause external to the child. Turk and Bry (1992) found that fathers' explanations of the academic events in their adolescent children's lives were correlated with the adolescents' own attributions for those events. Correspondingly, Garber and Flynn (2001) obtained a relation between mothers' attributions for events in their adolescent child's life and the adolescent's attributions.

Perhaps of most relevance to the current study are findings from the CVD Project. First, according to both students' and parents' reports, both mothers and fathers of HR participants provided more stable, global attributional feedback for negative events in their child's life than did the mothers and fathers of LR participants (Alloy, Abramson, Tashman, et al., 2001). Furthermore, according to both mother and student reports, mothers of HR students also provided more negative consequence feedback for negative social events in their child's life than did mothers of LR students. Similarly, according to students' reports, fathers of HR students provided more negative consequence feedback for negative social events in their child's life than did fathers of LR students. Taken together, these findings indicate that parental negative inferential feedback characterized by stable, global attributions and negative consequence feedback for negative events in their child's life is associated with the cognitive styles in their children that constitute high cognitive vulnerability to depression.

### Goals of the Present Study

Although both children's negative life events and parental attributional feedback have been explored independently as developmental precursors to cognitive vulnerability to depression, the current study expands this body of research by exploring a possible interaction between these two variables. Consistent with prior research, we predicted that parental inferential feedback and negative life events in childhood each would be associated with late adolescents' cognitive risk status. However, we hypothesized that parental inferential feedback would moderate the relationship between childhood negative life events and the child's level of cognitive vulnerability to depression such that it is the combination of a history of childhood negative life events paired with negative parental inferential feedback that is associated with high cognitive risk for depression

in adolescence. In other words, the combination of increased negative childhood events and negative parental inferential feedback would be associated with negative cognitive style in the adolescent above and beyond the individual main effects.

In addition to examining the interaction between the overall number of childhood negative life events and parental inferential feedback, the current study also examined the role of subsets of negative childhood life events. By examining these subsets of negative childhood events, the current study addressed whether findings documenting an association between childhood abuse and cognitive vulnerability to depression are specific to abuse events, or generalize to other types of negative events as well. In other words, is there a mechanism specific to abuse events that accounts for the relationship with cognitive vulnerability for depression, or would this relationship exist with negative events more generally? Moreover, are there specific types of negative childhood life events that would demonstrate a relationship similar to that between abuse events and negative cognitive style? If negative events in general, or specific types of negative events, are associated with cognitive vulnerability to depression, then the previously documented association between childhood abuse and cognitive vulnerability to depression may be indicative of this more general relationship. In contrast, a lack of association between general negative life events and cognitive vulnerability to depression, or between specific types of negative events and cognitive vulnerability to depression, would suggest that something specific to childhood abuse creates depressogenic cognitive styles. To address these questions, subsets of childhood events representing negative emotional feedback, family deaths, achievement failures, events suggesting inadequacy, and dependent versus independent events were examined.

## METHOD

### Participants: Student Sample

Student participants in this study were a subset of those involved in the CVD project. Student participants for the CVD Project were recruited from the freshmen classes of Temple University (TU) and the University of Wisconsin (UW). Selection of the sample occurred through a two-phase screening process. The first phase involved administering the Cognitive Style Questionnaire (CSQ) (Abramson, Metalsky, & Alloy, 2001); and a modified version of the Dysfunctional Attitudes Scale (DAS) (Weissman & Beck, 1978) to 5,378 freshmen (2,438 at TU, 2,940 at UW). The DAS was revised to include 24 additional items that assessed dysfunctional beliefs in achievement and interpersonal domains specifically. A pool of potential cognitive HR and LR participants was formed from freshmen scoring in the highest (most negative) or lowest (most positive) quartile of the screening sample on both the DAS and CSQ composite (stability + globality + consequences + self) for negative events, respectively. A total of 619 HR and 585 LR participants were identified in Phase 1.

In Phase 2, a randomly selected subset of 313 potential HR and 236 potential LR freshmen (all under the age of 30) were administered an expanded Schedule for Affective Disorders and Schizophrenia-Lifetime (SADS-L) diagnostic interview (Endicott & Spitzer, 1978). The interview was expanded to allow for both *DSM III-R*

and Research and Diagnostic Criteria (RDC) diagnoses. Potential participants were excluded from the CVD Project if they met *DSM III-R* or RDC criteria for any of the following diagnoses:

1. Current *DSM III-R* or RDC diagnosis of any episodic mood disorder (e.g., major or minor depressive disorder; bipolar disorder with a current depressive, manic, or hypomanic episode), or any chronic mood disorder (e.g., dysthymia, intermittent depressive disorder, or cyclothymia);
2. Current diagnosis of any other psychiatric disorder;
3. Current psychotic symptoms;
4. Past history of mania, hypomania, bipolar disorder, or cyclothymia; and
5. Serious medical illness that would preclude participation in a longitudinal study.

To avoid an unrepresentative sample of HR participants, freshmen who met *DSM III-R* or RDC criteria for a past unipolar depressive disorder but who had remitted for at least 2 months were retained in the final sample.

Of the 209 HR and 207 LR participants who remained eligible at the end of the second phase, 173 HR (83 at TU, 90 at UW) and 176 LR (87 at TU, 89 at UW) individuals agreed to participate in the longitudinal phase of the study. These participants formed the final CVD Project sample (see Alloy & Abramson, 1999 for the demographic information and representativeness of this sample). The current study involved only those participants in the final CVD sample who participated throughout the 2.5 year prospective follow up as well as completed the measures of parental inferential feedback. Furthermore, at least one of their parents must have participated in the Parent Study portion of the project and completed the measure of childhood negative life events. Thus, the sample for the current study included 69 HR and 79 LR participants. The demographic features of the current sample are presented in Table 1. The HR and LR groups in this study did not differ significantly on gender,  $\chi^2 (1, N = 149) = .598, p = .44$ , ethnicity,  $\chi^2 (5, N = 146) = 9.02, p = .11$ , or age,  $t (139) = -1.825, p = .07$ . However, it should be noted that 6 HR and 1 LR subject did not provide age data. Additionally, the subsample of participants in the current study did not differ from the total CVD Project sample on cognitive styles, age, gender, and ethnicity.

#### Participants: Parent Sample

Student participants were asked for written permission to contact their parents regarding participation in the Parent Study portion of the CVD Project. Parents, for the CVD Project, were operationalized as biological, step, adoptive, or other primary caregivers.

**TABLE 1. Characteristics of High- and Low-Cognitive Risk Participants**

	High Risk (n = 69)	Low Risk (n = 79)
Age (years)	18.51	19.32
Sex (% female)	66.6	72.5
Ethnicity (% Caucasian)	81.8	78.7

Students could allow us to contact one, both, or neither of their parents. If permission was granted, those parents were contacted and invited to participate in the Parent Study. Participation involved two extensive interviews and the completion of several self-report measures across two separate sessions. Parents were only excluded from the study if they refused participation, were unable to speak English, or were unreachable. The final parent sample included 335 (217 mothers, 118 fathers) of the approximately 400 parents contacted. Only parents who completed the measure of childhood negative life events were included in the current sample. Thus, the current sample included 148 mothers and 72 fathers. Due to the low number of fathers, only the mothers' information was used. The demographic features of the current mother sample are presented in Table 2.

#### Measures

**Cognitive Styles.** The CSQ and DAS were used to assess student participants' cognitive vulnerability to depression as described by the hopelessness theory (Abramson et al., 1989) and Beck's theory (1967, 1987), respectively. The CSQ is a self-report measure modified from the Attributional Style Questionnaire (ASQ) (Seligman, Abramson, Semmel, & von Beyer, 1979), a well established instrument with good reliability and validity (Peterson, 1991). The ASQ evaluates people's inferences for hypothetical positive and negative events on the internality, globality and stability attributional dimensions. The CSQ was derived by increasing the number of events to 12 positive and 12 negative events (6 achievement events and 6 interpersonal events for each valence) and by including ratings (on 7-point scales) of the likely consequences of each event and the implications of each event for the self-concept. In the CVD Project, HR and LR groups were selected using a composite score for negative events based on student participants' average ratings for the stability, globality, consequences, and self dimensions. The coefficient alpha based on the Phase 1 screening sample ( $n = 5378$ ) for the CSQ negative event composite was .88. Retest stability over a 1-year interval based on the CVD Project final sample ( $n = 349$ ) was .80 (Alloy & Abramson, 1999). The CSQ has also demonstrated predictive validity for lifetime history and prospective onsets of depressive episodes (Alloy et al., 1999, 2000; Alloy, Abramson, Whitehouse, et al., 2001).

The DAS (Weissman & Beck, 1978) was also expanded for use in the CVD Project. The original measure is composed of 40 items that assess dysfunctional attitudes concerning perfectionistic standards of performance, concern over others'

**TABLE 2. Characteristics of Mothers of High- and Low-Cognitive Risk Participants**

	Mothers of HR Participants (n = 69)	Mothers of LR Participants (n = 79)
Ethnicity (% Caucasian)	81.8	78.7
Average Family Income (\$)	65,328.81	62,206.14
Average Education (years)	15.0	14.7

*Note.* HR = High risk. LR = Low risk.

evaluations, expectations about the likelihood of desired outcomes, causal attributions and elevated importance attached to certain goals. An additional 24 items evaluating dysfunctional beliefs in achievement and interpersonal domains specifically (e.g., "If I fail at work, then I am a failure as a person"; "I am a nobody if my closest friend stops liking me.") were included in the DAS for use in the CVD Project. The expanded DAS score (in conjunction with the CSQ) was used to identify HR and LR participants. Reliability for the original DAS is considered sufficient (Hammen & Krantz, 1985; Weissman & Beck, 1978). In the Phase I sample from the CVD Project, the coefficient alpha for the expanded DAS was .90. Retest reliability over 1 year in the final sample was .78. Further, along with the CSQ, the DAS has shown predictive validity for lifetime history and prospective onsets of depressive episodes (Alloy et al., 1999, 2000; Alloy, Abramson, Whitehouse, et al., 2001).

**Psychopathology.** In order to assess psychopathology (for screening purposes), trained interviewers administered a modified version of the Schedule for Affective Disorders and Schizophrenia-Lifetime (SADS-L) diagnostic interview (Endicott & Spitzer, 1978). The SADS-L was modified for the CVD Project in four ways. First, additional probes were added to allow for the assignment of *DSM III-R* as well as RDC diagnoses. Second, probes were added that explicitly assessed the precise number of days participants felt depressed and for what percent of waking hours of each day they felt depressed. A third modification included expanding the probes in the anxiety disorders section of the interview by incorporating aspects of the Anxiety Disorders Interview Schedule-Revised (DiNardo & Barlow, 1988). Finally, all items relevant to a given diagnosis were grouped together and items relevant to assessing past episodes of a given disorder were presented immediately after the items for a current episode of that disorder. This modified format was intended to be less confusing to participants.

The research assistants involved in the administration of the SADS-L participated in an intensive interviewer-training program designed to teach administration procedures and diagnostic skills. The program, which was modeled after ideal programs (Amerson & Lewinsohn, 1981; Gibbon, McDonald-Scott, & Endicott, 1981), involved about 200 hours of reading and didactic instruction, training on case vignettes and videotaped interviews, role playing and extensive practice conducting live interviews. Throughout training and the duration of the project, interviewers received extensive individual feedback.

Beyond the training program, diagnoses were calibrated in several ways. First, recognized diagnostic experts reviewed taped interviews. Second, diagnoses between sites were calibrated through meetings in which interviewers from both sites met to compare diagnostic procedures and resolve discrepancies. Furthermore, interviewers from both sites exchanged taped interviews for review and comparison and used a consensus method to ensure that diagnostic refinements were implemented identically at both sites. A third method of calibration included within site calibration through ongoing reliability assessments and extensive feedback to avoid interviewer drift. Finally, an interrater reliability study was conducted on approximately 15% ( $n = 80$ ) of the SADS-L interviews. On the basis of joint ratings of these randomly selected interviews, the kappa coefficient (Cohen, 1960) was .90 or above for all project diagnoses.

**Negative Childhood Events.** The Children's Life Events Scale (CLES) is an expanded version of The Source of Stress Inventory (Chandler, 1981) used in the CVD Project to identify the occurrence of stressful events during childhood. The CLES is a checklist composed of 50 moderate-to-major stressful life events. Parent participants were asked to identify whether each of the events had occurred in their child's life between birth and age eighteen. If an event had occurred, they were asked to indicate their child's approximate age at the time of the event. Parent reports were used due to the possibility that events occurred when the adolescent was too young to recall them. Events specified on the CLES include achievement oriented events (e.g., "academic failure"), peer difficulties (e.g., "break up of serious romantic relationship"), family difficulties (e.g., "divorce of parents," "serious financial difficulties of family") and assorted other categories (e.g., "death of pet," "unwanted pregnancy"). The events also ranged in severity from less severe events such as "beginning school," to "death of parent" or "experienced sexual abuse, including rape." For the current study, a score for the CLES was derived from the total number of events reported. Additional subset scores were derived from the total number of events reported within each subset category. These subsets of events represent negative emotional feedback (i.e., "frequent teasing by peers," "decrease in acceptance by peers"), family deaths (e.g., "death of grandparent," "death of parent"), achievement failures (e.g., "academic failure," "nonacademic failure"), events suggesting inadequacy (e.g., "acquired a physical deformity," "needed special education services"), dependent events and independent events. There is no prior information regarding the psychometric properties of the CLES, or the Source of Stress Inventory. However, the correlation between mother and father reports of the total number of negative childhood life events experienced by their child was  $r = .61$ ,  $p < .01$ . Despite the lack of extensive data on the psychometric properties of the CLES, it was used due to the breadth of events included in the measure.

**Parental Inferential Feedback Styles.** In order to evaluate parents' inferential feedback styles, both parent and child report versions of the Parental Attributions for Children's Events Questionnaire (PACE; Alloy, Abramson, Tashman, et al., 2001) were created. The questionnaire was designed to assess parents' typical communicated attributions and consequences toward the child when the child experienced past negative events. The PACE consists of 12 hypothetical negative events, of which half are achievement-oriented and half are interpersonally-oriented. For each event, the student respondent is asked to imagine the described event happening to him or herself when he or she was a child, or the parent respondent is asked to imagine the event happening to his or her child. Following each event, there are four statements, presented in random order, that parents would potentially impart to their child. These four statements represent each of four possible attributional styles:

1. internal, stable, global (ISG)
2. external, stable, global (ESG)
3. internal unstable, specific (IUS) and
4. external, unstable, specific (EUS).

These attributional statements are followed by two statements concerning potential consequences (positive vs. negative) of the event's occurrence. For example, following the hypothetical event, "Everyone in your class [your child's class] is invited to a party but you [your child]," the four choices of attributional statements are:

1. "Of course, you weren't invited. You aren't easy to get along with." (ISG)
2. "All the other students are part of the same clique. People always have a hard time letting new people into their groups." (ESG)
3. "You were too quiet in that class. You didn't give people the chance to get to know you" (IUS) and
4. "The students throwing the party must have goofed and forgotten to send your invitation."

(EUS). The two consequence statement choices following this event are, "This is an isolated incident and it doesn't mean that it will happen again" (positive), and "Now you'll be identified as an outcast and people won't invite you to other parties either" (negative). Both student and parent participants were then asked to rate the likelihood that their parents, or they, themselves (for the parent version) would have said each of the four attributional statements and each of the two consequence statements for the student for each event. The probability ratings were made on 0 to 100% scales and did not have to add up to 100%. Students completed the PACE for both their mother and father and each parent completed the PACE for themselves.

In the current study, as in prior work (Alloy, Abramson, Tashman, et al., 2001), mean rating scores (0%-100%) were used for all analyses because this score was thought to be more representative of overall inferential feedback style. Further, following Alloy and colleagues (2001), for all analyses involving the PACE, a composite was created that collapsed across the external/internal dimension, such that higher scores indicated more stable, global inferential feedback and lower scores indicated more unstable, specific attributions. The rationale for collapsing across the internal-external dimension is threefold. First, the stability and globality of attributional feedback for negative events are hypothesized to be more important contributing factors to the development of cognitive risk for depression than internality (Abramson et al., 1989). Second, students' cognitive risk status was based on the stability and globality attributional dimensions irrespective of internality. Thus, composites collapsed across the internal-external dimension were deemed more appropriate for addressing the research hypothesis. Finally, by forming a composite, fewer analyses are required, which increases the reliability of the measure.

For the child report version of the PACE, coefficient alphas for maternal and paternal stable, global attributional feedback were .77 and .82, respectively for achievement and interpersonal events combined. For unstable, specific attributions, these alphas were .85 and .87. For the parent report version, the coefficient alphas for maternal and paternal reports of stable, global attributional feedback were .77 and .69, respectively (across achievement and interpersonal events). The alphas were .82 and .67 for mothers' and fathers' reports of unstable, specific attributional feedback (across achievement and interpersonal events), respectively.

## Procedures

Freshmen who were hypothesized to be at high versus low cognitive risk for depression, based on their scores on the CSQ and DAS, and who had no current Axis I disorders at the Phase II screening, were contacted by research assistants and invited to participate in the CVD Project. Student participants came to the laboratory for regular assessments every 6 weeks for 2.5 years. They completed the PACE at the end of the second year of follow-up. Students were paid for all of their time.

During the first year of follow-up, students were asked by their interviewer for written permission to contact their parents and invite them to participate in a separate Parent Study. The student participants were told that the Parent Study was independent of the CVD Project and that it would be assessing how parents of college age children cope with life experiences (which was, in fact, part of the Parent Study, but not a part relevant to the current study). Both students and their parents were assured that each would have no access to the information provided by the other and that their interviewers would have no access to the information provided by the other.

Once permission was obtained from students, their parents were contacted and were given the same explanation of the Parent Study as their children had received. If the parent agreed to participate and gave written informed consent, (s)he was scheduled for a structured interview (not relevant to current study) and completion of questionnaires. The questionnaires, including the PACE and CLES, were completed in person if the parent lived near by and by mail if they were unable to come into the laboratory.

## RESULTS

### Preliminary Analyses

Before combining the data from the TU and UW sites, a series of independent samples *t*-tests was conducted to test for possible site differences on the variables included in the current study. No site differences were found. Possible gender differences in negative childhood events and reports of parental inferential feedback were also examined using independent *t*-tests. Again, no differences were found.

### Relation Between Negative Childhood Life Events, Parental Inferential Feedback, and Cognitive Risk for Depression

To test the hypothesis that parent reports of childhood negative life events and reports of parental inferential feedback are associated with students' cognitive risk status, two sets of logistic regression analyses were conducted. The first of these analyses utilized the mother's report of the mother's attributional feedback and the second utilized the student's report of the mother's attributional feedback. Both sets of analyses utilized the mother's report of her child's negative childhood life events.

In the first set of analyses, both the mother's report of negative childhood life events and the mother's report of her own attributions for her child's events were entered in the first step of the logistic regression with cognitive risk group status entered as the criterion variable. There was no main effect for the number of events,  $\text{Wald} = 1.23, p = .27, R = .00$  or the mother's report of her own attributions for her child's events,  $\text{Wald} = .61, p = .44, R = .00$ . In step two, the interaction of these two variables was examined. This interaction was also found to be nonsignificant,  $\text{Wald} = 1.53, p = .22, R = .00$ .

In the second logistic regression (see Table 3), both the mother's report of negative childhood life events and the student's report of his or her mother's attributional feedback were entered in the first step. Again, there was not a significant main effect of mother's report of negative childhood life events,  $\text{Wald} = .64, p = .42, R = .00$ . However, the main effect of the student's report of his or her mother's attributions approached significance,  $\text{Wald} = 3.35, p = .07, R = .08$ . In the second step, the interaction was entered and was significant,  $\text{Wald} = 4.27, p = .04, R = .11$ . Specifically, the combination of higher reported negative maternal attributional feedback and a larger number of childhood negative life events was associated with students' high cognitive risk for depression status.

In order to examine the effects of the different subsets of negative childhood life events, logistic regression analyses were conducted using each of these subsets. There was no main effect of any of the tested subsets of negative childhood life events. Similarly, there were no significant interactions between the subsets of negative childhood life events and maternal attributional feedback. Furthermore, the small effect sizes demonstrated that the lack of significant findings was not a result of low statistical power.

## DISCUSSION

The current study was designed to expand the research on developmental origins of depressogenic cognitive styles in three ways. First, the independent relationships of both negative childhood life events and parental inferential feedback with cognitive styles were reexamined. In contrast to previous studies (Alloy et al., 2001; Garber

**TABLE 3. Summary of Hierarchical Logistic Regression Analysis Predicting Participants' Cognitive Risk Status**

Variable	$\beta$	SE	Wald	Sig.	R
Step 1					
Mother CLES	-0.02	0.03	0.65	0.42	0.00
Child Report of Mother's Attributions	-1.01	0.55	3.35	.07	-0.08
Step 2					
Interaction	0.23	0.11	4.27	0.04	0.11

*Note.* CLES = Child Life Event Scale.

& Flynn, 2001), the current study found no main effects of either of these variables. Thus, students at high cognitive risk for depression did not differ from students at low cognitive risk for depression in the number of mother reported childhood life events and only marginally differed in their reports of maternal inferential feedback.

One possible explanation for the inconsistent findings concerning the association of depressogenic cognitive styles and negative childhood life events is the measure used to examine negative life events. In the current study, childhood life events were measured through the mother's report whereas in previous studies, these events were assessed by self-report measures. Two difficulties arise from the use of mothers' reports. First, mothers may not be aware of all the events that occurred in their child's life. Second, according to Brewin, Andrews, and Gotlib (1993), parents have less accurate recall of their children's life events than do the children themselves and parent reports may be affected by social stigma related to parenting. In addition to the use of mother's report of childhood life events, the measure used to assess childhood life events is a relatively new measure that lacks extensive data on psychometric properties. Thus, the lack of an association between depressogenic cognitive style and negative childhood life events may be the product of a poor measure of childhood life events. In light of these measurement difficulties, it is unclear whether the lack of association between depressogenic cognitive styles and negative childhood life events is a product of using mothers' reports or a real absence of an association.

The inconsistent findings concerning the association between depressogenic cognitive styles and negative maternal inferential feedback are of particular interest given that Alloy and colleagues (2001) found a significant association using data from the CVD project. The likely explanation for this discrepancy is the difference in sample size. The current study used a smaller subset of the CVD Project sample than the subset of the CVD Project sample used by Alloy, Abramson, Tashman and colleagues, (2001). Given that the main effect of the student's report of his or her mother's attributions approached significance in the current study, the discrepant findings suggest that the smaller sample used in the current study decreased the statistical power to detect such an effect.

The second goal of the current study was to examine whether parental inferential feedback moderates the relationship between negative childhood life events and depressogenic cognitive styles. Mixed support was found for this hypothesis. There was no interaction between negative childhood life events and mothers' reports of their own inferential feedback. In contrast, there was a significant interaction between negative childhood life events and students' reports of maternal inferential feedback. Specifically, compared to low risk students, participants at high cognitive risk for depression had more negative childhood life events in combination with more negative maternal inferential feedback. The contrast in these two findings suggests that the student's perception of maternal inferential feedback may be more relevant to depressogenic cognitive styles than the mother's perception.

The final goal of the current study was to examine the roles of different subsets of negative childhood life events in the development of depressogenic cognitive styles. Counterintuitively, there was not a significant relationship between any of the tested event subsets and cognitive risk for depression. These findings become interesting in light of the previous evidence for a relationship between childhood emotional maltreatment events and cognitive risk for depression (e.g., Gibb, Alloy, Abramson, Rose,

et al., 2001). It appears that the relationship between childhood emotional maltreatment and depressogenic cognitive style may be specific to emotional maltreatment events and not due to the effect of negative life events in general or other subtypes of events. Thus, future research should examine the specific mechanism that explains the relationship between childhood emotional maltreatment and depressogenic cognitive styles (cf. Gibb, Alloy, Abramson, & Marx, 2001).

Despite the increased understanding of the development of depressogenic cognitive styles offered by this study, there are several limitations and difficulties that need to be considered. First, although it would be desirable to be able to predict cognitive risk status from negative life events in childhood and parental inferential feedback, the measures of cognitive risk status were collected as screening measures before the collection of data concerning the other variables. Thus, the reported life events and parental inferential feedback can not be used as prospective predictors of cognitive vulnerability to depression.

Beyond the problem of temporal sequence, there are other important considerations in reviewing the measurement of the independent variables. Both the CLES and PACE are retrospective questionnaires. Thus, reports of life events and parental inferential feedback may have been altered by memory failures, or, in the case of student reports, by biases related to cognitive risk status. Although Brewin and colleagues (1993) argued that adults' recall of specific childhood occurrences is reasonably accurate, research on the developmental origins of negative cognitive styles would clearly benefit from prospective and direct assessment.

Another issue regarding measurement concerns use of the PACE to assess parental inferential feedback. The PACE serves as a measure of parental feedback concerning hypothetical events in a child's life. Whereas this may be a good measure of inferential feedback in general, it would be helpful to measure parental feedback for the specific negative childhood events reported on the CLES. Finally, the PACE only measures four combinations of attributional feedback: Internal/Stable/Global, Internal/Unstable/Specific, External/Stable/Global, and External/Unstable/Specific. Thus, we were unable to assess the effects of other combinations of feedback.

In summary, research on the antecedents of cognitive vulnerability to depression would benefit from studies that examine negative events in childhood and parental inferential feedback prospectively and through direct assessment. In this way, negative life events during childhood and the inferences about causes that parents make concerning those events can be assessed as prospective predictors of negative cognitive style in adolescence. This said, however, the results of the current study suggest that the inferences parents make for their children's negative life events may make it more or less likely that these events will contribute to the development of a negative cognitive style.

## REFERENCES

Abramson, L. Y., Alloy, L. B., Hogan, M. E., Whitehouse, W. G., Cornette, M., Akhavan, S., & Chiara, A. (1998). Suicidality and cognitive vulnerability to depression among college students: A prospective study. *Journal of Adolescence*, 21, 157-171.

Abramson, L. Y., Metalsky, G. I., & Alloy, L. B. (1989). Hopelessness depression: A theory-based subtype of depression. *Psychological Review*, 96, 358-372.

Crossfield, A. G., & Morocco, A. (2001). Developmental origins of cognitive vulnerability to depression: Parenting, cognitive and inferential feedback styles of the parents of individuals at high and low cognitive risk for depression. *Cognitive Therapy and Research*, 25, 397-423.

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Abramson, L. Y., Metalsky, G. I., & Alloy, L. B. (2001). *The Cognitive Style Questionnaire: A measure of the diatheses featured in the hopelessness theory of depression*. Manuscript in preparation, University of Wisconsin-Madison.

Alloy, L. B., & Abramson, L. Y. (1999). The Temple-Wisconsin Cognitive Vulnerability to Depression (CVD) Project: Conceptual background, design, and methods. *Journal of Cognitive Psychotherapy: An International Quarterly*, 13(3), 227-262.

Alloy, L. B., Abramson, L. Y., Hogan, M. E., Whitehouse, W. G., Rose, D. T., Robinson, M. S., Kim, R. S., & Lapkin, J. B. (2000). The Temple-Wisconsin Cognitive Vulnerability to Depression Project: Lifetime history of Axis I psychopathology in individuals at high and low cognitive risk for depression. *Journal of Abnormal Psychology*, 109, 403-418.

Alloy, L. B., Abramson, L. Y., Metalsky, G. I., & Hartlage, S. (1988). The hopelessness theory of depression: Attributional aspects. *British Journal of Clinical Psychology*, 27, 5-21.

Alloy, L. B., Abramson, L. Y., Tashman, N., Steinberg, D., Whitehouse, W. G., Hogan, M. E., Crossfield, A. G., & Morocco, A. (2001). Developmental origins of cognitive vulnerability to depression: Parenting, cognitive and inferential feedback styles of the parents of individuals at high and low cognitive risk for depression. *Cognitive Therapy and Research*, 25, 397-423.

Alloy, L. B., Abramson, L. Y., Whitehouse, W. G., Hogan, M. E., Panzarella, C., Robinson, M. S., Lapkin, J. B., Rose, D. T., & Donovan, P. (2001). *Prospective incidence of axis I disorders in individuals at high and low cognitive risk for depression*. Manuscript in preparation, Temple University.

Alloy, L. B., Abramson, L. Y., Whitehouse, W. G., Hogan, M. E., Tashman, N. E., Steinberg, D. L., Rose, D. T., & Donovan, P. (1999). Depressogenic cognitive styles: Predictive validity, information processing and personality characteristics and developmental origins. *Behaviour Research and Therapy*, 37, 503-531.

Amerson, C. S., & Lewinsohn, P. M. (1981). An investigation into the observed sex difference in prevalence of unipolar depression. *Journal of Abnormal Psychology*, 90, 1-13.

American Psychiatric Association. (1987). *Diagnostic and statistical manual of mental disorders* (3rd ed. Rev.). Washington, DC: Author.

Beck, A. T. (1967). *Depression: Clinical, experimental and theoretical aspects*. New York: Harper & Row.

Beck, A. T. (1987). Cognitive models of depression. *Journal of Cognitive Psychotherapy: An International Quarterly*, 1(1), 5-37.

Brewin, C. R., Andrews, B., & Gotlib, I. H. (1993). Psychopathology and early experience: A reappraisal of retrospective reports. *Psychological Bulletin*, 113, 82-98.

Chandler, L. A. (1981). The Source of Stress Inventory. *Psychology in the Schools*, 18, 164-168.

Cohen, J. (1960). A coefficient agreement for nominal scales. *Educational and Psychological Measurement*, 20, 37-46.

DiNardo, P. A., & Barlow, D. H. (1988). *Anxiety Disorders Interview Schedule-Revised*. Albany, NY: Graywind.

Endicott, J., & Spitzer, R. A. (1978). A diagnostic interview: The schedule for affective disorders and schizophrenia. *Archives of General Psychiatry*, 35, 837-844.

Feiring, C., Taska, L., & Lewis, M. (1998). The role of shame and attributional style in children's and adolescent's adaptation to sexual abuse. *Child Maltreatment*, 3, 129-142.

Fincham, F. D., & Cain, K. M. (1986). Learned helplessness in humans: A developmental analysis. *Developmental Review*, 6, 301-333.

Garber, J., & Flynn, C. (1998). Origins of the depressive cognitive style. In D. Routh & R. J. DeRubeis (Eds.), *The science of clinical psychology: Evidence of a century's progress* (pp. 53-93). Washington, DC: American Psychological Association.

Garber, J., & Flynn, C. (2001). Predictors of depressive cognitions in young adolescents. *Cognitive Therapy and Research*, 25, 353-376.

Gibb, B. E., Alloy, L. B., Abramson, L. Y., & Marx, B. P. (2001). *Childhood maltreatment and maltreatment-specific inferences: A test of Rose and Abramson's (1992) extension of the hopelessness theory*. Manuscript submitted for publication.

Gibb, B. E., Alloy, L. B., Abramson, L. Y., Rose, D. T., Whitehouse, W. G., Donovan, P., Hogan, M. E., Cronholm, J., & Tierney, S. (2001). History of childhood maltreatment, negative cognitive styles, and episodes of depression in adulthood. *Cognitive Therapy and Research*, 25, 425-446.

Gibbon, M., McDonald-Scott, P., & Endicott, J. (1981). *Mastering the art of research interviewing: A model training procedure for diagnostic evaluation*. New York: Biometrics Research, New York State Psychiatric Institute.

Gold, E. R. (1986). Long-term effects of sexual victimization in childhood: An attributional approach. *Journal of Consulting and Clinical Psychology*, 54, 471-475.

Haines, B. A., Metalsky, G. I., Cardamone, A. L., & Joiner, T. (1999). Interpersonal and cognitive pathways into the origins of attributional style: A developmental perspective. In J. C. Coyne & T. Joiner (Eds.), *The interactional nature of depression: Advances in interpersonal approaches* (pp. 65-92). Washington, DC: American Psychological Association.

Hammen, C., & Krantz, S. E. (1985). Measures of psychological processes in depression. In E. E. Beckham & W. R. Leber (Eds.), *Handbook of depression: Treatment, assessment and research* (pp. 408-444). Homewood, IL: Dorsey.

Ingram, R. E., Miranda, J., & Segal, Z. V. (1998). *Cognitive vulnerability to depression*. New York: Guilford Press.

Nolen-Hoeksema, S., Girkus, J., & Seligman, M. E. P. (1992). Predictors and consequences of childhood depressive symptoms: A 5-year longitudinal study. *Journal of Abnormal Psychology*, 101, 405-422.

Peterson, C. (1991). The meaning and measurement of explanatory style. *Psychological Inquiry*, 2, 1-10.

Peterson, C., & Seligman, M. E. P. (1984). Causal explanations as a risk factor for depression: Theory and evidence. *Psychological Review*, 91, 347-374.

Rose, D. T., & Abramson, L. Y. (1992). Developmental predictors of depressive cognitive style: Research and theory. In D. Cicchetti & S. L. Toth (Eds.), *Rochester symposium on developmental psychopathology* (Vol. 4, pp. 323-349). Hillsdale, NJ: Erlbaum.

Rose, D. T., Abramson, L. Y., Hodulik, C. J., Halberstadt, L., & Leff, G. (1994). Heterogeneity of cognitive style among depressed inpatients. *Journal of Abnormal Psychology*, 103, 419-429.

Seligman, M. E. P., Abramson, L. Y., Semmel, A., & von Baeyer, C. (1979). Depressive attributional style. *Journal of Abnormal Psychology*, 88, 242-247.

Spitzer, R. L., Endicott, J., & Robins, E. (1978). Research diagnostic criteria: Rationale and reliability. *Archives of General Psychiatry*, 35, 773-782.

Turk, E., & Bry, B. (1992). Adolescents' and parents' explanatory styles and parents' causal explanations about their adolescents. *Cognitive Therapy and Research*, 16, 349-357.

Weissman, A., & Beck, A. T. (1978). *Development and validation of the Dysfunctional Attitudes Scale: A preliminary investigation*. Paper presented at the annual meeting of the American Educational Research Association, Toronto, Canada.

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