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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

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In this study, we examined the role of three social learning mechanisms in the development of undergraduates' depressogenic cognitive styles: modeling of parents' negative cognitive styles; negative inferential feedback from parents regarding the causes and consequences of stressful events in the child's life; and negative parenting practices. We obtained partial support for each of the three hypotheses. Compared to the parents of cognitively low-risk students, cognitively high-risk students' mothers exhibited more negative dysfunctional attitudes and inferential styles themselves; high-risk students' fathers showed less emotional acceptance and warmth; and high-risk students' mothers and fathers both communicated more stable, global attributional feedback and negative consequence feedback for stressful events in their children's lives. In addition, both parents' inferential feedback and fathers' emotional acceptance predicted their undergraduate children's likelihood of developing an episode of major or minor depression or the subtype of hopelessness depression during a 2.5-year prospective follow-up period, with some of these predictive associations mediated totally or in part by the students' cognitive vulnerability status.

KEY WORDS: cognitive vulnerability; depression; developmental precursors.

INTRODUCTION

According to two major cognitive theories of depression, the hopelessness theory (Abramson, Metalsky, & Alloy, 1989; Alloy, Abramson, Metalsky, & Hart-

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lage, 1988) and Beck's (1967, 1987) theory, particular maladaptive cognitive styles increase individuals' vulnerability to depression when they encounter negative life events. Specifically, in the hopelessness theory, people who characteristically attribute negative life events to stable and global causes, infer that further negative consequences will follow from a current negative event, and believe that the occurrence of a negative event in their lives means that they are deficient or unworthy are hypothesized to be more likely to develop episodes of depression, in particular, the subtype of ''hopelessness depression,'' when they confront negative life events than people who do not exhibit these negative inferential styles. Similarly, in Beck's theory, people who possess negative self-schemata that contain dysfunctional attitudes, such as that their worth depends on their being perfect or on other people's approval, are hypothesized to be vulnerable to depressive episodes when they encounter stressors that impinge on these beliefs.

Recent studies using or approximating a behavioral high-risk design (e.g., Alloy, Lipman, & Abramson, 1992; Depue et al., 1981) obtained considerable support for the cognitive vulnerability hypotheses of depression (see Alloy et al., 1999, and Ingram, Miranda, & Segal, 1998, for reviews). Of greatest relevance to the present study are findings from the Temple–Wisconsin Cognitive Vulnerability to Depression (CVD) Project (Alloy & Abramson, 1999). In the CVD Project, individuals with no current Axis I disorders who were at high versus low risk for depression based on the presence versus absence of the cognitive styles featured as vulnerabilities in the hopelessness theory and Beck's theory (negative inferential styles and dysfunctional attitudes) were followed prospectively for 5 years. Cognitively high-risk (HR) participants were significantly more likely than cognitively low-risk (LR) participants to develop both first onsets and recurrences of episodes of DSM III-R (American Psychiatric Association, 1987) and Research Diagnostic Criteria (RDC; Spitzer, Endicott, & Robins, 1978) major and minor depression as well as hopelessness depression (HD) during the first 2.5 years of follow-up (Alloy et al., 2000b). 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).

If negative cognitive styles do confer vulnerability for depression and suicidality, as indicated by the CVD Project findings, then it becomes important to explore the developmental origins of these cognitive styles. It is likely that genetic, neurochemical, social learning, and early traumatic processes all contribute to the development of cognitive vulnerability to depression (e.g., Garber & Flynn, 1998; Gibb et al., 2001; Goodman & Gotlib, 1999; Haines, Metalsky, Cardamone, & Joiner, 1999; Rose & Abramson, 1992). However, in this article, we focus on three social learning mechanisms that may play a role in the development of depressogenic cognitive styles: modeling of parents' negative cognitive styles; negative inferential feedback from parents regarding the causes and consequences of stressful events in the child's life; and negative parenting practices.

Modeling of Parents' Cognitive Styles

Children may learn their cognitive styles in part by observing and modeling significant others, in particular, their parents (Abramson et al., 1999; Alloy et al.,

1999; Garber & Flynn, 1998; Haines et al., 1999). If this is the case, then children's cognitive styles should correlate with those of their mothers or fathers. The results of studies of the modeling hypothesis have been mixed. On one hand, Seligman et al. (1984) reported a significant correlation of .39 between the attributional styles for negative events of 47 mothers and their elementary school children, but no correlation between the fathers' and children's attributional styles. They suggested that the significant associations with mothers' attributional styles may be attributable to mothers' role as the primary caretaker in most families. Similarly, Stark, Schmidt, and Joiner (1996) found a relationship between mothers' and children's scores on a measure of Beck's negative cognitive triad, but no association of fathers' and children's scores. In a sample of 240 sixth-grade children and their mothers, Garber and Flynn (2001) found a significant association ($r = .25$) between mothers' and children's global self-worth, but no correlation between their general attributional styles. On the other hand, Kaslow, Rehm, Pollack, and Siegel (1988), in a sample of 15 depressed and 22 nondepressed clinic children and 25 nonclinic children, and Turk and Bry (1992), in a sample of 21 adolescents with academic problems, did not obtain significant correlations between either parent's attributional style and that of their child. Oliver and Berger (1992) also found that college students' and their parents' scores were not significantly associated on three measures of dysfunctional attitudes and self-schemata.

Differences in the composition and size of the samples and cognitive measures used in these modeling studies may contribute to their discrepant findings. In addition, it also may be fruitful to consider the sex of the child in testing the modeling hypothesis (Tashman, 1997). It is possible that associations between the cognitive styles of parents and children of the same sex may be greater than those of opposite-sex parent–child dyads if children are more likely to identify with and therefore model the parent of the same sex (e.g., Bandura, 1965, 1969). Thus, in the present study, we further explored the modeling hypothesis by examining the cognitive styles (both inferential styles and dysfunctional attitudes) of the parents of the HR and LR undergraduates in the CVD Project as a function of both the parents' and children's sex.

Direct Learning from Parental Inferential Feedback

A second possible social learning mechanism is that parents communicate their own inferences about the causes and consequences of negative events in their child's life such that the child develops an inferential style consistent with the parental feedback. If parental feedback contributes to children's cognitive vulnerability, then parents' typical inferential communications to their children should be associated with their offspring's cognitive styles. The few findings consistently support the feedback hypothesis. Fincham and Cain (1986) reported that third-graders who attributed academic failure to external causes had parents who attributed the child's failures to their own (the parents') lack of effort, a cause external to the child. Turk and Bry (1992) found that fathers', but not mothers', explanations of the academic events in their adolescent children's lives were correlated with the adolescents' own attributions for those events. Similarly, although they did not find an association

between mothers' attributional styles and their children's styles, Garber and Flynn (2001) did report a relation between mothers' attributions for events in the child's life and their child's attributions. More generally, work by Dweck and her colleagues (e.g., Dweck, Davidson, Nelson, & Enna, 1978) has shown that children's attributions for performance outcomes are influenced by the direct feedback they receive from their teachers. In this study, we further addressed the feedback hypothesis by examining the inferential feedback styles of the parents of the HR and LR undergraduates in the CVD Project as reported by both the parents and offspring.

Indirect Learning from Negative Parenting Practices

In addition to modeling of parents' cognitive styles and parental inferential feedback, negative parenting practices may also contribute to the development of cognitive vulnerability to depression. Several investigators have hypothesized that children's self-worth, attitudes, and inferential styles are influenced by the quality of their relationships with their parents (e.g., Beck & Young, 1985; Bowlby, 1988; Cole, 1990; Eisner, 1995; Garber & Flynn, 1998). The two aspects of parenting most often implicated in the association between children's risk for depression and parent–child relations are parental lack of emotional warmth and parental negative control (Cole, 1990; McCranie & Bass, 1984; Tashman, 1997), a pattern of parenting referred to as ''affectionless control'' by Parker (1983). An important research question is whether negative parenting behavior increases risk for depression in offspring by inculcating negative cognitive styles.

Consistent with this hypothesis, studies of the offspring of depressed mothers have found significant associations between depressed mothers' negative comments or verbal criticism of their child and the child's negative cognitions (Goodman, Adamson, Riniti, & Cole, 1994; Jaenicke et al., 1987; Radke-Yarrow, Belmont, Nottelman, & Bottomly, 1990). Among studies that did not specifically target the offspring of depressed parents, significant associations also have been found between children's reports of low parental acceptance/warmth and high parental control and the children's negative cognitive styles (Brewin, Firth-Cozens, Furnham, & McManus, 1992; Litovsky & Dusek, 1985; Parker, 1993; Randolph & Dykman, 1998; Stark et al., 1996; Whisman & Kwon, 1992; Whisman & McGarvey, 1995; see Oliver & Berger, 1992, for an exception). Only a few studies have examined the ability of parenting behavior to predict offspring's cognitions prospectively. Koestner, Zuroff, and Powers (1991) found that parental rejection and restrictive control in childhood predicted subsequent self-criticism of their offspring in adolescence. Garber and Flynn (2001) found that low maternal care predicted their children's subsequent low self-worth, and high maternal psychological control predicted their children's depressive attributional style, even after controlling for maternal depression history. Thus, there is reasonably consistent evidence that low parental acceptance and high parental control are associated cross-sectionally and longitudinally with negative cognitions in offspring. In this study, we further explored the negative parenting hypothesis by examining the parenting behaviors of cognitively HR and LR participants' parents as reported by both the participants and their mothers and fathers.

Overview of the Present Study

The present study addressed three social learning hypotheses regarding potential antecedents of the development of cognitive vulnerability for depression: modeling of parents' cognitive styles; direct learning from parents' inferential feedback; and indirect learning from negative parenting practices. To this end, we examined the cognitive styles (dysfunctional attitudes and inferential styles), inferential feedback styles (regarding causes and consequences of events in the child's life), and parenting behaviors of the mothers and fathers of the undergraduates at high versus low cognitive risk for depression in the CVD Project. Parental inferential feedback styles and parenting practices were assessed with both parent and offspring report. In addition, our analyses took into account the gender of both parent and child. We hypothesized that the parents of cognitively HR participants would exhibit more dysfunctional attitudes and negative cognitive styles, more negative inferential feedback styles (stable, global attributions, and negative consequences for events in their child's life), and more negative parenting practices (less involvement/warmth and more psychological control) than would the parents of cognitively LR participants. In addition, we investigated whether any of the three classes of parent variables (cognitive styles, feedback styles, parenting behaviors) that differed between high- and low-risk students were also associated with the likelihood of onset of major (MD) or minor (MiD) depression, hopelessness depression (HD), or hopelessness in their college-aged child during the first 2.5 years of follow-up of the CVD Project, and, if so, whether these relations were mediated by the child's cognitive vulnerability status.

METHOD

Participants: Student Sample

The student participants in this study were a subset of those included in the Temple–Wisconsin CVD Project (Alloy & Abramson, 1999). Participants for the CVD Project were recruited through a two-phase screening process from the freshmen classes of Temple University (TU) and the University of Wisconsin-Madison (UW). In Phase I, 5,378 freshmen (2,438 at TU; 2,940 at UW) were administered the Cognitive Style Questionnaire (CSQ; Abramson, Metalsky, & Alloy, 2000) and a modified version of the Dysfunctional Attitudes Scale (DAS; Weissman & Beck, 1978). Freshmen scoring in the highest (most negative) or lowest (most positive) quartile of the screening sample on *both* the DAS and the CSQ composite (stability + globality + consequences + self) for negative events formed a pool of potential cognitive high-risk (HR) and low-risk (LR) participants, respectively (see Alloy & Abramson, 1999, and Alloy et al., 2000a, for more details). Thus, cognitive vulnerability and invulnerability to depression were based on *both* hopelessness and Beck's theories. A total of 619 HR and 585 LR participants were identified at Phase I.

In Phase II, a randomly selected subsample of 313 potential HR and 236

potential LR freshmen who were under 30 years of age were administered the Schedule for Affective Disorders and Schizophrenia—Lifetime (SADS-L) diagnostic interview (Endicott & Spitzer, 1978), expanded to permit DSM III-R as well as RDC diagnoses. 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 [MD] or minor [MiD] depressive disorder, bipolar disorder [Bi] with a current episode of either MD, mania [Ma], or hypomania [Hyp]) or any chronic mood disorder (e.g., dysthymia [Dys], intermittent depressive disorder [IDD], or cyclothymia [Cyc]); (2) current diagnosis of any other psychiatric disorder (e.g., anxiety disorder, alcohol or drug use disorder); (3) current psychotic symptoms; (4) past history of Ma, Hyp, Bi, or Cyc; and (5) serious medical illness that would preclude participation in a longitudinal study. Freshmen who met DSM III-R or RDC criteria for a past unipolar depressive disorder (e.g., past MD, MiD, Dys, IDD), but who had remitted for a minimum of 2 months, were retained in the final sample so as not to be left with an unrepresentative sample of HR participants.

At the end of Phase II, 209 HR (114 at TU; 95 at UW) and 207 LR (110 at TU; 97 at UW) participants remained eligible for the study. Of these, 173 HR (83 at TU; 90 at UW) and 176 LR (87 at TU; 89 at UW) individuals agreed to participate in the prospective phase of the study and formed the final CVD Project sample (see Alloy & Abramson, 1999, and Alloy et al., 2000a, for the demographic characteristics and representativeness of this final sample). Only those participants in the final sample who remained throughout the 2.5-year prospective follow-up and completed the measures of parenting behavior and parental inferential feedback and who had at least one parent agree to participate in the parent study portion of the project were included in the current study ($N = 287$; HR = 145; LR = 142). The demographic characteristics of the student participants in the present study are presented in Table I. The HR and LR groups in this study did not differ significantly on gender, $F(1, 252) = 0.24$, ns, age, $F(1, 252) = 2.67$, ns, or ethnicity, $F(1, 252) = 1.57$, ns. Also, the subsample of student participants included in this study did not differ from the total CVD Project sample on cognitive styles, age, gender, and ethnicity.

Table I. Student Sample: Demographic Characteristics

	High risk	Low risk
Temple University site		
N	63	56
Age (years)	19.46 (1.30)	20.78 (4.31)
Sex	66.7% Women	60.7% Women
Ethnic group	60.0% White	48.8% White
University of Wisconsin-Madison site		
N	82	86
Age (years)	18.12 (0.45)	18.28 (1.25)
Sex	69.5% Women	67.4% Women
Ethnic group	77.2% White	81.4% White

Note: Standard deviations are in parentheses.

Participants: Parent Sample

During the first year of the prospective follow-up phase of the CVD Project, student participants were asked for written permission to contact their parents to ask them to participate in the Parent Study. For this study, parents were defined as biological, step, adoptive, or other primary caregivers. Students could grant permission to contact both, one, or neither of their parents. Parents for whom permission was granted were contacted by telephone and invited to participate in the Parent Study, which involved two extensive interviews and the completion of several self-report measures across two different sessions. Other than a parent's refusal to participate, inability to speak English, or inability to be contacted, there were no exclusion criteria for parents. Of approximately 400 contacted parents, 335 (104 mothers of HR students; 113 mothers of LR students; 62 fathers of HR students; 56 fathers of LR students) agreed to participate in the Parent Study and completed at least some of the study measures.[7] The demographics for the parent sample are presented in Table II.

Measures

Cognitive Styles

The Cognitive Style Questionnaire (CSQ; Abramson et al., 2000) and Dysfunctional Attitudes Scale (DAS; Weissman & Beck, 1978) were used to assess student participants' cognitive vulnerability to depression as specified by the hopelessness theory (Abramson et al., 1989) and Beck's theory (1967, 1987), respectively, as well

Table II. Parent Sample: Demographic Characteristics

	High risk	Low risk
Temple University site		
N	47 Mothers	43 Mothers
	25 Fathers	22 Fathers
Average education (years)	14.36 (2.15)	13.45 (2.11)
Combined parental income ($)	53,763 (35,493)	37,540 (23,891)
Sex	65.3% Women	66.2% Women
Ethnic group	60.0% White	48.8% White
Marital status	84% Married	84% Married
University of Wisconsin-Madison site		
N	57 Mothers	70 Mothers
	37 Fathers	34 Fathers
Average education (years)	15.29 (2.22)	15.09 (2.31)
Combined parental income ($)	87,671 (106,271)	77,963 (54,998)
Sex	60.6% Women	67.3% Women
Ethnic group	77.2% White	81.4% White
Marital status	85% Married	88% Married

Note: Standard deviations are in parentheses.

[7]Some parents who agreed to participate completed only the first session's measures; thus, the degrees of freedom vary across analyses of the various parent report measures, depending on the number of parents who completed each measure.

as their parents' cognitive styles. The CSQ, a modified version of the Attributional Style Questionnaire (ASQ; Seligman et al., 1979), is a self-report measure used to assess participants' inferential styles for positive and negative events. The ASQ is a well-established instrument with good reliability and validity (Peterson, 1991) that assesses people's attributions for hypothetical positive and negative events on the internality, stability, and globality dimensions. The CSQ was modified from the ASQ by increasing the number of events to 12 positive and 12 negative events (6 achievement and 6 interpersonal events of each valence) and by including ratings (on 7-point scales) of the likely consequences of each event (e.g., ''How likely is it that the other person no longer wanting a romantic relationship with you will lead to other negative things happening to you?'') and the implications of each event for the self (e.g., ''To what degree does your receiving a negative evaluation of your job performance mean to you that you are flawed in some way?''). In the CVD Project, a composite score for negative events based on a sum of the stability, globality, consequences, and self-dimensions was used (along with the DAS) to select HR and LR groups as described above. The same composite from the CSQ was used to assess the participants' parents' inferential styles for negative events, with slight changes in the content of some items to make them more appropriate for adults. Coefficient α based on the Phase I screening sample (n = 5,378) 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 also showed predictive validity for episodes of depression (Alloy, Abramson, Murray, Whitehouse, & Hogan, 1997; Alloy et al., 2000b) and for suicidality (Abramson et al., 1998).

The DAS (Weissman & Beck, 1978) contains 40 items that assess dysfunctional attitudes regarding perfectionistic standards of performance, concern with evaluation by others, causal attributions, expectations about the likelihood of desired outcomes, and attachment of high importance to particular goals. For the CVD Project, we expanded the DAS by adding 24 items that measured dysfunctional beliefs in achievement and interpersonal domains specifically (e.g., ''If I fail in school or work, then I am a failure as a person''; ''I am a nobody if my closest friend stops liking me''). The expanded DAS score was used (along with the CSQ) to select HR and LR groups and, with slight changes in the content of some items to make them more appropriate for adults, to assess their parents' dysfunctional attitudes. Reliability and validity for the original 40-item DAS are adequate (Hammen & Krantz, 1985; Weissman & Beck, 1978). The coefficient α for the expanded DAS was .90 in our Phase I screening sample and retest reliability over 1 year in the final sample was .78. As with the CSQ, the DAS has shown predictive validity for episodes of depression (Alloy et al., 1997, 2000b) and suicidality (Abramson et al., 1998).

Parental Inferential Feedback Styles

Both parent report and child report versions of the Parental Attributions for Children's Events Questionnaire (PACE; Berrebbi, Tashman, Alloy, & Abramson, 2000) were created for this study to assess parents' typical communicated attribu-

tions and consequences toward the child when the child experienced negative events in the past. The PACE consists of 12 hypothetical negative events. Like the CSQ, half of the events are achievement oriented and half are interpersonally oriented. For each event, the student respondent is asked to imagine the 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 might communicate to their child representing 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 are followed by two statements regarding possible consequences (positive vs. negative) of the event's occurrence. For example, following the event, ''Everyone in your class is invited to a party but you (your child),'' the four attributional statements are, ''Of course you weren't invited. You aren't easy to get along with'' (ISG), ''All the other students are part of the same clique. People always have a hard time letting new people into their groups'' (ESG), ''You were too quiet in that class. You didn't give people the chance to get to know you'' (IUS), and ''The students throwing the party must have goofed and forgotten to send your invitation'' (EUS). The two consequence statements 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). Student participants were asked to select the one attribution and the one consequence their parent would be most likely to make for them, the student participant (or, if a parent, that they would be most likely to make for the student participant) and then to rate the likelihood that their parent, or they themselves, would have said each of the four attributional and each of the two consequence statements for the student for each event on 0–100% probability scales. The probability ratings for the four attributional statements and for the two consequence statements did not have to add to 100%. Students completed the PACE for both their mother and father and each parent completed the PACE for themselves.

Two scores can be obtained from the PACE: (1) the number of times (out of 12 possible) the student or parent selected each type of attributional and consequence statement as the most likely to be said by the parent for the student participant and (2) the mean rating (0–100%) of each type of attributional and consequence statement. In the present study, we used the mean rating (0–100%) score for all analyses. Inasmuch as stable and global attributions for negative events (regardless of their internality) are hypothesized to be important vulnerability factors for the development of hopelessness and episodes of depression in the hopelessness theory (Abramson et al., 1989) and student participants' cognitive risk status was based on the stability and globality attributional dimensions (irrespective of internality), we created a composite of the two stable, global attribution statements (collapsed across the internal–external dimension) and a composite of the two unstable, specific attribution statements (collapsed across the internal–external dimension) to use in all analyses involving the PACE. Table III displays the internal consistencies (coefficient αs) for the child report and parent report versions as well as correlations between the student and parent reports on the PACE. As can be seen in Table

Table III. Internal Consistency and Correlations of Parent and Child PACE Composite and CRPBI Subscale Scores

Parenting variable	Child report α	Parent report α	r	p
PACE				
Mother				
Stable, global attributions	.77	.77	−.04	.590
Unstable, specific attributions	.85	.82	−.04	.650
Negative consequences	.77	.69	−.05	.540
Father				
Stable, global attributions	.82	.69	.06	.620
Unstable, specific attributions	.87	.67	−.08	.490
Negative consequences	.78	.57	−.11	.390
CRPBI				
Mother				
Acceptance		.87	.29	.001
Negative control		.79	.40	.001
Lax control		.70	.39	.001
Father				
Acceptance		.82	.33	.004
Negative control		.68	.46	.001
Lax control		.61	.12	.280

Note: PACE, Parental Attributions for Children's Events Scale; CRPBI, Children's Report of Parental Behavior Inventory; α, alpha coefficient. Alpha coefficients were not calculated for child reports on the CRPBI.

III, the internal consistency of the student reports tended to be greater than for the parent reports (especially, than fathers' reports) and the students' and parents' reports did not correlate with each other. The lack of agreement between students and parents may be due in part to the relatively complex instructions of the PACE.

Parenting Behaviors

Parenting practices were assessed with the Children's Report of Parental Behavior Inventory (CRPBI; Schaeffer, 1965). The CRPBI is a 180-item self-report questionnaire (90 items each about mother and father) that yields scores on three dimensions of parenting: acceptance versus rejection (Acceptance), psychological autonomy versus psychological control (Negative Control), and firm control versus lax control (Lax Control). Respondents rate individual statements in terms of whether the statement is ''like,'' ''somewhat like,'' or ''not like'' what they experienced as children and adolescents. Schwarz, Barton-Henry, and Pruzinski (1985) reported adequate internal consistencies for child reports on the Acceptance, Negative Control, and Lax Control dimensions with mean αs of .87, .80, and .74, respectively, as well as good convergent and discriminant validity. When administered to college students and their mothers, fathers, and one sibling, the findings suggested that no rater was significantly superior to the others and therefore Schwarz et al. concluded that it is reasonable to administer the CRPBI to other informants besides the child. Thus, we also administered a parent report version of the CRPBI with slightly modified wording in which mothers and fathers were asked to report on their own behavior regarding raising their child in the CVD Project. The parent

version (CRPBI-P) consisted of the same 90 items the student participants were asked to rate about each individual parent on the CRPBI. Table III shows the coefficient αs for the parent reports as well as the correlations between the student and parent reports for each of the three CRPBI dimensions. Students' and parents' reports were significantly and moderately correlated with one another in all cases except for the Lax Control dimension for fathers.

Hopelessness

The Hopelessness Scale (HS; Beck, Weissman, Lester, & Trexler, 1974), a 20-item true–false questionnaire, was used to assess student participants' hopelessness about the future. Total scores range from 0 to 20, with higher scores indicating more severe levels of hopelessness. The HS has been reported to have good internal consistency (e.g., Beck et al., 1974) and retest stability over a 3-week period (Holden & Fecken, 1988). In addition, the correlations reported by Beck et al. (1974) between clinicians' ratings of hopelessness and scores on the HS (r = .74 in an outpatient sample; r = .64 in a sample of hospitalized suicide attempters) indicate adequate concurrent validity. Student participants completed the HS every 6 weeks during the 2.5-year follow-up for each of the 2-week periods in the 6-week interval. Mean level of hopelessness calculated from the entire 2.5-year period was used as one of the dependent measures in the analyses of parenting variables as predictors of child outcomes over the prospective follow-up period.

Depressive Symptoms

The Beck Depression Inventory (BDI; Beck, Rush, Shaw, & Emery, 1979) was used to assess student participants' initial levels of depression as they entered the study and parents' levels of depression when they completed the self-report measures (CSQ, DAS, PACE, CRPBI-P). The BDI's reliability and validity in nonclinical samples has been well established (Beck, Steer, & Garbin, 1988).

Depressive Episodes

Episodes of DSM III-R (definite and subthreshold) and RDC (definite and probable) MD and RDC (definite and probable) MiD across the 2.5-year prospective follow-up were assessed with an expanded SADS-Change (SADS-C; Spitzer & Endicott, 1978) interview, which was modified in the same way as the expanded SADS-L interview. In addition, the expanded SADS-C was used to make diagnoses of HD (definite and probable) across the 2.5-year follow-up, according to the symptom criteria specified by Abramson et al. (1989).[8] In the current study, MD,

[8]To qualify for a diagnosis of HD, participants had to endorse hopelessness ≥2 weeks (for a definite diagnosis) or ≥1 week (for a probable diagnosis) for 6 of 7 days of each week and either ≥5 (for a definite diagnosis) or ≥4 (for a probable diagnosis) of the following criterial symptoms: sadness, retarded initiation of voluntary responses, suicidal ideation/acts, sleep disturbance–initial insomnia, lack of energy, self-blame, difficulty in concentration, psychomotor retardation, brooding/worrying, lowered self-esteem, and dependency. These criterial symptoms had to be present either for ≥2 weeks (overlapping at least 12 of 14 days for definite HD) or for ≥1 week (overlapping at least 6 of 7 days for probable HD). In addition, the onset of hopelessness was required to precede the onset of the criterial symptoms by at least 1 day and no more than 1 week.

MiD, and HD were each coded as dichotomous variables, indicating whether or not each student participant experienced at least one of these disorders during the 2.5-year follow-up period of the study. Diagnostic interrater reliability for MD, MiD, and HD episodes throughout the follow-up phase was $\geq .90$. Further details regarding the expanded SADS-C interview and interviewer training may be found in Alloy and Abramson (1999).

Procedures

Freshmen who were hypothesized to be at high versus low cognitive risk for depression based on their scores on the CSQ and DAS were chosen for inclusion in the CVD Project. After completing the two-phase screening procedure, including completion of the BDI, eligible nondisordered HR and LR participants who agreed to participate in the longitudinal study were enrolled in the follow-up phase. For a 2.5-year period, participants came to the laboratory to complete structured interview and questionnaire assessments (including the SADS-C and HS) approximately every 6 weeks. When participants were unable to come to the laboratory (e.g., during vacations), assessments were conducted by phone and mail. In addition, student participants completed the PACE and CRPBI at the end of the second year of follow-up. All student assessments were conducted blind to participants' risk-group status. Students were paid for all of their time (see Alloy & Abramson, 1999, for the payment schedule). During the first year of follow-up, the students were also asked for their written permission to contact and invite their parents to participate. Students 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, although not a part reported here). It was decided that connecting the two studies could violate the students' confidentiality and could jeopardize their rapport with their interviewers.

Once permission was obtained from students, research assistants telephoned the parents and told them that their child gave permission for them to be contacted. Parents were given the same explanation of the parent study as their children had received. If the parents agreed to participate (and gave written informed consent), they were scheduled for a structured interview (not relevant to the current study) and completion of several questionnaires. Interviews were conducted either by phone or in person if the parent did not live too far from the university and was willing to come in person. After completing the interview, the interviewer explained the instructions for each of the questionnaires. The parent then completed the CSQ and DAS and several other measures not relevant here. Parents were later recontacted by the research assistants and asked to participate in a second session involving a different structured interview (again, not relevant here) and the completion of the PACE and CRPBI-P. For the sake of confidentiality and interviewer bias, parents were not interviewed by the same person who interviewed their child, and mothers and fathers received different interviewers. Parents and children were both assured of confidentiality and that their data would not be seen by the other. Parents were paid $60 for each of the two sessions.

RESULTS

Analysis Approach

The first set of hypothesis-testing analyses were designed to examine whether parents' cognitive styles, inferential feedback styles, and parenting behaviors differed for HR versus LR participants. For each measure for which we obtained both student and parent reports (PACE, CRPBI), risk (HR, LR) × site (TU, UW) × child sex (M, F) analyses of variance (ANOVAs) or multivariate analyses of variance (MANOVAs) were conducted separately for the students' and parents' reports. In addition, mothers' and fathers' data were analyzed separately in order to avoid being left with a possibly unrepresentative sample of "intact" families.[9] Following the initial ANOVAs, we also conducted analyses of covariance (ANCOVAs) including the BDI scores of the respondent as a covariate in order to control for any reporting biases associated with current depression on the part of the respondent. Thus, for student report data, the students' BDI scores were included as a covariate, whereas for parent report data, the parents' BDI scores were included as a covariate.

The second set of analyses explored whether the parenting variables predicted their undergraduate child's outcomes over the 2.5-year prospective follow-up period, and, if so, whether the predictive association was mediated by the child's cognitive risk status. Each parenting variable found to differ for the parents of HR and LR students in the first set of analyses was examined as a possible predictor of the student's likelihood of developing an episode of depression (DSM III-R or RDC MD or RDC MiD), the subtype of HD, and average hopelessness (HS scores) over the 2.5-year follow-up period in a series of regression analyses. In each regression analysis, one of the student outcomes was regressed onto a parenting variable, controlling for the student's BDI score. For each parenting variable that predicted a student outcome after controlling for the students' BDI scores, we added the students' risk status as a predictor in the regression equation to determine whether it mediated the parenting variable–student outcome association. Mediation by risk would be evidenced by a decrease in the significance of the parenting variable along with a significant prediction of the student outcome by risk.

Parental Modeling Hypothesis

Based on the modeling hypothesis, we predicted that HR students' parents would have more negative cognitive styles (DAS and CSQ scores) than would LR students' parents. To test this hypothesis, we conducted two risk (HR, LR) × site (TU, UW) × child sex (M, F) MANOVAs on parents' DAS and CSQ composite for negative events (stability + globality + consequences + self-implications) scores, one MANOVA on mothers' scores, and one on fathers' scores. For mothers' cognitive styles, the main effect of risk was the only significant effect, $F(1, 204) = 4.17$,

[9]Analyses of mothers' and fathers' data together led to listwise deletion of any cases in which either parent had not completed the relevant measure. This, in turn, led to artificially small sample sizes that were biased to include only "intact" families in which the mother, the father, and the child had all participated. Thus, to avoid this bias, we analyzed the data for mothers and fathers separately.

$p < .05$, and this effect remained significant when the mothers' BDI scores were controlled, $F(1, 203) = 7.56$, $p < .01$. Figure 1 shows that mothers of HR students had more negative cognitive styles than did mothers of LR students. Univariate ANOVAs were conducted separately on mothers' DAS and CSQ negative composite scores. The risk effect was significant for mothers' DAS scores, $F(1, 204) = 5.85$, $p < .02$, and remained significant when mothers' BDI scores were controlled, $F(1, 203) = 9.49$, $p < .01$. There was no risk effect for mothers' CSQ negative composite scores, $F(1, 204) = 1.37$, ns, although the risk effect became marginally significant when mothers' BDI scores were controlled, $F(1, 203) = 2.68$, $p = .10$. There were no significant effects obtained for the risk × site × child sex MANOVA on fathers' cognitive style scores. Thus, these findings are consistent with the hypothesis that students' cognitive styles were modeled, at least in part, on the cognitive styles, particularly, the dysfunctional attitudes, of their mothers.

Parental Inferential Feedback Hypothesis

Based on the parental inferential feedback hypothesis, we predicted that the parents of HR students would provide more stable and global attributional feedback and more negative consequence feedback than would the parents of LR students. First, we tested this hypothesis by conducting risk × site × child sex ANOVAs on

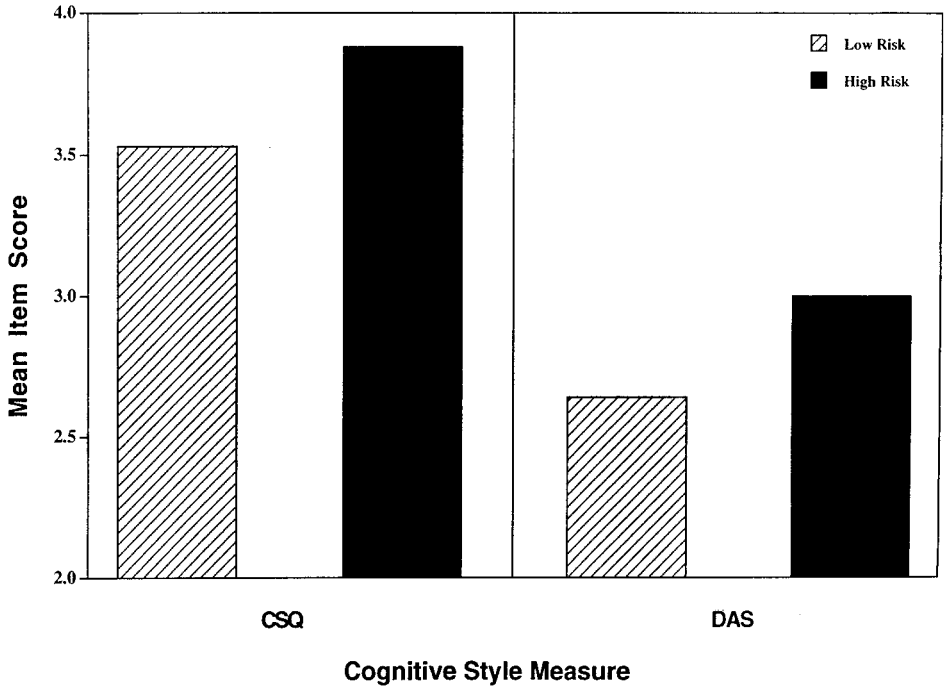

Fig. 1. Mothers' Cognitive Style Questionnaire (CSQ) negative events composite and Dysfunctional Attitudes Scale (DAS) mean item scores as a function of students' cognitive risk status.

the stable, global attributional composite scores from the PACE for mothers and fathers separately, based on the student reports and the parent reports. In the student reports, the risk main effect was significant both for mothers, $F(1, 278) = 4.22$, $p < .04$, and fathers, $F(1, 277) = 8.74$, $p < .01$, for achievement events. This risk effect was no longer significant for mothers when the students' BDI scores were controlled, $F(1, 274) = 0.63$, ns, but remained marginally significant for fathers with the students' BDI scores controlled, $F(1, 273) = 3.44$, $p < .06$. Figure 2 shows that HR students reported that their mothers and fathers communicated more stable, global attributional feedback to them when they experienced negative achievement events as children than LR students reported about their mothers and fathers. For the parent reports, the risk effect was significant both for mothers, $F(1, 152) = 6.11$, $p < .02$, and fathers, $F(1, 76) = 4.23$, $p < .05$, for both achievement and social events combined. This risk effect remained significant for mothers when their BDI scores were controlled, $F(1, 148) = 5.15$, $p < .03$, and remained marginally significant for fathers with fathers' BDI scores controlled, $F(1, 68) = 3.47$, $p < .07$. Figure 2 also shows that both mothers and fathers of HR students reported providing more stable, global attributional feedback for negative achievement and social events than did mothers and fathers of LR students.

We also tested the feedback hypothesis using the negative consequence com-

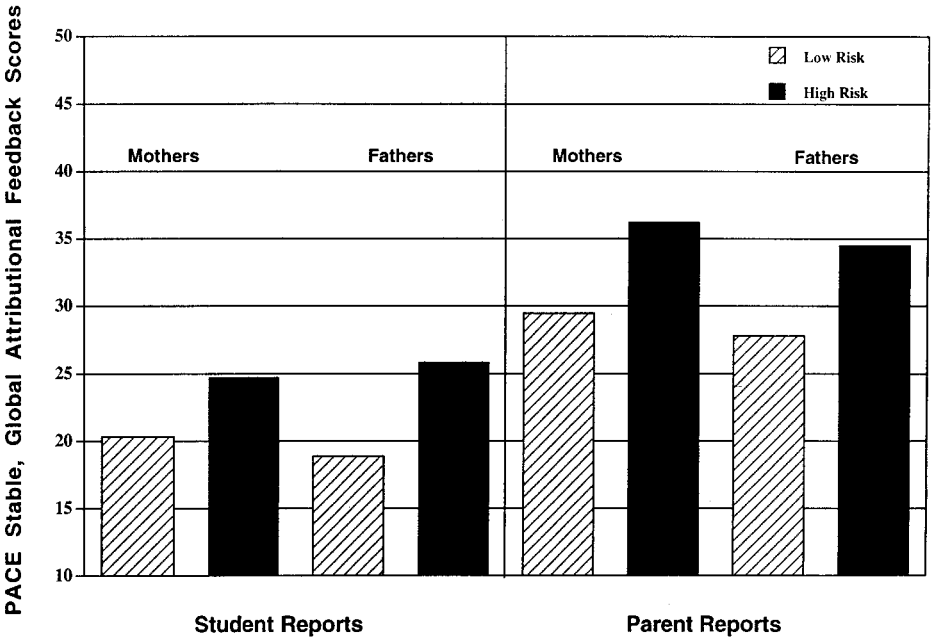

Fig. 2. Mothers' and fathers' stable, global attributional feedback scores from the Parental Attributions for Children's Events (PACE) Questionnaire, child and parent versions, as a function of students' cognitive risk status. Note that the student reports were for negative achievement events and the parent reports were for negative achievement and social events combined (thus the higher overall scores for the parent reports).

posites from the PACE. For the student reports, the risk × site × child sex ANOVAs yielded significant risk effects for both mothers', $F(1, 277) = 10.12$, $p < .002$, and fathers', $F(1, 278) = 11.48$, $p < .001$, negative consequence scores for social events, and these risk effects remained significant when students' BDI scores were controlled, $F(1, 272) = 4.55$, $p < .04$ for mothers, and $F(1, 273) = 5.52$, $p < .02$ for fathers, respectively. The risk effects for students' reports of both their mothers' and fathers' negative consequence feedback for achievement events were also significant, $F(1, 278) = 7.55$, $p < .01$, for mothers, and $F(1, 278) = 10.26$, $p < .002$, for fathers, respectively, but did not remain significant when the students' BDI scores were included as a covariate. Figure 3 shows that HR students reported greater negative consequence feedback for negative social events from both their mothers and fathers than LR students reported about their mothers and fathers. The analysis of parent reports revealed a similar risk effect for mothers' negative consequence scores for social events, $F(1, 159) = 3.98$, $p < .05$, that remained significant with mothers' BDI scores controlled, $F(1, 153) = 4.06$, $p < .05$, but no significant effects for fathers' negative consequence scores. As can be seen in Fig. 3, mothers of HR students reported that they communicated more negative consequence feedback for negative social events than did mothers of LR students.

Negative Parenting Practices Hypothesis

According to the negative parenting hypothesis, HR students' parents should be characterized by lower acceptance and greater psychological control than should

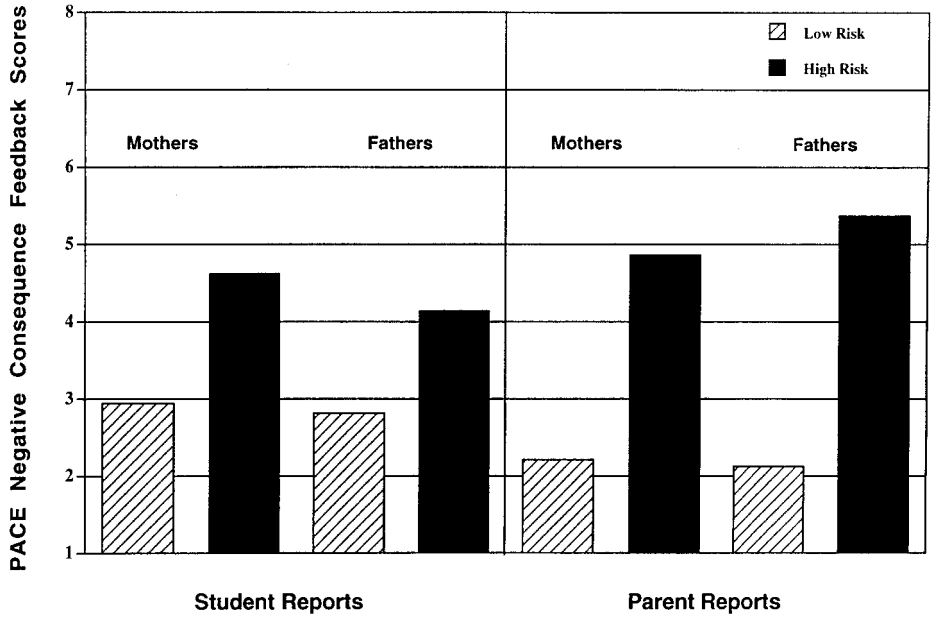

Fig. 3. Mothers' and fathers' negative consequence feedback scores from the Parental Attributions for Children's Events (PACE) Questionnaire, child and parent versions, as a function of students' cognitive risk status.

LR students' parents. We tested this hypothesis by conducting risk × site × child sex MANOVAs on the three dimensional scores from the CRPBI for mothers and fathers separately, based on the student and parent reports. For mothers, there were no risk-group effects for either the student or parent reports. For fathers, the risk × CRPBI dimension interaction was significant for both the students' reports, $F(2, 194) = 3.02$, $p < .05$, and for the fathers' reports, $F(2, 79) = 3.37$, $p < .04$, respectively. We conducted follow-up univariate ANOVAs on each of the three parenting dimensions of the CRPBI separately for fathers based on both the students' reports and their fathers' reports. For the students' reports, we obtained a significant risk effect on fathers' acceptance, $F(1, 195) = 4.14$, $p < .05$, which did not remain significant when the students' BDI scores were controlled, $F(1, 189) = 1.60$, ns. The same risk effect on fathers' acceptance occurred in the fathers' reports, $F(1, 77) = 4.25$, $p < .05$, and this effect remained significant when the fathers' BDI scores were controlled, $F(1, 57) = 4.87$, $p < .04$. As seen in Fig. 4, according to both students' and their fathers' reports, fathers of HR students showed less acceptance/warmth in raising their child than did fathers of LR students. In contrast, there were no risk differences on either fathers' negative control or lax control based on either students' or fathers' reports. There was a site main effect on fathers' reports of negative psychological control, $F(1, 80) = 12.14$, $p < .001$, that remained significant when fathers' BDI scores were controlled, indicating that TU fathers reported using greater negative control ($M = 22.67$) with their children than did UW fathers ($M = 19.85$). In addition, we obtained a child-sex main effect on fathers'

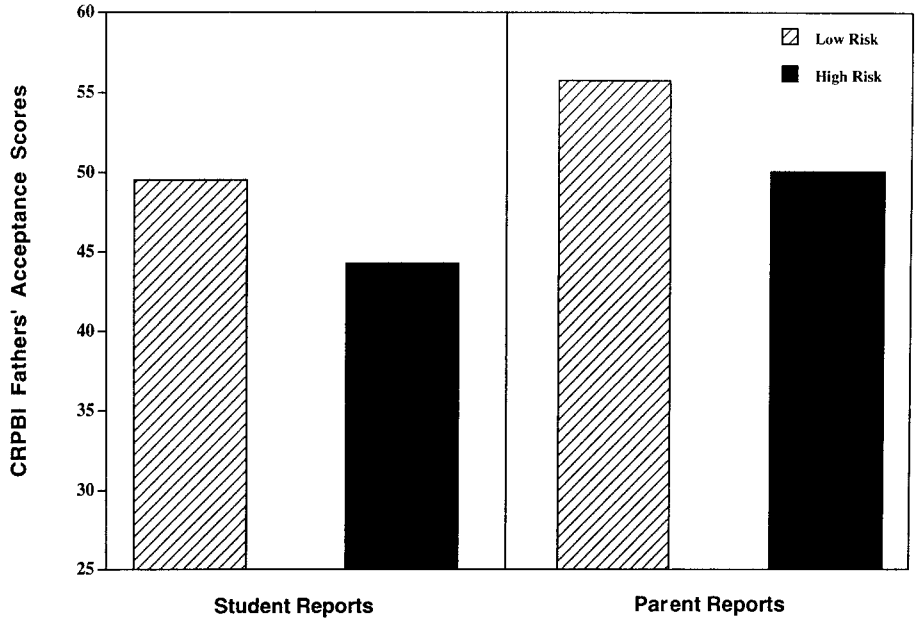

Fig. 4. Fathers' acceptance scores from the Children's Report of Parental Behavior Inventory (CRPBI), child and parent versions, as a function of students' cognitive risk status.

reports of lax control, $F(1, 80) = 6.67$, $p < .02$, that remained significant controlling for fathers' BDI scores, in which the fathers of sons reported that they were more lax in discipline ($M = 27.53$) than were the fathers of daughters ($M = 26.00$).

Association Between Parent Variables and Offspring's Outcomes

Parent Cognitive Styles

Given that mothers of HR students had more negative cognitive styles (DAS and CSQ scores) than mothers of LR students, we regressed the students' onset (yes, no) of any depressive episode (MD or MiD), an HD episode, and average levels of hopelessness (HS scores) over the 2.5-year follow-up onto their mothers' DAS and CSQ scores, controlling for the students' BDI scores. Neither mothers' DAS or CSQ scores predicted any of the student outcomes significantly.

Parent Feedback Styles

Similarly, given that we obtained significant associations between students' cognitive risk status and their mothers' and fathers' provision of stable, global attributional and negative consequence feedback based on both student and parent reports on the PACE, we examined these PACE variables as predictors of student outcomes in a series of regression analyses, controlling for students' BDI scores. For the student reports, mothers' stable, global attributional feedback predicted the onset of HD, $t(214) = 1.99$, $p < .05$, and average hopelessness level, $t(214) = 3.23$, $p < .001$, significantly, and mothers' negative consequence feedback also predicted average hopelessness level significantly, $t(214) = 9.76$, $p < .001$. Greater negative attributional or consequence feedback from mothers was predictive of a greater likelihood of HD onset and/or more hopelessness in their child, respectively, across the 2.5-year follow-up. The predictive association between mothers' stable, global attributional feedback and their child's HD onset was mediated by the child's cognitive risk status (see Table IV, top panel). In contrast, the prediction of the child's average hopelessness level by both maternal stable, global attributional and negative consequence feedback was only partially mediated by risk (see Table IV, second and third panels). Although students' risk status significantly predicted their average hopelessness levels, the associations between maternal attributional and consequence feedback and students' hopelessness remained significant and were only partially attenuated by the addition of risk as a predictor in the regression equations. Student reports of fathers' attributional and consequence feedback did not predict any of the student outcomes.

For the parent reports on the PACE, mothers' negative consequence feedback marginally predicted and fathers' negative consequence feedback significantly predicted the likelihood of depression (MD or MiD) onset in their child over the follow-up, controlling for the child's BDI scores, $t(160) = 1.78$, $p < .08$, for mothers and $t(73) = 2.85$, $p < .01$, for fathers, respectively. Greater negative consequence feedback from both mothers and fathers was associated with a greater likelihood of their child developing an episode of major or minor depression during the

Table IV. Hierarchical Multiple Regression Analyses to Predict Students' Outcomes over the Follow-up from Parents' Negative Attributional and Consequence Feedback on the PACE

Step	Predictor	Beta ln	*t*	*df*	Total R^2	R^2 Change
DV = HD onset; child report						
1	Ch BDI	0.25	3.86***	1, 214	.085	.085
	M Sta, Glo	0.14	1.99*	1, 214		
2	Ch Risk	0.39	6.12***	1, 213	.232	.147
w/Risk	M Sta, Glo	0.10	1.69$^+$	1, 213		
DV = AVG HS; child report						
1	Ch BDI	0.28	4.38***	1, 214	.128	.128
	M Sta, Glo	0.21	3.23***	1, 214		
2	Ch Risk	0.31	4.79***	1, 213	.224	.096
w/Risk	M Sta, Glo	0.19	2.98**	1, 213		
DV = AVG HS; child report						
1	Ch BDI	0.24	4.44***	1, 214	.368	.368
	M NCons	0.54	9.76***	1, 214		
2	Ch Risk	0.24	4.35***	1, 213	.444	.076
w/Risk	M NCons	0.52	9.34***	1, 213		
DV = ANY DEP onset; parent report						
1	Ch BDI	0.13	1.70$^+$	1, 160	.037	.037
	M NCons	0.14	1.78$^+$	1, 160		
2	Ch Risk	0.29	3.88***	1, 159	.124	.087
w/Risk	M NCons	0.12	1.53 ns	1, 159		
DV = ANY DEP onset; parent report						
1	Ch BDI	0.30	2.74**	1, 73	.178	.178
	F NCons	0.31	2.85**	1, 73		
2	Ch Risk	0.32	2.93**	1, 72	.281	.103
w/Risk	F NCons	0.24	2.18*	1, 72		

Note: PACE, Parental Attributions for Children's Events Questionnaire; DV, dependent variable; HD, hopelessness depression; AVG HS, Average Hopelessness Scale scores; ANY DEP, major or minor depression; Ch, child; M, mother; F, father; BDI, Beck Depression Inventory scores; Sta, Glo, stable, global attributional feedback; NCons, negative consequence feedback; Risk, cognitive risk status.
$^+p < .10$; $*p < .05$; $**p < .01$; $***p < .001$.

follow-up. The predictive associations between mothers' and fathers' consequence feedback and their child's depression onset were both partially mediated by the child's risk status (see Table IV, fourth and bottom panels). Neither parents' reports of their own attributional feedback predicted child outcomes.

Parenting Practices

Our earlier analyses showed that HR students' fathers were lower in acceptance/warmth than were LR students' fathers, based on both students' and fathers' reports on the CRPBI. Thus, we examined whether fathers' acceptance scores predicted student outcomes, controlling for the students' BDI scores. Students' reports of their fathers' acceptance predicted the likelihood of onset of HD during the follow-up, $t(196) = -2.35$, $p < .02$, and this effect was mediated by the students' cognitive risk (see Table V, top panel). Fathers' reports of their own acceptance of their child predicted their child's likelihood of depression (MD and MiD) onset, $t(83) = -2.22$, $p < .03$, but this predictive association was not mediated

Table V. Hierarchical Multiple Regression Analyses to Predict Students' Outcomes over the Follow-up from Fathers' Acceptance Scores on the CRPBI

Step	Predictor	Beta ln	*t*	*df*	Total R^2	R^2 Change
DV = HD onset; child report						
1	Ch BDI	0.23	3.34***	1, 196	.081	.081
	F Accep	−0.17	−2.35*	1, 196		
2	Ch Risk	0.38	5.80***	1, 195	.225	.144
w/Risk	F Accep	−0.11	−1.64 ns	1, 195		
DV = ANY DEP onset; parent report						
1	Ch BDI	0.01	0.97 ns	1, 83	.064	.064
	F Accep	−0.25	−2.22*	1, 83		
2	Ch Risk	0.17	1.51 ns	1, 82	.090	.026
w/Risk	F Accep	−0.20	−1.79$^+$	1, 82		

Note: CRPBI, Children's Report of Parental Behavior Inventory; DV, dependent variable; HD, hopelessness depression; ANY DEP, major or minor depression; Ch, child; F, father; BDI, Beck Depression Inventory scores; Accep, acceptance; Risk, cognitive risk status.
$^+p < .10$; $*p < .05$; $**p < .01$; $***p < .001$.

by their child's cognitive risk (see Table V, bottom panel). In both cases, lower acceptance/warmth from fathers was associated with a higher likelihood of HD or major or minor depression onset, respectively, in their child.

DISCUSSION

This study examined three potential social learning mechanisms by which individuals may develop maladaptive cognitive styles that promote vulnerability to depression: modeling of parents' negative cognitive styles; direct learning of negative cognitive styles based on parents' inferential feedback regarding the causes and consequences of negative events in the child's life; and indirect learning of negative cognitive styles based on parents' negative parenting practices. An important finding was that undergraduates' cognitive vulnerability status was related to the cognitive and/or parenting styles of both their mothers and fathers. Second, we obtained some, although not complete, support for each of the three social learning hypotheses. We discuss each in turn.

Modeling of Parents' Cognitive Styles

Consistent with the modeling hypothesis, mothers of HR students had more negative inferential styles and dysfunctional attitudes than did mothers of LR students. These risk-group differences were significant even when the mothers' levels of depression were controlled, suggesting that they were not attributable to reporting biases associated with mothers' current depression. Although in accord with the modeling hypothesis, parent–child similarity of cognitive styles is also consistent with other mechanisms as well, such as shared genetic covariation or exposure of both mothers and children to similar environmental feedback regarding the causes and consequences of stressful life events.

Our result is also consistent with those of several other studies (e.g., Garber & Flynn, 2001; Seligman et al., 1984; Stark et al., 1996) that also found significant associations between mothers' cognitions and those of their children, although not all prior studies have obtained significant mother–child associations for cognitive styles (see Kaslow et al., 1988; Oliver & Berger, 1992; Turk & Bry, 1992; and Garber & Flynn, 2001, with respect to attributional styles). In contrast, but consistent with all prior studies that have examined associations between fathers' and their children's cognitions (Kaslow et al., 1988; Oliver & Berger, 1992; Seligman et al., 1984; Stark et al., 1996; Turk & Bry, 1992), we obtained no risk-group differences for fathers' cognitive styles. Thus, to the extent that modeling of parents' cognitive styles is a contributor to the development of cognitive vulnerability to depression in offspring, it appears to be mothers' cognitive styles that are modeled. If mothers were the primary caretakers of our undergraduate participants, as is likely in most cases, then the greater similarity of our HR and LR students' cognitive styles to those of their mothers' than of their fathers' could be the result of greater exposure to mothers during the formative years for developing inferential styles and dysfunctional attitudes.

Direct Learning from Parental Inferential Feedback

We obtained two major findings in accord with the inferential feedback hypothesis. 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 (achievement events in the student reports and achievement and social events in the parent reports) than did the mothers and fathers of LR participants. Further, three of the four risk-group differences (all but student reports of mothers' attributional feedback) in reported parental feedback remained at least marginally significant when the respondents' BDI scores were controlled. Second, 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 according to both respondents' reports, and fathers of HR students provided more negative consequence feedback for negative social events in their child's life than did fathers of LR students according to the students' reports. Each of these risk-group differences remained significant when the respondents' BDI scores were controlled.

The general consistency of the association between students' cognitive vulnerability status and negative inferential feedback across both parents and both respondents is impressive and appears more robust than the relationship between students' cognitive vulnerability and their parents' general cognitive styles (discussed above). In this regard, our findings are consistent with those of Fincham and Cain (1986), Turk and Bry (1992), and Garber and Flynn (2001), who also found significant associations between mothers' or fathers' attributions about child-focused events and the child's attributions for those events. Indeed, similar to the present results, Garber and Flynn (2001) also found that the relationship between mothers' attributional feedback and their child's attributional style was stronger than the relationship between the mother's general attributional style and their child's style. Our findings and those of Garber and Flynn (2001) suggest that direct learning from parents'

verbalized causes and consequences for children's stressful events may be a more powerful mechanism for the development of offspring's inferential styles than is observing and imitating parents' own inferential styles.

Indirect Learning from Negative Parenting Practices

The negative parenting practices hypothesis was only partially supported and only for fathers. We predicted that HR students' parents would be characterized by lower acceptance and warmth and greater negative psychological control (the ''affectionless control'' pattern identified by Parker, 1983) than would LR students' parents. In fact, we only obtained risk-group differences on the acceptance/warmth dimension for fathers. However, the lower acceptance by fathers of HR than of LR students was reported consistently by both fathers and their undergraduate children and, in the case of the fathers' reports, remained significant when the fathers' BDI scores were controlled. Our finding of an association between low emotional warmth from fathers and their children's negative cognitive styles is generally consistent with several other cross-sectional (Brewin et al., 1992; Litovsky & Dusek, 1985; Parker, 1993; Randolph & Dykman, 1998; Stark et al., 1996; Whisman & Kwon, 1992; Whisman & McGarvey, 1995; see Oliver & Berger, 1992, for an exception) and prospective studies (Garber & Flynn, 2001; Koestner et al., 1991), although the majority of these other studies obtained relationships between children's cognitive styles and their mothers' acceptance.

It is interesting that although our CVD Project participants' cognitive styles were more strongly associated with their mothers' than their fathers' general cognitive styles (see above), they were more strongly associated with their fathers' than their mothers' provision of care and affection. Thus, fathers may also have a role to play in their children's development of cognitive vulnerability to depression, both through their levels of expression of emotional warmth as well as their provision of negative inferential feedback. Given that the majority of studies of the impact of parenting (including studies of parents' cognitions and feedback as well as parenting practices) on children's depression-relevant cognitions have focused on mothers, future research would benefit from further exploration of the distinctive mechanisms by which fathers also contribute to their children's cognitive risk for depression.

Our findings that mothers' and fathers' negative inferential feedback and fathers' emotional rejection (low levels of acceptance) were associated with the presence of negative cognitive styles in their undergraduate children may also be consistent with our report (Gibb et al., 2001) of an association between cognitive vulnerability status and childhood experiences of emotional maltreatment. Gibb et al. found that HR CVD Project participants reported more childhood emotional maltreatment, including humiliation, rejection, extortion, and teasing, than did LR participants, even when participants' BDI scores were controlled. Low emotional acceptance (e.g., ''Tells me how much he loves me'' or ''Gives me a lot of care and attention'' rated as ''not like'' one's parent) and negative inferential feedback (e.g., ''Of course you weren't invited. You aren't easy to get along with''; ''Now you'll be identified as an outcast and people won't invite you to other parties either'') could be viewed as milder ends of a continuum that includes outright emotional

abuse at its extreme. That is, emotional rejection and criticism from significant others, such as parents, may provide a breeding ground for the development of depressogenic cognitions whether they are expressed directly through explicitly abusive language or indirectly through provision of negative inferential feedback or lack of affection (Garber & Flynn, 1998). Consistent with the notion of a continuum of psychological rejection, the more extreme emotional maltreatment studied by Gibb et al. (2001) was even more strongly and consistently related to our student participants' negative cognitive styles and actual likelihood of developing major depression and HD than was parents' emotional warmth and inferential feedback examined in this study. This potential continuum of emotional rejection, ranging from mildly negative parenting practices and feedback to psychological abuse, bears much further study as a predictor of cognitive vulnerability to depression and to depression itself.

Association Between Parent Variables and Student Outcomes

Although mothers' cognitive styles were associated with their undergraduate children's cognitive vulnerability status, they did not significantly predict their children's hopelessness or likelihood of becoming depressed over the 2.5-year follow-up period. In contrast, mothers' inferential feedback did predict average hopelessness and the likelihood of developing an episode of clinically significant depression or the subtype of HD over the prospective follow-up, although not completely consistently. Specifically, student reports of maternal negative attributional and consequence feedback predicted students' hopelessness and onset of HD, with the onset of HD mediated by students' cognitive risk, whereas mothers' reports of maternal negative consequence feedback predicted onset of major or minor depression, partially mediated by students' cognitive risk. That cognitive risk did not mediate prediction of hopelessness by maternal inferential feedback could be due to the use of average levels of hopelessness as the outcome. The hopelessness theory (Abramson et al., 1989) does not assert that individuals who are cognitively vulnerable to depression will have higher levels of hopelessness at all times, but only when they are confronted with negative life events. Again, as discussed earlier with respect to the associations with students' cognitive styles, it appears that mothers' communicated inferences for their children's stressful events is a stronger and more consistent predictor of their children's likelihood of becoming depressed than is mothers' inferential styles. On the other hand, although mothers' inferential feedback predicted their children's hopelessness and likelihood of becoming depressed, it sometimes did so via pathways other than its effect on the children's development of negative cognitive styles. Thus, future research on the developmental antecedents of vulnerability to depression should explore other mediators of maternal feedback in addition to children's negative cognitive styles.

Based on parent reports, both fathers' acceptance/warmth and negative consequence feedback predicted their children's likelihood of developing an episode of major or minor depression, with the association between paternal consequence feedback and children's depression partially mediated by the children's cognitive risk. Fathers' acceptance as reported by the students also predicted the students'

likelihood of developing an episode of HD and this relation was completely mediated by the students' cognitive risk. These findings are of interest because they suggest again that fathers' parenting also may be important in contributing to their children's vulnerability to depression.

Limitations of the Present Study

There are two related and major limitations of this study. First, we relied on undergraduate students' and their parents' self-reports of the parents' inferential feedback and parenting practices, rather than directly assessing the parents' actual inferential communications or parenting behaviors. Second, the reports were retrospective. Both students and their parents were asked to recall the parents' feedback and parenting when the students were children. Although Brewin, Andrews, and Gotlib (1993) argued that adults' recall of specific childhood occurrences is reasonably accurate, future research on the developmental antecedents of negative cognitive styles and vulnerability to depression would clearly benefit from prospective and direct assessment of parental feedback and behaviors. Indeed, given the retrospective reports of parental communications and behaviors, we view the most important contribution of the present study as providing an empirical rationale and basis for more powerful prospective tests of the role of parental cognitive styles, inferential feedback, and parenting practices in the origins of children's negative cognitive styles. Our findings suggest that each of the three social learning mechanisms investigated in this study may contribute to the development of cognitive vulnerability to depression.

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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., Alloy, L. B., Hogan, M. E., Whitehouse, W. G., Donovan, P., Rose, D. T., Panzarella, C., & Raniere, D. (1999). Cognitive vulnerability to depression: Theory and evidence. *Journal of Cognitive Psychotherapy*: *An International Quarterly*, *13,* 5–20.

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

Abramson, L. Y., Metalsky, G. I., & Alloy, L. B. (2000). *The Cognitive Style Questionnaire*: *A measure of the diatheses featured in the hopelessness theory of depression.* Manuscript in preparation, University of Wisconsin-Madison, Madison, Wisconsin.

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,* 227–262.

Alloy, L. B., Abramson, L. Y., Hogan, M. E., Whitehouse, W. G., Rose, D. T., Robinson, M. S., Kim, R., & Lapkin, J. B. (2000a). The Temple–Wisconsin Cognitive Vulnerability to Depression (CVD) 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., Murray, L. A., Whitehouse, W. G., & Hogan, M. E. (1997). Self-referent information processing in individuals at high and low cognitive risk for depression. *Cognition and Emotion*, *11,* 539–568.

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. (2000b). *Prospective incidence of Axis I disorders in individuals at high and low cognitive risk for depression.* Manuscript in preparation, Temple University, Philadelphia, Pennsylvania.

Alloy, L. B., Abramson, L. Y., Whitehouse, W. G., Hogan, M. E., Tashman, N. A., 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.

Alloy, L. B., Lipman, A. J., & Abramson, L. Y. (1992). Attributional style as a vulnerability factor for depression: Validation by past history of mood disorders. *Cognitive Therapy and Research*, *16,* 391–407.

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

Bandura, A. (1965). Vicarious processes: A case of no trial learning. In L. Berkowitz (Ed.), *Advances in experimental social psychology.* San Diego, CA: Academic Press.

Bandura, A. (1969). *Principles of behavior modification.* New York: Holt, Rinehart, & Winston.

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,* 5–37.

Beck, A. T., Rush, A. J., Shaw, B. F., & Emery, G. (1979). *Cognitive therapy of depression.* New York: Guilford Press.

Beck, A. T., Steer, R. A., & Garbin, M. G. (1988). Psychometric properties of the Beck Depression Inventory: Twenty-five years of evaluation. *Clinical Psychology Review*, *8,* 77–100.

Beck, A. T., Weissman, A., Lester, D., & Trexler, L. (1974). The measurement of pessimism: The Hopelessness Scale. *Journal of Consulting and Clinical Psychology*, *42,* 861–865.

Beck, A. T., & Young, J. E. (1985). Depression. In D. H. Barlow (Ed.), *Clinical handbook of psychological disorders*: *A step-by-step treatment manual* (pp. 206–244). New York: Guilford Press.

Berrebbi, D. S., Tashman, N., Alloy, L. B., & Abramson, L. Y. (2000). *The Parental Attributions for Children's Events Scale (PACE).* Manuscript in preparation, Temple University, Philadelphia, Pennsylvania.

Bowlby, J. (1988). Developmental psychiatry comes of age. *American Journal of Psychiatry*, *145,* 1–10.

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

Brewin, C. R., Firth-Cozens, J., Furnham, A., & McManus, I. C. (1992). Self-criticism in adulthood and recalled childhood experience. *Journal of Abnormal Psychology*, *101,* 561–566.

Cole, D. A. (1990). Relation of social and academic competence to depressive symptoms in childhood. *Journal of Abnormal Psychology*, *100,* 181–190.

Depue, R. A., Slater, J., Wolfstetter-Kausch, H., Klein, D., Goplerud, E., & Farr, D. (1981). A behavioral paradigm for identifying persons at risk for bipolar spectrum disorder: A conceptual framework and five validation studies. *Journal of Abnormal Psychology*, *90,* 381–437.

Dweck, C. S., Davidson, W., Nelson, S., & Enna, B. (1978). Sex differences in learned helplessness: II. The contingencies of evaluative feedback in the classroom and III. An experimental analysis. *Developmental Psychology*, *14,* 268–276.

Eisner, J. P. (1995). The origins of explanatory style: Trust as a determinant of optimism and pessimism. In G. M. Buchanan & M. E. P. Seligman (Eds.), *Explanatory style* (pp. 49–55). Hillsdale, NJ: Erlbaum.

Endicott, J., & Spitzer, R. A. (1978). A diagnostic interview: The Schedule for Affective Disorders and Schizophrenia. *Archives of General Psychiatry*, *35,* 837–844.

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., 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.

Goodman, S. H., Adamson, L. B., Riniti, J., & Cole, S. (1994). Mothers' expressed attitudes: Associations with maternal depression and children's self-esteem and psychopathology. *Journal of the American Academy of Child and Adolescent Psychiatry*, *33,* 1265–1274.

Goodman, S. H., & Gotlib, I. H. (1999). Risk for psychopathology in the children of depressed mothers: A developmental model for understanding mechanisms of transmission. *Psychological Review*, *106,* 458–490.

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 T. Joiner & J. C. Coyne (Eds.), *The interactional nature of depression* (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.

Holden, R. R., & Fecken, C. (1988). Test–retest reliability of the Hopelessness Scale and its items in a university population. *Journal of Consulting and Clinical Psychology*, *44,* 40–43.

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

Jaenicke, C., Hammen, C., Zupan, B., Hiroto, D., Gordon, D., Adrian, C., & Burge, D. (1987). Cognitive vulnerability in children at risk for depression. *Journal of Abnormal Child Psychology*, *15,* 559–572.

Kaslow, N. J., Rehm, L. P., Pollack, S. L., & Siegel, A. W. (1988). Attributional style and self-control behavior in depressed and nondepressed children and their parents. *Journal of Abnormal Child Psychology*, *16,* 163–175.

Koestner, R., Zuroff, D. C., & Powers, T. A. (1991). Family origins of adolescent self-criticism and its continuity into adulthood. *Journal of Abnormal Psychology*, *100,* 191–197.

Litovsky, V. G., & Dusek, J. B. (1985). Perceptions of child rearing and self-concept development during the early adolescent year. *Journal of Youth and Adolescence*, *14,* 373–387.

McCranie, E. W., & Bass, J. D. (1984). Childhood family antecedents of dependency and self-criticism: Implications for depression. *Journal of Abnormal Psychology*, *93,* 3–8.

Oliver, J. M., & Berger, L. S. (1992). Depression, parent–offspring relationships, and cognitive vulnerability. *Journal of Social Behavior and Personality*, *7,* 415–428.

Parker, G. (1983). Parental 'affectionless control' as an antecedent to adult depression. *Archives of General Psychiatry*, *34,* 138–147.

Parker, G. (1993). Parental rearing style: Examining for links with personality vulnerability factors for depression. *Social Psychiatry and Psychiatric Epidemiology*, *28,* 97–100.

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

Radke-Yarrow, M., Belmont, B., Nottelman, E., & Bottomly, L. (1990). Young children's self-conceptions: Origins in the natural discourse of depressed and normal mothers and their children. In D. Cicchetti & M. Beeghly (Eds.), *The self in transition*: *Infancy to childhood* (pp. 345–361). Chicago: University of Chicago Press.

Randolph, J. J., & Dykman, B. M. (1998). Perceptions of parenting and depression-proneness in the offspring: Dysfunctional attitudes as a mediating mechanism. *Cognitive Therapy and Research*, *22,* 377–400.

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.

Schaeffer, E. F. (1965). Children's report of parental behavior: An inventory. *Child Development*, *36,* 413–424.

Schwarz, J. C., Barton-Henry, M. L., & Pruzinsky, T. (1985). Assessing child-rearing behaviors: A

comparison of ratings made by mother, father, child, and siblings on the CRPBI. *Child Development*, *56,* 462–479.

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

Seligman, M. E. P., Peterson, C., Kaslow, N. J., Tanenbaum, R. L., Alloy, L. B., & Abramson, L. Y. (1984). Attributional style and depressive symptoms among children. *Journal of Abnormal Psychology*, *93,* 235–238.

Spitzer, R. L., & Endicott, J. (1978). *Schedule for Affective Disorders and Schizophrenia—Change version.* New York: Biometrics Research, New York State Psychiatric Institute.

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

Stark, K. D., Schmidt, K. L., & Joiner, T. E. (1996). Cognitive triad: Relationship to depressive symptoms, parents' cognitive triad, and perceived parental messages. *Journal of Abnormal Child Psychology*, *24,* 615–631.

Tashman, N. (1997). *The Parent–Child Study*: *Cognitive style*, *psychopathology*, *personality dysfunction*, *and parent–child relations in the parents of children at high and low cognitive risk for depression.* Unpublished doctoral dissertation, Temple University, Philadelphia, Pennsylvania.

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 meeting of the American Educational Research Association, Toronto, Canada.

Whisman, M. A., & Kwon, P. (1992). Parental representations, cognitive distortions, and mild depression. *Cognitive Therapy and Research*, *16,* 557–568.

Whisman, M. A., & McGarvey, A. L. (1995). Attachment, depressotypic cognitions, and dysphoria. *Cognitive Therapy and Research*, *19,* 633–650.