Measuring Children's Perceptions of Their Mother's Depression: The Children's Perceptions of Others' Depression Scale – Mother Version

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Several theoretical perspectives suggest that knowledge of children's perceptions of and beliefs about their parents' depression may be critical for understanding its impact on children. This paper describes the development and preliminary evidence for the psychometric properties of a new measure, the Children's Perceptions of Others' Depression – Mother Version (CPOD-MV), which assesses theoretically and empirically driven constructs related to children's understanding and beliefs about their mothers' depression. These constructs include children's perceptions of the severity, chronicity, and impairment of their mothers' depression; self-blame for their mother's depression; and beliefs about their abilities to deal with their mother's depression. The CPOD-MV underwent two stages of development: (1) a review of the literature to identify key constructs, focus groups to help generate items, and clinicians' ratings on the relevance and comprehensibility of the drafted items and (2) a study of the measure's psychometric properties. The literature review, focus groups, and item-reduction techniques yielded a 21-item measure. Reliability, factor structure, and discriminant, convergent, and concurrent validity were tested in a sample of 10- to 17-year-old children whose mothers had been treated for depression. The scale had good internal consistency; factor structure suggestive of a single construct; and discriminant, concurrent, convergent, and incremental validity, suggesting the importance of measuring children's perceptions of their mothers' depression beyond knowledge of mothers' depression symptom level when explaining which children have the greatest risk for emotional and behavioral problems among children of depressed mothers. These findings support continued development and beginning clinical applications of the scale.

Keywords: depression, mothers, children's perceptions, children's beliefs

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Based on a large body of literature, researchers have concluded that depression in mothers can have adverse effects on the psychological functioning and development of children from infancy through late adolescence (Goodman, 2007). Less is known about the specific mechanisms that underlie the risk for adverse outcomes, although evidence is growing in support of genetic factors, prenatal influences, parenting behaviors, and contextual stressors. To date, though, the role of children's cognitive appraisals of mothers' depression symptoms has not been given much attention. Such cognitive variables, especially children's maladaptive beliefs or perceptions about the impact of their mothers' depression symptoms, may play a critical role in helping to explain the increased vulnerability for the development of depression and other problems in children with depressed mothers relative to children whose mothers have not experienced depression (Garber & Martin, 2002). In a related area of study, research with the Children's Perception of Interparental Conflict Scale (Grych, Seid, & Fincham, 1992) has found associations between children's cognitions of self-blame and threat during marital conflict and their level of adjustment problems. We sought to extend that work to children's exposure to depression in their mothers.

The importance of understanding children's cognitive appraisals of depression symptoms in their mothers is highlighted by three sets of theories, all of which emphasize the importance of considering individuals' perceptions of stressful events rather than relying solely on knowledge of the occurrence of the events. First, Dodge's (Dodge, 1986) social information processing model posits that the manner in which children process information influences their response to situations and, ultimately, their adjustment. Particularly relevant to children of depressed mothers are encoding (the degree of maladaptive bias during information processing, e.g., selectively attending to negative cues) and representation processes (errors in interpreting cues, e.g., over-interpretation of threat or self-blame). Second, in stress and coping theories, children's interpretations and appraisals of a stressor play mediating roles in the degree of distress felt in association with the stressor and, ultimately, in the impact of the stressor (Compas, Connor-Smith, Saltzman, Thomsen, & Wadsworth, 2001; Grych & Fincham, 1990). These theories are particularly relevant because many of the day-to-day experiences of being raised by a depressed mother may constitute significant stressors for children (Hammen, 2002). Third, cognitive theories of depression and other disorders emphasize the role of thinking patterns, particularly overly pessimistic or negative cognitions, on emotions and behavior (Alloy, Abramson, Walshaw, & Neeren, 2006; Beck, 1976). All of these theories suggest that it is critical to assess children's perceptions and understanding of their mother's depression, and not just the presence or severity of maternal depression, to understand the impact of mother's depression on children.

Building on these theoretical frameworks, we developed a conceptual model for the role of children's cognitions in the association between depression in mothers and the development of psychopathology in their children. In the model, as children become aware of the signs and symptoms of their mothers' depression, they conceptualize their observations and experiences in particular ways. These conceptualizations are guided by the children's cognitive and emotional development and general cognitive biases. Children's cognitions about their mother's depression are expected to guide children's emotions and other coping responses to the stressors associated with mothers' depression and thereby influence the impact of the mother's depression on the children's development of behavioral and emotional problems. For example, children who perceive their mother's depression as more severe, chronic, and impairing, blame themselves, and feel helpless in the face of their mother's depression would be expected to develop more anxiety and depression symptoms over time. Implicit in this model is a developmental perspective, with the intention being that a measure of these cognitions might be used in the future to test the role of timing of exposure.

Based on this model, we designed a questionnaire to measure children's perceptions of the severity, chronicity, and impairment of their mothers' depression; self-blame for their mother's depression; and beliefs about their ability to alleviate the mother's depression and about their own ability to cope. The goals of the study were to develop and test the psychometric properties of a measure of these cognitions given that validated measures are available for all of the components of the theoretical model except for children's cognitions about maternal depression. Although a few studies examined stress and coping in relation to maternal depression (Beardslee, 1989; Compas, Langrock, Keller, Merchant, & Copeland, 2002; Klimes-Dougan & Bolger, 1998) or children's behavioral and emotional responses to maternal depression (Solantaus-Simula, Punamaki, & Beardslee, 2002a, 2002b), none have explicitly addressed children's underlying perceptions about the extent to which their mothers' depression is a chronic and impairing problem, that is related to the child's own behavior, and that affects how their mother parents them.

This paper presents research on the development, reliability (internal consistency), factor structure, and validity of this measure, the Children's Perceptions of Others' Depression-Mother Version (CPOD-MV). The measure was designed for the age range from 10 years through late adolescence. These ages were selected to enable research and clinical applications of the measure to a broad age range, while recognizing that assessment of the intended constructs in younger children would likely require a behavioral assessment. Study 1 involved the initial development and refinement of the CPOD-MV. Study 2 tested the reliability and validity of the CPOD-MV.

Study 1

Overview

The purpose of Study 1 was to identify important dimensions of children's perceptions of their mother's depression and to generate and refine items for the CPOD-MV. Based on established guidelines for scale development, items were derived following a multistep process designed to enhance content validity (Clark & Watson, 1995; Snyder & Rice, 1996). The goal was to develop an item pool consistent with the theoretical model. It was also important to develop items relevant to the age range of 10 years through adolescents, given a future aim of testing the role of children's age at the times of exposures to depression in their mothers.

Method

Four steps were taken to identify the items for CPOD-MV. First, the theory-generated constructs thought to be relevant for children with depressed mothers, as specified in the introduction, guided the initial generation of items. Second, three focus groups were run with a total of 15 adults (ages 25–65 years; 62% female) who were participants in support groups for individuals with depression and their families. All of the focus group participants identified themselves as suffering from depression. Several of the participants further identified themselves as having been raised by a depressed parent. In addition, some of the participants were parents of children who ranged in age from infants to adults. Thus, the groups represented various inter-

generational perspectives on issues related to depression in parents.

Participants in the focus groups gave feedback on the goals of the measure and on the drafted items and suggested wording changes and ideas for additional items. In particular, the focus groups grappled with the question of what word or phrase to use to refer to depression in the items. In addition, the focus group participants were asked to describe, from their experiences, the types of behaviors in which mothers engage when feeling sad or depressed, what children or adolescents might observe when a mother is sad or depressed, and how they may think about their observations of and experiences with a depressed mother. The purpose of these questions was to elicit items that would assess children's attributions, explanations, expectations, fears, worries, coping strategies, and so forth. Their responses were the bases for added items. None of the focus group participants were participants in Study 2.

Third, a group of 42 family-oriented, child and adolescent outpatient mental health service providers reviewed the drafted items. They were given a written introduction to the purpose of the measure and asked to read each item and rate it on two scales based on their experience and understanding of the issues that affect families with depressed mothers. First, they rated the importance and relevance of each item to the constructs of interest, taking into account the intended age range, using a 4-point scale ranging from *very important* (1) to *not at all important* (4). Second, they rated each item for its likelihood of being understood by children as young as 10, using a 4-point scale ranging from *very clearly stated* (1) to *not at all clearly stated* (4). They were asked to suggest rewording of difficult or awkward items and to recommend items for constructs that they thought we had neglected. The fourth step involved engaging in a set of item-reduction techniques in order to shorten the scale.

Results

Based on the first two procedures, using the theory and the focus groups, a pool of 84 items was generated. The strong consensus from the focus groups was to not use the word *depression* in the items, because even children whose mothers have been diagnosed with and treated for depression may assume that depression refers to a more serious condition than what they observe in their mothers. Several alternative words and phrases were considered and the decision was made to list the suggested words in the instructions and retain the more commonplace and less intensive word "sad" for the items.

Clinicians' ratings were averaged across clinicians to reveal the mean rating for each item on importance and clarity. For importance, mean ratings ranged from 1.10 to 2.10, with a total mean of 1.52. For clarity, mean ratings ranged from 1.10 to 2.21, with a total mean of 1.50. These ratings indicate that most of the items were judged as both important and clear. Items with mean ratings of 2 or higher on either scale were either dropped or revised. The clinicians' comments were used to revise items and to add items. This process yielded 48 items.

Study 2

Overview

The purpose of Study 2 was to examine the internal consistency reliability and validity of the CPOD-MV. We tested convergent validity by examining correlations between CPOD-MV and children's general negative attributional style. Perceptions of mothers' depression are likely to be related to children's maladaptive cognitive styles. In fact, attributions specific to depression in one's mother is one of several constructs measured by CPOD-MV. However, given their greater specificity, children's perceptions of their mothers' depression were expected to provide additional information important for understanding cognitive vulnerabilities beyond children's general attributional style. Therefore, we expected only small to moderate correlations between CPOD-MV and children's attributional style.

To test discriminant validity, we predicted that the CPOD-MV would not be significantly related to family stressors. Thus, we tested associations with children's exposure to stressful events in the family, over the course of their lifetime, as reported by mothers.

We measured concurrent validity by testing correlations between the CPOD-MV and youths' behavior problems, symptoms of anxiety or depression, and self-esteem. We expected significant correlations between higher CPOD-MV scores (i.e., more negative perceptions of mothers' depression as severe, impairing, and affecting the parent-child relationship) and more externalizing and, especially, internalizing behavior problems, higher symptom levels of anxiety and depression, and lower self-esteem. We further expected that CPOD-MV scores would be associated with mothers' depression symptom levels, both concurrently and over the course of their child's lifetime. Given that the CPOD-MV asks about current perception, we expected that youths who have been exposed more recently to maternal depression symptoms would have more negative perceptions and beliefs about maternal depression, providing evidence of concurrent validity. Given that our model also predicts that these perceptions will be influenced by various child specific factors (cognitive and emotional development; general cognitive biases), we expected only a small to moderate degree of association between CPOD-MV scores and mothers' symptoms, even current symptoms.

Finally, we tested incremental validity to determine the extent to which CPOD-MV provides unique, clinically useful information beyond mothers' report of her own depression and beyond children's general negative attributional style. Consistent with the rationale for developing CPOD-MV, we hypothesized that children's cognitions about their mothers' depression would contribute to determining risk for psychopathology among children of mothers with depression. We expected that after accounting for children's attributional style and mothers' reports of their own depression symptoms, children's more negative perceptions of their mothers' depression as indexed by the CPOD-MV

would predict higher levels of behavior problems, anxiety, and depression, and lower self-esteem.

We tested these psychometric properties in a sample of middle childhood through adolescent-aged youths whose mothers had a clinician-assigned diagnosis of current depression. We chose this sample for three reasons. First, preadolescence and early adolescence are important developmental periods for cognitive and social development as well as periods of risk for their own depression (Lewinsohn, Clarke, Seeley, & Rohde, 1994), and thus a critical group for studying perceptions underlying the link between depression in mothers and the development of psychopathology in the youth. Second, these youth lived with and were being cared for by their mothers, making mothers' depression a proximate concern. Third, all youth in this sample were exposed to mothers with clinically significant levels of depression.

Participants

Participants were 91 women and their 10- to 17-year-old children recruited from a large health maintenance organization (HMO) with offices in urban and suburban areas of a large city in the southeastern United States. Children had a mean age of 13.57 ($SD = 1.94$), and 55% were female. If more than one child was in the eligible age range, the researchers selected one at random. Reflective of the geographic area from which we recruited, about half (53%) of the children were white, not of Hispanic origin, 41% were African American, with the others being Hispanic, Asian, American Indian, or of multiple race/ethnicities. All of the children were living with their mothers. Most mothers were married and living with their husband (63.7%), with 20.9% divorced, 5.5% separated, and 9.9% single. About half of the mothers (51.7%) had at least an undergraduate college degree.

Procedure

Women whose medical records indicated that they had a current diagnosis of Major Depressive Disorder or Dysthymia and at least one child in the age range were sent a letter inviting them to participate in a study of a measure to identify potential signs of emotional distress in children. Women were asked to reply by returning a form or phoning in with their contact information and permission for us to call. Respondents were scheduled to be seen either at their HMO location or at their homes. Nearly all of the women opted to be seen at their HMO location. Research assistants arranged for children and mothers to provide informed consent and then to complete the questionnaires independently of each other.

Measures

Children's Attributional Style Questionnaire-Revised (CASQ-R). Youths completed the CASQ-R (Thompson, Kaslow, Weiss, & Nolen-Hoeksema, 1998), a 24-item self-report measure designed to assess children's causal explanations for positive and negative events. For each event, respondents are presented with two possible causes and asked to choose which cause best described the way they would think if the event happened to them. The two causes hold constant two attributional dimensions that have been shown to be related to depressive symptomatology (internal-external, global-specific, and stable-unstable) while varying the third. The total score was used for this study. It is calculated by subtracting the negative from the positive score, and higher scores indicate less pessimistic attributional styles. The scale has moderate internal consistency ($\alpha = .53–.60$ for positive composite; $\alpha = .45–.46$ for negative composite) and test-retest reliability across 6 months ($r = .53$ for positive composite; $r = .38$ for negative composite), and good criterion-related validity (i.e. moderate correlations with self-reported depression symptoms) in 9 to 12 year olds (Thompson et al., 1998). In our sample, internal consistency reliabilities were .62 (positive composite) and .63 (negative composite).

Youth Self-Report (YSR). Youth completed the YSR (Achenbach & Edelbrock, 1995), a 113-item self-report measure for children aged 11–18, assessing the presence of symptoms of emotional and behavior problems in the 6 prior months. Responses are given using a 3-point scale, ranging from 0 (*not true*) to 2 (*very true or often true*). The measure yields scores on Internalizing and Externalizing problems and a Total score. The YSR is a widely used instrument that has shown acceptable reliability and validity (Achenbach & Edelbrock, 1995).

Child Behavior Checklist (CBCL). Mothers completed the CBCL (Achenbach & Edelbrock, 1995) to assess behavioral problems of their offspring in the past 6 months. Each of the 113 items is scored on a 3-point scale, ranging from 0 (*not true*), 1 (*sometimes true*), 2 (*very often true*). The scale yields three total scores, internalizing problems, externalizing problems, and total problems with good reliability and validity (Achenbach & Edelbrock, 1995).

Children's Depression Inventory (CDI) (Kovacs, 1992). To measure depression symptom severity, youth completed the CDI, a 27-item self-report questionnaire of the degree to which they experienced common symptoms of depression in the 2 prior weeks. Scores range from 0 to 54, with higher scores representing more severe depressive symptoms. The CDI has demonstrated adequate levels of reliability and validity (Kovacs, 1992), with an internal consistency reliability of .91 in our sample.

Revised Children's Manifest Anxiety Scale (RCMAS). Youth completed the RCMAS (Reynolds & Richmond, 1994), a 37-item self-report instrument assessing the level and nature of anxiety symptoms in children and adolescents (ages 6–19 years). Children respond with "yes" or "no" as to whether the item is descriptive of their thoughts or feelings. The RCMAS yields an overall score, with higher scores indicating more anxiety. The measure has high test-retest reliability over 9 months ($r = .68$), high internal consistency (αs from .79 to .85 across ages), and convergent validity (i.e., high correlation with measures of trait anxiety)

(Reynolds & Richmond, 1994). In our sample, the internal consistency reliability was .92.

Rosenberg Self-Esteem Scale (RSE). Youths completed the RSE (Rosenberg, 1979), a 10-item scale assessing the degree to which respondents are satisfied with their lives and feel good about themselves. Children respond on a 4-point scale, ranging from 1 (*strongly agree*) to 4 (*strongly disagree*); higher scores indicate more positive self-esteem. Studies across a wide range of ages yield adequate internal consistency (α between .77 to .88), temporal stability (test-retest correlations between .82 and .88), and construct validity (i.e., moderate correlations with other measures of self-concept and depression symptoms) (Blascovich & Tomeka, 1993). The internal consistency reliability in our sample was .87.

Challenges and problems. Mothers reported the occurrence of symptoms of their own depression and of stressful life events at specific ages in the lives of the participating children. The list of symptoms of depression (16 items) was taken from the *DSM-IV* (APA, 1994) criteria for major depression and for dysthymia. Randomly interspersed with the depression symptoms were stressful life events (12 items), derived from a standard stressful life events checklist (Dohrenwend, Raphael, Schwartz, Stueve, & Skodol, 1993). The stressor items were intended both as filler, to minimize the emphasis on depression, and also to be able to test discriminant validity in that the CPOD-MV was not expected to be associated with general family stressors. The stressor items inquired about family level stressors, such as "we moved to a new home," "I or another family member had a serious physical illness or injury," and "my husband or I lost our job." Women were instructed to indicate, for every item that occurred to them, the age of her participating child when it had occurred, with five specified age ranges provided: 0–3, 4–7, 8–11, 12–15, and 16–18 years old. Mothers were instructed to complete the items for the age brackets up to that which included their child's current age.

The scores are the total number of the mother's symptoms (possible range from 0 to 16) and the total number of family stressors (possible range from 0 to 12) reported as having occurred in each of the relevant age ranges for the participating youth, yielding up to five depression symptoms and five family stressor scores per participant across age brackets. For the incremental validity analyses, given the broad range of participants' ages (and thus varying possible years of exposure) and in order to have one score that would be comparable across the sample, we relied on the score for the mothers' depression symptoms in the age bracket that included the child's current age. This decision was further justified by the CPOD-MV asking about current perceptions. Beck Depression Inventory-II (BDI-II) scores, obtained at the same time as the other measures, were available for a subsample of mothers ($n = 40$). The BDI-II, a 21-item scale assessing the intensity of depressive symptoms in the previous 2 weeks, has strong evidence of reliability and validity in clinical and nonclinical samples (Beck, Steer, & Brown, 1997). BDI-II scores were significantly correlated with mothers' depression symptom scores

for the current age group on Challenges and Problems, $r = .34$, $p = .03$.

Children's perception of parental sadness (CPOD-MV). The 48-item CPOD-MV developed in Study 1 to assess youths' cognitions related to their mother's depression was shortened further by relying on the item reduction technique of eliminating redundant items, as determined by an examination of inter-item correlations. We retained the item with the best face validity and at least five items capturing each of the primary constructs. These steps resulted in a 21-item scale. Each item is rated *true* (2), *sort of true* (1), or *false* (0). Scores are derived by summing the ratings, resulting in a potential range of scores from 0 to 42. The scale and instructions to respondents are available on the first author's website at http://www.psychology.emory.edu/clinical/goodman/index.html and in the online supplemental materials.

Results

CPOD-MV descriptives. The CPOD-MV had a mean of 13.97 ($SD = 7.52$) and a range of 2 to 33. The scores were not associated with youth age, $r = .07$, $p = .52$; youth gender, $t(1, 89) = -.83$, $p = .41$; one versus two parents in the home, $t(1, 89) = 0.41$, $p = .69$; ethnicity (Caucasian versus African American), $t(1, 83) = 0.78$, $p = .78$; or mothers' education (college degree versus not), $t(1, 89) = 1.79$, $p = .08$.

Internal consistency reliability. Internal consistency reliability, assessed by computing coefficient alpha, yielded $\alpha = .89$. To test whether the youngest children might be accounting for lower reliabilities, we calculated and compared internal consistency reliabilities separately for children aged 12 years and younger ($n = 33$, $\alpha = .89$) and children aged 13 years and older ($n = 58$, $\alpha = .84$). We divided the sample between the ages of 12 and 13 years because this is the typical age when children transition from elementary school to middle school, thus marking an important developmental shift. The Fisher-Bonett Test (Kim & Feldt, 2008) for equality of independent alpha coefficients revealed a nonsignificant difference in alpha coefficients across age groups.

Exploratory factor analysis. An item-level exploratory factor analysis was conducted to examine whether the 21 items on the CPOD-MV could be adequately presented by a smaller number of underlying constructs. Factors were extracted using Maximum Likelihood estimation. Eigenvalue, variance explained, and scree plots were examined to identify the number of factors that adequately explained the data. A five factors solution was identified as optimal (see Table 1). As shown, the five factors generally followed expectations. Factor 1 appeared to tap items representing both ability to cope with the mother's depression and perceived chronicity. Factor 2 reflected impairment and self-blame. Factor 3 reflected ability to help alleviate mother's depression. Factor 4 appeared to reflect a self-blame factor. Factor 5 reflected impairment (maternal withdrawal), although this factor included just two items. Factors 1 to 4 were generally moderately to strongly intercorrelated (correlations range from .18 to .65, with most correlations over

Table 1
Item-Level Exploratory Factor Analysis

	Factor				
Item	1	2	3	4	5
When my mother gets sad, I worry that I'll get sad like she does.	.788	−.179	−.199	.055	.074
I get scared when my mom gets sad.	.733	−.325	−.115	.132	−.064
My mom stays sad for a long time.	.618	.100	.211	−.169	.106
When my mother gets sad, I'm afraid that something bad will happen.	.586	.035	−.171	.346	.012
After my mom has been sad, it takes a while for her to be happy again.	.384	.128	.205	−.055	−.065
*When my mom has been sad, she gets over it pretty quickly.	.365	.174	.211	−.089	.169
*I never see my mother sad.	.341	.075	.012	−.208	.066
*My mother hardly ever yells at me when she's sad.	−.278	.975	−.138	.080	.035
My mother gets sad when I make mistakes.	−.177	.762	−.035	.026	−.043
It's hard to talk to my mother when she's sad.	.120	.611	−.127	−.052	.168
I'm usually to blame when my mother gets sad.	.302	.391	−.007	.025	−.214
Most of the time my mother seems to enjoy things less than she used to.	.233	.350	.013	.195	.246
*When my mother gets sad, I can usually help make her feel better.	−.092	−.156	.981	−.001	.105
*I am good at helping my mother get over her sadness.	−.175	−.107	.886	.185	.093
When my mother gets sad, there's nothing I can do to help her.	.275	.113	.342	.022	−.152
My mom gets sad about things I've done at school.	−.118	.005	.026	.843	.011
Even if she doesn't say it, I know it's my fault that my mother gets sad.	.174	.085	.101	.575	−.076
*Usually it's not my fault when my mother becomes sad.	−.033	.006	.368	.419	.031
*The things that make my mom sad have nothing to do with me.	.078	.258	.082	.289	−.096
My mother often has times when she sleeps more or less than usual.	.114	.119	.182	−.052	.701
*My mother pays attention to me even when she's sad.	.063	.100	.352	−.119	−.409

* Reverse scored item.

.4). A follow-up factor analysis was conducted at the scale-level, using scores computed from the factor loadings of the item-level factor analysis. Results showed that these factors all loaded onto a single underlying factor, with factor loadings ranging from .38 to .82.

Validity. In order to assess the convergent validity of the CPOD-MV, we first examined relations between CPOD-MV and children's attributional style (CASQ-R). The CPOD-MV total score had a moderate and significant negative correlation with children's general attributional style (Table 2); more negative perceptions of mothers' depression (higher CPOD-MV scores) are associated with children's more pessimistic attributional styles (lower CASQ-R). Consistent with hypotheses, this test of convergent validity supports similarity but not redundancy of the CPOD-MV and children's general attributional style.

For discriminant validity, as predicted, CPOD-MV was not associated with family stressors. That is, mothers' reports of number of family stressors in any of the children's age ranges were not associated with CPOD-MV scores (all rs ≤ .10).

Concurrent validity of CPOD-MV was assessed first by examining associations with children's emotional or behavioral functioning and self-esteem. As predicted, more negative perceptions and beliefs of mothers' sadness on the CPOD-MV were moderately to strongly and significantly correlated with higher levels of self-reported (YSR) and mother-reported (CBCL) internalizing, externalizing, and total problems, higher levels of depression (CDI), higher levels of anxiety (RCMAS), and lower levels of self-esteem (RSE). Next, we examined associations between mothers' depression and the CPOD-MV. The correlation between mother-reported number of depressive symptoms in the

child's lifetime and CPOD-MV score was significant for only one age range, 12–15 years old, which was the current age range for the majority (61.5%) of the children. For the 16–18-year-old group, the correlation was also moderate but nonsignificant due to the small number of children in that age group.

Tests of incremental validity were conducted using hierarchical linear regression models with age and sex in the first step, children's attributional style and mothers' depression symptoms during the current age group in the second step, and the CPOD-MV score in the third step. The dependent variables were depression (CDI), anxiety (RCMAS), self-esteem (RSE), and child-reported (YSR) and mother-reported (CBCL) internalizing, externalizing, and total scores. Table 3 displays output for the nine regression models. For all models, the CPOD-MV total score was a significant predictor of the dependent variable and explained significant incremental variability in the dependent variable above children's age, sex, and negative attributional style, and mothers' report of her own depression symptoms, with the latter not significantly predicting any of the dependent variables when the other predictors and covariates were in the model.

Discussion

Although an elevated risk for the development of social and emotional problems among children of depressed mothers is now well established, researchers are only beginning to understand the specific mechanisms underlying that risk. In particular, there is accumulating evidence that broad (e.g., stress), specific (e.g., parenting skills), and structural (e.g., divorce) family factors explain (mediate) or modify

Table 2
Validity: Correlations Between CPOD-MV Total Score and Youths' Emotional and Behavioral Measures, Family Stressors and Mothers' Depression, and Children's Attributional Style Measures

				Correlation with CPOD-MV	
	n	*M*	*SD*	*r*	*p*
Attributional style	91	5.04	3.96	−.39	<.001
Behavior problems					
Self-Report					
Internalizing	90	53.57	12.07	.48	<.001
Externalizing	90	56.04	11.60	.37	<.001
Total problems	90	55.87	11.44	.47	<.001
Mother-Report					
Internalizing	91	57.55	11.14	.34	<.001
Externalizing	91	56.29	10.25	.30	<.001
Total problems	91	57.70	10.23	.33	.001
Depression	90	9.57	8.61	.49	<.001
Anxiety	90	10.88	6.61	.47	<.001
Self-Esteem	91	32.23	5.78	−.48	<.001
Challenges and problems					
Depression symptoms					
Age 0–3	91	2.54	4.00	.04	.34
Age 4–7	91	3.52	4.36	−.02	.43
Age 8–11	91	6.15	5.01	.06	.28
Age 12–15	75	6.71	4.63	.26	.01
Age 16–18	19	4.00	4.88	.24	.16
Family stressors					
Age 0–3	91	1.36	1.61	.10	.17
Age 4–7	91	1.85	1.85	−.10	.18
Age 8–11	91	2.54	2.05	.05	.32
Age 12–15	75	1.75	1.54	.07	.29
Age 16–18	19	0.63	0.96	.00	.40

(moderate) the association between parent and offspring depression (Avenevoli & Merikangas, 2006). One specific possible mechanism of risk, which was the focus of this set of studies, is through children's perceptions of depressive symptoms in their mothers. Building on cognitively-oriented models of child adjustment, and related work by Grych et al. (1992), the CPOD-MV scale was developed to assess children's understanding of and attributions for depressive symptoms in their mothers. The aim was to provide a measurement tool that can be used in future research to further understanding of the manner in which depressive symptoms in mothers are perceived by children and, in turn, the extent to which these perceptions may be related to the development of adjustment problems in children.

Overall, our analyses showed that the CPOD-MV has sound psychometric properties. It had good internal consistency reliability, even among the youngest children. The factor structure reflects the conceptualized dimensions and indicates that the scale captures a single underlying dimension, supporting the use of a total score. In terms of convergent validity, the CPOD-MV showed the expected moderate association with children's general attributional style, indicating that children's responses to the CPOD-MV are related to general negative thinking tendencies but do not simply reflect general attributional tendencies.

Evidence for the concurrent validity of the CPOD-MV was provided by significant associations between children's

perceptions of mothers' depression and youth's adjustment across different constructs, measures, and reporters. Consistent with predictions, higher CPOD-MV scores were associated with higher levels of youth self-report of current internalizing behavior problems, depressive symptoms, both transient and persistent anxiety, and more negative self-esteem. These findings are consistent with the idea that children's understanding of and attributions for depression symptoms in their mothers play a role in their development of emotional and behavioral problems. Future studies are needed to elucidate this role. For example, researchers may test these perceptions as mediating mechanisms of risk in families with depressed parents or as moderators of the degree of maladjustment within this high-risk group of youth. Longitudinal studies are particularly needed to elucidate the temporal associations between the occurrence of mothers' depression, development of children's perceptions of the depression, and the emergence of behavioral and emotional problems.

It is important to note that the CPOD-MV scales were also associated with youths' self-report of current externalizing behavior problems. Researchers have found that children with depressed mothers are also at risk for externalizing disorders (Hammen, 1991). A meta-analytic review of studies of associations between depression in mothers and psychopathology in children revealed no significant difference in the strength of association between maternal depres-

Table 3

Incremental Validity: Hierarchical Regression Analyses Predicting Youth Self-Reported Depression Symptoms, Anxiety, Self-Esteem, Internalizing, Externalizing, and Total Behavior Problems, and Mother-Reported Internalizing, Externalizing, and Total Behavior Problems From CPOD-MV Total Score Above Children's Attributional Style and Mothers' Report of Her Depression

Variable	Predicting depression			Predicting anxiety			Predicting self-esteem		
	B	SE B	β	B	SE B	β	B	SE B	β
Step 1									
Age	0.72	0.47	.16	0.30	0.35	.09	−0.07	0.32	−.02
Sex	0.83	1.82	.05	3.27	1.36	.25*	−0.63	1.23	−.06
ΔR^2		.03			.07*			.00	
Step 2									
Age	0.43	0.35	.10	0.11	0.29	.03	0.10	0.25	.03
Sex	−0.22	1.38	−.01	2.57	1.11	.19*	−0.03	0.98	−.00
Attributional style	−1.45	0.18	−.67**	−0.99	0.14	−.59*	0.92	0.13	.63*
Mother depression symptoms	−0.07	0.14	−.04	−0.07	0.11	−.06	0.02	0.10	.02
ΔR^2		.44***			.34***			.39***	
Step 3									
Age	0.39	0.34	.09	0.08	0.27	.02	0.13	0.24	.04
Sex	−0.47	1.31	−.03	2.36	1.06	.18*	0.17	0.94	.02
Attributional style	−1.24	0.18	−.57***	−0.82	0.15	−.49***	0.77	0.13	.53***
Mother depression symptoms	−0.09	0.13	−.05	−0.09	0.11	−.07	0.04	0.10	.03
CPOD-MV total score	0.31	0.09	.27**	0.24	0.08	.27**	−0.22	0.07	−.28**
ΔR^2		.06**			.06**			.07**	
Total R^2		.53***			.47***			.46***	
n		90			90			91	

Variable	Predicting self-reported internalizing			Predicting self-reported externalizing			Predicting delf-reported total problems		
Step 1									
Age	.62	.67	.10	.65	.63	.11	.61	.63	.10
Sex	1.16	2.57	.05	4.34	2.42	.19	3.05	2.42	.13
ΔR^2		.01			.05			.03	
Step 2									
Age	.36	.61	.06	.42	.59	.07	.35	.57	.06
Sex	.33	2.35	.01	3.36	2.30	.15	2.04	2.22	.09
Attributional style	−1.33	.30	−.44***	−1.08	.29	−.37***	−1.27	.28	−.44***
Mother depression symptoms	.09	.24	.04	−.29	.24	−.13	−.16	.23	−.07
ΔR^2		.20***			.13**			.19***	
Step 3									
Age	.31	.57	.05	.39	.57	.07	.31	.54	.05
Sex	−.10	2.21	.00	3.06	2.23	.13	1.64	2.08	.07
Attributional style	−.93	.30	−.31**	−.79	.31	−.27*	−.90	.29	−.31**
Mother depression symptoms	.03	.23	.01	−.33	.23	−.14	−.21	.21	−.09
CPOD-MV total score	.57	.16	.36**	.41	.16	.26*	.53	.15	.35**
ΔR^2		.11**			.06*			.10**	
Total R^2		.32***			.24***			.32***	
n		90			90			90	

Variable	Predicting mother-reported internalizing			Predicting mother-reported externalizing			Predicting mother-reported total problems		
Step 1									
Age	.19	.61	.03	−.73	.56	−.14	−.36	.56	−.07
Sex	.65	2.37	.03	2.44	2.15	.12	2.51	2.16	.12
ΔR^2		.0003			.03			.02	
Step 2									
Age	.03	.57	.01	−.85	.53	−.16	−.48	.53	−.09
Sex	.30	2.22	.01	2.13	2.08	.10	2.25	2.08	.11
Attributional style	−1.03	.28	−.37***	−.77	.27	−.30**	−.79	.27	−.31**
Mother depression symptoms	.28	.22	.13	.17	.21	.08	.23	.21	.11
ΔR^2		.16***			.10**			.12**	

Table 3 (*continued*)

Variable	Predicting mother-reported internalizing			Predicting mother-reported externalizing			Predicting mother-reported total problems		
	B	SE B	β	B	SE B	β	B	SE B	β
Step 3									
Age	−.01	.56	.00	−.90	.52	−.17	−.52	.52	−.10
Sex	.01	2.18	.00	1.79	2.02	.09	1.96	2.03	.10
Attributional style	−.80	.30	−.29**	−.50	.28	−.19	−.56	.28	−.22*
Mother depression symptoms	.26	.22	.12	.14	.20	.07	.21	.21	.10
CPOD−MV total score	.32	.16	.22*	.38	.14	.28*	.32	.15	.24*
ΔR^2		.04*			.07*			.05*	
Total R^2		.20**			.20**			.18**	
n		91			91			91	

Note. Sex coded 1 = Male, 2 = Female. CPOD = Children's Perceptions of Others' Depression.
* $p < .05$ (one-tailed).   ** $p < .01$ (one-tailed).   *** $p < .001$ (one-tailed).

sion and internalizing relative to externalizing problems in youth (Goodman et al., 2010).

Youths' reports on the CPOD-MV were significantly related to both youths' and mothers' reports of children's behavior problems. Importantly, these findings of associations across informants support the concurrent validity and minimize concerns about potentially inflated correlations due to measurement source bias or mothers' depression potentially negatively biasing their perception of their children (Richters, 1992).

We found further support for concurrent validity of the CPOD-MV with our expected small to moderate and significant relations with mothers' reports of their depressive symptoms, although support was limited to the current age period of the majority of the children. That is, more current, but not past, mother-reported depression was related to children's more negative perceptions of their mothers' depression. This result is consistent with findings that, although mothers' history of depression matters, current depression symptoms better account for levels of current problems in the offspring (Hammen et al., 1987). This association being small to moderate in magnitude further suggests the importance of having both sources of information: the mothers' reports on their symptoms of depression and children's reports on their perceptions of the mothers' depression. Further, discriminant validity was supported by CPOD-MV scores not being associated with mothers' reports of their family stressors across the child's lifetime.

Finally, tests of incremental validity demonstrated the utility of the CPOD-MV measure above mothers' self-reports of their depression and a conventional measure of children's negative attributions. After accounting for these variables, the CPOD-MV scores were still associated with higher levels of problems across all measures of adjustment. Indeed, mothers' self-reported depression did not significantly predict any of the measures of children's adjustment. These findings suggest that the CPOD-MV may be tapping a unique construct that is important for understanding risk for psychopathology in youth with depressed mothers and that children's perceptions captured with this measure provide valuable information even beyond knowledge of mothers' depression and children's' general attributional style.

Overall, the findings suggest that the CPOD-MV is a reliable and valid measure of children's beliefs about their mothers' depression. These findings support continued research with this measure both to further test its psychometric properties and to answer important developmental questions about risk to children of depressed parents, such as how children's beliefs about their mother's depression might contribute to the tendency for mothers' depression and children's psychopathology to have proximal onset (Hammen, Burge, & Adrian, 1991) and remission in close temporal proximity (Weissman et al., 2006).

Some limitations should be considered in the interpretation of the findings. First, the findings can only be generalized to children of mothers with depression meeting diagnostic criteria. Unanswered questions remain about distinctions between individuals who meet diagnostic criteria for depression and those with high symptom levels who do not meet diagnostic criteria and a comparison of children from both such groups will be an important future study (Ingram & Siegle, 2009). Second, constraints within our data collection site prohibited our conducting a retest in order to be able to examine test-retest reliability or from knowing if there was a self-selection bias in relation to the decision to participate.

Further work with this measure is also needed to determine the ways in which the scale may need to be modified to measure children's perceptions of depression in their fathers. Depression in mothers is of relatively greater concern than depression in fathers given depression's greater prevalence in women relative to men (Kessler et al., 2003), stronger associations between mothers' depression relative to fathers' depression and both internalizing and externalizing problems in children (Connell & Goodman, 2002), mothers being the primary caregivers in most families (Lamb, 2000), and the number of children living in mother-headed households. Nonetheless, depression in fathers is also a concern given evidence that fathers' depression also interferes with healthy parenting (Wilson & Durbin, 2010) and is significantly related to children's psychopathology (Kane & Garber, 2004). Modifications of the measure to be appropriate for children's perceptions of their fathers' depression would benefit from considering that depression in

fathers, relative to mothers, differs in symptoms, comorbidities, and course (Sloan & Kornstein, 2003) and may be less (Jacob & Johnson, 1997) or differently (Jacob & Johnson, 2001) manifest in parenting.

The broad goal of the current study was to present evidence regarding the reliability and validity of a new measure assessing children's perceptions of depression in their mothers. Future research is needed to apply this new measure to expanding theoretical understanding of the role of such perceptions in the development of emotional and behavior problems in youth exposed to depression in their mothers. Clinical implications include family therapists' applying this tool for identifying children with negative cognitions related to their mothers' depression which, if found to function as a vulnerability factor, could be the target of specific preventive interventions. Overall, the findings of this study suggest that beyond measures of depression symptoms in mothers, children's perceptions and beliefs about their mothers' depression are related to the development of emotional and behavioral problems in children and adolescents of depressed mothers.

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