

## **Informant Discrepancies in Assessing Child Dysfunction Relate to Dysfunction Within Mother-Child Interactions**

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*We examined whether mother-child discrepancies in perceived child behavior problems relate to dysfunctional interactions between mother and child and stress in the mother. Participants included 239 children (6–16 years old; 58 girls, 181 boys) referred for oppositional, aggressive, and antisocial behavior, and their mothers. Mother-child discrepancies in perceived child behavior problems were related to mother-child conflict. Moreover, maternal stress mediated this relationship. The findings suggest that discrepancies among mother and child evaluations of child functioning are not merely reflections of different perspectives or artifacts of the assessment process, but can form components of conceptual models that can be developed and tested to examine the interrelations among critical domains of child, parent, and family functioning.*

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**KEY WORDS:** attribution bias context; disagreement; discrepancies; stress; conflict.

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Parents, teachers, children, and clinicians are often discrepant in how they perceive and rate the child's social, emotional, and behavioral problems (e.g., Achenbach, McConaughy, & Howell, 1987; De Los Reyes & Kazdin, 2005; Grills & Ollendick, 2002). Discrepancies among informants' ratings, especially those between mothers and children, have been studied extensively to examine correlates of the discrepancies, whether discrepancies are more likely with some disorders rather than others, and whether data from some informants (e.g., mother vs. child) are more useful for some disorders or purposes than others (see De Los Reyes & Kazdin, 2005, for a review).

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Discrepancies among informants' ratings are often considered as both a clinical reality and methodological nuisance. The clinical reality refers to the fact that informants' perceptions of children's functioning are more often than not disparate from one another, and their ratings simply will differ, even when the same measure (e.g., identical rating scale) is used. The methodological nuisance refers to the fact that clinicians and researchers can obtain quite different results in either a clinical evaluation or research, based on whose views (mother's, child's, teacher's) are assessed, or whether one or all are used to characterize the child. For example, in a given sample, different children will be identified as meeting criteria for a disorder, depending on whose ratings are used or whether informants' ratings are combined (e.g., Kazdin, 1989; Offord et al., 1996; Youngstrom, Findling, & Calabrese, 2003). Similarly, the extent to which individuals improve with treatment and whether one treatment is more effective than another can vary as a function of parent, child, or teacher evaluations of treatment outcomes (e.g., see De Los Reyes & Kazdin, *in press*).

Discrepancies may reflect more than clinical assessment and methodological issues (Ferdinand, van der Ende, & Verhulst, 2004; Pelton, Steele, Chance, & Forehand, 2001). The informant discrepancies often revealed in the process of collecting information of childhood dysfunction may be integrally related to dysfunctional interactions between the informants providing the information. For instance, in an interaction between mother and child, the extent to which mother and child perceive the child's behavior in different ways may relate to either the mother or child (or both) reacting negatively to the disparities inherent between their perceptions. More specifically, mother-child discrepancies may be borne out of real-world interactions between mother and child, related to whether mother and child perceive the child's behavior as being problematic.

Discrepancies between the perceptions mother and child have of the child's behavior may be related to how the mother and child interact. Such disparities in perceptions may be related to increases in the levels of negative interactions between mother and child (e.g., conflict). An example may be an instance in which a child is fighting with a sibling. The mother may view this behavior as very aggressive, whereas the child may view his behavior as necessary in order to prevent his sibling from teasing him. Another instance may involve a mother asking her child to finish his chores, and her child refusing to do so. The mother may view this behavior as oppositional, whereas the child may view this behavior as justified, given that he shares the room with his sister, and it is "her mess." In these interactions, the discrepancies between how mother and child perceive the child's behavior may produce an argument between mother and child concerning whether or not this behavior should cease, or whether this behavior is warranted, given the situation. If similar interactions between mother and child occur often, they may relate to increases in the level of overall conflict between mother and child.

The relation between the discrepant perceptions between mother and child and the level of conflict between mother and child may be especially salient in the case of discrepant perceptions of children's externalizing problems (e.g., aggression, impulsivity, oppositionality). Externalizing problems in children often involve direct negative contact with others in the child's environment. Thus, conflicts between mother and child over whether, or the extent to which, the child's behavior is problematic may be particularly likely when the discrepancies between mother and child perceptions concern the child's externalizing problem behaviors. Moreover, an investigation examining the relations between mother-child discrepancies and mother-child conflict is important to examine in children referred for treatment for externalizing problems, because negative aspects of the family environment, such as mother-child conflict, are related to the development and maintenance of problem behaviors in children (Patterson, 1982; Reid, Patterson, & Snyder, 2002). In addition, parent and family dysfunction are often present in families of children referred for treatment for externalizing problem behaviors (Pepler & Rubin, 1991). Thus, the manner in which externalizing problems in children develop and are maintained, as well as the context in which such problems are treated suggest that the relation between mother-child discrepancies in perceived child behavior and the nature of mother-child interactions may be especially important to consider in the context of mothers' and children's discrepant perceptions of clinic-referred children's externalizing problems. The primary aim of this study was to examine the relationship between mother-child discrepancies in their perceptions of clinic-referred children's externalizing problems and mother-child conflict.

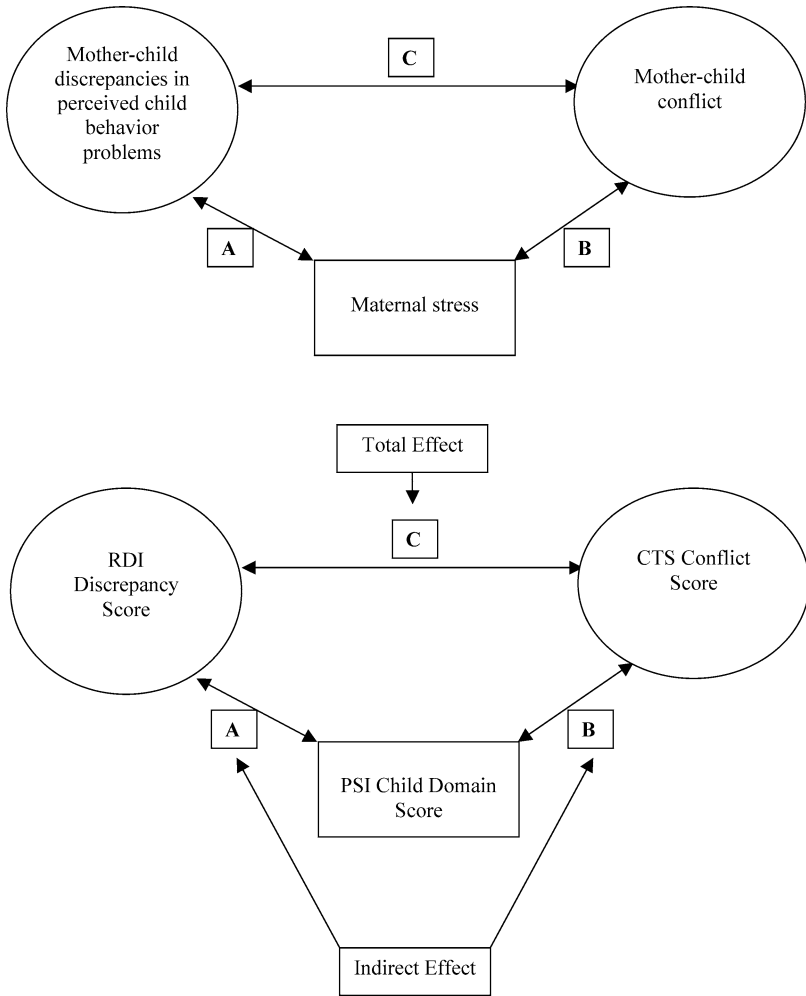
The idea that mother-child discrepancies in perceived child behavior have implications for the nature of parent-child interactions and child dysfunction gains saliency in light of prior theory and research on informant discrepancies (e.g., De Los Reyes & Kazdin, 2005; Youngstrom, Loeber, & Stouthamer-Loeber, 2000). For instance, a recent theoretical framework of informant discrepancies in the clinic setting (Attribution Bias Context [ABC] Model; De Los Reyes & Kazdin, 2005) posits that mother-child discrepancies exist, in part, because mother and child are discrepant in both the attributions they make over the causes of the child's behavior, and the perspectives they have concerning whether the child's behavior warrants treatment. Interestingly, prior work suggests how these discrepancies between mothers' and children's attributions and perspectives may have implications for the nature of parent-child interactions and child dysfunction. For example, prior cross-sectional work suggests a relation between parental self-rated stress and informant discrepancies (Youngstrom et al., 2000). Theorists suggest that this relation may exist, in part, because parents experiencing stress have a lower threshold by which they perceive their child's behavior as problematic and warranting treatment, relative to other informants (De Los Reyes & Kazdin, 2005). However, this conceptualization of the relation between parental

stress and discrepancies assumes a directional relation (i.e., stress leading to discrepancies), and as mentioned previously, prior work examining this relation is cross-sectional.

It is likely that reciprocal relations exist between parental stress and discrepancies, and thus, that relations between stress and discrepancies may operate under a variety of different circumstances. For example, if mother and child are discrepant in the attributions and perspectives they have of a particularly salient aspect of the nature of their relationship and interactions (i.e., the child's problem behavior), these discrepancies may be particularly stressful to the mother. These discrepancies may be particularly stressful to the mother in instances in which the mother views her child's behavior problems as problems within the child that he or she should feasibly be able to control, whereas the child views their own behavior as a problem with the environment and outside their own control (i.e., an instance of mother-child discrepancies in attributions; see De Los Reyes & Kazdin, 2005). Thus, perhaps the extent to which the child perceives his or her own behavior problems in ways that are discordant with the mother's perceptions may be related to increases in stress within the mother. These increased levels of stress in the mother may then be related to the tendency for the mother and child to engage in interactions characterized by verbal and/or physical conflict. The upper panel of Fig. 1 depicts a conceptual model to propose that greater mother-child discrepancies in perceived child behavior problems are related to increases in mother-child conflict, and maternal stress is proposed to mediate this relation. This study was a test of the proposed model.

This study examined the interrelations among mother-child discrepancies in perceived child behavior problems, maternal stress, and mother-child conflict. We hypothesized that greater mother-child discrepancies in ratings of child behavior problems would be related to both greater maternal stress and greater mother-child conflict. Also, we hypothesized that maternal stress would mediate the relationship between mother-child discrepancies in ratings of child behavior problems and mother-child conflict (both hypotheses are represented in the model proposed in the upper panel of Fig. 1). We examined the relations among mother-child discrepancies, maternal stress, and mother-child conflict cross-sectionally to see whether the results warrant a prospective study to examine the proposed model (see Hammen & Brennan, 2001).

Several investigations have found that mother-child discrepancies in ratings of child behavior problems are related to a variety of subject and demographic variables (e.g., child age, child gender, socioeconomic status, ethnicity, maternal depression; see De Los Reyes & Kazdin, 2005, for a review). In addition, when examining informant discrepancies, prior work has controlled for child intelligence (e.g., IQ; Chi & Hinshaw, 2002). Maternal depression is also often positively related to maternal stress (Deater-Deckard, 1998). Thus, subject and demographic variables of the child, mother, and family might account for mother-child discrepancies in their ratings of child behavior problems in this study, and make



**Fig. 1.** Upper panel represents the conceptualization of the mediation model, where: (A) = relation between mother-child discrepancies in perceived child behavior problems and maternal stress; (B) = relation between maternal stress and mother-child conflict; and (C) = relation between mother-child discrepancies and mother-child conflict that is mediated by maternal stress. Lower panel represents the tests for the indirect (i.e., mediating) effect of the PSI Child Domain Score (maternal stress) on the association between the RDI Discrepancy Score (mother-child discrepancies) and the CTS Conflict Score (mother-child conflict). This test examined whether there was a significant drop in the total effect (i.e., the association between the RDI Discrepancy Score and the CTS Conflict Score) after the PSI Child Domain Score was in the model.

unnecessary the constructs of stress and conflict we propose as critical. Several variables were assessed to control for influences that might account for and make unnecessary the additional constructs we propose to be related to mother-child

discrepancies in perceived child behavior problems (i.e., child age, child gender, ethnicity, socioeconomic status, child IQ, maternal depression).

## METHOD

### Participants

Participation was initiated by families who contacted a triage center at a child psychiatry service that serves a large catchment area, or by direct contact with the clinic. Children referred for oppositional, aggressive, or antisocial behavior were seen at the Yale Child Conduct Clinic, an outpatient treatment service for children and families. After referral, children and families completed an initial evaluation to assess child, parent, and family functioning, and then began treatment. Informed consent was solicited and obtained from all families, including the parent(s) or primary caretaker, and all children  $\geq 7$  years of age.

Because we were interested in examining discrepancies between mothers' and children's perceptions, the study included only those families in which both mother and child participated. The study included 239 children (58 girls and 181 boys) and families who were consecutive admissions to the clinic. Children ranged in age from 6–16 years ( $M = 10.1$ ,  $SD = 2.0$ ); 162 (68%) of the children were European American, 59 (25%) were African American, 8 (3%) were Hispanic American, and 10 (4%) were of other groups or mixed background, based on parent identification of ethnicity.

Diagnoses of the child were obtained from the parent version of the Research Diagnostic Interview (RDI; Kazdin, Siegel, & Bass, 1992), a structured interview modeled after the Schedule for Affective Disorders and Schizophrenia for School Age Children (Chambers et al., 1985). The interview assessed the presence, absence, and duration of child symptoms to permit diagnoses based on the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-III-R; American Psychiatric Association, 1987). The child version of the RDI was also administered, but was not used to obtain the child's diagnoses. The procedures for parent and child versions of the RDI were similar, and reliability assessment was obtained for the parent version. Reliability of Axis-I diagnoses was routinely assessed by independent observers for randomly selected cases for the parent version ( $n = 22$ , 9%) over the period in which this project was conducted, and yielded high agreement ( $\kappa = .87$  across all diagnoses). Principal Axis-I diagnoses included conduct disorder (CD, 40%), oppositional defiant disorder (ODD, 28%), attention-deficit/hyperactivity disorder (ADHD, 6%), major depressive disorder (21%), other disorders (2%), or no diagnosable Axis-I disorder (4%). Most children (74%) met criteria for more than one disorder ( $M = 2.4$  disorders,  $SD = 1.2$ ). Full-scale Wechsler Intelligence Scale for Children (WISC-R; Wechsler, 1974) intelligence quotients (IQ) ranged from 54 to 144 ( $M = 100.3$ ,  $SD = 17.7$ ); 12 of the

cases were below an IQ of 70, one of the DSM-IV criteria for mental retardation (American Psychiatric Association, 1994).

We included all cases referred to the clinic to not further restrict the generality of our findings. In addition, we controlled for child IQ when testing the main hypotheses of this study, even though correlation analyses suggested that child IQ was not related to any of the variables of interest in the present study (informant discrepancies, maternal stress, mother-child conflict; see Fig. 1).

The primary caretaker of the child included biological (94%), adoptive (3%), step (3%), or foster mother (1%) and ranged in age from 22 to 59 years ( $M = 36.6$ ,  $SD = 6.2$ ); 46% of the children came from single-parent families. Family occupational and educational level (Hollingshead, 1975) was distributed from lower to higher socio-occupational classes as follows: class I = 8%, class II = 15%, class III = 34%, class IV = 29%, and class V = 14%. Family occupational and educational level was also measured using a continuous scale: the Hollingshead (1975) Family Four-Factor Index ( $M = 38.4$ ,  $SD = 12.8$ ). Median monthly family income was \$2,001 to \$2,500 (range from 0–\$500 to >\$5,000); 5 families did not report their monthly family income; 17% of the families received social assistance.

### Assessment

Measures were selected to assess mother and child perceptions of child behavior problems, maternal stress, and mother-child conflict, key domains central to our hypotheses. In addition, child, mother, and family characteristics were assessed to evaluate whether our predictions and findings might be accounted for by these variables. All measures were completed before treatment and drew on multiple assessment formats (interviews, questionnaires) and informants (parents and children).

#### *Mother and Child Perceptions of Problem Behaviors*

Mothers' and children's perceptions of child behavior problems were measured using the RDI, as mentioned previously. The RDI has both a parent and child version, administered by separate trained interviewers who were each unaware of the results of the other administration. All items to assess for diagnoses and symptoms are administered, rather than skipping items based on informants' responses. Items on the RDI are rated 0 (*definitely no*), 1 (*perhaps, sometimes, or maybe*), or 2 (*definitely yes*). Apart from diagnoses, the total number of symptoms could be scored to provide an overall measure of behavior. Duration of symptoms was part of the diagnostic interview. However, duration of symptoms was not used to evaluate discrepancies, in keeping with prior research on the correspondence of parent and child ratings of child deviance (e.g., Achenbach et al., 1987; De Los Reyes & Kazdin, 2005).

The RDI was used to measure the total number of child externalizing symptoms, as rated by both the mother and child. A total externalizing symptom rating was computed for the mother and for the child by counting the total number of CD, ODD, and ADHD symptoms endorsed by the mother and child from their respective structured interviews. All symptoms rated a “1” or “2” were counted as endorsed symptoms (i.e., present). Lastly, the conduct disorder section of both the RDI child and parent versions contains a question on sexual activity. Mothers were always asked this question, regardless of the age of the child. However, only children 12 years or older were asked this question. For those children under 12 years of age, this question was pro-rated, based on the number and severity of symptoms endorsed in the conduct disorder section. These procedures were consistent with prior work examining informant discrepancies using the RDI (De Los Reyes & Kazdin, 2004).

Lastly, correlations were computed among the CD, ODD, and ADHD sections of the parent and child versions of the RDI (see Table I). The CD, ODD, and ADHD sections of the child RDI exhibited larger correlations than those exhibited by the parent RDI (mean  $r$ s = .66 vs. .35, respectively). The correlations among the sections for each rater were positive and were combined to form composite scores of both total mother-rated and total child self-rated child externalizing symptoms.

### *Maternal Stress and Depression*

We expected mother-child discrepancies between their ratings of child behavior to be related to maternal stress. Maternal stress was measured using the Parenting Stress Index (PSI; Abidin, 1990; Lloyd & Abidin, 1985). The measure includes 120 items, each rated on a 5-point scale, that reflect areas of stress related to the child (e.g., demandingness, mood) and to the mother’s views of their own functioning (e.g., restrictions of role, social isolation). The items yield a total perceived stress score (PSI Total Score), as well as subscale scores for items reflecting

**Table I.** Correlations Among Subscales of the RDI Parent and Child Versions for the Total Sample ( $N = 239$ )

Variable	1	2	3	4	5	6
1. RDI total mother-rated CD symptoms		.43***	.31***	.28***	.07	.10
2. RDI total mother-rated ODD symptoms			.30***	.17**	.12	.07
3. RDI total mother-rated ADHD symptoms				.05	-.03	.08
4. RDI total child self-rated CD symptoms					.64***	.64***
5. RDI total child self-rated ODD symptoms						.69***
6. RDI total child self-rated ADHD symptoms						

*Note.* RDI: Research Diagnostic Interview; CD: conduct disorder; ODD: oppositional defiant disorder; ADHD: attention-deficit/hyperactivity disorder.

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



stress related to the child's behavior (PSI Child Domain Score), and stress related to the mother's own functioning (PSI Parent Domain Score). Diverse types of reliability (internal consistency, test-retest) and validity (concurrent, predictive) for the PSI have been reported in the references cited previously.

For the current study, we were interested in maternal stress as it related to discrepancies between mothers' and children's perceptions of the child's behavior problems. Thus, the PSI Child Domain Score was used as the measure of maternal stress, as the subscale reflected areas of maternal stress that were conceptually salient to the mediation model we wished to examine (i.e., the mother's level of stress related to the child's behavior; the prediction noted below focused on the PSI Child Domain Score. However, the Child Domain, Parent Domain, and Total Scores were highly correlated. Correlations between the subscales revealed that the PSI Total Score was related to both the Child Domain and Parent Domain Scores,  $r(237) = .84$  and  $.90$ , respectively,  $ps < .001$ . The Child Domain Score was related to the Parent Domain Score as well,  $r(237) = .54$ ,  $p < .001$ . In any event, results reported below were consistent with our hypotheses, regardless of whether the Child Domain, Parent Domain, or Total Scores were examined).

Maternal depression was assessed by the Beck Depression Inventory (BDI; Beck, Steer, & Garbin, 1988) to reflect severity of depressive symptoms. For each of 21 items, the parent selected 1 of 3 statements that differed in the presence or severity of the symptom. Scores obtained on the BDI correlate significantly with clinician's ratings of depression as well as with behavioral measures of depression. In addition, extensive work has demonstrated the reliability of the BDI using both internal consistency and test-retest reliability estimates (Beck et al., 1988).

### *Mother-Child Conflict*

We expected mother-child discrepancies in ratings of child behavior problems to be related to levels of mother-child conflict. To our knowledge, there are no standardized rating scales of mother and child conflict. Previous investigations have used the Conflict Tactics Scales (CTS; Straus, 1979) to measure the level of conflict between mother and child (e.g., El-Sheikh & Flanagan, 2001; Ingoldsby, Shaw, & Garcia, 2001). Therefore, mother-child conflict was measured by the CTS. This is a widely used instrument with several scales designed to measure the extent to which different family members both engage in verbal and/or physical aggression with other family members, and use reasoning to resolve conflicts with other family members. The CTS has demonstrated adequate reliability (e.g., internal consistency and stability) and validity (e.g., concurrent, predictive) (e.g., Kolko, Kazdin, & Day, 1996; Strauss, 1990). For the current study, mothers were asked to rate the level of conflict between them and the child participating in the assessment (i.e., not the level of conflict between them and their children in general). The subscales that measure the frequency of parent-to-child reasoning (3 items scored on a

6-point scale), verbal aggression (8 items scored on a 6-point scale), and physical aggression (9 items scored on a 6-point scale), were used to yield a total score of mother-child conflict. The CTS Conflict Score was computed by subtracting the total score of the reasoning subscale from 18 (i.e., the greatest possible score on the subscale), and adding this amount to the total scores of the verbal aggression and physical aggression subscales, in keeping with the recommended scoring procedure (Straus, 1979).

### *Subject and Demographic Variables*

Prior research has indicated that discrepancies are often correlated with subject and demographic variables (e.g., child age, socioeconomic status). Thus, similar to maternal depression, several subject and demographic variables were assessed to evaluate whether the model we proposed could be more parsimoniously explained by constructs and findings already widely evident in this literature. We assessed socioeconomic status and child characteristics and included five measures: an index of family socioeconomic status, child age, child gender, ethnicity, and child IQ. Families completed a General Information Form to assess subject and demographic variables, and children were administered the WISC-R, mentioned previously, to assess child IQ. From the General Information Form, the Hollingshead index, mentioned previously, was used to reflect socioeconomic status. Child age, child gender, and ethnicity were also assessed on this form because they often relate to mother-child discrepancies between their ratings of child behavior problems.

## **RESULTS**

### **Preliminary Analyses**

#### *Mother-Child Perceptions of Child Behavior Problems and Mother-Child Discrepancies*

Mothers' and children's perceptions of child behavior problems were assessed using the total number of symptoms from the diagnostic interview (RDI) endorsed by mothers about their child, and children about themselves, for the symptoms of CD, ODD, and ADHD. Discrepancies between mothers' and children's ratings were measured using standardized difference scores, consistent with current recommendations on how to measure informant discrepancies on ratings of child psychopathology (De Los Reyes & Kazdin, 2004). Standardized difference scores were created by first converting each child's self-ratings and his or her mother's ratings of the child into  $z$ -scores, and then subtracting the  $z$ -score of the child's self-ratings from the  $z$ -score of the mother's ratings of the child (hereby

referred to as RDI Discrepancy Scores). Prior work has shown that there is directionality in the relations among informant discrepancies and child, parent, and family characteristics (e.g., discrepancies are often negatively related to child age and positively related to maternal depression; De Los Reyes & Kazdin, 2005). Thus, the signs (plus or minus) of the RDI Discrepancy Scores were maintained, in keeping with prior work. The mathematical properties of RDI Discrepancy Scores, along with correlations between RDI Discrepancy Scores and child, parent, and family characteristics have been reported elsewhere (De Los Reyes & Kazdin, 2004).

*Means, Standard Deviations, and Correlations Between Mother and Child Ratings*

Means and standard deviations for the child-completed and mother-completed measures are presented in Table II. A correlation computed between RDI total mother-rated child externalizing symptoms and RDI total child self-rated externalizing symptoms revealed that the correspondence between mother and child ratings of child behavior problems was significant but low,  $r(237) = .14$ ,  $p < .05$ , consistent with previous investigations (e.g., Achenbach et al., 1987; De Los Reyes & Kazdin, 2005).

*Subject and Demographic Characteristics of the Child, Mother, and Family*

To examine the relationship between mother-child discrepancies and the child and family demographic characteristics of child age, socioeconomic status, and child IQ, correlations were calculated between child age, socioeconomic status, child IQ, and the RDI Discrepancy Score. Only child age was associated with the

**Table II.** Means and Standard Deviations of Measures for the Total Sample ( $N = 239$ )

Measure	Parent <i>M (SD)</i>	Child <i>M (SD)</i>
Research Diagnostic Interview		
Total CD Symptoms	3.34 (2.29)	3.37 (3.04)
Total ODD symptoms	7.33 (1.75)	4.95 (2.56)
Total ADHD symptoms	10.09 (3.36)	6.32 (4.18)
Total externalizing symptoms	20.75 (5.59)	14.64 (8.60)
BDI Total Score	9.87 (7.78)	
PSI Child Domain Score	129.84 (22.98)	
CTS Conflict Score	32.68 (12.22)	

*Note.* BDI: Beck Depression Inventory; PSI: Parenting Stress Index; CTS: Conflict Tactics Scale; CD: conduct disorder; ODD: oppositional defiant disorder; ADHD: attention-deficit/hyperactivity disorder.

RDI Discrepancy Score,  $r(237) = -.27, p < .001$ . Mother-child discrepancies in ratings of the child's behavior problems decreased as the age of the child increased. Analyses of the relation between mother-child discrepancies and both ethnicity and child gender did not reveal any significant relations.

Key to the model underlying the study was that stress would be related to discrepancies between mother and child ratings. It is possible that maternal depression, already known from prior research to be related to both mother-child discrepancies between their ratings and maternal stress, would account for any relation between discrepancies and maternal stress. To examine the relationship between maternal depression and maternal stress, a correlation was computed between the BDI Total Score and the PSI Child Domain Score. The BDI Total Score was associated with the PSI Child Domain Score,  $r(237) = .20, p < .01$ . Greater maternal depression was associated with greater maternal stress. Even though a number of the subject and demographic variables examined were not significantly related to discrepancies, all subject and demographic characteristics examined as a possible control variable were used when examining our hypotheses (i.e., child age, child gender, ethnicity, socioeconomic status, child IQ, maternal depression), in order to provide a conservative test of our proposed model.

### Maternal Stress

We hypothesized that greater mother-child discrepancies in perceived child behavior problems would be related to greater levels of maternal stress, when controlling for child, mother, and family characteristics. To test this, the PSI Child Domain Score was used as the criterion variable in a hierarchical regression analysis, with child age, child gender, ethnicity, socioeconomic status, child IQ, and the BDI Total Score entered in the first step, and the RDI Discrepancy Score entered in the second step as independent variables. In the first step of the equation, child, mother, and family characteristics were related to the PSI Child Domain Score,  $R = .24, R^2 \Delta = .06, F \Delta(6, 232) = 2.36, p < .05$ . In the second step of the equation, the RDI Discrepancy Score was related to the PSI Child Domain Score,  $\beta(237) = .34, R^2 \Delta = .10, F \Delta(1, 231) = 28.20, p < .001$ , when controlling for child, mother, and family characteristics. These results supported the hypothesis that greater mother-child discrepancies in perceived child behavior problems would be related to greater levels of maternal stress, when controlling for child, mother, and family characteristics.

### Mother-Child Conflict

We hypothesized that greater mother-child discrepancies in perceived child behavior problems would be related to greater levels of mother-child conflict, when controlling for child, mother, and family characteristics. To test this, the

CTS Conflict Score was used as the criterion variable in a hierarchical regression analysis, with child age, child gender, ethnicity, socioeconomic status, child IQ, and the BDI Total Score entered in the first step, and the RDI Discrepancy Score entered in the second step as independent variables. In the first step of the equation, child, mother, and family characteristics were not related to the CTS Conflict Score,  $R = .22$ ,  $R^2 \Delta = .05$ ,  $F \Delta (6, 232) = 2.00$ , *ns*. In the second step of the equation, the RDI Discrepancy Score was related to the CTS Conflict Score,  $\beta (237) = .16$ ,  $R^2 \Delta = .02$ ,  $F \Delta (1, 231) = 5.46$ ,  $p < .05$ , when controlling for child, mother, and family characteristics. These results supported the hypothesis that greater mother-child discrepancies in perceived child behavior problems would be related to greater levels of mother-child conflict, when controlling for child, mother, and family characteristics.

### Tests of the Mediating Effect of Maternal Stress

We hypothesized that maternal stress would mediate the association between mother-child discrepancies in perceived child behavior problems and mother-child conflict, when controlling for child, mother, and family characteristics. Because the RDI Discrepancy Score was related to both the PSI Child Domain Score and the CTS Conflict Score, the first two conditions for the tests of a mediator model were met (Baron & Kenny, 1986; Holmbeck, 1997). The last two requirements to be met were that: (1) the PSI Child Domain Score had to be associated with the CTS Conflict Score, when taking into account the RDI Discrepancy Score; and (2) the magnitude of the effect of the association between the RDI Discrepancy Score and the CTS Conflict Score had to decrease, when taking into account the PSI Child Domain Score. As outlined by Holmbeck (1997), these two conditions were tested with one hierarchical regression equation, with the CTS Conflict Score entered as the criterion variable, child age, child gender, ethnicity, socioeconomic status, child IQ, and the BDI Total Score entered in the first step, and the RDI Discrepancy Score and PSI Child Domain Score entered simultaneously in the second step as independent variables.

As mentioned previously in the tests of the relation between mother-child discrepancies and mother-child conflict, the first step of the equation did not evidence a significant relation between child, mother, and family characteristics and the CTS Conflict Score. Results of the regression testing the last two conditions of mediation indicated that, in the second step of the equation, the PSI Child Domain Score was related to the CTS Conflict Score,  $\beta (237) = .23$ ,  $R^2 \Delta = .06$ ,  $F \Delta (2, 230) = 8.34$ ,  $p < .001$ , when controlling for child, mother, and family characteristics, and the RDI Discrepancy Score. However, consistent with our hypothesis that maternal stress would mediate the relation between mother-child discrepancies and mother-child conflict, the RDI Discrepancy Score was not related to the CTS Conflict Score, when entered simultaneously in the same step as

the PSI Child Domain Score,  $\beta (237) = .08, ns$ . Thus, the results of the regression testing the last two conditions of mediation suggest that maternal stress was related to mother-child conflict, when controlling for mother-child discrepancies in perceived child behavior problems, but the relation between mother-child discrepancies in perceived child behavior problems and mother-child conflict was no longer statistically significant, when controlling for maternal stress. These results supported the hypothesis that maternal stress would mediate the relation between mother-child discrepancies in perceived child behavior problems and mother-child conflict, when controlling for child, mother, and family characteristics.

Because the last two conditions for mediation were met, post-hoc tests of the significance of the indirect effect of the PSI Child Domain Score on the association between the RDI Discrepancy Score and the CTS Conflict Score were conducted (Holmbeck, 2002). The test of the indirect effect is a test of whether the use of the PSI Child Domain Score as a mediating variable between the relationship between the RDI Discrepancy Score and the CTS Conflict Score produced a significant drop in the association between the RDI Discrepancy Score and the CTS Conflict Score. Specifically, the test conducted for the indirect effect of the PSI Child Domain Score was whether there was a significant drop in the total effect (i.e., the association between the RDI Discrepancy Score and the CTS Conflict Score) after including the PSI Child Domain Score in the model. The indirect effect was the product of the *bs* of: (1) the relation between the RDI Discrepancy Score and the PSI Child Domain Score; and (2) the relation between the PSI Child Domain Score and the CTS Conflict Score (the *b* of this second relation was computed with the RDI Discrepancy Score in the model; see lower panel of Fig. 1). The standard error (*se*) of the indirect effect was also computed, and the results of these computations were standardized or transformed into a *z*-score to test for the significance of the indirect effect (Holmbeck, 2002).

The relation between the RDI Discrepancy Score and the PSI Child Domain Score had a *b* of 5.95, and a *se* of 1.12. The relation between the PSI Child Domain Score and the CTS Conflict Score had a *b* of .12, and a *se* of .04. Post-hoc tests for the significance of the indirect effect yielded a *b* of the indirect effect of .71, and a *se* of .28 ( $N = 239$ ). A *z*-score transformation of these results yielded a significant *z*-score of 2.54,  $p < .01$ , suggesting that there was a significant indirect effect of the PSI Child Domain Score on the association between the RDI Discrepancy Score and the CTS Conflict Score. These results further supported the hypothesis that maternal stress would mediate the relation between mother-child discrepancies in perceived child behavior problems and mother-child conflict.

## DISCUSSION

We examined whether mother-child discrepancies in perceived child behavior problems were related to mother-child conflict and whether maternal stress

mediated this relation. The main findings were: (1) mother-child discrepancies in perceived child behavior problems were related to maternal stress and mother-child conflict; (2) maternal stress mediated the relationship between mother-child discrepancies in perceived child behavior problems and mother-child conflict; and (3) the previous relations could not be accounted for or explained by child, mother and family characteristics, which are known to correlate with mother-child discrepancies and maternal stress. Thus, the results suggest that mother-child discrepancies in perceived child behavior problems are related to mother-child conflict and maternal stress mediates this relation.

Our findings with regard to the proposed conceptual model (see Fig. 1) extend the results of previous research showing the relationship between mother-child discrepant perceptions and the development and course of psychopathology in youth (e.g., Ferdinand et al., 2004; Pelton et al., 2001). The results illustrate how informant discrepancies can be conceptualized as a component of a conceptual model developed and tested to examine the interrelations among critical domains of child, parent, and family functioning. Although the present study is cross-sectional, our data fit a model suggesting that when mother and child disagree in their perceptions of the degree to which the child's behavior is problematic, these discrepancies may be related to increases in the amount of conflict between mother and child, and maternal stress may mediate this relation. In addition, as noted previously, prior cross-sectional work suggests a relation between parental self-rated stress and informant discrepancies (Youngstrom et al., 2000), with prior work inferring a directional relationship (i.e., parental stress is an informant characteristic that influences the magnitude of informant discrepancies). Such an inference, in relation to the conceptual model tested in the present study, would suggest that parental stress would relate to informant discrepancies, which would, in turn, mediate the relation between parental stress and mother-child conflict (i.e., mother-child discrepancies would be conceptualized as the mediating variable of the relation between maternal stress and mother-child conflict). However, our mediation findings suggest, instead, that maternal stress mediates the relation between mother-child discrepancies and mother-child conflict. The findings reported in the present study suggest that when maternal stress and mother-child discrepancies are considered as independent predictors of mother-child conflict, only maternal stress is related to mother-child conflict. Thus, our findings suggest that mother-child discrepancies do not mediate the relation between maternal stress and mother-child conflict. Instead, our findings suggest that mother-child discrepancies relate to mother-child conflict, and maternal stress mediates this relation.

Although we proposed that the child as a source of stress would be the key stressor, the results indicated that overall stress, stress from the child, and stress from the parent's own life were all highly interrelated. The findings conveyed that stress mediated the relationship, but not one source of stress more than another. With these promising findings, a more fine-grained analysis of stress, with multiple

measures, different types of stress (e.g., hassles, stressors) and means to combat stress (e.g., social supports) warrant further study.

There are several limitations of this study. First, although tests of mediation suggest that the proposed model (see Fig. 1) was a good fit to the data, this study was cross-sectional. Thus, the results of the tests of mediation do not allow for inferences of causality or directionality among mother-child discrepancies, mother-child conflict, and maternal stress (Kraemer, Wilson, Fairburn, & Agras, 2002). A test of a possible mediator model that relates mother-child discrepancies to fundamental issues of stress, conflict, and mother-child interaction needs to be followed up with prospective research.

Second, mother-child discrepancies in perceived child behavior problems were related to maternal stress. Nevertheless, other domains of maternal and family functioning, such as spousal conflict or maternal depression, may be related to maternal stress as well (e.g., Deater-Deckard, 1998; Reisinger, Frangia, & Hoffman, 1976; Strain, Young, & Horowitz, 1981; Wahler & Afton, 1980). Our study showed that maternal stress was related to discrepancies. Yet, the study was limited in controlling only for a single domain (maternal depression) of maternal psychosocial functioning in evaluating whether stress was related to mother-child discrepancies and mother-child conflict. At the same time, work cited previously suggests that maternal depression is a particularly salient feature of maternal and family functioning that is often associated with maternal stress, and indeed, with informant discrepancies as well. Thus, that our findings could not be accounted for by maternal depression, along with a number of other child, mother, and family characteristics, adds further support to our findings and test of the proposed conceptual model. Nevertheless, future research ought to further elaborate whether stress is pivotal, and how stress might be exacerbated or mediated by other influences (e.g., social support).

Third, characteristics of the sample could limit the generality of the findings. We studied a clinic sample referred for oppositional, aggressive, and antisocial behavior. A clinic sample provided a useful test insofar as child behavior problems and maternal stress are quite evident by the very nature of clinical referrals, and as noted previously, prior work suggests that parent and family dysfunction play integral roles in the development, maintenance, and treatment of behavior problems in children. Our proposed model may only be applicable to families that are experiencing problems with child behavior and the family environment at a severity that warrants clinical intervention. At the same time, our proposed model was informed by a recent theoretical framework aiming to explain why informant discrepancies exist in the clinic setting (ABC Model; De Los Reyes & Kazdin, 2005). Thus, it was important to test our conceptual model in a sample of clinic-referred children. Nevertheless, it is important that future work examine the model proposed in the present study in samples of clinic-referred children experiencing other problems or disorders (e.g., anxiety, depression).



Lastly, maternal stress and mother-child conflict were assessed only through self-report, which may have inflated the obtained relationships. Shared method variance due to the common assessment formats and informants could increase the correlations among measures. Of course, this would happen for control variables (e.g., maternal depression), independent variables (e.g., discrepancy scores), and dependent variables (e.g., mother-child conflict). Thus, common method variance across all of the constructs measured in the present study would have increased the likelihood that several non-significant findings would emerge, because the grand majority of variables examined in the present study (including control variables) were derived from highly similar assessment methods, and variables were often derived from information derived from the same informant. However, support for hypotheses and the findings that all self-report measures were highly or equally correlated suggest that some general common method influence could not explain the results. Nevertheless, future research would profit greatly from adding additional measures, including ratings from other informants (e.g., fathers, teachers) and measures of child behavior problems in the home that do not rely on informant report.

We investigated how mother-child discrepancies, often examined exclusively in the context of multi-informant clinical assessments (De Los Reyes & Kazdin, 2005), could instead be conceptualized and examined as a potentially critical component of mother-child relationships, as well as mother and child functioning. Indeed, the study of childhood psychopathology often assumes that discrepancies among informants' perceptions of child problem behavior merely have implications for how psychopathology is assessed and classified in children. In contrast, the results of the present study suggest that mother-child discrepancies can be conceptualized and examined as constructs that have critical implications for how mothers react when their perceptions of the child differ from their child's self-perceptions, and how such reactions may be related to how mother and child interact with each other. Thus, we encourage future prospective research to be dedicated to examining the impact that such discrepant perceptions may have on dyadic behavior, and both parent and child functioning.

The findings from the present study suggest that mother-child discrepancies in perceived child behavior problems may be related to mother-child conflict, and maternal stress may mediate this relationship. The findings suggest that discrepancies among mother and child evaluations of child functioning are not merely reflections of different perspectives, but can form components of conceptual models that can be developed and tested to examine the interrelations among critical domains of child, parent, and family functioning. Future prospective investigations are warranted in examining how the interrelations among mother-child discrepancies in perceived child behavior problems, maternal stress, and mother-child conflict operate temporally.

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## REFERENCES

- Abidin, R. R. (1990). *Parenting Stress Index clinical manual*. Charlottesville, VA: Pediatric Psychology Press.
- Achenbach, T. M., McConaughy, S. H., & Howell, C. T. (1987). Child/adolescent behavioral and emotional problems: Implications of cross-informant correlations for situational specificity. *Psychological Bulletin, 101*, 213–232.
- American Psychiatric Association (1987). *Diagnostic and statistical manual of mental disorders* (3rd ed., Revised). Washington, DC: Author.
- American Psychiatric Association (1994). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC: Author.
- Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51*, 1173–1182.
- 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.
- Chambers, W. J., Puig-Antich, J., Hirsch, M., Paez, P., Ambrosini, P. J., Tabrizi, M. A., & Davies, M. (1985). The assessment of affective disorders in children and adolescents by semistructured interview: Test-retest reliability of the Schedule for Affective Disorders and Schizophrenia for School-Age Children, Present Episode Version. *Archives of General Psychiatry, 42*, 696–702.
- Chi, T. C., & Hinshaw, S. P. (2002). Mother-child relationships of children with ADHD: The role of maternal depressive symptoms and depression-related distortions. *Journal of Abnormal Child Psychology, 30*, 387–400.
- Deater-Deckard, K. (1998). Parenting stress and child adjustment: Some old hypotheses and new questions. *Clinical Psychology: Science and Practice, 5*, 314–332.
- De Los Reyes, A., & Kazdin, A. E. (2004). Measuring informant discrepancies in clinical child research. *Psychological Assessment, 16*, 330–334.
- De Los Reyes, A., & Kazdin, A. E. (2005). Informant discrepancies in the assessment of childhood psychopathology: A critical review, theoretical framework, and recommendations for further study. *Psychological Bulletin, 131*, 483–509.
- De Los Reyes, A., & Kazdin, A. E. (in press). Conceptualizing changes in behavior in intervention research: The range of possible changes model. *Psychological Review*.
- El-Sheikh, M., & Flanagan, E. (2001). Parental problem drinking and children's adjustment: Family conflict and parental depression as mediators and moderators of risk. *Journal of Abnormal Child Psychology, 29*, 417–432.
- Ferdinand, R. F., van der Ende, J., & Verhulst, F. C. (2004). Parent-adolescent disagreement regarding psychopathology in adolescents from the general population as a risk factor for adverse outcome. *Journal of Abnormal Psychology, 113*, 198–206.
- Grills, A. E., & Ollendick, T. H. (2002). Issues in parent-child agreement: The case of structured diagnostic interviews. *Clinical Child and Family Psychology Review, 5*, 57–83.
- Hammen, C., & Brennan, P. A. (2001). Depressed adolescents of depressed and nondepressed mothers: Tests of an interpersonal impairment hypothesis. *Journal of Consulting and Clinical Psychology, 69*, 284–294.

- Hollingshead, A. B. (1975). *Four-factor index of social status*. New Haven, CT: Yale University.
- Holmbeck, G. N. (1997). Toward terminological, conceptual, and statistical clarity in the study of mediators and moderators: Examples from the child-clinical and pediatric psychology literatures. *Journal of Consulting and Clinical Psychology, 65*, 599–610.
- Holmbeck, G. N. (2002). Post-hoc probing of significant moderational and mediational effects in studies of pediatric populations. *Journal of Pediatric Psychology, 27*, 87–96.
- Ingoldsby, E. M., Shaw, D. S., & Garcia, M. M. (2001). Intrafamily conflict in relation to boys' adjustment at school. *Development and Psychopathology, 13*, 35–52.
- Kazdin, A. E. (1989). Identifying depression in children: A comparison of alternative selection criteria. *Journal of Abnormal Child Psychology, 17*, 437–455.
- Kazdin, A. E., Siegel, T., & Bass, D. (1992). Cognitive problem-solving skills training and parent management training in the treatment of antisocial behavior in children. *Journal of Consulting and Clinical Psychology, 60*, 733–747.
- Kolko, D. A., Kazdin, A. E., & Day, B. T. (1996). Children's perspectives in the assessment of family violence: Psychometric characteristics and comparison to parent reports. *Child Maltreatment, 1*, 155–167.
- Kraemer, H. C., Wilson, G. T., Fairburn, C. G., & Agras, W. S. (2002). Mediators and moderators of treatment effects in randomized clinical trials. *Archives of General Psychiatry, 59*, 877–883.
- Lloyd, B. H., & Abidin, R. R. (1985). Revision of the Parenting Stress Index. *Journal of Pediatric Psychology, 10*, 169–177.
- Offord, D., Boyle, M. H., Racine, Y. A., Szatmari, P., Fleming, J. E., Sanford, M. N., & Lipman, E. L. (1996). Integrating assessment data from multiple informants. *Journal of the American Academy of Child and Adolescent Psychiatry, 35*, 1078–1085.
- Patterson, G. R. (1982). *Coercive family process*. Eugene, OR: Castalia.
- Pelton, J., Steele, R. G., Chance, M. W., & Forehand, R. (2001). Discrepancy between mother and child perceptions of their relationship: II. Consequences for children considered within the context of maternal physical illness. *Journal of Family Violence, 16*, 17–35.
- Pepler, D. J., & Rubin, K. H. (Eds.). (1991). *The development and treatment of childhood aggression*. Hillsdale, NJ: Lawrence Erlbaum.
- Reid, J. B., Patterson, G. R., & Snyder, J. (Eds.). (2002). *Antisocial behavior in children and adolescents: A developmental analysis and model for intervention*. Washington, DC: American Psychological Association.
- Reisinger, J. J., Frangia, G. W., & Hoffman, E. H. (1976). Toddler management training: Generalization and marital status. *Journal of Behavior Therapy and Experimental Psychiatry, 7*, 335–340.
- Strain, P. S., Young, C. C., & Horowitz, J. (1981). Generalized behavior change during oppositional child training: An examination of child and family demographic variables. *Behavior Modification, 5*, 15–26.
- Straus, M. A. (1979). Measuring intrafamily conflict and violence: The Conflict Tactics Scales. *Journal of Marriage and the Family, 41*, 75–88.
- Straus, M. A. (1990). Measuring intrafamily conflict and violence: The Conflict Tactics (CT) Scales. In M. A. Straus & R. J. Gelles (Eds.), *Physical violence in American families: Risk factors and adaptations to violence in 8,145 families* (pp. 29–47). New Brunswick, NJ: Transaction.
- Wahler, R. G., & Afton, A. D. (1980). Attentional processes in insular and noninsular mothers: Some differences in their summary reports about child problem behaviors. *Child Behavior Therapy, 2*, 25–41.
- Wechsler, D. (1974). *Manual for the Wechsler Intelligence Scale for Children-Revised, WISC-R*. San Antonio, TX: Psychological Testing Corporation.
- Youngstrom, E. A., Findling, R. L., & Calabrese, J. R. (2003). Who are the comorbid adolescents? Agreement between psychiatric diagnosis, youth, parent, and teacher report. *Journal of Abnormal Child Psychology, 31*, 231–245.
- Youngstrom, E., Loeber, R., & Stouthamer-Loeber, M. (2000). Patterns and correlates of agreement between parent, teacher, and male adolescent ratings of externalizing and internalizing problems. *Journal of Consulting and Clinical Psychology, 68*, 1038–1050.