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Mother-Child Disagreement in Reports of Child Anxiety: Effects of Child Age and Maternal Anxiety

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Abstract

The present study examined effects of maternal anxiety, child age, and their interaction on mother-child anxiety reporting disagreement while taking into account the direction of each informant's report relative to the other. Participants were 41 dyads of mothers and clinically anxious children aged 7-13. A hierarchical regression revealed a significant interaction between maternal anxiety and child age ($\beta = .30, p < .05$). A graph of this interaction indicated that when maternal anxiety is high and the child is older, maternal report of anxiety is relatively higher, and when maternal anxiety is high and the child is younger, child report of anxiety is relatively higher. When maternal anxiety is low, the reporting discrepancy is relatively stable across age. Results may help explain previous mixed findings regarding effects of age and maternal anxiety on reporting discrepancies. Possible explanations for these results are discussed.

Keywords

anxiety; children; parent-child agreement; self-report; parent-report

1. Parent-Child Reporting Disagreement

A substantial body of research demonstrates low rates of concordance in endorsement of symptoms between children and other informants, such as parents and teachers (Bird, Gould, & Staghezza, 1992; De Los Reyes & Kazdin, 2005; Klein, 1991; Reich & Earls, 1987). Studies comparing concordance between parent and child ratings of internalizing and externalizing disorders have generally demonstrated that agreement is lower for internalizing disorders (Achenbach, McConaughy, & Howell, 1987; Salbach-Andrae, Lenz, & Lehmkuhl, 2009), and rates of concordance have been especially low for anxiety disorders, whether measured via continuous measures (e.g., Barbosa, Tannock, & Manassis, 2002; Wren, Bridge, & Birmaher, 2004) or diagnostic interview (e.g., Choudhury, Pimentel, & Kendall, 2003; Grills & Ollendick, 2003). This general trend is consistent with findings that parents and children tend to have higher agreement in endorsement of overt than covert anxiety symptoms (Comer & Kendall, 2004), likely due to the lesser degree of access parents have to their child's thoughts and covert physical symptoms.

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Evidence of low rates of agreement between parent- and child-reports has frequently been used to support use of multiple informants for assessing child anxiety following the rationale that each informant provides valid information from his or her unique perspective. Bird and colleagues (1992) suggested using the “or rule” for integrating discrepant reports wherein symptoms endorsed by either the parent or the child are used to make final impressions. However, in practice, reporting discrepancies are often resolved by placing greater weight on parent report, especially with regard to younger children (e.g., Grills & Ollendick, 2003; Rapee et al., 1994). Jensen and colleagues (1999) note that the practice of integrating discrepant reports to form diagnostic impressions does not make clinical sense if there are a priori reasons for placing greater weight on information from certain informants, as would be the case if identified factors account for systematic reporting discrepancies. De Los Reyes and Kazdin (2005) note that there is no “gold standard” with which to compare each informant's report of child psychopathology, which precludes interpreting systematic factors affecting reporting discrepancy as indicators of relative validity of the informant. Little research has been conducted to directly examine the relative validity of parent and child reports of internalizing symptoms; however, two studies have explored the validity of parent and child predictions of child subjective experiences of anxiety and behaviors using a behavioral approach task (Cobham & Rapee, 1999; DiBartolo & Grills, 2006). Both studies found that children were better predictors of their subjective experiences of anxiety during the tasks than were parents, and DiBartolo and Grills found that children were also better predictors of their anxious behaviors during the task. Such findings suggest that the tendency to integrate reports or emphasize parent-report in the case of a reporting discrepancy may not be best practices.

1.1. Correlates of Parent-Child Reporting Disagreement

Despite the caveat that parent and child characteristics systematically related to reporting discrepancies cannot alone be used to indicate relative validity of informant report, identifying such factors may provide valuable evidence as to potential sources of error compromising report validity. Specifically, the age of the child and the presence of maternal psychopathology (e.g., maternal anxiety) have been examined in the literature as factors contributing to informant disagreement. The literature yields conflicting findings on the effects of child age and maternal anxiety on discrepancies between mother and child reports. With respect to the effect of child age on reporting discrepancies, several studies have found higher rates of agreement or lower rates of disagreement between parents and children with increasing child age (e.g., Grills & Ollendick, 2003; Rapee et al., 1994; Wren, Bridge, & Birmaher, 2004). Conversely, other studies have found that parents demonstrated higher rates of agreement or lower rates of disagreement with younger children (e.g. Krain & Kendall, 2000; Safford, Kendall, Falmnery-Schroeder, Webb, & Sommer, 2005). Still, several studies have demonstrated no consistent relationship between child age and parent-child reporting discrepancy (e.g., Choudhury, Pimentel, & Kendall, 2003; Engel, Rodrigue, & Geffken, 1994; Jensen, Rubio-Stipec, & Canino, 1999; Manassis, Tannock, & Monga, 2009; Reuterskiöld, Öst, & Ollendick, 2008).

With respect to the effect of maternal psychopathology on reporting discrepancies, findings have also been mixed. Many studies have supported a positive association between maternal anxiety and larger mother-child reporting discrepancy (e.g., Frick, Silverthorn, & Evans, 1994; Manassis, Tannock, & Monga, 2009). Frick and colleagues (1994) found that a history of maternal anxiety predicted disagreement between mother and child reports of child anxiety, and that higher relative reporting by anxious mothers was specific to report of child anxiety (in comparison to child major depression and child attention deficit/hyperactivity disorder). Briggs-Gowan and colleagues (1996) found that maternal anxiety was a unique predictor of informant disagreement above and beyond the variance shared with maternal

depression. However, some studies have not supported a positive association between maternal anxiety and reporting discrepancies (e.g., Krain & Kendall, 2000; Reuterskiöld, Öst, & Ollendick, 2008).

Despite many studies addressing parent and child factors affecting reporting discrepancies, little attention has been devoted to interrelations between these factors. Due to child characteristics that increase with development, such cognitive sophistication, autonomy, and affective understanding (Harter, 2006), it is possible that reporting discrepancies between mothers and children may be influenced differently by factors such as maternal anxiety at different stages of child development, thereby making this potential interaction effect an important target of examination.

Most studies examining factors affecting informant concordance in report of child anxiety have explored their effects on rates of agreement or disagreement generally; that is, they have examined how these factors affect the size of the reporting difference or the presence or absence of diagnostic agreement. Fewer studies have examined the direction in which the disagreement occurs. With respect to the direction of the effect of child age on reporting discrepancy, Wren and colleagues (2004) found that younger age was associated with relatively higher reporting by children compared to parents; however, to date, no other studies have directly addressed this question. Studies addressing the direction of the effect of maternal psychopathology on reporting discrepancies have generally found that maternal anxiety is associated with higher relative child anxiety-reporting by mothers compared to children (e.g., Frick, Silverthorn, & Evans, 1994; Manassis, Tannock, & Monga, 2009).

1.2. The Present Study

The goal of the present study was to examine the effects of maternal anxiety and child age on discrepant parent-child reports of child anxiety, taking into account the direction of these effects, and to explore potential interactions between these factors. Given the state of the current literature, we hypothesized that: (a) higher maternal anxiety would be associated with greater reporting discrepancy between mother and child, with anxious mothers reporting higher child anxiety relative to child report, (b) younger child age would be associated with greater reporting discrepancy between mother and child, with younger children self-reporting relatively higher anxiety than mother-report, (c) there would be a differential effect of maternal anxiety on relative anxiety reporting at different levels of child development, though no specific hypotheses were made as to direction.

2. Method

2.1 Participants

Participants were 41 dyads of mothers and children (23 females and 18 males) aged 7-13 years ($M = 10.32$; $SD = 1.78$) from ethnically diverse backgrounds (58.5% Latino, 19.5% African American, 12% Caucasian, 5% Other, 5% not reported). Children met criteria for a primary anxiety disorder diagnosis (Specific Phobia [SP], $n = 10$; Generalized Anxiety Disorder [GAD], $n = 10$; Social Phobia [SoP], $n = 8$; Separation Anxiety Disorder [SAD] $n = 3$; Posttraumatic Stress Disorder [PTSD], $n = 4$; Selective Mutism [SM] $n = 1$) or a secondary anxiety disorder diagnosis (GAD, $n = 1$; SoP, $n = 2$; SP, $n = 2$). Children diagnosed with a secondary anxiety disorder met criteria for a primary diagnosis of Oppositional Defiant Disorder ($n = 3$) or Attention-Deficit/Hyperactivity Disorder ($n = 2$). Eighty-three percent of children met criteria for more than one anxiety diagnosis. Sixty-six percent of children met criteria for an anxiety disorder via both mother and child report. Seventeen percent met criteria via child report only, and 17% percent met criteria via mother report only.

2.2. Procedure

Data for this study were gathered as part of a larger study examining parenting style, cognitive processes, and child anxiety in which 61 families participated. In that project, families participated in a data collection session lasting approximately three and half hours after consent and child assent forms were signed. Procedures consisted of administration of the Anxiety Disorders Interview Schedule for DSM-IV: Child and Parent Versions (ADIS-C/P; Silverman & Albano, 1996), followed by brief interviews with the children to examine cognitive interpretive biases and conflict resolution styles, and a parent-child interaction task to examine parental modeling of anxious behaviors. These tasks were followed by the administration of questionnaires to the parents and children including the Multidimensional Anxiety Scale for Children (MASC; March, Parker, Sullivan, Stalling, & Conners, 1997) and the Trait scale of the State-Trait Anxiety Inventory (STAI-T; Spielberger, Gorsuch, & Lushene, 1970) used in the current study. For the current study, 13 cases were omitted due to incomplete data, and 7 were omitted because the child did not meet criteria for a primary or secondary anxiety diagnosis.

Families were recruited for this study in one of two ways. First, after Institutional Review Board approval was obtained, a letter was sent to parents of children in participating schools in the New Orleans metropolitan area. The letter stated that if, on a regular basis, their children were experiencing symptoms such as nervousness, fearfulness, test anxiety, worries, stomach aches, or problems sleeping, they may be eligible to participate in a study examining how children manage certain emotions. Parents were asked to provide their names and phone numbers if interested in participating in the study. Children whose parents provided phone numbers were screened by phone using the Child Behavior Checklist (CBCL; Achenbach & Rescorla, 2001). Additionally, families were referred for participation through local mental health clinics and were also screened using the CBCL. Families were invited to participate if the parents endorsed symptoms for their children in the clinical range for any internalizing subscale of the CBCL. In the sample used in this study, nine families were clinically-referred and 32 were recruited from schools through the standard procedure described above. After completing the data collection session, parents were given feedback by graduate students as to diagnostic findings and all families were provided with a list of mental health service agencies in the area.

2.3. Measures

2.3.1. The Child Behavior Checklist—For Ages 6-18 (CBCL; Achenbach & Rescorla, 2001) is a 112-item multidimensional parent report measure that assesses children's functioning across several domains. Items are presented as statements and parents are asked to rate how descriptive each item is of his or her child's behavior within the past six months on a three-point scale ranging from 'Not True (as far as you know)' to 'Very True or Often True.' The CBCL has demonstrated good psychometric properties (Achenbach & Rescorla, 2001), and is widely used as a screening measure of child emotional and behavior problems.

2.3.2. Anxiety Disorders Interview Schedule for DSM-IV: Child and Parent Versions—(ADIS-C/P; Silverman & Albano, 1996) were administered by doctoral students who had been trained to 100% diagnostic agreement. The ADIS-C/P is a semi-structured diagnostic interview based on DSM-IV diagnostic criteria designed to assess major psychiatric disorders of childhood, including several anxiety disorders. The ADIS-C/P has demonstrated excellent retest reliability (Silverman, Saavedra, & Pina, 2001), and the anxiety disorders section has demonstrated good concurrent validity with other measures of anxiety (Wood, Piacentini, Bergman, McCracken, & Barrios, 2002). Consistent with guidelines established by the developers of the ADIS-C/P, diagnoses were determined on the basis of composite between mother and child reports (i.e., diagnoses resulting from either

parent or child interview were aggregated), and the diagnosis yielding the highest severity rating was established as the primary diagnosis.

2.3.3. The Multidimensional Anxiety Scale for Children—(MASC; March, Parker, Sullivan, Stalling, & Conners, 1997) is a 39-item self-report measure of child anxiety. The MASC is divided into four main scales, three of which have subscales: physical symptoms (tense/restless, somatic/autonomic), social anxiety (humiliation/rejection, performance fears), harm avoidance (perfectionism, anxious coping), and separation/panic (March et al., 1997). A total anxiety score is computed by summing responses to all items on the four main scales. The MASC has also been adapted for report of child anxiety by parents (Baldwin & Dadds, 2007). The factor structures of both the parent and child versions of the MASC have been found to be comparable, and the measure has been found to be valid and reliable in community and clinical samples (Baldwin & Dadds, 2007; Grills-Taquechel, Ollendick, & Fisak, 2008; March et al., 1997; Rynn et al., 2006). In this study, the total anxiety scores from the child self-report version and the mother-report version were used as measures of child anxiety. Cronbach's alphas for this study were .80 and .93 for child and mother versions, respectively.

2.3.4. The Trait scale of the State-Trait Anxiety Inventory—(STAI-T; Spielberger, Gorsuch, & Lushene, 1970) was administered to all parents participating in the study. The STAI-T is an adult self-report measure containing 20 items designed to measure relatively enduring anxiety experienced by the respondent. Participants are asked to rate the frequency at which they experience the thought or feeling described by the item via a 4-point Likert scale (1 = *almost never*, 2 = *sometimes*, 3 = *often*, 4 = *almost always*). Responses were summed to yield a total anxiety score, which was used as an indicator of maternal anxiety in this study. The STAI-T has demonstrated excellent retest reliability and good concurrent validity (Metzger, 1976). Cronbach's alpha for the current study was .72.

2.3.5. Reporting discrepancy—Because self- and parent-reports of child anxiety were measured using the same scale, reporting discrepancy was computed by subtracting child self-report MASC score from parent-report MASC score. Resulting positive values indicated higher child anxiety endorsed by mother relative to child, and resulting negative values indicated higher child anxiety endorsed by child relative to mother. Use of the same measure of child anxiety with each informant removes possible artifacts from using different rating scales.

3. Results

3.1. Preliminary Analyses

Correlations between measures of socioeconomic status (SES) (mother's level of education and total household income) and reporting discrepancy were not statistically significant, and measures of SES were not included in subsequent analyses. Child gender was not correlated with any study variable and was not included in any further analysis. Analyses of variance (ANOVAs) indicated that child ethnicity did not significantly explain any study variable and was also not included in any further analysis.

Zero-order correlations between child age, maternal anxiety, and mother and child reports of child anxiety are presented in Table 1. Results showed a significant negative correlation between child self-reported anxiety and child age and a significant positive correlation between mother-reported child anxiety and child age. Mother-reported child anxiety and child self-reported anxiety were not significantly correlated.

3.2. Regression Analysis

To test our hypotheses regarding reporting discrepancies, a hierarchical regression analysis was conducted predicting reporting discrepancy from child age, maternal anxiety, and the interaction between child age and maternal anxiety (Table 2). Child age and maternal anxiety were entered in Step 1 and the interaction term was entered in Step 2. Variables entered into Step 1 contributed to explaining 33% of the variance in discrepancy of reporting scores, though child age was the only significant predictor ($\beta = .57, p < .001$). In Step 2, the interaction between age and maternal anxiety was significant ($\beta = .30, p < .05$), and the final model accounted for 40% of the variance in mother-child anxiety reporting discrepancy.

3.3. Graphic Analysis

A graph of the interaction between child age and maternal anxiety, presented in Figure 1, shows that for dyads in which mothers were highly anxious, the age of the child determined the direction of the reporting discrepancy with younger children reporting relatively higher anxiety than mother-report and older children reporting relatively lower anxiety than mother-report. Low maternal anxiety was associated with smaller reporting discrepancy in younger and older children, while high maternal anxiety was associated with larger reporting discrepancy.

3.4. Analysis by Maternal Anxiety Level

To further understand the interaction, regression analyses predicting reporting discrepancy from maternal anxiety and child age were run for groups based on maternal anxiety level (Table 3). A median split was used to divide the sample into low maternal anxiety and high maternal anxiety groups. The median score for maternal anxiety corresponded to a t-score of 60 based on established norms, thus high-anxious mothers fell at or above one standard deviation above the mean of the norm sample (range of total sample t-scores = 46-80). Results revealed that for the group with high-anxious mothers, child age significantly predicted reporting discrepancy such that mothers reported higher anxiety relative to child report with increasing child age ($F(2, 18) = 9.91, p < .01$), and for the group with low-anxious mothers, age was not a significant predictor ($F(2, 17) = 0.64, p = ns$).

4. Discussion

4.1. Implications

These findings support our contentions that when examining factors affecting reporting discrepancies, rather than examining only the magnitude of the discrepancy, the direction of relative reporting of child anxiety between mothers and children (i.e., which informant is reporting more and which informant is reporting less anxiety) should be considered, and that potential interactions between factors shown to affect reporting discrepancies should be examined.

The finding of a significant interaction between child age and maternal anxiety may help to explain previous mixed findings in the literature. Results from separate regressions run for subgroups of high-anxious and low-anxious mothers examining the effects of child age and maternal anxiety on reporting discrepancies indicate that a significant main effect of child age on reporting discrepancy was present only for the subgroup of highly anxious mothers, while mothers low on anxiety had relatively consistent reports with their children across ages. Studies detecting no main effect of age on reporting discrepancy may have included mothers without high amounts of anxiety, while studies detecting no main effect of maternal anxiety on reporting discrepancy may have included restricted age ranges or not included age as a consideration.

The finding that directions of relative reporting were different between anxious mothers and younger children (with children self-reporting higher anxiety than mother-report) and anxious mothers and older children (with mothers reporting higher child anxiety than child self-report) may further clarify mixed findings in the literature. By examining the effects of child age and maternal anxiety on only the size of the discrepancy between mother and child reports, past studies may have inadvertently aggregated discrepant reports in opposite directions, thus missing significant reporting differences.

Past studies detecting higher rates of disagreement between parents and younger children have pointed to lack of cognitive sophistication on the part of younger children to fully understand and report reliably and validly as to their symptoms (Grills & Ollendick, 2002). However, past contrary findings that parents and younger children yielded *higher* rates of agreement or found no age trend indicate that cognitive immaturity cannot be the sole explanation for discrepant reports. Our finding that younger children self-reported significantly higher anxiety than anxious mothers reported for them may be explained by younger children's tendency to integrate parent characteristics into their own developing self-concepts (Eder & Mangelsdorf, 1997; Thompson, 1998). From this perspective, younger children's self-report of anxiety would be skewed by their mothers' apparent anxiety. Exposure to parents' frequent and intense negative emotions can be overly arousing for young children who have not yet developed emotional regulation skills and may discourage self-reflection (Denham, 1998). In turn, discouragement of affective self-reflection may point to a more prominent role of parental negative affectivity in younger children's self-concepts. The finding that older children of anxious mothers self-reported relatively lower anxiety than their mothers did for them may be explained by increased affective regulation skills and maturing self-concepts that are less based upon how they perceive their parents. It is also possible that mothers ascribe more of their own self-concepts to their older children.

One notable strength of this study was the inclusion of a multiethnic sample comprised primarily of Latino mother-child dyads. Some research suggests that culture may play a role in both mothers' and children's tendencies to report symptoms. For example, past research has indicated that Latinos endorse more symptoms due to a general tendency toward agreeability relative to European Americans (e.g., Marín, Gamba, & Marín, 1992), and this potential reporting difference may have implications for apparent reporting discrepancies. We explored the effects of race/ethnicity on all study variables and found no significant relations. Notably, race/ethnicity was not related to mother self-reported anxiety, either mother or child report of child anxiety, or reporting discrepancy between mother and child report. These results indicate that our findings may apply cross-culturally to the racial/ethnic groups examined here.

4.2. Limitations

Findings from this study are limited by potential effects of shared method variance and reliance on self-report to measure maternal anxiety. Future research should include additional assessment of maternal psychopathology, such as use of diagnostic interviews. An additional limitation of this study was our use of mixed recruited and clinically-referred sample of children, which may affect the generalizability of findings to populations of anxious youth presenting in clinical settings. Finally, because our sample included a range of diagnoses and our research question required information regarding the relative intensity of anxiety reported along a single metric, our design precluded exploring the role of diagnostic agreement in our findings. Future research may aim to replicate these findings at the diagnostic level by exploring the number of symptoms endorsed or severity ratings of mothers and children endorsing the same primary anxiety diagnosis.

Research Highlights

- Reporting agreement is affected by interaction of child age and maternal anxiety.
- Anxious mothers underreport anxiety for younger child, over-report for older child.
- Non-anxious mothers display reporting agreement with child across child ages.

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Figure 1.

Graph of the interaction between child age and maternal anxiety. High and low values for child age and maternal anxiety are one standard deviation above and below their respective means. Negative scores on y-axis indicate higher child self-reported anxiety relative to mother-reported child anxiety.

Table 1
Means, Standard Deviations, Ranges, and Correlations between Child Self-Reported Anxiety, Child Age, Mother Self-Reported Anxiety, and Mother Report of Child Anxiety

Variable	Correlations				Mean	SD	Range
	1	2	3	4			
1. MASC-C	--				46.78	22.27	0-97
2. Child Age	-.43*	--			10.32	1.78	7-13
3. STAI-T	-.09	.08	--		46.40	7.22	32-63
4. MASC-M	.12	.33*	.02	--	54.16	20.71	15-92

Note. MASC-C = Multidimensional Anxiety Scale for Children - child report; STAI-T = Trait scale of the State-Trait Anxiety Inventory; MASC-M = Multidimensional Anxiety Scale for Children - mother report. Means, standard deviations, and ranges are reported for raw scores of each measure.

* $p < .01$

Table 2
Summary of Hierarchical Regression Analysis for Variables Predicting Discrepancy in
Report of Child Anxiety

Variables	SE β	β	ΔR^2
Step 1			.33**
Child Age	.13	.57***	
Maternal Anxiety	.14	.04	
Step 2			.07*
Child Age $\times$ Maternal Anxiety	.14	.30*	
Final Model			
Child Age	.13	.53***	
Maternal Anxiety	.14	-.08	
Child Age $\times$ Maternal Anxiety	.14	.30*	

Maternal Anxiety = Total anxiety score on the STAI-T.

* $p < .05$,

** $p < .01$,

*** $p < .001$

Total statistics for final model: $R^2 = .40$, $F(3, 37) = 8.24$, $p < .001$

Table 3
Summary of Regression Analyses Predicting Reporting Discrepancy from Child Age and Maternal Anxiety within Subsamples of High-Anxious and Low-Anxious Mothers

Variables	High-Anxious Mothers		Low-Anxious Mothers	
	<i>SE</i> β	β	<i>SE</i> β	β
Child Age	.18	.73*	.25	.22
Maternal Anxiety	.18	-.03	.25	.13

Maternal Anxiety = Total anxiety score on the STAI-T.

*
 $p < .001$