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ORIGINAL PAPER

Adolescent-Mother Agreement about Adolescent Problem Behaviors: Direction and Predictors of Disagreement

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Abstract Correlations between adolescent and parent reports of adolescent problems are low in magnitude. In community samples adolescents tend to report *more* problems than parents and in clinical samples adolescents tend to report *fewer* problems than parents. Indices of agreement may be biased if some adolescents in a given sample report more problems and others report fewer problems than parents. In the current study, order and mean agreement between adolescent and maternal reports of adolescent internalizing and externalizing problems, taking into account the direction of disagreement, was examined in a community sample of 133 young adolescents and their mothers. Two-thirds to three-quarters of adolescents reported more problems than mothers. Accounting for the direction of discrepancies resulted in improved agreement between adolescents and mothers and differing patterns of predictors of discrepancies. Additionally, the results demonstrate the need to control for relations between adolescent-reported problems and discrepancies when exploring predictors of discrepancies.

Keywords Adolescent-mother agreement · Internalizing problems · Externalizing problems

Investigations of agreement between child and parent reports of child emotional and behavior problems show that children and their parents often do not agree about the number or severity of problems children display (e.g., Achenbach et al., 1987; Seiffge-Krenki and Kollmar, 1998; Waters et al., 2003). Understanding the nature of these discrepancies has important implications for help-seeking and intervention, and ultimately the well-being of the child, because, for example, parents are more likely to seek help for their children than children are for themselves (Berger et al., 2005; De Los Reyes and Kazdin, 2005). Understanding informant disagreement also has implications for research on childhood disorders because different samples of children will be identified as having problems depending on the reporter. Indeed, it is sometimes found that children report more problems than parents and vice versa (Kazdin, 1994). Although it has been acknowledged that the direction of discrepancies warrants attention when congruence between adolescent and parent reports is examined (Holmbeck et al., 2002), this issue has received limited attention in the

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literature. In the current study, we address this gap in the literature by examining agreement between adolescent and maternal reports of problems in a community sample of young adolescents and their mothers. Our first goal was to determine whether the direction of discrepancies between adolescent and maternal reports of problems biased agreement indices. Our second goal was to assess whether factors associated with discrepancies were influenced by the direction of discrepancies.

Agreement in order

The Pearson correlation coefficient is the most commonly used statistic to assess agreement between child and parent reports of child problems. It provides information about the order or relative standing of scores from two informants (Kazdin, 1994). Achenbach et al.'s (1987) meta-analysis of 119 studies showed that the average correlation between child and parent reports of problems was .25. Correlations were greater for younger children (6 to 11 years) compared to adolescents (12 to 19 years) and were greater for externalizing problems compared to internalizing problems. Others have since reported correlations between child and parent reports of child problems ranging from the .20 s to the .60 s (e.g., Achenbach et al., 2002; Theunissen et al., 1998). Overall, the magnitude of correlations between adolescent and parent reports of adolescent problems in community and clinical samples are low to moderate at best.

Agreement in means

Although correlations between child and parent reports of problems lend insight into the relative correspondence among dyads, correlations do not provide information about the magnitude or direction of the differences between child-parent dyads. Hence, mean differences have been examined to capture the magnitude of child-parent differences in reports of child problems. Here, the picture becomes even more complicated. Studies of community samples show that, on average, adolescents report *more* problems than their parents, whereas studies of clinical samples show that, on average, adolescents report *fewer* problems than their parents (e.g., Stanger and Lewis, 1993; Thurber and Osborn, 1993; Thurber and Snow, 1990; Waters et al., 2003). For example, in a community sample Verhulst and van der Ende (1992) found that adolescents' Youth Self Report (YSR; Achenbach, 1991a) scores were much higher than parents' Child Behavior Checklist (CBCL; Achenbach, 1991a) scores. The YSR and CBCL were developed to be comparable and to be used as parts of a multiaxial assessment to identify problem behaviors (Achenbach, 1991a). Discrepancies were larger for externalizing problems, for girls, and for older adolescents. Likewise, Seiffge-Krenki and Kollmar (1998) found that adolescents reported more externalizing, internalizing, and total problems than mothers and fathers in their community sample. Conversely, in a large sample of adolescents (ages 12 to 16) referred for mental health treatment, Rey et al. (1992) found that adolescents had lower mean scores than their parents on 81% of externalizing items and 40% of internalizing items. Handwerk et al. (1999) compared adolescent YSR self-report and parent CBCL reports of child internalizing and externalizing problems, in a sample of adolescents referred to a psychiatric hospital, youth home, or acute-care shelter for treatment. Results showed that mean YSR scores were, on average, 1 standard deviation lower than mean CBCL scores. Furthermore, 74% of parents' CBCL scores fell into the clinical range compared to only 28% of adolescents' YSR scores.

Considering that in community samples adolescents report more problems, on average, than their parents, whereas in clinical samples adolescents report fewer problems, on average, than their parents, a question that arises is whether, in any given community or clinical sample of adolescents and their parents, some adolescents report fewer problems and others report more problems than their parents. Youngstrom et al. (2000) found that the average difference between CBCL and YSR (CBCL-YSR) scores was $-.16$ ($SD = 8.70$) for externalizing problems and -1.32 ($SD = 7.15$) for internalizing problems in a community sample of adolescent males and their caregivers (mostly mothers). Likewise, Berg-Nielsen et al. (2003) found in a clinical sample of adolescents that difference scores, calculated as parent CBCL scores minus adolescent YSR scores, ranged from -30 to $+27$ for internalizing problems and -25 to $+31$ for externalizing problems. The average difference for internalizing was 1.13 ($SD = 11.86$) and for externalizing 1.85 ($SD = 12.35$). These results demonstrate that in both community and clinical samples of adolescents some adolescents do report fewer problems and others do report more problems than their parents.

When some adolescents report fewer problems compared to parent reports, and others in the same sample report more problems than parents, calculating correlations and testing mean differences between adolescent and parent reports for entire samples may mask individual differences and bias agreement indices. Heretofore, the possibility that agreement indices between parent and child reports of child problems may be biased by the direction of discrepancies has not been explored. Therefore, the first goal of this study was to address this gap in the literature. To do so we calculated order and mean agreement indices for the entire sample and contrasted them with agreement indices calculated separately for

adolescent-mother dyads where adolescents reported fewer problems than mothers and dyads where adolescents reported more problems than mothers.

Why do adolescents and parents disagree in order and means?

The extent to which parents and children disagree about child problems appears to vary as a function of the problem being assessed (e.g., externalizing versus internalizing problems), the age of the child, gender, and sample characteristics (e.g., community vs. clinical). Other factors related to agreement levels include parental attributions about child behavior and parent-child relationship characteristics (Holmbeck et al., 2002; Kazdin, 1994). This literature is not extensive, however, and findings are not always consistent. Therefore, replication is warranted (Kazdin, 1994). Furthermore, the pattern of relations between explanatory factors and discrepancies may vary depending on the direction of disagreement, a possibility that has not been examined. In the current study, our second aim was to replicate previous findings on factors associated with adolescent-parent discrepancies and to determine whether the patterns of association differ depending on the direction of the discrepancy.

Parental attributions about child behavior

Parents make assumptions about the controllability of their child's behavior, and attribute affective and behavioral responses of their child to causes that are more or less internal (i.e., the child) or external (i.e., the context) (Bugental and Happaney, 2002). Discrepancies between child and parent reports of problems may reflect, in part, parental attributions of the causes of child problems (De Los Reyes and Kazdin, 2005). Parental attributions about child behavior are influenced by child characteristics, including gender, age, and personality, and parental characteristics, such as mood states (Bugental and Happaney, 2002; De Los Reyes and Kazdin, 2005). For example, if a parent views their child's temperament or personality to be difficult, then the parent may be more likely to generalize this perception across situations and report more problems in the child. Alternatively, if a parent views the child's temperament positively, the parent may well view the child's behavior positively. In the current study, we explore how maternal impressions of adolescent effortful control, a dimension of temperament that allows individuals to better regulate emotions and behaviors, relate to discrepancies. Adolescent self-reports of poor behavioral control are related to self-reports of externalizing problems (Stice and Gonzales, 1998). Mothers of adolescents low in effortful control may likewise view their adolescents as lacking regulatory skills. If mothers generalize this perception across situations they may report more problems than their adolescents, which in turn may be related to discrepancies.

Negative parental mood states may also influence attributions about child behavior (Bugental and Happaney, 2002). For example, maternal depressive affect, a negative mood state related to reports of child problems, may trigger or prime negative attributions about child behavior (Bugental and Happaney, 2002; De Los Reyes and Kazdin, 2005). Youngstrom et al. (2000) found that caregiver depression and stress were related to greater discrepancies between caregiver and adolescent reports of problems, and Berg-Nielsen et al. (2003) showed that maternal depression predicted greater discrepancies between adolescent and mother reports of problems; mothers with increased levels of depression tended to report more problems for the adolescents than adolescents reported for themselves. As with parental perceptions of child temperament, maternal psychological functioning may color perceptions of child behavior and thus contribute to discrepancies via elevated maternal reports of adolescent problems. In the current study, we explore how maternal depressive symptoms relate to discrepancies.

Parent-child relationship quality

Discrepancies between adolescent and parent reports of problems may also arise if parent-adolescent relationships are emotionally distant, or if their communication patterns are characterized by negative interactions. As adolescents push for greater autonomy, changes in established interaction patterns may contribute to emotional disruption and conflict and thus communication about problems (Collins et al., 1997). Stattin and Kerr (2000), Kerr and Stattin (2000) and others (e.g., Marshall et al., 2005) have shown that much of the knowledge parents have about their adolescents' activities and behaviors comes from adolescents' open disclosure of information to parents. If relationships are strained, adolescents may not be willing to share information with parents. Berger and colleagues (2005) showed that an insecure-preoccupied attachment style predicted greater discrepancies between adolescent-mother and adolescent-father reports of internalizing and externalizing problems. Moreover, negative mother-adolescent communication is related to larger discrepancies between maternal and adolescent reports of adolescent stress. Hartos and Power (1997) showed that negative mother-adolescent communication, as reported by 9th grade adolescents, was related to larger discrepancies between mother and adolescent reports of adolescent stress. These findings suggest that the quality of the adolescent-parent relationship may affect how information about adolescent problems is communicated, which in turn may affect adolescent and parent reports of adolescent problems, and thus give rise to discrepancies. Therefore,

in the current study we examined the role of adolescents' perceptions of two domains of their relationship with their mothers, attachment security and conflict, in determining discrepancies between adolescent and maternal reports of problems.

To clearly identify factors associated with discrepancies between parent and adolescent reports of problems, it might be necessary to control the number of problems reported by adolescents and/or mothers to ensure that explanatory variables are related to disagreement among reporters and not simply the level of problems reported by one respondent. It is possible that relations between explanatory factors and discrepancies result from their associations with adolescent-reported or mother-reported problem behaviors in general. Dyads with larger discrepancies have either adolescents or mothers who reported a relatively large number of problems. If one set of respondents generally reports more problems, then large discrepancies would be related to those respondents' problem behavior scores. In the current study, we explored the possibility that discrepancies would be related to adolescent- or mother-reported problems to disentangle relations between explanatory variables and adolescent-mother discrepancies.

The current study

To summarize, our first goal was to explore the possibility that indices of agreement between adolescent and maternal reports of adolescent problems may be biased if the direction of the discrepancy between reporters is not taken into consideration. Therefore, in a community sample of young adolescents and their mothers we contrasted correlations between, and mean differences in, adolescent YSR and maternal CBCL reports of problems for the full sample with correlations and means for adolescent-mother dyads where adolescents report fewer problems than mothers and for dyads where adolescents report more problems than mothers. Our second goal was to identify predictors of discrepancies for the full sample and then to determine whether the same patterns of association held when taking into account the direction of the discrepancy, controlling for adolescent- or mother-reported levels of problems, where needed. We expected that for the full sample, correlations between adolescent and maternal reports would be low to moderate in magnitude and that adolescents would report more problems than mothers. Maternal impressions of adolescent low effortful control, maternal depressive symptoms, insecure attachment, and negative mother-adolescent communication were expected to be associated with greater absolute discrepancies between adolescent and mother reports of problems. It was unclear how the direction of discrepancies would influence this pattern of results. Gender was included in the models because of well-established gender differences in rates of problems in early adolescence (Cole et al., 2002; Galambos et al., 2003).

Method

Participants

A total of 133 European American firstborn adolescents and their mothers provided data. Adolescents averaged 13.84 years of age ($SD = .24$). Seventy-eight were boys (59%), and 55 were girls (41%). Mothers averaged 45.40 years of age ($SD = 4.88$). At the time of the study, 83% of mothers were married to their child's father, and 7% were married to someone other than their child's father. Families were of middle to upper socioeconomic status (SES; Hollingshead, 1975, *Four-Factor Index of Social Status*; see Bornstein et al., 2003) with a mean of 55.81 ($SD = 8.83$). In terms of highest level of education completed, 38% of mothers completed a standard four-year college degree, and 40% started or completed a graduate or professional degree. Eighty percent of mothers were employed and worked an average of 35 h per week ($SD = 13.21$). Active informed consent and assent procedures were followed.

Adolescent and maternal reports of adolescent problem behaviors

The *Youth Self Report* (YSR; Achenbach, 1991b) and the *Child Behavior Checklist* (CBCL; Achenbach, 1991c) are widely used measures of child psychopathology. The YSR, the self-report version used with 11- to 18-year-olds, was completed by the adolescents, and the CBCL was completed by the mother. Both the YSR and CBCL contain 119 items, 103 of which match (16 items on the CBCL were replaced with social desirability items on the YSR because they were deemed inappropriate for adolescents). Respondents are asked to report, either now or within the past 6 months, how often they (or their child) had the problem stated. Each item is rated as: 0 = *not true*, 1 = *somewhat or sometimes true*, or 2 = *very true or often true*. Both the YSR and the CBCL yield three summary scales, internalizing problems, externalizing problems, and total problem behaviors. The scales on the YSR and CBCL are similar, but do not include exactly the same set of items. To compare means on the YSR and CBCL, scales were created using only the comparable items in the two. YSR summary scale alphas in our sample of adolescents were .91, .87, and .95 for internalizing, externalizing, and total problems, respectively. Alphas in our sample of mothers were .84, .88, and .93 for CBCL internalizing, externalizing, and total problem summary scales, respectively.

Predictors of discrepancies

Maternal report of adolescent temperament

The parent-report version of the *Early Adolescent Temperament Questionnaire—Revised* (EATQ-R; Ellis and Rothbart, 2001) was used to measure maternal impressions of adolescent temperament. The revised version, like the original *Early Adolescent Temperament Questionnaire* (Capaldi and Rothbart, 1992), focuses on aspects of temperament, including emotionality and reactivity, related to self-regulation in early adolescence. In the current study, the *Effortful Control* subscale was used. Temperament characteristics associated with effortful control allow an individual to better regulate emotions and behavior. Following the factor analysis by Ellis and Rothbart (2001), principal component analyses were employed to derive the *Effortful Control* factor, estimated as the principal component of three subscales (attention, activation control, and inhibitory control), accounting for 75.8% of their total variance. This subscale was chosen over others (e.g., negative affectivity) to avoid overlapping with similar items on the YSR and CBCL (e.g., items tapping depressed and anxious mood and aggressive behavior). Factor scores were used in the analyses. Internal consistency (α) in our sample of mothers was .91.

Maternal depressive symptoms

The *Center of Epidemiological Studies Depression Scale* (CES-D; Radloff, 1977) was used to measure maternal depressive symptoms. The CES-D is a 20-item self-report instrument that measures depressive symptoms within the past week. Items are rated on a scale from 0 = *Rarely or none of the time (less than 1 day)* to 3 = *Most or all of the time (5–7 days)*. The total CES-D scale is computed as the sum of the 20 items. Internal consistency (α) in our sample of mothers was .90.

Adolescent report of mother-adolescent negative communication

The *Conflict Behavior Questionnaire* (CBQ; Prinz et al., 1979; Robin and Foster, 1989) measures perceived conflict and negative communication between parents and adolescents. Specifically, the 16-item adolescent version of the *Perceptions of Interactions with Mother* subscale was used. Items are scored as either *true* or *false*. A total score was calculated with higher scores indicating greater levels of negative communication between adolescents and their mothers. Internal consistency (α) in our sample of adolescents was .79.

Adolescent report of attachment security in relationship with mother

The *Kerns' Security Scale* (Kerns et al., 1996) is a self-report measure of parent-child relationships that is based on attachment theory. The scale is designed to tap children's perceptions of a particular attachment relationship, in this case attachment to mother. The items reflect security aspects of attachment, tapping the child's belief that their mother is responsive, available, open to communication, and a reliable source of help. The 15 items are presented as two contrasting statements (e.g., "Some kids find it easy to trust their mom, but, other kids are not sure if they can trust their mom"). The adolescent chooses the statement that is more like him or her and then chooses either *sort of true for me* or *really true for me*. Responses are scored from 1 to 4, and a single mean score is calculated with higher score indicating greater feelings of security. Internal consistency (α) in our sample of adolescents was .87.

Data analytic plan

To address the question of whether agreement indices are biased by the direction of discrepancies, we:

1. Calculated correlations between, and assessed mean differences in, adolescent and maternal reports of problems for the full sample;
2. Examined discrepancy scores (adolescent YSR scores minus maternal CBCL scores) to determine the percentage of adolescents who reported fewer problems than mothers and the percentage of adolescents who reported more problems than mothers;
3. Calculated correlations between, and assessed mean differences in, adolescent and maternal reports of problems separately for dyads where adolescents reported fewer problems than mothers, and for dyads where adolescents reported more problems than mothers. Contrasting these results against the results from Step 1 allowed us to determine whether the direction of the discrepancy biased agreement indices.

To identify predictors of discrepancies and to determine whether the same patterns of association held when taking into account the direction of the discrepancies, we:

4. Computed the absolute discrepancy scores between adolescent and maternal reports of problems. For the full sample we calculated correlations of the absolute discrepancy scores with each YSR and CBCL summary scale to assess whether adolescent and/or mother reports of problems should be controlled in subsequent analyses;
5. Conducted regression analyses for the full sample predicting absolute discrepancy scores to assess independent

effects of explanatory factors and gender, controlling for adolescent-reported or mother-reported problems as determined in Step 4;
6. Computed correlations between explanatory factors and absolute discrepancy scores separately for dyads where adolescents reported fewer problems than mothers and for dyads where adolescents reported more problems than mothers (controlling for adolescent-reported or mother-reported problems as needed) to determine if the pattern of explanatory factors associated with discrepancies was the same when the direction of the discrepancies was taken into consideration.

Results

Preliminary analyses

Prior to data analysis, univariate distributions of all variables were examined for normalcy, homogeneity of variance, and outliers; transformations were applied to resolve problems (Tabachnick and Fidell, 1996). YSR summary scales, absolute discrepancy scores between YSR and CBCL scores, and mother-adolescent negative communication were re-expressed using square root transformations. Summary scales for the CBCL were re-expressed using cube root transformations. Maternal depressive symptoms were re-expressed using a $\log_{10}$ transformation. Analyses were conducted on the transformed data; for clarity, however, all descriptive statistics are presented in original metrics. Concerns about the independence of scores have been raised when discrepancy scores (i.e., difference scores) are calculated from reports provided by the same individual at two or more time points (e.g., Cronbach and Furby, 1970). The issue of independence is less of a concern in studies of informant agreement (in which discrepancy scores are commonly calculated) because discrepancy scores are calculated from independent reporters (Carlton-Ford et al., 1991; Holmbeck et al., 2002).

Order and mean adolescent-mother agreement

Full sample analyses

Before it could be determined whether the direction of discrepancy biased agreement indices, it was necessary to examine order and mean agreement between adolescents and mothers for the full sample (see Table 1). Adolescent and maternal scores were correlated significantly and positively for all three summary scales: The magnitudes of the correlations were low to moderate. Paired *t*-tests of average YSR and CBCL scores showed that adolescents reported more problems than mothers for each of the three summary scales.

Subgroup analyses

To determine the proportion of adolescents who reported more problems than their mothers and the proportion of adolescents who reported fewer problems than their mothers, discrepancy scores were calculated (adolescent YSR scores minus maternal CBCL scores). Discrepancy scores ranged from -16 to $+29$ for internalizing problems, -23 to $+27$ for externalizing problems, and -50 to $+100$ for total problems. An examination of the discrepancy scores revealed that 66%, 68%, and 74% of adolescents in the sample reported more internalizing, externalizing, and total problems, respectively, than their mothers (i.e., discrepancy scores were greater than zero). The proportions of adolescents reporting fewer internalizing, externalizing, and total problems than mothers were 27%, 30%, and 26%, respectively (i.e., discrepancy scores were less than zero). Perfect agreement was found for nine adolescent-mother dyads (7%) on internalizing problems and three adolescent-mother dyads (2%) on externalizing problems (i.e., the discrepancy score was equal to zero because the adolescents and mothers had the same summary scale scores). No mother-adolescent dyads had the same total problems scores.

Correlations between adolescent YSR and mother CBCL scores were re-computed separately for the two adolescent-mother agreement subgroups: (1) dyads where adolescents reported fewer problems than mothers, and (2) dyads where adolescents reported more problems than mothers (see Table 1). Correlations between adolescent YSR and mother CBCL scores for the first group were positive and very high; in the second group, correlations were positive and moderately high. Paired *t*-tests of mean level differences revealed that, for dyads where adolescents reported fewer problems than mothers, mean YSR internalizing and externalizing problem scores were not significantly different from mean CBCL scores. Mean YSR total problem scores were significantly lower than mean CBCL total problem scores. Tests of mean level differences in problem scores for dyads where adolescents reported more problems than mothers showed that adolescents reported significantly more internalizing, externalizing, and total problems compared to mothers.

Explaining adolescent-mother discrepancy scores

To explore whether factors associated with discrepancies were influenced by the direction of discrepancies, regression analyses predicting the absolute magnitude of discrepancies between adolescent and maternal reports were conducted for the full sample. Then, partial correlation analyses between absolute discrepancies and possible explanatory factors were conducted separately for each subgroup. Absolute discrepancy scores for the full sample were computed for internalizing, externalizing, and total problems (absolute value of

Table 1 Correlations, descriptive statistics, and comparisons between adolescent YSR and maternal CBCL scores for the full sample and separately by adolescent-mother dyads where adolescent scores were lower and dyads where adolescent scores were higher than maternal scores

	r ($N-2$)	Adolescents M (SD)	Mothers M (SD)	t ($N-1$)	N
Full sample					
Internalizing	.34**	10.82 (8.26)	6.75 (5.42)	12.91**	132
Externalizing	.20*	10.85 (6.69)	6.75 (6.12)	14.55**	133
Total	.23**	37.68 (22.08)	22.09 (16.22)	21.14**	133
Adolescent scores lower than mother scores					
Internalizing	.82**	5.23 (5.12)	10.21 (5.69)	.31	36
Externalizing	.83**	5.93 (5.21)	11.74 (7.28)	.86	40
Total	.81**	19.04 (15.25)	33.69 (19.31)	5.41**	35
Adolescent scores higher that mother scores					
Internalizing	.59**	13.80 (8.10)	5.56 (4.83)	21.43**	87
Externalizing	.59**	13.30 (5.94)	4.66 (4.00)	29.73**	90
Total	.51**	44.33 (20.30)	17.95 (12.70)	32.31**	98

Note. $n = 9$ adolescent-mother dyads agreed on the level of internalizing, and $n = 3$ dyads agreed on the level of externalizing problems; therefore, these participants were not included in subsample analyses.

*$p < .05$. **$p < .01$.

the adolescent YSR score minus the mother CBCL score). A value of zero indicated perfect agreement, and a high positive value indicated a high degree of disagreement. Means for the absolute discrepancy scores were $M = 6.79$ ($SD = 5.86$) for internalizing problems; $M = 7.59$ ($SD = 4.85$) for externalizing problems; and $M = 23.30$ ($SD = 16.27$) for total problems. The mean for the maternal report of adolescent effortful control factor score was $M = .00$ ($SD = 1.00$). Average maternal depressive symptoms were low ($M = 8.25$, $SD = 8.14$, possible range 0 to 60), negative mother-adolescent communication was low ($M = 3.72$, $SD = 3.84$, possible range 0 to 16), and attachment security was strong ($M = 3.16$, $SD = .45$, possible range 0 to 4). Maternal report of adolescent effortful control factor scores were correlated significantly with negative mother-adolescent communication ($r = -.41$, $p < .05$) and attachment security ($r = .41, p < .05$) and negative mother-adolescent communication and attachment security were correlated significantly ($r = -.57. p < .05$). Maternal depressive symptoms were not related significantly to the other predictor variables.

Correlations of absolute discrepancy scores with YSR and CBCL summary scales are presented in Table 2. A positive correlation with an absolute discrepancy score indicates that higher scores were associated with a greater discrepancy between adolescent and maternal reports of problems. In general, absolute discrepancy scores were related to adolescent YSR scores, but not to maternal CBCL scores. Greater discrepancies between adolescent and maternal scores were associated with more internalizing, externalizing, and total problems as reported by the adolescent.

Regression analyses for the full sample

To test the independent effects of predictors of discrepancies, separate regression analyses predicting absolute discrepancies between adolescent and mother reports of internalizing, externalizing, and total problems were conducted, controlling for the effects of adolescent-reported problems (see Table 3). Grand-mean centered scores were used in all analyses to aid the interpretation of results (Cohen et al., 2003).

Table 2 Correlations of YSR and CBCL with absolute discrepancy scores for internalizing, externalizing, and total problems

	Absolute discrepancy internalizing	Absolute discrepancy externalizing	Absolute discrepancy total problems
YSR Internalizing	.63**	.36**	.63**
YSR Externalizing	.34**	.61**	.51**
YSR Total	.56**	.50**	.64**
CBCL Internalizing	.05	.03	.01
CBCL Externalizing	–.10	.03	–.15
CBCL Total	–.04	.05	–.07

Note. $n = 132$ to 133.

**$p < .01$.

Table 3 Multiple regression analyses testing predictors of absolute discrepancies between adolescent and mother scores for internalizing, externalizing, and total problems, full sample

	β		
	Absolute discrepancy internalizing	Absolute discrepancy externalizing	Absolute discrepancy total problems
Adolescent report of problems (YSR)	.59**	.61**	.66**
Gender	–.09	–.06	–.07
Maternal report of adolescent effortful control	.02	.14†	.19*
Maternal depressive symptoms	–.06	–.01	–.05
Adolescent report of negative mother-adolescent communication	.09	.20*	.13
Adolescent report of secure attachment to mother	–.03	–.10	.03
Total R^2	.39	.50	.46

Note. $N = 120$

†$p < .10$. *$p < .05$. **$p < .01$.

Only the covariate YSR internalizing was significantly related to the absolute discrepancy in internalizing problems. For the absolute discrepancy in externalizing problems, higher YSR externalizing scores and elevated negative communication were related to a greater absolute discrepancy in adolescent and maternal reports of externalizing problems. For total problems, greater YSR total problem scores and greater effortful control as reported by mothers were related to greater discrepancies between adolescent and maternal reports of problems.

Correlational analyses separately for adolescent-mother agreement subgroups

Due to small sample sizes for adolescent-mother dyads where adolescents reported fewer problems than their mothers ($n = 35$ to 40), regression analyses could not be conducted separately for the subgroups. Therefore, zero-order correlations were computed between absolute discrepancies and gender, maternal reports of adolescent effortful control, maternal depressive symptoms, adolescent reports of conflicted mother-adolescent communication and attachment security, separately for the adolescent-mother agreement subgroups for internalizing, externalizing, and total problems (see Table 4).

Among adolescent-mother dyads where adolescents reported fewer problems than mothers, gender, greater effortful control, negative communication, and attachment security were all related to discrepancies for externalizing problems. For males and when negative communication with mothers was elevated, absolute discrepancies for externalizing problems were larger. When mothers rated their

Table 4 Correlations of absolute discrepancies for internalizing, externalizing, and total problems with predictors for the subgroups

	r					
	Adolescent scores lower than mother scores			Adolescent scores higher than mother scores		
	Internalizing	Externalizing	Total	Internalizing	Externalizing	Total
Adolescent report of problems (YSR)	–.13	.21	.10	.80**	.74**	.77*
Gender[a]	–.29†	.34*	.13	–.02/.09[b]	–.20†/ –.28[b]*	–.20*/ –.20[b]†
Maternal report of adolescent effortful control	–.28	–.44**	–.31†	–.01/.21[b]†	–.07/.44[b]**	.05/.52[b]**
Maternal depressive symptoms	.11	.08	.05	.03/ –.17[b]	.09/ –.01[b]	.00/ –.17[b]
Adolescent report of negative mother adolescent communication	.17	.36*	.28	.12/.02[b]	.42**/.11[b]	.21*/ –.05[b]
Adolescent report of secure attachment to mother	–.20	–.35*	–.17	–.13/ –.09[b]	–.33**/ –.12[b]	–.14/.12[b]

Note. n for adolescent scores lower groups = 34 to 40. n for adolescent scores higher groups = 78 to 97.

[a]Point-biserial correlations.

[b]Partial correlation coefficients controlling for the matching YSR problem behavior scale.

†$p < .10$. *$p < .05$. **$p < .01$.

adolescents higher in effortful control and when adolescents indicated greater attachment security to mothers, discrepancies for externalizing problems were smaller. There were non-significant trends for associations between narrowed discrepancies and male gender and greater effortful control for internalizing and total problems, respectively. None of the other variables was related to discrepancies for internalizing or total problems.

For adolescent-mother dyads where adolescents reported more problems than mothers, zero-order correlations were tested first, followed by partial correlations controlling for the significant associations between adolescent reported problems (YSR scores) and absolute discrepancies (see Table 3). That is, the partial correlations tested the independent relations between explanatory factors and discrepancies. Male gender was related to smaller discrepancies in externalizing, controlling for YSR scores, but not to discrepancies in internalizing problems. After controlling for YSR scores, maternal reports of adolescent effortful control were related to greater discrepancies in externalizing and total problems. Discrepancies were larger when mothers reported greater effortful control. Significant associations of negative communication and attachment security with discrepancies for externalizing problems attenuated to non-significance when YSR scores were controlled.

Discussion

The overarching goal of the current study was to better understand discrepancies between adolescent and maternal reports of adolescent problems. First, we explored how the direction of discrepancies affects agreement indices (order and mean). Second, we examined patterns of association between explanatory factors and discrepancies, and how the direction of discrepancies affects these relations. Understanding adolescent-mother disagreement about problems has implications for research and practice aimed at identifying adolescents with problems and factors associated with the development of problems.

Assessing the direction of discrepancies

To address our first goal of exploring how the direction of the discrepancies might affect agreement indices, we compared correlations and mean differences between adolescent YSR and maternal CBCL reports of internalizing, externalizing, and total problems for the full sample with correlations and mean differences for adolescent-mother dyads where adolescents reported fewer problems than mothers and dyads where adolescents reported more problems with mothers. Correlations between YSR and CBCL scores for the full sample were low to moderate. Tests of mean agreement showed that, on average, adolescents reported more internalizing, externalizing, and total problems than mothers. These findings correspond to those from other studies documenting discrepancies between adolescent and parent reports of adolescent problems in community samples (e.g., Achenbach et al., 1987; Achenbach et al., 2002) and serve as a starting point for determining whether the direction of discrepancies biases agreement indices.

Exploring the direction of the discrepancies between adolescent and maternal reports of problems showed that two-thirds to three-quarters of adolescents in the current sample reported more problems than their mothers. Examining order agreement separately by adolescent-mother agreement subgroups indicated moderate to strong associations between adolescent and mother reports of problems. Furthermore, mean agreement was found for dyads where adolescents reported fewer internalizing and externalizing problems than mothers. In contrast, adolescent means were significantly higher for dyads where adolescents reported more problems than mothers. Examining order and mean agreement between adolescent and maternal reports of adolescent problems disregarding the direction of disagreement biased adolescent-mother agreement indices by deflating order agreement and inflating mean differences.

The bias created by ignoring the direction of disagreement between adolescent and maternal reports of problems may help to explain the range in correlations and differing patterns of mean agreement reported in previous studies (e.g., Frank et al., 2000; Thomas et al., 1990). Indices of agreement may be influenced by the ratio of adolescents with higher scores than parents to adolescents with lower scores than parents in a sample. This bias may lead to the conclusion that parents have only modest knowledge of their adolescents' problems. The current study showed that, although parents may misestimate the level of problems their adolescents have (poor mean agreement), relative agreement between adolescents and parents is better than previously thought: When the direction of discrepancies is taken into consideration, parents of adolescents who themselves report more problems tend also to rate their adolescents as having more problems (i.e., moderate to strong order agreement).

Other research corresponds to our finding that mean-level disagreement between adolescent and parent reports of problems may not reflect a total lack of understanding of adolescent problems on the part of parents. Cole et al. (2002) found in a longitudinal study of parents and their early adolescent children that, although adolescents reported more depressive symptoms on average than parents, adolescent and parental rates of change in adolescent depressive symptoms (across 3-year periods from 5th to 8th grade) were similar. Parents perceived increases in adolescent depressive symptoms similar to increases reported by their adolescents. Likewise, Laird et al. (2003) found that

parents reported fewer delinquent behaviors on average for their adolescents compared to adolescent reports, but that decreases in adolescent reported parental knowledge of adolescent activities and whereabouts were associated with increases in parent reports of adolescent delinquent behavior from 9th to 12th grade. These results show that parents are aware, to some extent, of their adolescents' problems, and that lack of agreement in means on checklists assessing adolescent problems may not necessarily reflect a complete lack of awareness about adolescent problems.

Predictors of discrepancies

The second goal of the study was to assess factors that contribute to better or worse order agreement between adolescents and mothers about adolescent problems, and to determine whether the direction of discrepancies affected these patterns of association. Results for the full sample showed that only adolescent-reported internalizing problems (YSR scores) were related to absolute adolescent-mother discrepancy in internalizing problem reports. When adolescents reported more problems, discrepancies between adolescent and mother scores were larger. YSR externalizing scores and adolescent-reported negative communication were both related to adolescent-mother discrepancies in externalizing problem reports. Higher YSR scores and elevated negative communication were related to greater discrepancies. For total problems, higher YSR scores and maternal reports of less effortful control were related to greater discrepancies. Gender, maternal depressive symptoms, and attachment security were not related to discrepancies for any of the problem scales.

Examining predictors of discrepancies separately for adolescent-mother dyads where adolescents reported fewer problems than mothers, and for dyads where adolescents reported more problems than mothers, further demonstrated the need to consider the direction of discrepancies between adolescent and maternal reports of adolescent problems. First, when adolescents' externalizing scores were lower than mothers' scores, male gender was associated with *greater* discrepancies. When adolescents' externalizing scores were higher than mothers' scores, male gender was associated with *narrowed* discrepancies. In studies of agreement where the direction of discrepancies has not been taken into account, gender is inconsistently related to discrepancies (De Los Reyes and Kazdin, 2005). As noted by Frank et al. (2000), who found that parents of adolescent inpatients tended to report more delinquent behaviors for boys, gender stereotypes may influence parents' reports of adolescent problems. On average, adolescent boys tend to engage in more risk and problem behaviors than do adolescent girls, especially in early adolescence (Galambos, 2004). Consequently, parental attributions may reflect expectations for boys to exhibit these types of behaviors more than girls (Bugental and Happaney, 2002).

Further demonstration of the need to consider the direction of discrepancies was found when maternal reports of adolescent effortful control were considered. When adolescents' scores were lower than mothers' scores, maternal reports of lower adolescent effortful control were associated with *greater* discrepancies for externalizing. In contrast, when adolescents' scores were higher than mothers' scores, lower effortful control was associated with *narrowed* discrepancies for externalizing. These findings correspond to the *Attribution Bias Context Model* (De Los Reyes and Kazdin, 2005) proposition that attributions made by mothers who consider their adolescents to have difficult temperaments (i.e., low effortful control) may contribute to elevated maternal reports of adolescent problems (i.e., greater discrepancies when adolescents' scores are lower than maternal scores and narrowed discrepancies when adolescents' scores are higher than maternal scores). Temperamental characteristics associated with effortful control allow an individual to better regulate emotions and behaviors, a hallmark of psychological maturity (Galambos and Costigan, 2003). Parents of adolescents low in effortful control may view their adolescents as lacking some of the necessary skills to regulate emotions and behaviors. For example, parents of children who demonstrated lack of control at ages 3 and 5 reported that their child had more internalizing and externalizing problems in early adolescence (Caspi et al., 1995). When adolescents' scores are lower than mothers' scores, mothers may be generalizing their attributions across situations, perceiving more problems than their adolescents' perceive. When adolescents' scores are higher than mothers' scores, it may be that mothers are more attuned to potential problems associated with low effortful control.

Contrary to previous research and theory, which has shown that maternal affect may color attributions about child behavior (Bugental and Happaney, 2002) and that depressive symptoms are related to greater discrepancies between adolescents and maternal reports of problems (e.g., Berg-Nielson et al., 2003; Youngstrom et al., 2000), the results from the current study did not support this finding. Maternal depressive symptoms were not related to discrepancies for any of the three problem scales, regardless of the direction of discrepancies. The lack of replication may be due, in part, to relatively low levels of maternal depressive symptoms in the current study.

An additional goal of the current study was to explore the possibility that relations between explanatory factors and adolescent-parent discrepancies may be influenced by associations with adolescent problem behavior in general. Because discrepancy scores were correlated with adolescent reports of problems, it was important to distinguish between factors associated only with adolescent reported problems

and those associated with discrepancies between adolescent and parent reports. The associations between maternal reports of adolescent effortful control and discrepancies were significant only after controlling adolescent reported levels of problems (for dyads where adolescents reported more problems than mothers). After removing the variance in discrepancy scores accounted for by YSR scores, maternal reports of effortful control were related to absolute discrepancies such that maternal reports of low adolescent effortful control contributed to smaller discrepancies between adolescent and maternal reports of problems. Conversely, when the association between YSR scores and absolute discrepancies was removed, we found that significant associations between adolescent reported mother-adolescent negative communication and discrepancies for externalizing and total problems, and attachment security and discrepancies for externalizing problems (for dyads where adolescents reported more problems), attenuated to non-significance. The finding that adolescent-mother relationship variables were not associated with discrepancies independent of adolescent reported problems indicates that adolescents who viewed communication with their mothers as characterized by negative interactions, and who were less secure in their attachment to their mothers, also reported more problems. That is, relationship quality variables contributed to greater adolescent-reported problems, rather than to the discrepancy between adolescent and maternal reports of problems.

Limitations and future directions

A limitation of the current study was the small sample size, which precluded more powerful tests of correlates of discrepancies. With a larger sample the adolescent-mother agreement subgroups would likely have been larger and regression models, rather than partial correlations, could have been used to examine correlates of discrepancies separately by group. Furthermore, with a larger sample, additional discrepancy groups could have been created. Groups based on discrepancy scores at the extremes of the distributions could be compared to groups where the discrepancies are smaller in magnitude. Testing such gradients of discrepancies may reveal differences that have implications for better understanding adolescent problems.

An additional limitation of the current study was that the sample consisted only of European American firstborn adolescents and their mothers. Factors related to discrepancies may differ depending on the make up of the dyad and the racial, ethnic, or cultural background of the participants. For example, results may differ for father-adolescent dyads or for adolescent-parent dyads with different birth order. Including in the sample other racial, ethnic, or cultural groups is also important because culture affects parental attributions about child behavior (Bugental and Happaney, 2002). Finally, having an additional reporter of adolescent problems, such as a peer, teacher, or counselor, would have allowed for additional tests of validity of the adolescent and maternal reports of problems.

Follow-up research could explore these issues in larger, more diverse community samples and in clinical samples with additional reporters to validate the adolescent and maternal reports. For example, research shows that adolescents tend to report fewer problems than parents in clinical samples (e.g., De Los Reyes and Kazdin, 2005; Frank et al., 2000). Would the pattern of results seen in the current study hold in a clinical sample, with a greater proportion of adolescents having lower scores than parents?

Strengths and conclusions

The current study contributes to the literature on parent-child agreement about problems by indicating that the direction of discrepancies, maternal attributions about adolescent temperament, mother-adolescent relationship quality, and the level of adolescent-reported problems all need to be considered when exploring discrepancies. It has been suggested that the direction of discrepancy is important (e.g., Ferdinand et al., 2004; Frank et al., 2000), and strategies for how to account for discrepancies when exploring divergent perspectives as correlates of objective outcomes have been outlined (Holmbeck et al., 2002). However, none has previously demonstrated how the direction of discrepancies biases indices of agreement.

As children enter adolescence, the issue of adolescent-parent agreement about problems assumes greater importance because rates of internalizing and externalizing problems increase (Cole et al., 2002; Galambos et al., 2003). Moreover, changes in parent-child relationships, such as increased negative affect associated with parent-child conflict (Collins and Laursen, 2004) and adolescents spending more time with peers (Brown, 2004), may disrupt communication about adolescent problems. The results of the current study demonstrate that accurately identifying and treating adolescents and their families may be aided by taking into account the direction of discrepancies and other factors related to parent and adolescent perceptions of adolescent problems.

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