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Depressive symptoms in mothers and daughters: Attachment style moderates reporter agreement

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Abstract

Parents and adolescents show only modest agreement when reporting on depressive symptoms. Drawing from attachment theory and previous research on informant discrepancies, we tested hypotheses about how adolescent attachment style may impact reporting agreement in a sample of 184 low-income mother-adolescent daughter dyads (adolescent mean age = 15.4 ($SD = 1.05$), maternal mean age = 41.4 ($SD = 7.60$); 58% Latina, 26% African-American/Black, 16% as non-Hispanic, White). Mothers and adolescents reported on their own and each others' depressive symptoms and adolescents reported on attachment style. Using a moderated Actor Partner Interdependence Model (APIM) to calculate reporter bias and accuracy estimates, we tested whether attachment style moderated maternal and adolescent accuracy in theoretically consistent ways. Mothers and adolescents showed similar levels of accuracy and bias when reporting on each other. Consistent with hypotheses, we found that adolescents who reported high levels of preoccupation were less accurate when reporting on their mothers because they tended to observe symptoms that their mothers did not endorse. Conversely, mothers were the most accurate in these dyads, potentially because preoccupied adolescents tend to elevate displays of emotional distress. Reporting accuracy was not affected by a dismissive style. These results add to literature indicating that parent-child reporting discrepancies often reflect meaningful information about relationships, and highlight the need to consider different sources of reporting bias and accuracy in assessment and treatment.

Keywords

reporting discrepancy; depressive symptoms; attachment style; APIM; mother-adolescent dyad

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Compliance with Ethical Standards

This study was conducted in compliance with the Institutional Review Board at the University of Connecticut, NIH requirements, and APA guidelines.

Ethical approval: All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed consent: Informed consent was obtained from all individual participants included in the study.

Parents and adolescents often see things differently. One area in which parents and adolescents tend to disagree is in reports of adolescent psychiatric symptoms, particularly when reporting on internalizing behaviors such as depressive symptoms. In a meta-analysis of over 300 studies, the overall correlation between parent and adolescent reports of internalizing behaviors was modest (mean $r = .26$; De los Reyes et al., 2015). Similar results have been found in various countries throughout the world (Rescorla et al., 2013).

Historically, disagreement between parents and children when reporting on the child's psychiatric symptoms has raised challenges for clinicians and researchers. Whose report should be considered accurate for assessment, diagnostic decisions, monitoring the course of symptoms, or treatment outcome research? More recently, differences in parents' and children's perspectives have been conceptualized as more than just a measurement or diagnostic challenge, but rather as reflecting potentially meaningful information. Research supporting this assumption has demonstrated that the degree of concordance between parents and adolescents when reporting on the same construct is systematically related to individual and relationship characteristics and has implications for subsequent adolescent adjustment and family functioning (for review, see De los Reyes, 2013). For example, past studies have found that adolescent attachment organization predicts the magnitude of reporter discrepancies between mothers and adolescents when reporting on relationship characteristics (e.g., Berger, Jodl, Allen, McElhaney & Kuperminc, 2005; Ehrlich, Cassidy & Dykas, 2011). The current study builds on these findings to examine if adolescent's self-reported attachment style predicts variations in agreement between mothers and daughters when reporting on their own and each other's depressive symptoms.

Most studies of symptom reporting discrepancies have focused on differences in how parents, teachers, or adolescents see the adolescent. In contrast, adolescents typically are not asked about parents' symptoms. There are several reasons why adolescents' reporting accuracy could differ from parents, including different family roles, efforts by parents to hide symptoms, and cognitive differences in egocentrism and perspective-taking. However, given limited research in this area, it is largely unknown how much findings about reporter agreement can be generalized to adolescents' views on their parents. The extent to which adolescents see their mothers as depressed, whether accurate or not, may influence the impact these symptoms have on the adolescent. Thus, research that includes both parents' and adolescents' views on each other can extend our understanding of reporting discrepancies, as well as depressive symptoms in the family context.

Researchers have used various analytical approaches in the study of reporter discrepancies, including difference scores, absolute difference scores, residual scores, and statistical interactions. Each of these approaches has strengths and limitations (see Laird & De los Reyes, 2013). The Actor-Partner Interdependence Model (APIM; Kenny, Kashy & Cook, 2006), a widely used method in dyadic social psychology literature, provides another method for examining agreement in symptom reports. Although not widely used in the clinical literature, a moderated APIM with post-hoc probing provides a strategy to test hypotheses about factors that systematically account for variation parent and adolescent symptom reporting agreement, as well as the magnitude of under- and over-reporting.

The APIM was initially conceptualized as a way to simultaneously estimate the effect of actors and partners on an outcome of interest while accounting for the dependence inherent to dyadic data (Kenny et al., 2006). The terms actor and partner designate which person's data are being used as predictors, such that actor effects reflect the potential influence of the reporter's characteristics (e.g., wives' depressive symptoms predicting their marital dissatisfaction) and partner effects reflect the influence of partner's characteristics (e.g., husbands' depressive symptoms predicting wives' marital dissatisfaction). When members of a dyad report about some characteristic in themselves and as perceived in their partner, actor and partner effects in the APIM can be conceptualized as *bias* and *accuracy*, respectively (Kenny & Acitelli, 2001). This model has been used to understand informant discrepancies on psychiatric symptoms between adolescents and peers (e.g., Swenson & Rose, 2009), but has not been widely applied to examine agreement in parent and adolescent symptom reports. In this paper, we use a moderated APIM as represented in Figure 1. As shown, predictor variables include mothers' and daughters' self-reports of their own depressive symptoms and outcomes are mothers' and daughters' reports of the other person's depressive symptoms. Actor effects reflect *bias* (i.e., how much a mother's self-reported depressive symptoms predict her report of her adolescent's depressive symptoms; labeled bias in Figure 1) while partner effects reflect *accuracy* (i.e., how much the adolescents' self-reported depressive symptoms predict maternal report of adolescent depressive symptoms; labeled accuracy in Figure 1).

Bias paths within the APIM reflect the tendency for individuals with certain characteristics to see their partner in a similar way in regards to that characteristic. In most dyadic studies of social perceptions, bias estimates are typically larger than accuracy estimates and are thought to reflect *assumed similarity* among relationship partners (Acitelli & Kenny, 2001; Swenson & Rose, 2009). Because both actor and partner self-reports are included simultaneously as predictors, *actual similarity* between partners is controlled for in estimated regression paths. In the proposed model, significant bias estimates indicate that individuals who endorse more depressive symptoms for themselves also tend to report more symptoms in their partner, regardless of what that partner reports. In the clinical literature, this tendency has been referred to as depression distortion (Richters, 1992), which holds that depressive symptoms lead to a negative bias in how social information is interpreted and remembered. Although initially conceptualized as reflecting mood-congruent memory, recent studies suggest multiple factors may contribute to depression distortion biases (see De los Reyes, 2013). Evidence of this type of bias has been demonstrated in several studies of mothers reporting on their children (e.g., Hood, 2009; Youngstrom, Loeber, Stouthamer-Loeber, 2000), and may be particularly evident when mothers report on their adolescent daughter (Gartstein, Bridgett, Dishion & Kaufman, 2009).

Accuracy estimates within the APIM reflect rank order agreement between self-reported symptoms and partner observed symptoms, controlling for biases (i.e., depression distortion or assumed similarity) that may inflate agreement in bivariate associations. Although use of the term accuracy might imply that only self-reports are correct, this estimate is consistent with the term agreement as conceptualized in the informant discrepancy literature where both partner's reports are considered valid, despite being different. Accuracy estimates may be influenced by individual and relational characteristics. Statistically, these are

characteristics that moderate partner effects within the model (Garcia, Kenny & Ledermann, 2015). For example, the extent to which a mother is accurate in reporting on her daughter's depressive symptoms will depend in part on how openly her daughter expresses these symptoms and how her mother interprets and remembers these symptoms. As a result, factors that influence how emotional distress is displayed within relationships or how signs of emotional distress in others are interpreted or remembered, such as attachment style, may systematically influence accuracy estimates. In the current study, we test whether attachment style moderates accuracy estimates when mothers and daughters are reporting on each other's symptoms (paths labeled mod1 and mod2 in Figure 1) in ways theoretically consistent with attachment theory. We focus on moderation of accuracy effects because these reflect agreement between partners in the dyad, whereas bias estimates only reflect within-person associations.

Influence of attachment style on observation and expression of depressive symptoms

In social psychology literature, attachment system behaviors are thought to reflect two underlying domains: attachment anxiety and attachment avoidance. In adolescents, these domains have also been referred to as attachment preoccupation and dismissiveness, respectively (Furman & Buhrmester, 2009). The domain approach to understanding attachment is different than categorical types often described in developmental literature (e.g., secure versus avoidant); however, these two approaches share many conceptual similarities (for discussion, see Fraley et al., 2015). In both approaches, attachment anxiety (preoccupation) involves ongoing concerns about potential abandonment and efforts to maintain closeness; attachment avoidance (dismissiveness) involves minimization of the importance of relationships and efforts to avoid intimacy. These domains manifest in differences in social information processing and emotion regulation within relationships.

According to attachment theory, attachment style impacts how the behaviors of an attachment figure are noticed, interpreted and remembered (Dykas & Cassidy, 2011; Mikulincer & Shaver, 2005). As a result, attachment style may influence an adolescent's accuracy when reporting on her mother's symptoms. Individuals who are preoccupied with an attachment figure are overly focused on that partner's behaviors because they fear relationship disruption; as a result, they often misread signals in negative ways (Fraley et al., 2006). Adolescents with a preoccupied relationship style may therefore interpret maternal behaviors that are normative or fleeting (e.g., crying one day) as symptoms of more serious depression. If so, these adolescents may be less accurate in reporting on their mother's depressive symptoms because they see depression even when it is not present. In contrast, individuals who are dismissive of attachment relationships attend less to their partner's behaviors. As a result, an adolescent who uses dismissive attachment strategies may not attend to or remember her mother's displays of emotional distress in order to reduce the impact of these displays on her own emotions (Niedenthal et al., 2002). Consequently, adolescents with a dismissive style may be less likely to observe or report maternal depressive symptoms, even if their mother is experiencing these symptoms.

Theoretically, attachment behaviors are also thought to reflect emotion-regulation strategies, including how open an individual is with her emotions and how she seeks and utilizes support from an attachment figure (Shaver & Mikulincer, 2007). As a result, attachment style may also influence how much an adolescent shows her depressive symptoms to her mother, which in turn could impact the level of agreement in their reports of adolescent symptoms. Adults high in attachment anxiety use hyperactivation strategies to ensure their emotional needs are met by an attachment figure (Maas, Laan & Vinherhoets, 2011). Reflecting this strategy, adolescents who report preoccupation with their maternal relationship may be more likely to emphasize their symptoms in order to get a response from their mother. Consequently, these mothers may be more accurate in reporting on their daughter's symptoms because their daughter makes her symptoms particularly evident.

In contrast, individuals with avoidant attachment style are believed to use deactivation strategies for emotion regulation (Pascuzzo, Cyr & Moss, 2013). That is, they try to dampen emotional distress and avoid showing emotional needs to an attachment figure. If used by adolescents, this type of emotion regulation strategy could have different effects on how accurate mothers are when reporting on their adolescents' depressive symptoms. First, because adolescents who report high dismissiveness are less likely to show signs of distress to others (e.g., Becker-Stoll et al., 2001), their mothers may be less aware of their adolescent's emotions. Alternatively, there is evidence that individuals categorized as having avoidant attachments based on interview measures of attachment representations report fewer symptoms but are seen by others as more symptomatic (Berger et al., 2005; Dozier & Lee, 1995). If a dismissive attachment style works in a similar way, maternal accuracy may be low in dyads in which adolescents report high dismissiveness, but disagreement would occur because mothers report more symptoms than adolescent. Finally, because individuals with dismissive attachment styles avoid emotional distress more generally, they may not acknowledge nor exhibit sad feelings (Shaver & Mikulincer, 2007). In this case, both mother and daughter reports of adolescent symptoms may be consistently low.

Drawing from a conceptual model of informant discrepancies and attachment theory, we used a moderated APIM to determine if mothers and adolescents show similar accuracy and bias and whether attachment style (preoccupied or dismissive relational style) moderates accuracy in a sample of 184 low-income mother-adolescent daughter dyads. We hypothesized that:

1. Actor (bias) and partner (accuracy) effects will be evident for both outcomes (mother's reports on their daughter; daughter's reports on their mother), with bias effects stronger than accuracy effects.
2. Accuracy effects will be moderated by adolescent attachment style in the following ways:
 - a. Adolescents who report greater preoccupation with the maternal relationship will be less accurate in estimates of maternal depressive symptoms because they overreport (i.e., they see symptoms in their mothers that may not be there). Adolescents who report greater dismissiveness with the maternal relationship will be less accurate in

estimates of maternal depressive symptoms because they under report (i.e., they do not see symptoms that their mother's experience).

- b. Mothers will be more accurate in their estimates of adolescent depressive symptoms when their daughter reports high preoccupation (i.e. greater accuracy because these adolescents show their symptoms more). Based on existing research, it is less clear how high dismissiveness would influence maternal accuracy.

Method

Participants and Procedures

Study participants included 184 adolescent girls and their biological mothers residing in a mid-sized, low-income city in the Northeast US. These families were participating in a larger NIH-funded study aimed at understanding the cultural and relational context of health disparities among adolescent girls. All adolescent girls entering 9th through 11th grade within the city were eligible for participation, with the average age at 15.2 years ($SD=1.05$; Range = 13–17). Caregivers ranged from 21 to 66 years ($M=41.6$, $SD=8.04$). Fifty-eight percent of adolescents identified as Latina (primarily Puerto Rican), 26% as African-American/Black, and 16% as non-Hispanic, White. In 27% of families, at least one parent was born outside the U.S., and another 18% were born in Puerto Rico. Thirty percent of homes included both biological parents at the time of participation. Educationally, 22% of mothers had not completed high school, 67% had a high school degree, and 11% had a bachelor's degree. The majority of adolescents (87%) qualified for free or reduced lunch at school. Racial/ethnic and socioeconomic characteristics of the sample are consistent with public data about the city and high school demographics.

Participants were recruited from city schools, community centers, health centers, YWCA, local media outlets, and word-of-mouth. Interviews were conducted in English and Spanish (20%) based on participant preference. When possible, measures were selected that have been validated with Spanish-speaking populations in previous studies. All measures were translated and backtranslated and then piloted with local residents in an iterative process, following recommendations by the World Health Organization. Mothers and daughters participated separately in a semi-structured interview and then completed survey instruments privately using Audio Computer Assisted Survey Instruments (ACASI) in their preferred language. Interviews took approximately 2 hours, and participants were paid \$40 each for their time. All procedures were approved by the University of Connecticut Institutional Review Board.

Measures

Demographic—Mothers provided detailed demographic information. Race/ethnicity, marital status, and an SES risk composite were tested as potential covariates because these factors have been related to depressive symptoms in women in previous studies. The SES composite was a count of three risk factors: low maternal education (no HS degree), receipt of public assistance housing, and receipt of free lunch.

Adolescent depressive symptoms—Adolescents completed the Major Depression subscale from the Adolescent Psychopathology Scale (APS; Reynolds, 1998), which has established psychometric properties. On the APS, the Major Depression subscale includes 13 items that evaluate depressive symptoms based on DSM IV criteria. The measure uses a 3-point scale with scores ranging from (1) *almost never* to (3) *nearly every day* over the last two weeks. Cronbach alpha in the current sample was high ($\alpha=.88$).

Maternal report of adolescent depressive symptom—Mother's completed the widely used Behavior Assessment System for Children – Second Edition (BASC-2; Reynolds & Kamphaus, 2004) internalizing scales about their daughter. The 13 depression items were summed for the present analysis. The BASC uses a 4-point Likert scale with scores ranging from (0) *not at all* to (3) *often* if the symptoms have ever been present in the last six months. In the present sample, Cronbach alpha reliability was high ($\alpha=.85$).

Maternal depressive symptoms—Mothers self-reported depressive symptoms during the previous two weeks using the Patient Health Questionnaire (PHQ), a 9-item measure that was developed to follow the criteria for depression from the DSM-IV (Kroenke, Spitzer, & Williams, 2001). The PHQ items are rated on a 4-point Likert scale with scores ranging from (0) *not at all* to (3) *nearly every day*. Cronbach alpha reliability was high ($\alpha=.84$).

Daughter's report of maternal depressive symptoms—No known validated measures assess adolescent reports of parent symptoms. For this study, we had daughters complete a modified version of the PHQ-9 described above, in which wording was changed to reflect observations of their mother (e.g., "My mother seems to have little interest or pleasure in doing things"). To be consistent with mother's reports of their daughter on the BASC, adolescents were asked to base their judgments on the last six months using the same 4-point scale. Initial piloting of the measure with six adolescents from the same community indicated appropriate understanding of items. As one indicator of validity, scores on this measure were significantly higher in dyads in which the mother reported a history of mental health treatment compared to those who did not, $t(186) = 2.11, p < .05, d = .32$. The test-retest correlation over six weeks in a subset of 80 participants was high, $r=.68, p < .001$. Cronbach's alpha was good ($\alpha=.78$).

Preoccupied and dismissive attachment style—Domains from the Behavioral Systems Questionnaire (BSQ; Furman & Wehner, 1999) were used to reflect adolescents' preoccupied and dismissive attachment style with parents. This measure draws from Behavioral Systems Theory, in which individuals are thought to use specific behaviors to maintain a relatively stable state between themselves and an attachment figure (Furman & Buhrmeister, 2009). An example of a preoccupied item is, "I get too wrapped up in my mother's worries"; an example of a dismissing item is, "I rarely turn to my mother when upset". Like other self-report measures of attachment style, the BSQ assesses different aspects of attachment relationships than those captured by representational or behavioral measures; however, previous studies have shown that scores on these two domains are related to other attachment measures, observed relationship characteristics and subsequent adjustment in ways consistent with attachment theory (e.g., Branstetter, Furman & Cottrell,

2009; Furman & Simon, 2004; Milan, Zona & Snow, 2013). Adolescent reports of maternal preoccupation (five items, $\alpha = .74$) and maternal dismissiveness (five items, $\alpha = .76$) were used for the current purposes, with higher scores reflecting more preoccupation and dismissiveness.

Data Analytic Plan

Data were first checked for normality using graphical and univariate approaches. Initial correlational analyses were used to determine bivariate associations between all variables and determine if any socioeconomic factors should be used as covariates. Next, all depressive symptom variables were converted into standardized z scores as recommended by Laird and De los Reyes (2013) for discrepancy score analysis. A path model consistent with the Actor-Partner Interdependence Model (APIM; Acitelli & Kenny, 2001) was first estimated to determine the statistical significance and equivalence of actor and partner effects (bias and accuracy estimates) for mothers and daughters. To test our hypotheses about the role of attachment style in respondent discrepancies, we included additional variables in the model reflecting main effects of attachment style variables on both outcomes, and interactions between depressive symptoms (mother and adolescent reports on self) and attachment style variables. For example, to test whether preoccupied attachment style moderates maternal accuracy, an additional path was included reflecting the interaction between adolescent self-report depressive symptoms * preoccupied style predicting maternal report of adolescent depressive symptoms. Because the full model would include four correlated interaction terms, we separately tested interactions with daughter's self-reported symptoms and then with mothers' self-reported symptoms. Interaction terms significant in these models were included in the final model. Then, post hoc probing of simple slopes was conducted using process macros following Hayes (2013) recommendations.

Results

Table 1 presents the means, standard deviations, and bivariate correlations between mother and adolescent depressive symptom variables and adolescent relationship style variables. Based on standard cutoffs, 26% of mothers reported elevated symptoms on the PHQ-9, and 20% of adolescents reported symptoms in the clinically significant range on the APS. Outcome variables (maternal report of adolescent symptoms and adolescent report of maternal symptoms) did not differ by age, race/ethnicity, marital status, or SES risk within this sample; consequently, these variables were not used in subsequent analyses.

Results from a simple APIM model with only depressive symptom variables included is presented in Table 2. As shown, actor (bias) and partner (accuracy) effects were both significant predictors of observed depressive symptoms for both mothers and daughters. In other words, reports of the other person's symptoms were predicted from both how depressed the target person actually was based on self-report, and how depressed the reporter was. As predicted in our first hypothesis, bias effects were notably larger than accuracy effects, indicating that one's own depressive symptoms were a stronger predictor of how depressed the other person appeared, relative to how depressed that person may actually be. Next, we tested whether accuracy and bias estimates were the same magnitude across

reporter (mother versus daughter) using a nested model design comparing models with these paths constrained to be equal versus freely estimated. The chi square differential test was nonsignificant, indicating that mothers and daughters exhibited similar degrees of accuracy and bias when reporting on each other, differential $\chi^2 (df=2) = .31, p = .86$. Thus, bias and accuracy estimates were held constant across reporter in subsequent models that include interaction terms.

To test whether adolescents' reported attachment style with their mother moderates reporter accuracy estimates, we next included specific interaction terms in the APIM (i.e., preoccupied style * maternal self-report symptoms predicting adolescent report of maternal symptoms; preoccupied style * adolescent self-report symptoms predicting maternal report of adolescent symptoms). As shown in Table 3, preoccupied style was predictive of mothers' reports of daughter's symptoms and daughter reports of maternal symptoms, with greater preoccupation associated with more symptoms. Dismissive style was predictive only of daughter's reports of their mother's symptoms, with daughters who reported a more dismissive style reporting that their mothers were more depressed. Of interest, a preoccupied style interacted with both mother and daughter self-reported symptoms in predicting reports of the other person's symptoms. In other words, preoccupied attachment style moderated both mother and daughter accuracy estimates, as predicted by our second hypothesis. These interactions were in the opposite direction, however. No significant interactions were found with the dismissive style variable, contrary to our second hypothesis.

Post hoc probing of both significant interaction terms are presented in Figure 2 and 3. These graphs show how mother and adolescent accuracy estimates vary by the degree of preoccupation with the relationship as reported by the adolescent. As shown in Figure 2, mothers' accuracy when reporting on their daughter was statistically significant only when daughters reported high levels of preoccupation ($B = .20, SE = .08, p = .01$). At moderate ($B = .09, SE = .07, p = .22$) and low ($B = -.02, SE = .11, p = .86$) levels of preoccupation, maternal accuracy was not statistically significant. Put differently, among adolescents reporting high depressive symptoms, these symptoms were observed by mothers only in dyads characterized by high adolescent preoccupation. Conversely, high preoccupation decreased how accurate adolescents were when reporting on their mother's depressive symptoms ($B = -.01, SE = .08, p = .98$ for high preoccupation; $B = .15, SE = .06, p = .01$ for moderate preoccupation; $B = .29, SE = .09, p = .001$ for low preoccupation). As illustrated in Figure 3, adolescents who were the lowest on preoccupation (potentially the most securely attached) were the most accurate when reporting on maternal symptoms. In contrast, adolescents reporting high levels of preoccupation were inaccurate because they observed signs of depression in their mothers, regardless of what the mother was self-reporting.

Discussion

Discrepancies between parent and adolescent reports about symptoms have been widely documented. In the last decade, there has been an increased effort to demonstrate that these discrepancies are meaningfully related to family characteristics. Building on these efforts,

we tested hypotheses about how agreement between mothers and daughters when reporting on each other's symptoms may be systematically related to attachment style variables.

Results from a simple APIM revealed significant bias and accuracy in mothers' and daughters' reports about each other. As expected, bias estimates were particularly strong, potentially reflecting depression distortion processes. In dyadic studies of interpersonal perception, bias estimates are interpreted as reflections of assumed similarity, meaning the tendency to believe close others share similar beliefs and characteristics (Kenny & Acitelli, 2001). Because this study focused on depressive symptoms, bias estimates may reflect both depression distortion processes and assumed similarity. Studies that examine reporter bias in symptom domains that are less subject to generalized negative cognitive distortions (e.g., somatic complaints) could provide further insight into how much assumed similarity plays a role in individuals' reports on a family member's symptoms. Nonetheless, the degree of bias relative to accuracy estimates has implications for how we measure intergenerational similarity in depression research, and how we interpret symptom reports in families where multiple family members have mental health issues in clinical settings. In terms of research, our findings echo those of others (e.g., Burt et al., 2005) about the importance of using independent data when estimating intergenerational transmission of depression. Clinically, these findings support long-standing recommendations about the need for multi-informant assessment in the diagnosis of adolescents (De los Reyes, 2013). In addition, they highlight the need for clinicians to consider the likely impact of parental depressive symptoms when parents are key informants for child and adolescent assessment.

Although the potential for parents' reports of child symptoms to be biased by their own depressive symptoms is well-documented, less empirical attention has been given to identifying factors that may systematically influence reporter accuracy. In the current sample, accuracy estimates were statistically significant, but small in magnitude. Similar results have been found in studies comparing adolescent and peer reports of symptoms using the same analytic approach (Swenson & Rose, 2009). In the APIM, these estimates reflect accuracy or agreement controlling for depression distortion biases, assumed similarity, and actual similarity. In other words, if all mothers were equal in depressive symptoms, how accurate would they be when reporting on their daughter's symptoms? The answer is: not very. Based on our results, the same can be said about adolescent girls. Although overall accuracy was low, our results indicate that the degree of accuracy varies based on relational characteristics such as attachment style.

When adolescents reported high preoccupation with the maternal relationship, they were less accurate in their observations of their mother's depressive symptoms (i.e., there was less agreement between their observations and mother's self-reports). Consistent with hypothesis, adolescent girls who reported high levels of preoccupation tended to report high maternal depressive symptoms, regardless of what their mother self-reported. In other words, these adolescents observed maternal symptoms that did not exist, at least by their mother's account. There are several possible explanations for this finding that are consistent with attachment theory. First, preoccupied adolescents may be hypervigilant or overly sensitive to maternal behaviors that are suggestive of emotional unavailability or rejection, including symptoms such as being irritable or not enjoying being around others. Second, these

adolescents may have biases in memory processes when asked to recall their mother's behaviors. Previous studies have shown that adolescents high on preoccupation tend to remember more negative relational events from the past (Dykas, Woodhouse, Jones & Cassidy, 2014). The measure used for adolescents to report on their mothers asked about six months of maternal behavior, while the self-report measure for mothers asked about symptoms in the past two weeks. This was done to be consistent with established measures used by mothers and adolescents to report on adolescent symptoms. Thus, observers were always reporting on a longer time period than the target person. Accordingly, adolescents in this sample who reported higher preoccupation may have selectively remembered more symptomatic behavior in their mothers from the past six months, even if she was not currently exhibiting symptoms. Finally, it is also possible that these are dyads in which maternal symptomatic behaviors are the most erratic, which may have actually contributed to a preoccupied attachment style. If so, some of these mothers may have been relatively more symptomatic over the last six months but not experiencing a high level of symptoms at the time of reporting.

A preoccupied relational style also moderated maternal accuracy when reporting on their daughter. In dyads characterized by high adolescent preoccupation, mothers were *more* accurate in their observations of their daughter's symptoms. Indeed, it was only in these families where maternal accuracy estimates were statistically significant after controlling for maternal depressive symptoms. In community samples, parents generally report fewer symptoms of depression in their adolescents compared to adolescent self-report (Barker, Bornstein, Putnick, Hendricks, & Suwalsky, 2007); therefore, it may be fairly normative for parents to not see their child's symptoms. In dyads characterized by greater preoccupation, adolescents may be more outwardly expressive of their emotional distress to their mothers in an effort to get their needs for support met (Pascuzzo et al., 2013). As a result, there may be greater agreement in their reports of the adolescents' symptoms. Accurate observation of symptoms does not mean mothers in these dyads are necessarily more sensitive, however; a mother may accurately report that her daughter engages in a behavior fairly often (e.g., crying) without being attuned to the reasons why or ways to help.

One distinct aspect of this study is that mothers and adolescents reported on their own depressive symptoms and the observed symptoms of the other person. Our findings indicate very similar reporting characteristics in both mothers and adolescent daughters in terms of the magnitude of accuracy and bias. These findings are consistent with other studies showing biases in how depressed adolescents interpret emotional displays in their mothers (Ehrmantrout et al., 2011). The extent to which adolescents see their mothers as depressed, whether accurate or not, may be important for understanding the impact these symptoms have on the adolescent. On the positive side, an adolescent who is aware of her mother's emotional distress may be more understanding or supportive. Alternatively, adolescents who see their mothers as depressed could also have an increased sense of burden, responsibility, or worry (e.g., Ireland & Pakenhan, 2010). Despite the prevalence of families impacted by maternal depression, surprisingly little research has examined how offspring actually perceive symptoms in their parents. This seems a particular important research area with adolescents, whose increased cognitive ability and knowledge of mental health may influence how they view and make sense of maternal symptoms.

To date, most studies on parent-adolescent reporting discrepancies have focused on implications for assessment. Given the growing body of research indicating that discrepant views often reflect meaningful relational characteristics and predict future functioning (De los Reyes, 2013), there also may be important implications for treatment. For example, discrepant views may be indicative of insecurity in the relationship (Berger et al., 2005), potentially highlighting a need for dyadic or family therapy. Addressing discrepancies in parents' and adolescents' views on each other's symptoms within the treatment setting could contribute to increased reporter accuracy, which may lead to greater sensitivity by family members during periods of worsening symptoms. It may also reduce the likelihood that a mother or daughter sees unfounded symptoms in the other, which could help reduce associated feelings of guilt, worry, or burden about the other's emotional well-being. Examining how reporting discrepancies should be understood and incorporated into treatment, and not just assessment and diagnosis, is an important next step in this area of research.

Study Limitations

Our findings should be interpreted in the context of study limitations. First, results are based on community sample, and reporting discrepancies differ in community versus clinical samples (Barker et al., 2007). In clinical samples, depressive symptoms have presumably led to families seeking out services, and thus may be more severe or impactful than symptoms reported in community samples. Similarly, families in this study were largely from racial/ethnic minority groups, single parent households, and lower SES communities, which have implications for generalizability. For example, in single parent households, relationships between mothers and adolescents often take on increased intensity (Nixon et al., 2012) and African-American and Latina adolescents report more family obligation and "parentification" (Hooper, Tomek, Bond, & Reif, 2015; Milan & Wortel, 2015). Thus, the adolescents in this sample may have been more privy to or affected by maternal depressive symptoms than other groups of adolescents. However, reporting discrepancies are evident across socioeconomic, racial/ethnic, and cultural groups (De los Reyes et al., 2015; Rescorla et al., 2013); therefore, understanding the nature of these discrepancies across different groups is important. Moreover, given that rates of depressive symptoms are highest among low-income women, research examining how depressive symptoms are observed by family members in this population is particularly important.

Measurement issues also impact study interpretations. Self-report measures of attachment style can only assess explicit, accessible aspects of an attachment relationship rather than representational aspects. Importantly, studies using working model of attachment interviews have also found that attachment variables systematically relate to reporter symptom agreement (e.g., Ehrlich et al., 2011). Together, these findings highlight the potential relevance of attachment constructs in parent-adolescent reporting discrepancies. Future studies that incorporate multiple measures, including observational or physiological measures, would be informative. Relatedly, we only assessed attachment style from the adolescent's perspectives, in part because most attachment self-report measures for adults focus on romantic relationships, which are qualitatively distinct. Finally, the measure of adolescent reports of their mothers' symptoms was created for this study because other

measures did not exist; the validity and reliability of this measure in other samples is not established. Also, for both reporters, the period that observers used was longer than the period for self-report because of the way most parent report of symptoms are designed. This difference should not affect discrepancy analyses based on relative rank rather than raw difference scores as used in APIM, but is a notable distinction in the sets of measures. Despite these limitations, there are several strengths to the study. In particular, mothers and adolescents reported on themselves and each other, which allowed us to examine accuracy in both partners. In addition, we tested hypothesis about factors that moderate reporter agreement using a method that offers several advantages over other strategies.

Conclusions

According to attachment theory, attachment style influences how an individual observes, interprets, and communicates emotional distress within close relationships. As a result, attachment style may help explain variations in agreement in reports on depressive symptoms between mothers and adolescent daughters. Consistent with this possibility, we found that a preoccupied attachment style increased maternal accuracy but decreased adolescent accuracy in theoretically consistent ways. These findings add to the growing body of literature indicating that reporting discrepancies often reflect meaningful information about relationships. Understanding factors that systematically influence how parents and adolescents see each other's symptoms can aid in case formulation and diagnosis with adolescents, as well as provide potentially important areas to address in dyadic and family treatment.

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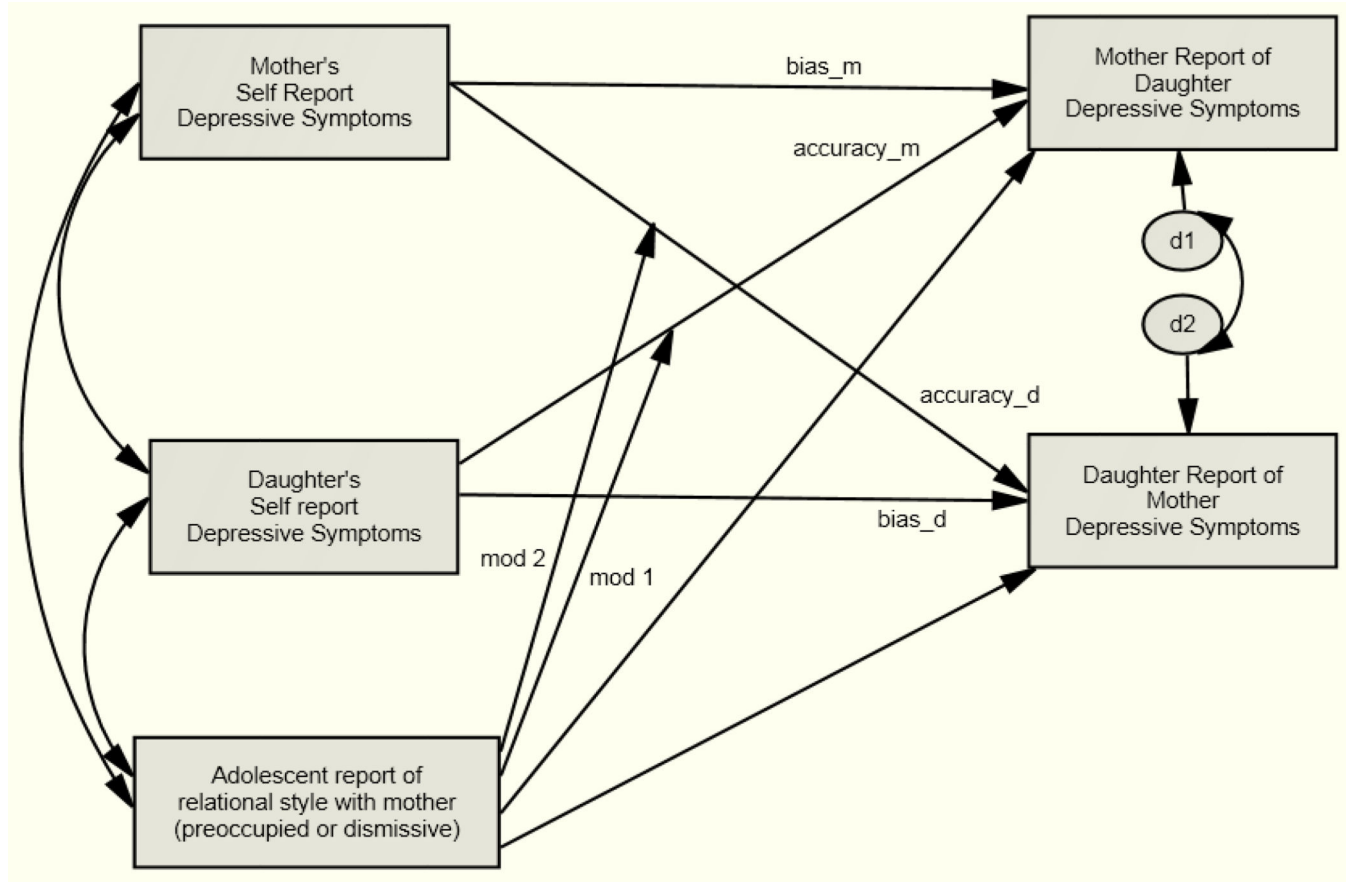


Figure 1. Actor Partner Interdependence Model (APIM) to estimate accuracy, bias, and moderators of accuracy

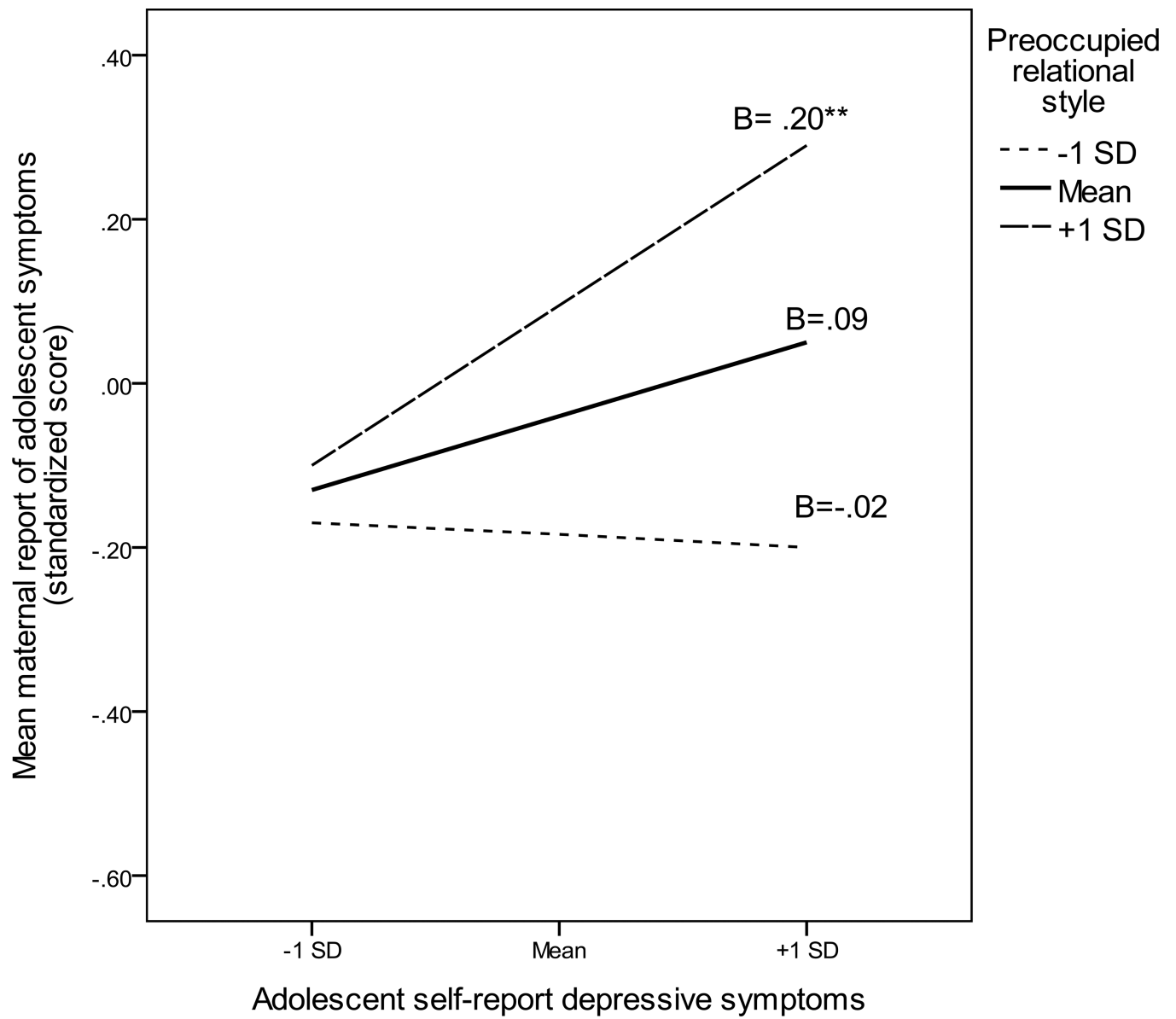


Figure 2.
Post hoc probing of maternal accuracy estimates at varying level of adolescent preoccupation

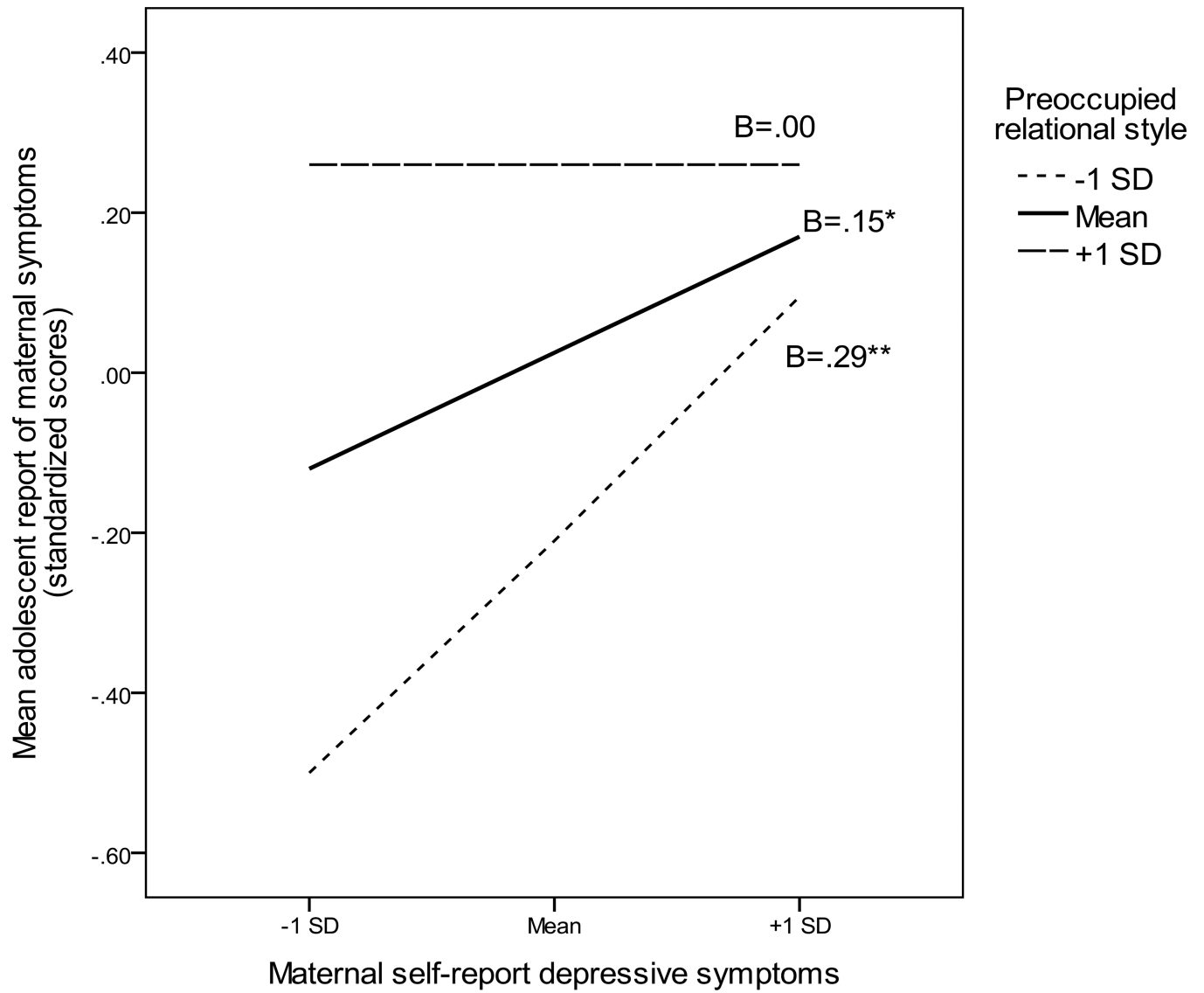


Figure 3.
Post hoc probing of adolescent accuracy estimates at varying level of adolescent preoccupation

Table 1

Means, standard deviations (SD), and correlations (N=184)

	<i>Mean (SD)</i>	1	2	3	4	5
1. Maternal self-reported depression (PHQ)	6.12 (5.4)	-				
2. Adolescent self-reported depression (APS)	19.35 (5.1)	.18*	-			
3. Adolescent report of maternal depression	9.36 (4.3)	.27**	.50***	-		
4. Maternal report of adolescent depression (BASC-2)	8.01 (5.9)	.54***	.26**	.19*	-	
5. Adolescent preoccupied attachment	2.24 (.87)	.18*	.35***	.42***	.24**	-
6. Adolescent dismissive attachment	2.57 (.88)	.04	.38***	.39***	.07	.24**

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

Note: PHQ= Patient Health Questionnaire (Kroenke et al., 2001); APS=Adolescent Psychopathology Scale (Reynolds, 1998); BASC-2=Behavioral Assessment System for Children (Reynolds & Kamphaus, 2004)

Table 2

Accuracy and bias estimates from simple Actor Partner Interdependence Model (APIM)

Predictors:	OUTCOME	
	Mother's report of adolescent's symptoms	Adolescent's report of mother's symptoms
Mother self-report symptoms	.51 (.06) *** (maternal bias)	.18 (.06) ** (maternal accuracy)
Adolescent self-report symptoms	.15 (.06) * (adolescent accuracy)	.47 (.06) *** (adolescent bias)

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

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Table 3

Path estimates from full Actor Partner Interdependence Model (APIM)

Predictor:	Mother's report of adolescent's symptoms		Adolescent's report of mother's symptoms	
	B (SE)	Path label	B (SE)	Path label
Maternal self-reported depression	.43 (.04) ***	<i>Maternal bias</i>	.14 (.05) *	<i>Adolescent accuracy</i>
Adolescent self-reported depression	.14 (.05) **	<i>Maternal accuracy</i>	.43 (.04) ***	<i>Adolescent bias</i>
Adolescent preoccupied attachment style	.12 (.06) *		.20 (.06) ***	
Adolescent dismissive attachment style	-.04 (.06)		.16 (.06) **	
Preoccupied attachment X adolescent self-reported depression	.14 (.07) *	<i>Moderator of maternal accuracy</i>		
Preoccupied attachment X maternal self reported depression			-.19 (.07) **	<i>Moderator of adolescent accuracy</i>
R ² for model	R ² = .29		R ² = .44	

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