Parental ADHD Symptoms and Self-Reports of Positive Parenting

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Objective: In 2 studies, we tested whether parental attention-deficit/hyperactivity disorder (ADHD) symptoms are associated with self-reports of more positive parenting, even after accounting for observed positive parenting behaviors. **Method:** In Study 1, 96 mothers with sons 8–11 years of age participated; 44% of the boys were diagnosed with ADHD. The majority of mothers and sons were European Caucasian. In Study 2, 48 parents (24 mother–father pairs) with children 6–12 years of age participated. All children in Study 2 were diagnosed with ADHD, and 75% of the children were boys. More than 90% of the families were Caucasian. In both studies, parents self-reported on their positive parenting, and positive parenting was observed in parent–child interactions. **Results:** In models including relevant demographic variables, other parental psychopathologies, and both inattentive and hyperactive/impulsive symptoms, parents with higher levels of hyperactive/impulsive symptoms self-reported engaging in significantly more positive parenting behaviors than were observed. Parental inattentive symptoms were not uniquely associated with self-reports of positive parenting. This pattern was found for both mothers and fathers, and across families with and without children diagnosed with ADHD. **Conclusions:** Results suggest that high levels of parental ADHD symptoms may be associated with over-estimation of positive parenting behaviors. Reasons for the distinction between the types of ADHD symptoms associated with higher self-reports of positive parenting and the clinical implications of the findings are discussed.

Keywords: ADHD, parenting, adult ADHD, positive illusory bias, self-reports

Many researchers have documented parenting difficulties in families with a child with attention-deficit/hyperactivity disorder (ADHD), particularly if the child also shows oppositional or conduct problems. For example, Johnston and Mash's (2001) review identified consistent parenting-related impairments associated with child ADHD, including elevated parenting stress and parental psychopathology, conflicted parent–child interactions, lower parenting self-efficacy, and less effective parenting practices across a range of samples. Given the high heritability of ADHD, it is likely that in many families ADHD symptoms occur in both parent and child (Faraone et al., 2005). Indeed, over half of adults with

ADHD have a child with ADHD, and 25%–50% of children with ADHD have a parent with the disorder (Biederman, Faraone, Mick, & Spencer, 1995). Thus, the parenting difficulties observed in families of children with ADHD may be accounted for, at least in part, by parental ADHD. However, parental ADHD symptoms have not been assessed systematically in most previous studies of parenting in families of children with ADHD (Johnston, Mash, Miller, & Ninowski, 2012). Parental ADHD symptoms and their effect on parenting are likely to play important roles in the trajectory of child development as parenting, parental and child ADHD symptoms, and other comorbidities all likely interact in a transactional manner (Johnston & Mash, 2001). Given these mutual influences, it is especially important to assess and understand how parental ADHD symptoms are related to parenting, as parents with high levels of ADHD symptoms are likely to be interacting with a child with ADHD.

Recent studies have examined parenting in families of children with ADHD as well as community samples, typically assessing parental ADHD symptoms dimensionally, and relating these symptoms to both self-reports of parenting and direct observations of parenting (e.g., Chen & Johnston, 2007; Chronis-Tuscano et al., 2008; Ellis & Nigg, 2009; Harvey, Danforth, Eberhardt McKee, Ulaszek, & Friedman, 2003; Psychogiou, Daley, Thompson, & Sonuga-Barke, 2007). These different methods each have distinct advantages and disadvantages in the assessment of parenting; self-reports cover parenting over time and across a variety of situations, whereas observations allow for more objective measurements. Across both methodologies, studies reveal a consistent

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picture of more negative parenting behaviors associated with higher levels of parental ADHD symptoms in both community (e.g., Mokrova, O'Brien, Calkins, & Keane, 2010) and clinical (e.g., E. H. Arnold, O'Leary, & Edwards, 1997) samples. For example, in a series of studies, Johnston and colleagues found maternal inattentive symptoms were positively associated with self-reports of inconsistent discipline (Chen & Johnston, 2007), maternal hyperactive/impulsive symptoms were related to self-reports of both over-reactivity and laxness in parenting (Johnston, Scoular, & Ohan, 2004), and both types of maternal ADHD symptoms were related to reports of less consistent parenting and poorer monitoring of child behavior (Murray & Johnston, 2006). Parental ADHD symptoms were measured dimensionally in the first two studies and categorically in Murray and Johnston's (2006) report. Similarly, for fathers, ADHD symptoms, measured both dimensionally and categorically, have been linked to more self-reported inconsistent discipline, physical punishment and poorer monitoring (Psychogiou et al., 2007), and more criticism and reported over-reactivity with their children (E. H. Arnold et al., 1997).

With respect to parental ADHD symptoms and positive parenting behaviors, such as responsiveness and involvement, researchers have found inconsistent results (for a review, see Johnston et al., 2012). For example, in the studies described above, Johnston and colleagues found no association between maternal ADHD symptoms and observed parenting responsiveness (Chen & Johnston, 2007) or parent or child reports of positive parenting (Murray & Johnston, 2006). Other researchers have similarly found no association between dimensional assessments of parental ADHD symptoms and self-reported positive parenting for either fathers or mothers (Mokrova et al., 2010). Yet, other studies have reported a negative relationship between level of parental ADHD symptoms and self-reported parenting involvement, but only for fathers (Ellis & Nigg, 2009; Mokrova et al., 2010), or a positive relationship between parental ADHD symptoms and both observed and self-reported positive parenting, but only for mothers (Psychogiou et al., 2007; Psychogiou, Daley, Thompson, & Sonuga-Barke, 2008). Taken together, across both self-report and observational measures, studies yield discrepant results on the association between parental ADHD symptoms and positive parenting.

Observational measures of parenting, in general, have been found to be more predictive of child outcomes than are parent self-reports (Zaslow et al., 2006), raising concerns about the validity or accuracy of parent self-reports (Morsbach & Prinz, 2006). In particular, self-reports of parenting have been linked to both positive and negative biases. For example, studies have reported responses influenced by social desirability or impression management (e.g., Johnston et al., 2004; Lovejoy, Verda, & Hays, 1997; Marachi, McMahon, Spieker, & Munson, 1999), and others have found that parental psychopathology such as symptoms of depression and anxiety are linked to more negative reports of parenting (e.g., Chi & Hinshaw, 2002).

Psychogiou et al. (2007) found a positive association between self-reported positive parenting and ADHD symptoms, which they interpreted as evidence of a similarity-fit. That is, the match in high levels of ADHD between parent and child are presumed to allow parents with elevated ADHD symptoms to demonstrate strength in positive parenting, by showing more

enthusiasm, empathy, tolerance and encouragement toward their child with ADHD. Although Psychogiou et al. (2008) did find evidence of similarity-fit using both self-report and observational measures of parenting, in this study the observed parenting score combined positive parenting behaviors and low scores on negative parenting behaviors. Thus, the extent to which the similarity-fit occurs with observations of solely positive parenting behavior remains unclear. We propose it is possible that in studies relying on self-reports of parenting, a link between parental ADHD and positive parenting might reflect, at least in part, over-reporting of positive parenting by parents with elevated ADHD symptoms. In childhood, ADHD has been robustly associated with over-reporting of competence across various domains compared to observations and reports from mothers, fathers, teachers, and peers (for a review, see Owens, Goldfine, Evangelista, Hoza, & Kaiser, 2007). Although only a few studies have examined this possibility among adults with ADHD symptoms, preliminary results suggest similar overestimations in adult reporting. In one study, Knouse, Bagwell, Barkley, and Murphy (2005) found adults with ADHD reported similar driving competence to adults without ADHD, despite showing poorer performance (more collisions and speeding tickets), demonstrating an overestimation of their competence. Similarly, Jiang and Johnston (2012) found that women with higher levels of ADHD symptoms (assessed by other informants) overestimated their competence in various life domains compared to the ratings provided by other informants. Thus, it is possible that parental ADHD symptoms are associated with overestimations of competence in positive parenting, and this overestimation may account for positive associations found between parental ADHD symptoms and self-reports of positive parenting.

In the current research, we examined whether parental inattentive and hyperactive/impulsive symptoms were associated with self-reports of positive parenting, above and beyond the contributions of observed positive parenting. Given that difficult child behavior can elicit negative changes in parenting (Burke, Pardini, & Loeber, 2008) and other parental psychopathologies (such as depression) can affect parenting (S. H. Goodman & Brand, 2008) and are likely to be related to parental ADHD symptoms, we controlled for these variables in our analyses to ascertain unique associations between parental ADHD and self-reports of positive parenting. In two separate samples, we tested whether the positive association between parental ADHD symptoms and positive parenting exists even when accounting for objective measures of positive parenting. That is, whether the association between parental ADHD and positive parenting might be explained by over-estimation in the self-reports of parents with high levels of ADHD symptoms. Although most previous research concerning adult ADHD and parenting has been conducted with mothers, some studies have suggested that there may be differential relationships between parental ADHD symptoms and parenting in mothers and fathers (e.g., Mokrova et al., 2010; Psychogiou et al., 2007). Therefore, we also examined whether the relationship between parental ADHD and positive parenting is moderated by parent gender. We hypothesized that parental ADHD symptoms would predict higher levels of positive parenting for both mothers and fathers.

Study 1

In Study 1, we tested whether an association exists between mothers' levels of ADHD symptoms and their self-reports of positive parenting after controlling for observations of positive parenting as well as other parent and child symptoms. We used a sample in which approximately half of the children were diagnosed with ADHD, and the levels of inattentive and hyperactive/impulsive symptoms in mothers were measured dimensionally.

Method

Participants. Mothers of 42 boys with ADHD (44%) and mothers of 54 boys without ADHD (56%) 8–11 years of age participated in the study. Families were recruited through advertisements to schools, community centers and other public places, parent support groups, a Children's Hospital, as well as from a volunteer registry of families interested in participating in research. Descriptive information for the sample is presented in Table 1. Families were primarily middle class, with a median income level of \$50,000–\$74,999. *T*-test comparisons indicated no significant differences between the families with a boy with ADHD and families of comparison boys in terms of child or mother age or family socio-economic status ($ps > .63$). The majority of mothers and sons were European Caucasian (63.5%); 16.7% self-identified as Asian, and 15.6% self-identified as of another ethnicity (four cases were missing ethnicity data). This sample had a slightly lower proportion of Asian participants than the region in which families were recruited (Statistics Canada, 2007). A chi-square test indicated no significant difference between families of boys with ADHD and control boys in ethnicity ($p > .72$).

Criteria for inclusion of boys in the ADHD group included diagnoses made by a qualified health professional, ADHD symptoms present prior to 7 years of age according to mother report, and mother and teacher reports on the ADHD Rating Scale–IV (ADHD-IV; DuPaul, Power, Anastopoulos, & Reid, 1998) consistent with diagnostic criteria. This rating scale lists the symptoms of

ADHD found in the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed., text rev.; *DSM–IV–TR*; American Psychiatric Association, 2000), and mothers and teachers rated the child's behavior on a 4-point Likert scale ranging from 0 (*never or rarely*) to 3 (*very often*). The scale has demonstrated good reliability and validity (DuPaul et al., 1998). In the present study, internal consistency for the total score on the ADHD-IV was .86 for mothers and .93 for teachers. Boys included in the ADHD group had ratings of 2 (*often*) or 3 (*very often*) for at least six inattentive or hyperactive/impulsive symptoms by both mother and teacher. In addition, either the mother or teacher rated the child as 2 (*often*) or 3 (*very often*) on a question asking how much the child's ADHD symptoms impair or interfere with his ability to function at home or at school. In total, 71.4% of boys with ADHD were taking medications for their symptoms. Of these, 56.67% were on their medication during participation in the study.

For both the control and ADHD groups, participants were excluded if they had a pervasive developmental disorder (e.g., autism, intellectual disability) reported by the parent or indicated by school placement, or if the child or parent was not fluent in English.

Measures.

Parenting behavior.

Alabama Parenting Questionnaire (APQ; Shelton, Frick, & Wootton, 1996). The APQ is a self-report measure of parenting behavior over the past 4 weeks. It comprises subscales of positive parenting, involvement, poor monitoring/supervision, and inconsistent discipline. Given our focus on positive parenting, and to parallel the observations of positive parenting, only the positive parenting and involvement subscales of the APQ were used in the current analyses. Mothers rated themselves on items such as "You complement your child when he does something well" and "You have a friendly talk with your child" on a 5-point Likert scale ranging from 0 (*never*) to 4 (*always*). In previous studies, the APQ has demonstrated acceptable internal consistency (Shelton et al., 1996), and in this study, Cronbach's alpha for a composite score of positive parenting and involvement was .80. The APQ has been used extensively in studies of parenting in adults with ADHD symptoms (e.g., Murray & Johnston, 2006; Psychogiou et al., 2007), differentiates clinic-referred and nonproblem families (Shelton et al., 1996), is sensitive to the effects of parenting and combined interventions (e.g., Hinshaw et al., 2000), and is significantly related to child behavior problems (Dadds, Maujean, & Fraser, 2003). The APQ positive parenting scales also have demonstrated significant relations to observational measures of positive parenting (e.g., Chronis et al., 2011; Hawes & Dadds, 2006). In this study, the APQ positive composite was marginally significantly correlated with a composite of the negative parenting subscales, $r(94) = -.18, p = .08$.

Maternal responsiveness. Mothers and their sons engaged in an interaction in the laboratory that included 10 min of free play and 10 min of task completion. During free play, mothers and sons were encouraged to play with any of the toys provided. During task completion, mothers were told to instruct their sons on tasks such as sorting cards, completing worksheets, sorting laundry, re-lacing shoes, setting the table, and cleaning up toys. These interactions were videotaped, and mother behavior was subsequently coded using the Responsiveness Coding System (Johnston, Murray, Hinshaw, Pelham, & Hoza, 2002), which assesses mothers' parenting

Table 1
Descriptive Information, Study 1

Variable	<i>M</i>	<i>SD</i>	Range
Child age	9.79	1.17	7.67–12.17
Child conduct problems (SDQ)	0.40	0.42	0–1.60
Family income ^a	4.89	1.99	1–9
Mother age	40.74	6.11	28–52
Mother hostility symptoms (BSI)	0.81	0.53	0–2.40
Mother depressive symptoms (BSI)	0.62	0.69	0–3.17
Mother inattentive symptoms (CSS)	0.73	0.66	0–2.89
Mother hyperactive/impulsive symptoms (CSS)	0.76	0.60	0–2.89
Self-reports of positive parenting/involvement (APQ)	3.10	0.47	1.88–4.00
Observed parenting responsiveness	4.71	0.34	3.45–5.59

Note. $n = 96$. SDQ = Strengths and Difficulties Questionnaire, ranging from 0 to 2; BSI = Brief Symptoms Inventory, ranging from 0 to 4; CSS = Current Symptom Scale–Self-Report, ranging from 0 to 3; APQ = Alabama Parenting Scale, ranging from 0 to 4.

^a Family income was based on a scale ranging from 1 (*less than \$5,000*) to 9 (*more than \$200,000*). Higher scores indicate higher family income.

in the context of the child's needs. Dimensions assessed include the following: style of control, sensitivity of control, acceptance of the child, positive involvement, affective tone, and general responsiveness. To reflect the positive parenting that is the focus of this report, and to allow for comparison with self-reported dimensions from the APQ, we used a composite score including only the acceptance, positive involvement, affective tone, and general responsiveness dimensions. Coders rated each minute of the interaction on a scale ranging from 1 to 7 (4 being *neutral*) for each dimension. Acceptance of the child reflects encouragement, affection, and positive feelings from the mother toward her child. Positive involvement assesses how much the mother interacts with her child, through conversation, attention, or physical presence. Maternal affective tone measures the extent to which the mother expresses happiness, pleasure, and positive affect when interacting with her child. General responsiveness measures the mother's overall ability to respond appropriately and to adapt to her child's needs. This coding system has demonstrated satisfactory inter-rater reliability in previous studies (Johnston et al., 2002; Seipp & Johnston, 2005). In this study, four coders were trained until a minimum of 80% agreement between coders was reached (ratings within 1 point of each other were considered reliable). Thirty-five percent of the videos were then double-coded for reliability, with coders unaware of which videos were reliability coded. Coders were blind to scores on other measures used in the study. Responsiveness scores were averaged across the two situations, and the intraclass correlation for a composite responsiveness variable was .98.

In previous research, responsiveness scores have been found to correlate negatively with child conduct problems and maternal depression (Johnston et al., 2002), negatively with maternal over-reactivity and laxness (Chan, Penner, Mah, & Johnston, 2010), and positively with maternal involvement in some studies (Chen & Johnston, 2007), although not in others (Johnston et al., 2002). In this sample, responsiveness correlated significantly with the APQ composite positive parenting score, $r(94) = .20, p = .04$, and with the APQ composite negative parenting score, $r(94) = -.23, p = .02$.

Parent's psychological functioning.

Current Symptom Scale–Self-Report (CSS; Barkley & Murphy, 2006). Mothers rated their own levels of inattentive and hyperactive/impulsive symptoms on a 4-point Likert scale ranging from 0 (*never or rarely*) to 3 (*very often*). The CSS lists the 18 diagnostic criteria for ADHD found in the *DSM-IV-TR* (American Psychiatric Association, 2000), with separate subscales for inattentive and hyperactive/impulsive symptoms. The scale has good validity, correlating highly with structured clinical interviews, and differentiates individuals with and without prior or current diagnoses of ADHD (Barkley, 2011). Validity of self-reports of ADHD symptoms on the CSS are further supported by moderate to strong correlations, ranging from .59 to .80, with ratings provided by other informants (Barkley, Knouse, & Murphy, 2011). Each subscale has demonstrated satisfactory internal consistency (based on information presented for a similar, but updated, version of the CSS; Barkley, 2011). Cronbach's alpha in this sample was .93 for the inattentive subscale and .86 for the hyperactive/impulsive subscale.

Brief Symptom Inventory (BSI; Derogatis, 1993). Mothers completed the depression and hostility subscales of the BSI on a

5-point Likert scale ranging from 0 (*not at all*) to 4 (*extremely*). The BSI has high reliability and internal consistency (Derogatis, 1993). This measure has high construct, convergent, and predictive validity, and it has been used with many different populations (Derogatis, 1993). Cronbach's alpha in this sample was .87 for the depression subscale and .71 for the hostility subscale.

Child disruptive behaviors.

Strengths and Difficulties Questionnaire (SDQ; R. Goodman, 2001). Mothers reported on their child's behavior using the SDQ on a 3-point Likert scale ranging from 0 (*not true*) to 2 (*certainly true*). This measure assesses conduct problems, emotional problems, hyperactivity-inattention, peer problems, and prosocial behaviors. We used the conduct problem score to gauge the child's level of disruptive behaviors. The scale has acceptable internal consistency, has shown to be highly correlated with other measures of childhood psychopathology, and can differentiate children with and without psychiatric disorders (R. Goodman, 2001). Cronbach's alpha in this sample was .82.

Procedure. This study was approved by our university's ethics board. Mother–son dyads were invited to participate in the lab at the university. Informed consents and assents were obtained from mothers and sons upon arrival to the lab and following a description of the study. Mothers and their sons completed questionnaires separately and engaged in an interaction that was videotaped.¹ The order of the interaction and questionnaires was counterbalanced across families. Mothers received a \$35 honorarium, and children received a T-shirt.

Results

Descriptive analyses. Descriptive information for child and mother variables is presented in Table 1. The boys' mean score on the SDQ conduct problems scale was within the normative range. An inspection of the scores revealed 32% of the boys had SDQ scores in the borderline to abnormal range (www.sdqinfo.com). For mothers, the mean score on the CSS for inattentive symptoms was slightly above the normative mean, and the mean score for hyperactive/impulsive symptoms was comparable to the normative mean for this measure for adults 30–49 years of age as reported by Barkley and Murphy (2006). Approximately 10% of mothers had ADHD symptoms in the clinically significant range with scores at or above the 93rd percentile. Mothers' scores on the BSI were slightly above the normative means for both depressive and hostility symptoms but were well below the means for a clinical sample. The means correspond to a *T*-score of 60 for depression and a *T*-score of 62 for hostility (Derogatis, 1993).

Correlations between main variables, possible covariates, and demographic characteristics. Maternal inattentive and hyperactive/impulsive symptoms were significantly correlated with each other, $r(94) = .80, p < .001$, and each also was correlated with depressive symptoms and hostility symptoms (inattentive with depression, $r(94) = .37, p < .001$, and hostility, $r(94) = .37, p < .001$; hyperactive/impulsive with depression, $r(94) = .32, p = .001$, and hostility, $r(94) = .37, p < .001$). At the bivariate level,

¹ This data set was part of a larger study examining how parents' and children's attributions relate to family relationships and their behaviors within the family.

maternal ADHD symptoms were not significantly correlated with self-reports or observed positive parenting.

Turning to associations between demographic characteristics and mother symptoms and parenting, child age was not significantly correlated with any of the measures ($ps > .12$). Mother age was significantly inversely correlated with levels of maternal ADHD symptoms— $r(94) = -.23, p = .02$, for inattentive symptoms, and $r(94) = -.25, p = .02$, for hyperactive/impulsive symptoms—and was positively correlated with self-reports of positive parenting, $r(94) = .20, p = .05$. Family income was only related to observed maternal responsiveness, $r(93) = .22, p = .03$. As mother age was the only variable significantly related to both predictor and outcome variables, it was controlled in subsequent analyses.

Regression predicting mother self-reports of positive parenting/involvement. We examined whether maternal ADHD symptoms would significantly predict self-reports of positive parenting, after controlling for observations of positive parenting, child characteristics, and other maternal psychopathology (see Table 2). In Step 1, child ADHD status, child conduct problems, mother age, maternal depressive and hostility symptoms, and observed responsiveness were entered as predictors of the APQ positive parenting score. The model was marginally significant, $R^2 = .12, R^2_{adj} = .06, F(6, 89) = 1.93, p = .09$. Mother age and observed responsiveness significantly contributed to the model, with older mothers and mothers who were observed to be more positive, self-reporting more positive parenting. In Step 2 of the regression, maternal inattentive and hyperactive/impulsive symptoms were entered and accounted for significant unique variance, $R^2_{change} = .07, F_{change}(2, 87) = 3.49, p = .04$. The full model also was significant, $F(2, 87) = 2.40, p = .02$. Further examination revealed it was maternal hyperactive/impulsive symptoms in particular that were significantly and positively associated with maternal reports of positive parenting, beyond the effects of observed positive parenting and control variables. Thus, more hyperactive/impulsive symptoms in mothers were associated with more positive self-views of positive parenting, above and beyond observations of positive parenting.

Study 2

In Study 2, we extended our hypothesis to examine the association between positive parenting and levels of parental ADHD symptoms in both mothers and fathers. In this sample, all children were clinically-referred for ADHD. This sample allowed us to test whether the possible over-estimation in self-reports found in mothers with higher levels of ADHD symptoms in Study 1 would generalize to fathers. Furthermore, the clinical nature of the sample in Study 2 allowed us to examine whether the relationship between self-reports of parenting and parental ADHD symptoms is only evident when examined across a broad range of functioning as in the sample in Study 1 that included both clinical and community families, or whether the relationship also appears in samples restricted to those with clinically-referred children. Thus, in Study 2, we tested whether parental ADHD symptoms would predict higher self-reports of positive parenting, after accounting for an objective measure of positive parenting, for both mothers and fathers.

Method

Participants. Forty-eight parents (24 mother–father pairs) participated in this study with their 6- to 12-year-old child with ADHD. Families were recruited from an ADHD clinic at a children's hospital (descriptive information about the sample is presented in Table 4). In total, 75% of children were male. Most participants were Caucasian (91.7%); 4.2% of participants self-identified as Aboriginal, and 4.2% self-identified as Arab/West Asian. This sample had a slightly higher proportion of Caucasian participants than the region in which families were recruited (Statistics Canada, 2008). Families were primarily middle class, with a median income level of \$90,000 to \$99,000. All children were diagnosed with ADHD by a qualified health professional, and 37.5% were on medication during the study. Additional inclusion criteria for children included three out of four parent ratings of child ADHD symptoms above specified cutoff scores. Since teacher ratings of child ADHD were not used in this study, we instead relied on reports provided by both

Table 2
Self-Report of Positive Parenting Predicted From Parent ADHD Symptoms: Study 1

Predictor	Unstandardized [3]	SE	Standardized [3]	<i>t</i>	<i>p</i>
Step 1: $R^2 = .12$, adjusted $R^2 = .06$, $F(6, 89) = 1.93$, $p = .09$					
Child ADHD diagnosis	-.06	.13	-.06	-0.47	.64
Child conduct problems	-.14	.16	-.12	-0.88	.38
Mother age	.02	.01	.24	2.22	.03
Mother depressive symptoms	.14	.08	.21	1.74	.09
Mother hostility symptoms	.05	.11	.06	0.49	.63
Observed responsiveness	.29	.14	.21	2.05	.04
Step 2: $\Delta R^2 = .07$, $\Delta F(2, 87) = 3.49$, $p = .04$					
Child ADHD diagnosis	-.01	.12	-.01	-0.11	.92
Child conduct problems	-.07	.16	-.06	-0.44	.66
Mother age	.02	.01	.28	2.66	.01
Mother depressive symptoms	.13	.08	.19	1.63	.11
Mother hostility symptoms	.01	.11	.01	0.06	.95
Observed responsiveness	.27	.14	.20	1.95	.06
Mother inattentive symptoms	-.20	.13	-.27	-1.55	.13
Mother hyperactive/impulsive symptoms	.34	.13	.43	2.58	.01

Note. Child attention-deficit/hyperactivity disorder (ADHD) diagnosis was coded as 1 = yes, 2 = no.

mothers and fathers, across two measures of child ADHD symptoms. Mothers and fathers rated their child's ADHD symptoms on the ADHD Rating Scale-IV (ADHD-IV; DuPaul et al., 1998) and the Conners' Parent Rating Scales-Revised Short Form (CPRS-R-S; Conners, 2001). The ADHD-IV was described in Study 1, and in this sample, the internal consistency for the total score on the ADHD-IV was .97 for mothers and .96 for fathers. We used the cutoff score of the 90th percentile for the child's age and gender on the ADHD-IV total score as an inclusion criterion. The CPRS-R-S measures a range of child behavioral symptoms and yields an ADHD index. Mothers and fathers rated their children on a 4-point Likert scale ranging from 0 (*not at all*) to 3 (*very much*). All scales of the CPRS-R-S have demonstrated good reliability and validity (Conners, 2001). The internal consistency for the ADHD index on the CPRS-R-S was .96 for mothers and .94 for fathers. We used a *T*-score of 70 or above on the ADHD index as an inclusion criterion. Of the four possible scores from mothers and fathers on these two measures, we required that children scored above the cutoff on at least three to be included in the sample. Participants were excluded if parents reported that the child had a pervasive developmental disorder (e.g., autism, intellectual disability) or if the child or parent was not fluent in English.

Measures.

Parenting behavior. As in Study 1, mothers and fathers self-reported their positive parenting and involvement over a 4-week period using the APQ (Shelton et al., 1996). Internal consistency for this sample was .89 for mothers and .83 for fathers. As in Study 1, parent reports on the APQ positive composite were marginally related to their reports of negative parenting practices (measured using the Parenting Scale; D. S. Arnold, O'Leary, Wolff, & Acker, 1993), $r(46) = -.25$, $p = .08$. Parents and children were also observed during play and task situations. Mother-child and father-child interactions were coded using the same Responsiveness Coding System (Johnston et al., 2002) and the same coding procedures as in Study 1. The intraclass correlation between coders for the composite responsiveness variable was .95 for mothers and .85 for fathers in this sample. In this study, observed responsiveness was not significantly related to self-reports of either positive ($r(45) = .11$, $p = .46$) or negative ($r(45) = -.22$, $p = .14$) parenting, perhaps in part due to the small sample size.

Parent's psychological functioning.

Conners' Adult ADHD Rating Scale-Screening Version (CAARS-SV; Conners, Erhardt, & Sparrow, 1999). This measure assesses levels of ADHD symptoms in adults. Mothers and fathers rated their levels of inattentive and hyperactive/impulsive symptoms on a 4-point Likert scale ranging from 0 (*not at all, never*) to 3 (*very much, very frequently*). For analyses, only the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.; *DSM-IV*; American Psychiatric Association, 1994) inattentive and hyperactive/impulsive subscales were used. The CAARS-SV is reliable and valid for assessing adult ADHD symptoms (Conners et al., 1999). Adler et al. (2008) reported intraclass correlations between patient and investigator ratings of symptoms ranged from .45 to .87 across the symptom dimensions of the CAARS-SV, and across pre- and post-treatment assessments. Adult self-ratings also were significantly correlated with a variety of clinical and functional outcome measures. Internal consistency for this sample was .87 for

the inattentive subscale and .83 for the hyperactive/impulsive subscale for mothers, and it was .91 for the inattentive subscale and .81 for the hyperactive/impulsive subscale for fathers.

Adult Self-Report (ASR; Achenbach & Rescorla, 2003). This measure assesses a range of psychological functioning in adults on empirically-based subscales. For the purpose of this study, we used mother and father reports on the subscales assessing depressive problems and antisocial problems. Norms are available for each gender in two age categories (18–35 years and 36–59 years). The ASR has acceptable reliability and validity, and has scales consistent with *DSM* categories (Achenbach & Rescorla, 2003). The internal consistency in this sample was .79 for depressive problems and .78 for antisocial problems for mothers, and it was .82 for depressive problems and .90 for antisocial problems for fathers.

Child disruptive behaviors.

Conners' Parent Rating Scales-Revised Short Form (CPRS-R-S; Conners, 2001). We used the oppositional scale of the CPRS-R-S to gauge the child's level of disruptive behaviors. Cronbach's alpha for the oppositional scale score was .92 for mothers and fathers.

Procedure. This study was approved by the university ethics boards. Eligible families were identified by clinicians and given information about the study. Families who were interested contacted research assistants by phone and were provided details of the study. Those who met eligibility criteria were mailed a consent form and were invited to the lab.² Upon arrival, parental consent and child assent were obtained. Parents engaged in a recorded interaction with their children, and they completed questionnaires. The interaction included free play and the completion of tasks. Parents instructed their children on tasks such as sorting coins, completing puzzle books, packing a backpack, re-lacing shoes, setting the table, and cleaning up toys. The order of mother-child and father-child interactions and questionnaires were counterbalanced across families. Parents received a \$20 honorarium, and children received a T-shirt.

Results

Descriptive analyses. Descriptive information for child and parent variables is presented in Table 3. Children's mean score on the oppositional scale of the CPRS-R-S corresponded to a *T*-score of 68, reflecting the clinical nature of the sample with all children diagnosed with ADHD. Mothers' and fathers' mean scores on the CAARS were within the normal range for a nonclinical adult population for both inattentive and hyperactive/impulsive symptoms (Conners et al., 1999). Approximately 15% of mothers and fathers had inattentive symptoms in the clinically significant range, and 17% had hyperactive/impulsive symptoms in the clinically significant range (with *T*-scores 2: 65). *T*-scores on the ASR for both depressive and antisocial problems indicated mothers and fathers' scores were approxi-

² This data set was part of larger study examining parents' psychological functioning and how it relates to their own parenting behavior and also co-parenting behavior, particularly in families with children who have ADHD and comorbid oppositional defiant disorder.

Table 3
Descriptive Information, Study 2

Variable	<i>M</i>	<i>SD</i>	Range
Child age	8.13	1.47	6.00–11.00
Child oppositional symptoms (CPRS-R-S)	10.69	4.11	2–18
Family income ^a	9.36	1.81	4–11
Parent age	39.31	6.54	28–64
Parent depressive symptoms (ASR)	5.48	4.22	0–15
Parent antisocial symptoms (ASR)	3.92	3.36	0–14
Parent inattentive symptoms (CAARS-SV)	0.82	0.63	0–2.67
Parent hyperactive/impulsive symptoms (CAARS-SV)	0.71	0.57	0–2.56
Self-reports of parent's positive parenting/involvement (APQ)	3.28	0.44	1.88–4.00
Observed parenting responsiveness	4.84	0.32	3.97–5.43

Note. *n* = 48. CPRS-R-S = Conners' Parent Rating Scales–Revised Short Form, ranging from 0 to 3; ASR = Adult Self-Report; CAARS-SV = Conners' Adult ADHD (Attention-Deficit/Hyperactivity Disorder) Rating Scale–Screening Version, ranging from 0 to 3; APQ = Alabama Parenting Scale, ranging from 0 to 4; responsiveness ranges from 1 to 7.

^a Family income was based on a scale ranging from 1 (*less than \$10,000*) to 11 (*more than \$100,000*). Higher scores indicate higher family income.

mately 0.5 to 1 standard deviation above the normative means (*T*-scores range from 55 to 58).

Correlations between main variables, possible covariates, and demographic characteristics. Replicating the pattern found in Study 1, parental inattentive and hyperactive/impulsive symptoms were significantly correlated, $r(46) = .77, p < .001$, and each was significantly correlated with antisocial symptoms (inattentive $r(46) = .37, p = .01$; hyperactive/impulsive $r(46) = .38, p = .01$). Inattentive symptoms also were significantly correlated with depressive symptoms, $r(46) = .40, p = .01$. Parent ADHD symptoms were not significantly correlated with measures of positive parenting at the bivariate level, but antisocial symptoms were significantly negatively correlated with self-reports of positive parenting, $r(46) = -.31, p = .03$. Turning to demographic vari-

ables, child age was negatively and family income was positively correlated with parents' responsiveness, $r(45) = -.56, p < .001$, and $r(36) = .45, p = .01$, respectively. There was a significant negative relation between parent age and inattentive symptoms, $r(46) = -.35, p = .01$. Given that none of these variables were significantly associated with both predictor and outcome variables, they were excluded from subsequent analyses.

Regression predicting parent self-reports of positive parenting/involvement. We examined whether maternal and paternal ADHD symptoms would significantly predict self-reports of positive parenting, after controlling for observations of positive parenting, child characteristics, and other parental psychopathology (see Table 4). In Step 1, child gender, child oppositional behavior (as rated by each parent), parent gender, parental depressive and antisocial symptoms, and observed responsiveness were entered. Child and parent gender were included in this model because the sample included both mothers and fathers, and boys and girls, and we believed parenting behaviors may differ across the type of parent–child relationship. The model at Step 1 was not significant, $R^2 = .19, F(6, 40) = 1.54, p = .19$. In Step 2, parental inattentive and hyperactive/impulsive symptoms were entered and accounted for significant variance, $R^2_{\text{change}} = .13, F_{\text{change}}(2, 38) = 2.19, p = .04$. The full model at this step was significant, $F(8, 38) = 1.85, p = .05$. Further examination revealed that parental hyperactive/impulsive symptoms, in particular, added unique variance in accounting for self-reports of positive parenting, beyond the effects of observed positive parenting and control variables. As in Study 1, more hyperactive/impulsive symptoms in parents were associated with more positive self-views of positive parenting, above and beyond observations of positive parenting, for both mothers and fathers.

In Step 3, interactions between parental ADHD symptoms and parent gender were entered. There was no significant change in variance accounted for by the introduction of these interactions in Step 3, $R^2_{\text{change}} = .02, F_{\text{change}}(2, 36) = 1.85, p = .53$, suggesting that the relation between ADHD symptoms and

Table 4
Self-Report of Positive Parenting Predicted From Parent ADHD Symptoms: Study 2

Predictor	Unstandardized [3]	<i>SE</i>	Standardized [3]	<i>t</i>	<i>p</i>
Step 1: $R^2 = .19$, adjusted $R^2 = .07, F(6, 40) = 1.54, p = .19$					
Child gender	-.20	.16	-.20	-1.30	.20
Child oppositional symptoms	-.02	.02	-.15	-0.92	.36
Parent gender	.19	.14	.22	1.32	.20
Parent depressive symptoms	.003	.02	.03	0.17	.87
Parent antisocial symptoms	-.04	.02	-.30	-1.67	.10
Observed responsiveness	.13	.20	.09	0.63	.53
Step 2: $\Delta R^2 = .13, \Delta F(2, 38) = 2.19, p = .04$					
Child gender	-.24	.15	-.24	-1.61	.12
Child oppositional symptoms	-.02	.02	-.21	-1.39	.17
Parent gender	.10	.14	.11	0.72	.48
Parent depressive symptoms	.01	.02	.09	0.51	.62
Parent antisocial symptoms	-.07	.02	-.50	-2.69	.01
Observed responsiveness	.10	.19	.07	0.51	.61
Parent inattentive symptoms	-.10	.16	-.14	-0.64	.53
Parent hyperactive/impulsive symptoms	.39	.17	.50	2.28	.03

Note. Child gender was coded as 0 = male, 1 = female. Parent gender was coded as 0 = male, 1 = female. ADHD = attention-deficit/hyperactivity disorder.

positive self-views of parenting does not differ across mothers and fathers.

General Discussion

Consistent with our hypotheses, parental ADHD symptoms were positively associated with self-reports of positive parenting, beyond the effects of observed positive parenting and control variables. This pattern was evident across both mothers and fathers, and across samples of families with a wide spectrum of child ADHD severity (from no ADHD to clinical levels of ADHD). Our findings are consistent with the possibility of over-estimations of parenting competence associated with higher levels of parental ADHD symptoms, similar to that already documented in children with ADHD.

We first consider the finding that parental ADHD symptoms, specifically hyperactive/impulsive symptoms, are uniquely associated with self-reports of positive parenting behaviors. Across our two studies, both maternal and paternal hyperactive/impulsive symptoms were associated with a possible over-reporting of positive parenting. These findings are consistent with the positive illusory bias found in the child ADHD literature (Owens et al., 2007), and they parallel Knouse et al.'s (2005) and Jiang and Johnston's (2012) findings of over-estimation of competence associated with adult ADHD symptoms. Thus, the over-estimations associated with ADHD symptoms in children's self-reports seem to extend to adults with ADHD symptoms and to estimates of competence in the parenting domain. It is important to note that the significant association of ADHD symptomatology and more positive self-reports of parenting was unique to hyperactive/impulsive symptoms. The high degree of overlap between inattentive and hyperactive/impulsive symptoms cautions against concluding from the regression analyses that inattentive symptoms are not associated with positive parenting. However, the bivariate relations, and partial correlations conducted controlling for the alternate dimension of ADHD symptoms, also revealed stronger and positive links to self-report of positive parenting for hyperactive/impulsive symptoms. As expected, adult reports of their ADHD symptoms were related, in both studies, to their reports of depressive and antisocial/hostile symptoms. However, the contributions of hyperactive/impulsive symptoms to positive parenting were observed with these comorbid symptoms controlled. We also note that, in Study 2, although antisocial symptoms were uniquely associated with self-reports of parenting, this relation was negative, whereas the association for ADHD symptoms was positive. The association for antisocial symptoms parallels previous research (Wachlarowicz, Snyder, Low, Forgatch, & DeGarmo, 2012) and attests that the positive association between hyperactive/impulsive symptoms and parenting is not an anomaly of our samples or methods.

The association between parental ADHD symptoms and self-reports of positive parenting is consistent with the similarity-fit phenomenon found by Psychogiou et al. (2007, 2008), wherein parents with higher ADHD symptoms are more positive in their parenting of children with ADHD symptoms. However, in our studies, parental ADHD symptoms were not significantly associated with observations of positive parenting, suggesting that the links between parental ADHD and positive parenting may be more related to how parents complete self-report measures assessing their parenting competence, rather than indicating particular

strengths in parenting. Of course, it is also possible that our observational measure of parenting was less sensitive as a measure of positive parenting than was the self-report measure or was limited by the measurement of parenting within a restricted time frame. Although the responsiveness coding system has evidence of validity, it was not strongly related to the self-reports of positive parenting. Further research is necessary to replicate our results and to further explore the extent to which findings may be influenced by measurement or sample characteristics. Our focus in this study was driven by previous work suggesting positive associations between ADHD symptoms and positive parenting. However, it is important to remember that previous research has quite consistently demonstrated *negative* links between ADHD symptoms and both reported and observed parenting difficulties in domains such as consistency and over-reactivity to child misbehaviors (Johnston et al., 2012).

As already noted, it was only hyperactive/impulsive symptoms that uniquely predicted parenting in our samples, not inattentive symptoms. These findings parallel Owens and Hoza's (2003) results showing that children's hyperactive/impulsive symptoms, but not inattentive symptoms, are associated with their over-estimations of competence. The distinction between the types of ADHD symptoms uniquely associated with over-estimates found in our studies may reflect the types of parenting behaviors assessed. The association between self-reported positive parenting behaviors and hyperactive/impulsive symptoms may reflect the parents' sense of spontaneity, enthusiasm, or activity with their children. In contrast, parental inattentive symptoms may be less likely to lead to over-estimations of positive parenting, and may instead relate more to aspects of parenting such as consistency in discipline or monitoring of child behavior that require sustained mental effort and attention to details.

Given the current uncertainty regarding the level of symptomatology necessary to indicate a diagnosis of ADHD in adults (Barkley, Murphy, & Fisher, 2008) and evidence that impairments may be present at subdiagnostic levels (Mannuzza et al., 2011), we elected to measure parental ADHD symptoms dimensionally. Although most parents in our studies were not clinically diagnosed with ADHD, a sizable proportion of parents did have ADHD symptoms in the clinical range. In Study 1, approximately 10% of mothers reported ADHD symptoms at or above the 93rd percentile. In Study 2, approximately 20% of parents had ADHD symptoms at or above the 94th percentile. Further research will be important to examine more closely whether the association between parental ADHD symptoms and reporting of positive parenting occurs across the spectrum of ADHD severity.

Clinical Implications

With upcoming changes to ADHD criteria in the *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.; DSM-5; American Psychiatric Association, 2013) that are likely to explicitly include symptoms relevant to adults, and the increasing clinical use of ADHD diagnoses among adults, our studies have important clinical implications. To the extent that our findings reflect an over-estimation, or possible positive illusory bias, in reporting of positive parenting among parents with higher levels of ADHD symptoms, the implication is a clear need to employ multiple methods to assess parenting behaviors. Observations or collateral

reports may prove particularly important in allowing for accurate clinical assessment of parenting competencies in this population. This would be particularly relevant in the context of parenting interventions for families with ADHD members. As there is evidence to suggest that, at least in children with ADHD, overestimations of competence are associated with poorer treatment outcome (Mikami, Calhoun, & Abikoff, 2010), such overestimations in parenting self-reports of adults with ADHD may not only obscure the need for treatment but may also signal a need for greater efforts to engage parents in treatment. Alternately, if the positive association between higher levels of hyperactive/impulsive symptoms and self-reports of positive parenting can be found using other types of observational measures, this aspect of parenting may prove an important strength in families with ADHD members.

Limitations and Future Directions

We acknowledge the limitations of these studies. First, as noted above, although both the self-report and observational measures of parenting are valid and were selected to be similar, it is possible that they were tapping aspects of parenting that are differentially related to ADHD symptoms. In addition, as also noted above, parents in our studies were not clinically diagnosed with ADHD, and our findings may not generalize to a clinical population of parents. It is possible that at clinical levels of adult ADHD, parenting difficulties, child misbehaviors, and family functioning may be so severely impaired that over-estimations of competence would be less likely to obscure difficulties. We also acknowledge that in Study 2, although the children had all been previously diagnosed with ADHD, we lacked teacher ratings and relied on mother and father ratings to confirm these diagnoses. In both studies, we relied on parent self-reports of their ADHD symptoms, rather than employing collateral reports and/or assessments of impairment as would be necessitated in order to diagnose ADHD (Sibley et al., 2012). However, the measures that we used have demonstrated significant and moderate to strong correlations between self and other ratings of ADHD symptoms, and have provided evidence that self-reports in nonreferred adults are typically higher than reports by other informants. This tendency to report more difficulties with symptoms stands in contrast to the suggestion of over-estimations of positive parenting seen in this sample (e.g., parents who acknowledged the highest levels of ADHD difficulties were those who reported the most optimal parenting), and thus, it seems unlikely that our reliance on self-reports of ADHD symptoms could account for the findings.

Although we consider the observational measures of parenting to be a strength in our studies, our focus was limited to a small set of parenting behaviors (including praise, warmth, and acceptance) as measured in a laboratory setting over a brief duration. It will be important in future studies to not only examine a broader range of positive parenting behaviors, perhaps including aspects such as limit setting or emotion coaching, but to attempt to do so in a more naturalistic manner. Although parent and child gender were included in our second study, the failure to find differences associated with these variables may reflect the limited power of the analyses. Similarly, we were not able to test for full interaction effects that might exist across pairings of parent and child gender. Further studies to examine whether our pattern of results will

replicate in larger samples of mothers and fathers, and families of both boys and girls with ADHD, will be important. An additional necessary future direction will be the exploration of these relationships between parent ADHD and parenting in families from diverse racial and ethnic backgrounds.

Conclusion

This study was the first to examine parental ADHD symptoms as predictors of overestimation in self-reports of parenting and found that parental hyperactive/impulsive symptoms were positively associated with over-reporting of positive parenting. The over-reporting of positive parenting was evident across mothers and fathers and across a range of parent and child ADHD symptom severity. The results point to the importance of considering parental ADHD symptoms in the assessment of parenting and treatment planning in families with ADHD members.

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