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Parental Agreement on ADHD Symptom-Specific and Broadband Externalizing Ratings of Child Behavior

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Abstract

Mothers and fathers often disagree in their ratings of child behavior as evidenced clinically and supported by a substantial literature examining parental agreement on broadband rating scales. The present study examined mother-father agreement on DSM-based, ADHD symptom-specific ratings, as compared to agreement on broadband ratings of externalizing behavior. Using mother and father ratings from 324 children who participated in the Multimodal Treatment Study of Children with ADHD, parental agreement was computed and patterns of disagreement were examined. Mother-father ratings were significantly correlated. However, a clear pattern of higher ratings by mothers compared to fathers was present across ratings. Agreement on ADHD symptom-specific ratings was significantly lower than agreement for broadband externalizing behaviors or ODD symptoms. Of several moderator variables tested, parental stress was the only

variable that predicted the discrepancy in ratings. Disagreement between parents is clinically significant and may pose complications to the diagnostic process.

Keywords

ADHD; informant agreement; stress; MTA; assessment

Practice parameters for the evidence-based assessment of children with ADHD recommend the collection of standardized rating scales from multiple settings and sources (AACAP, 1997; AAP, 2000). Specifically, the American Academy of Pediatrics (AAP) guidelines stipulates that ADHD symptom specific ratings should be collected from a classroom teacher and from parents. This approach, while comprehensive, inevitably creates situations where informants provide discrepant or contradictory ratings. The reasons for inter-rater discrepancies and how to interpret such discrepancies have not been readily established.

In practice and research, discrepant ratings may occur between parents and teachers or even between mothers and fathers. It appears that informants from the same setting (e.g., mothers and fathers) rate children more similarly than informants from different settings (e.g., mothers and teachers; Achenbach, McConaughy, & Howell, 1987). Estimates of parent-teacher agreement demonstrate low, but statistically significant, correlations. For example, in a meta-analysis of 119 studies, Achenbach et al. (1987) reported an average correlation of .27 between parents and teachers on broadband measures such as the Child Behavior Checklist (CBCL). Comparable levels of parent-teacher agreement are observed when Diagnostic and Statistical Manual (DSM) symptoms of ADHD are rated ($r = .09-.39$; Antrop, Roeyers, Oosterlann, & VanOost, 2002; Shaffer, Fisher, Dulcan, & Davies, 1996; Wolraich et al., 2004).

Agreement between mothers and fathers tends to be higher than estimates reported for parent-teacher agreement though far from concordant (Achenbach et al., 1987; Duhig, Renk, Epstein, & Phares, 2000; Mash & Johnson, 1983). Across three commonly used broadband rating scales, correlations for mother-father agreement were .79 for ratings on the CBCL, .56-.73 for the Behavior Assessment Scale for Children (BASC), and .55 for the Conners Parent Rating Scale (CPRS; Achenbach et al., 1987). Similarly, Duhig et al. (2000) report moderate agreement ($r = .66$) for mother-father ratings of broadband externalizing symptoms (Duhig, Renk, Epstein & Phares, 2000).

Notably, all of the mother-father agreement research has focused on broadband rating scales; not ADHD symptom-specific ratings. Two findings from research examining mother-father agreement on broadband ratings would seem to have implications for mother-father agreement on ratings of ADHD symptomatology. First, informant agreement appears to be higher for externalizing behaviors (e.g. aggression and hyperactivity) as compared to internalizing behaviors (e.g., depression and anxiety; Achenbach et al., 1987; Christensen, Margolin, Sullaway, 1992; Duhig et al., 2000). This finding is typically attributed to externalizing behaviors being more overt and therefore, more observable (Achenbach et al., 1987; Christensen, Margolin, & Sullaway, 1992; De Los Reyes & Kazdin, 2005). There is some specific evidence to support this theory. For example, Christensen, Margolin, & Sullaway (1992) found that externalizing items on the CBCL were rated as more objective and observable by a group of independent raters than internalizing items and were associated with higher parental agreement. Because ADHD behaviors are considered to be on the externalizing spectrum, high parental agreement might be expected. However, one might also predict that agreement may be different across the ADHD symptom domains, inattention vs. hyperactivity/impulsivity. These predictions have not been examined.

A second relevant finding is that mothers' consistently rate externalizing behaviors more severely than fathers (Christensen, Margolin, & Sullaway, 1992; Duhig et al., 2000; Jensen, Taylor, Xenakis, & Davis, 1988; Mash & Johnson, 1983). Concerning ratings of ADHD behaviors, a similar pattern of higher ratings among mothers than fathers would be expected. Again, this prediction has not been examined on ADHD symptom-specific scales.

Given current recommendations to use DSM-based ADHD symptom checklists (AAP, 2000), there is a clear need for more information regarding the utility of gathering ADHD symptom-specific ratings from multiple parents as well as guidelines for handling discrepant ratings. As agreement tends to be higher when the area being rated is more objective and observable (Christensen, Margolin & Sullaway, 1992) parental agreement on measures of DSM oppositional symptoms may be higher than agreement in DSM ADHD symptoms, although this has not been examined.

Given probable rating discrepancies between mothers and fathers on ADHD symptom-specific ratings, it is important to understand possible predictors of discrepancies. For example, mother-father discrepancies in child ratings may be the result of inherent gender biases such as gender-specific tolerance levels for externalizing behaviors. Specifically, fathers may be more likely to perceive externalizing behaviors as a natural aspect of childhood for boys and as less problematic than mothers (Singh, 2003). Recent research examining parent/teacher agreement on ratings of DSM ADHD symptoms found that discrepancies may also be caused by other variables specific to the parent (van der Oord, Pris, Oosterlann, & Emmelkamp, 2006). For example, parental stress has been shown to affect ratings of children, with high stress associated with more severe ratings of child disruptive behavior (Chi et al., in press; van der Oord et al., 2006). Similarly, parents of children with ADHD are more likely to exhibit symptoms of depression (Nigg & Hinshaw, 1998) and symptoms of depression are also associated with more severe ratings of behavior (Chi & Hinshaw, 2002; Youngstrom, Izard, & Ackerman, 1999; Youngstrom, Loeber & Stouthamer-Loeber, 2000). Although this could be a result of more severe child externalizing behavior causing more parental depression, it has been partially explained with a depression distortion hypothesis (Chi et al., in press; Youngstrom, Izard, & Akerman, 1999).

The purpose of the present study is to examine maternal and paternal agreement on ratings of DSM-IV ADHD symptomatology. For the sake of comparison, agreement on ratings of ODD symptomatology and CBCL externalizing behavior will also be examined. We predict that in a clinic sample of children with ADHD, parental agreement on ADHD symptom-specific ratings will be comparable to what is typically reported in the broadband externalizing literature (e.g., Duhig et al., 2000 meta-analysis). Related to the observable nature of behavior, we hypothesize that there will be higher agreement on symptoms of ODD and hyperactivity/impulsivity than for symptoms of inattention. Similar to what has been reported with broadband ratings we predict that mothers of children will rate ADHD symptoms and oppositional behaviors more severely than fathers.

This study also examines variables that might help to explain or understand any discrepancies between maternal and paternal ratings. A number of studies of the depression-distortion hypothesis have found that parental symptoms of depression (usually maternal) predict informant discrepancies on broadband measures of child behavior (e.g. Chi et al., in press; Youngstrom, Lober, & Stouthamer-Loeber, 2000; Youngstrom, Izard, & Ackerman, 1999). De Los Reyes, Goodman, Kliewer, and Reid-Quinones (2008) recently extended this finding by showing child depressive symptoms are also important in predicting discrepancies. However, a recent study focusing on *parent-teacher* agreement on *DSM symptom-specific ratings of ADHD* found that stress but not depression predicted the

discrepancy between parents and teachers (van der Oord et al., 2006). Accordingly, we predict that stress and not depression will predict *mother-father* rating discrepancies on ADHD symptom-specific ratings.

Method

Subjects

Participants were recruited for the Multimodal Treatment Study of Children with ADHD (MTA). Children ($n = 579$) were between 7–9 years of age and had a diagnosis of ADHD Combined Type at the time of recruitment (American Psychiatric Association, 2000). This diagnosis was determined using the Diagnostic Interview Schedule for Children, Parent Report (DISC-P 4.0; Shaffer et al., 2000), supplemented with up to two symptoms identified by children's teachers using the SNAP-IV (Swanson, 1992) for cases falling just below the DISC diagnostic threshold. Co-occurring oppositional defiant or conduct disorders (54%), anxiety disorders (33.5%), and affective disorders (3.8%) were diagnosed with the DISC-P. Of the 324 with ratings by both parents, Sixty-two percent was Caucasian, 17% was African-American, 8% was mixed descent, 6% was Hispanic, and 7% other. Eighty percent of the sample was male.

At baseline, ratings were collected from both mothers and fathers when more than one parent was available. The ratings collected from 321 married couples (317 biological mothers, 287 biological fathers, 34 step fathers and 4 step mothers) were used in these analyses.

Measures

SNAP-IV—(Swanson, 1992). The SNAP-IV has 39 items, which are derived from DSM criteria for ADHD and ODD. The items on this scale are reproduced directly from DSM-IV and DSM-III symptoms for ADHD and ODD, and include 18 ADHD items from DSM-IV (9 DSM inattention and 9 DSM hyperactive/impulsive symptoms). Parents and teachers respond on a 4-point Likert scale rating the severity of symptoms in the past four weeks (i.e., 0 = not at all, 1 = just a little, 2 = pretty much, and 3 = very much). The scale yields ADHD-related factor scores on Inattention and Hyperactivity/Impulsivity. Each factor score is derived by summing the items for each symptom domain and dividing by the number of items on each factor (Inattention = 9 items; Hyperactivity/Impulsivity = 9 items). Summing the 18 DSM-IV ADHD symptom ratings yields an ADHD Total Score. Normative data for the SNAP are provided by Gaub and Carlson (1997) and Swanson (1992). Using SNAP parent ratings collected from the ADHD and normal control participants from the MTA sample ($n = 1311$), the 18 DSM ADHD items were found to have excellent internal consistency, Cronbach's alpha = .97.

Child Behavior Checklist—(CBCL; Achenbach, 1991) – The CBCL is one of the most widely used rating scales in research and clinical practice. The 4 – 18 year-old caregiver extended version was collected from parents at baseline in the MTA study. Item scores on the CBCL range from 0 (not true of child) to 2 (very true or often true of child). The Externalizing Problems scale score is comprised of 27 items, 8 from the Delinquent Behavior subscale and 19 from the Aggressive Behavior subscale. One-week test-retest stability coefficient for the Externalizing Problems scale is .93 (Achenbach, 1991).

Parenting Stress Index (PSI) – Short Form—The PSI-short form is comprised of 36 items which parents complete by rating on a 5-point likert scale how much they agree with the item with response options ranging from strongly disagree to strongly agree. The PSI consists of two empirically derived factors, Parental Distress and Parent-Child

Dysfunctional Interaction which can be combined to create a PSI Total Score. The PSI is a self-administered scale that has acceptable test-retest (range = .68 – .85) and internal reliability (range = .80 – .87; Abidin, 1990).

Beck Depression Inventory (BDI)—The BDI consists of 21 items rated on a 4-point likert scale with higher scores indicating greater depression. The BDI is frequently utilized in research to evaluate parental depression in samples of children with disruptive behavior disorders. The BDI has good internal consistency, split half reliability and has been found to differentiate between mothers of clinic-referred and non-clinic referred children (Beck, Steer, & Garbin, 1988).

Statistical Analyses

In order to assess parental agreement, intraclass correlations (ICC; Shrout & Fleiss, 1979) and Pearson correlations were conducted examining mother-father agreement on the SNAP Inattention, Hyperactivity/Impulsivity, ADHD Total, and ODD Total Scores, and the Externalizing scale of the CBCL. Differences in mother-father correlation coefficients between ADHD symptoms, ODD symptoms and the CBCL Externalizing symptoms were assessed using Fisher r-to-z transformations. Discrepancies in mother and father ratings were assessed using t-tests.

Finally, in order to assess for the possible moderating effects of other variables on any observed discrepancies in mother-father ratings, a set standard of regressions were performed. In line with the recommendations provided by De Los Reyes and Kazdin (2004), standardized differences scores were utilized as the dependent variable. Specifically, rating scale means were transformed into z-scores and the difference between mother and father z-scores (father's z-scores were subtracted from mother's z-scores) was calculated and used as the dependent variable. In their review of methods for calculating informant discrepancies, De Los Reyes and Kazdin (2004) found that standardized difference scores correlated equally well with each of the informant's individual ratings and thus, produced the most consistent estimate of informant discrepancies. Six predictor variables were entered into the regression simultaneously. Variables entered into the regression included the following: child race (Caucasian or African-American), child gender, Parenting Stress Index (PSI) Total Score - Mother, Parent Stress Index (PSI) Total Score – Father, Beck Depression Inventory (BDI) Total Score – Mother, and Beck Depression Inventory (BDI) Total Score – Father. A regression was run for each of the five dependent variable difference scores; SNAP Inattention, SNAP Hyperactivity/Impulsivity, SNAP ADHD, and SNAP ODD Total Scores, and the CBCL Externalizing Score (see Table 3).

Results

Correlation Analyses

Intraclass correlations between mothers and fathers for the SNAP Inattention, Hyperactivity/Impulsivity and ADHD Total scores were moderate (ICC range = .38–.40) and statistically significant (all $ps < .01$; see Table 1). There was no difference in agreement between ratings of Inattention symptoms and Hyperactivity/Impulsivity symptoms ($p > .05$). Correlations on the CBCL Externalizing subscale and ODD Total Score were larger (ICCs = .56) and also statistically significant (both $ps < .01$). The magnitude of correlation for mother-father ratings of ODD symptoms on the SNAP and externalizing behaviors on the CBCL was significantly higher than associations observed on the SNAP ADHD symptom scales ($ps < .01$). The ODD and CBCL correlations were not statistically different ($p > .05$).

Comparisons of mother and father ratings

Mothers rated their children significantly higher (more severe) than fathers on all SNAP scales (i.e., inattention, hyperactivity/impulsivity, ADHD Total, and ODD Total) and on the CBCL Externalizing Scale. The differences reflect small to medium effect sizes for disagreement depending on the rating (see Table 2).

Moderator analyses

Using standardized difference scores from the SNAP inattention, hyperactivity/impulsivity, ADHD Total Score, ODD Total Score, and CBCL Externalizing Score as dependent measures, the father's PSI Total Score was significant in all of the analyses. Specifically, there was a significant negative relationship between fathers' stress scores and all dependent variables (see Table 3). There was a significant negative relationship between mothers' PSI Total Score and ODD symptoms and a significant positive relationship with the CBCL Externalizing Score. Child gender, child race, and BDI scores (mother or father) were not significantly correlated with any of the dependent variables.

To understand and elucidate these findings, mother and father ratings of ADHD symptoms (i.e., SNAP ADHD Total Score) and externalizing symptoms (i.e., CBCL Externalizing Score) were plotted as a function of mother and father PSI Total Score ratings (see Figure 1 & Figure 2). A pattern is revealed whereby fathers with low parental stress rate their children's ADHD and Externalizing symptoms lower than mothers, but as stress increases, this pattern reverses and fathers rate their children more severely than mothers.

Discussion

In a clinic sample of children diagnosed with ADHD – Combined Type, mothers and fathers demonstrated moderate agreement in ratings of ADHD symptomatology and externalizing problems. There was a clear pattern of mothers rating children as having higher levels of ADHD and ODD symptomatology and externalizing problems than fathers. However, it appeared that parental stress may moderate these interparental discrepancies in ratings.

While parental agreement on ADHD symptom-specific ratings was moderate, the magnitude of agreement was significantly less than was observed for ODD symptom ratings or externalizing symptoms. This finding is not consistent with the parent-teacher agreement literature which has repeatedly demonstrated that parent-teacher agreement on ADHD symptoms is similar in magnitude to parent-teacher agreement on broadband measures (Antrop, Roeyers, Oosterlann, & VanOost, 2002; Shaffer, Fisher, Dulcan, & Davies, 1996; Wolraich et al., 2004). One possible explanation for this finding is that the relative reliability of the rating scales (i.e., SNAP vs. CBCL) is contributing to the different correlations. However, DSM ADHD rating scales and the CBCL have nearly identical psychometric properties (e.g., Cronbach's alpha for CBCL = .84 and for ADHD specific rating scales = .87 – .96; test-retest reliability for CBCL = .71–.90 and for ADHD Rating Scale = .70–.86; Pelham, Fabiano & Massetti, 2005). Also, the ODD ratings and the ADHD ratings within the SNAP rating scale produce discrepant levels of mother-father agreement suggesting that there is something inherent to ADHD ratings that results in less parental agreement. A second plausible explanation for lower parental agreement on ADHD ratings is that many broadband externalizing items focus on delinquent and aggressive behaviors. These behaviors may be more highly observable than symptoms of ADHD and therefore, more likely to produce high agreement (Christensen, Margolin, & Sullaway, 1992). The theory that more easily observed behaviors generates higher agreement is supported by our finding that mother-father agreement on ODD symptoms is similar (not statistically different) to rates of broadband externalizing agreement. However, our hypothesis that hyperactivity/

impulsivity symptoms are more easily observed and therefore, would have higher correlations as compared to inattention symptoms was not confirmed.

Our analyses indicate that the differences between maternal and paternal ratings of ADHD symptoms have the potential to significantly impact diagnostic decisions. Examination of intraclass correlations, which takes into account chance agreement between raters, revealed correlations between mothers and fathers of .38 for the SNAP ADHD and .56 for the SNAP ODD. While these levels of association suggest moderate agreement, there is also considerable disagreement. This disagreement between parents is clinically significant and may pose complications to the diagnostic process. For example, using a strict cutoff of six or more symptoms (as defined by ratings of “pretty much” or “very much”), mothers’ SNAP ratings alone would suggest a DSM-IV ADHD diagnosis in 73% of study participants. In contrast, if fathers’ ratings alone were utilized, 58% of the sample would have met symptom criteria for ADHD. Considering that the AAP and AACAP guidelines currently do not include information on how to incorporate ratings from both parents, this finding has significant clinical implications.

Effect size analyses revealed that the disagreement between parents on the SNAP ratings of ADHD symptomatology was moderate, $d = .41$ (see Table 2). This is a noteworthy finding that has significant implications for treatment outcome research. Specifically, in treatment outcome studies where repeated measures are routinely collected, if the investigator does not ensure that the same parent completes ratings each time, treatment effects may be artificially inflated or nullified depending upon the order in which mother and father ratings were acquired. For example, if the mother of a treatment participant completed SNAP ratings at baseline and the father at post intervention, it would appear that there was a moderate effect of treatment even if there was actually no effect. This finding suggests that significant efforts should be made to have the same parent complete repeated measures ratings and that it may be advisable for changes in rater to be documented and reported as part of treatment outcome studies.

Previous research has found that parental stress and depression may influence agreement in parent/teacher and parent/child ratings of behavior (Chi & Hinshaw, 2002; Chi et al., in press; De Los Reyes et al., 2008; van der Oord et al., 2006; Youngstrom, Izard, & Ackerman, 1999). Some evidence has been presented suggesting that high levels of parental depression may in fact bias parent ratings, with high levels of depression associated with overly negative reports of behavior (Chi & Hinshaw, 2002). Concordant with the van der Oord et al. (2006) study of ADHD symptom-specific parent-teacher agreement, stress was the only variable that predicted the discrepancy between mothers’ and fathers’ ratings. The direction of a putative causal relationship between parental stress and child misbehavior can not be inferred from these correlational results. It is indeed plausible that children with negative behavior cause more stress in their parents. But it is equally plausible that parents with increased stress rate their children more negatively.

Parental stress appeared to impact fathers differently than mothers when rating child ADHD symptomatology. According to the PSI manual, parents who obtain a Total Score above 90 are experiencing clinically significant levels of stress (Abidin, 1990). The mean PSI for mothers in our sample was 92 vs. 87 for fathers. Both mothers and fathers of children with ADHD appear to be experiencing significant parental stress. These scores are similar to those reported in other samples of parents of children with ADHD (DuPaul, McGoey, Eckert, VanBrakle, 2001). The regression analyses demonstrate that parental stress is more highly correlated with fathers’ ratings of children’s ADHD symptomatology compared to mothers’ ratings. Plotting ADHD symptom ratings by level of stress (see Figure 1) reveals that fathers who report low levels of parenting stress rate their children’s behavior less

severely compared to mothers with low levels of stress and the discrepancy is greater. However, fathers who are experiencing moderate levels of stress are more likely to rate their children's behavior closer to mothers with moderate stress and the discrepancy narrows. Further, at the highest levels of stress, the discrepancy reverses, with fathers rating behavior more severely than mothers (see Figure 1 & Figure 2). Again, directionality of these relations and the accuracy of the ratings can not be determined from these data.

Clinical Implications

These findings have significant clinical implications because the AAP Guidelines for ADHD assessment stipulate that ADHD symptom-specific ratings and not broadband measures be collected from parents. As such, physicians will likely be faced with considerable disagreement between mothers and fathers. One possible solution for dealing with discrepancies between mother and father ratings of ADHD symptoms would be to identify one parent as "primary" and to weigh their ratings more heavily when making diagnostic decisions. Typically, the primary parent is the parent with greater exposure and knowledge of a child's behavior. A second alternative is to have mothers and fathers jointly complete ratings of ADHD symptomatology. The clinician could request that the parents come to agreement on each of the items. However, if parents could not agree on a particular item they would be allowed to provide multiple responses. In those cases where multiple responses were circled, the clinician could use the average of the two responses or could interview both parents and clinically determine the most accurate rating (i.e., similar to the procedure used with the K-SADS for handling discrepant parent/child reports; Kaufman et al., 1997). This technique fits well with the current recommendations that emphasize the multi-informant, multi-method, approach to diagnosing ADHD (Pelham et al., 2005).

Irregardless of the method chosen, one needs to consider the purpose of the assessment process. It has been argued that the overarching purpose of assessment of ADHD should go well beyond diagnosis to providing information that will guide intervention development (Pelham et al., 2005). The multi-informant assessment strategy may serve to inform the clinician about family dynamics or contextual differences that will play a role in the intervention process. For example, parental perceptions of the child and parental motivation for treatment are clinically relevant and require consideration in interventions such as behavioral parent training (Pelham & Fabiano, 2008).

Limitations

The sample utilized in these analyses was a research sample of children diagnosed with ADHD – Combined Type and the findings may not generalize to a community sample or to a sample of children with ADHD-Inattentive type. Further, it is unknown if these results apply to children with ADHD of different ages such as preschoolers or adolescents. As noted in the Methods, primary parents' responses on a structured interview were combined with teacher rating data to make the initial diagnosis of ADHD in the MTA and may have restricted the range of responses of primary parents, mainly mothers.

Also, we did not measure parental perception of behavior in terms of objectivity or ease of observation. Accordingly, our statements concerning the relationship between the observable nature of behavior and agreement are hypotheses based solely on previous research and cannot be empirically tested with the available data.

Future Directions

Fathers' input is typically not sought as part of the diagnostic or therapy process nor as part of treatment outcome evaluations (Duhig, Phares, & Birkeland, 2002). This study found that in a clinic sample, mothers rate symptoms of ADHD as significantly worse than fathers.

Unless we assume that mothers' ratings are more valid than fathers' ratings, this could lead to over-diagnosis, or at least overestimate of severity. Additional research is needed to determine the *incremental validity* of adding fathers' ratings to mothers' ratings as part of the diagnostic process. Accordingly, if it is determined that paternal ratings make a significant contribution to the diagnostic process then guidelines must be established for clinicians dealing with discrepant ratings of behavior or with families where only one parent is available. In addition, if this finding is replicated, it will be important for studies providing normative information on rating scales to include fathers and to report norms separately for mothers and fathers or for primary and secondary caregivers.

Additional research is needed to explore the factors that may influence or even bias ratings of ADHD. It is possible that mothers perceive symptoms of ADHD as occurring more frequently than fathers, i.e. rating a behavior as occurring *very often* as opposed to *often* or *sometimes*, possibly because they spend more time with the child. An alternate explanation is that fathers and mothers agree on the frequency of externalizing behaviors but fathers view the behaviors as less problematic and impairing, i.e. the "boys will be boys" hypothesis. Studies where mothers and fathers observe a child's behavior and then rate the behavior may shed light on the relative accuracy of mother versus father ratings. Interestingly, a series of studies employing child confederates enacting ADHD/ODD behaviors and interacting with parents of both ADHD and nonADHD children showed no differences between mothers and fathers in their perceptions of deviant child behavior on standardized ratings (Lang et al., 1999; Pelham et al., 1997, 1998). This suggests that the findings obtained herein may be unique to mothers' and fathers' perceptions with their own ADHD child as opposed to reflecting differences between mother and father perceptions of ADHD behavior in general. Also, there is some evidence to suggest that ADHD children may tend to have more deviant interactions with their mothers than their fathers, and personal experience may underlie the observed difference (Tallmadge & Barkley, 1983). Further, future research should explore whether rater gender may also influence teacher ratings of child behavior. Until more research is available on factors contributing to these differences, it will be difficult to weigh the relative importance/accuracy of multiple parent raters in the diagnostic process.

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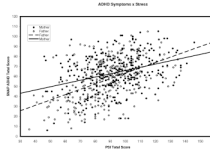


Figure 1. Graphical depiction of the effect of Parent Stress Index (PSI) scores on maternal and paternal rated symptoms of ADHD on the SNAP. Higher scores on the Y axis indicate greater numbers of ADHD symptoms.

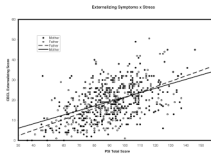


Figure 2. Graphical depiction of the effect of Parent Stress Index (PSI) scores on maternal and paternal rated externalizing symptoms on the CBCL. Higher scores on the Y axis indicate greater numbers of externalizing symptoms.

Table 1

Agreement between mothers and fathers for SNAP and CBCL ratings

Questionnaire	N	Intraclass Correlation	Pearson Correlation
SNAP-IA	320	.39**	.45**
SNAP-HI	318	.40**	.45**
SNAP-ADHD	319	.38**	.43**
SNAP-ODD	317	.56**	.57**
CBCL-EX	315	.56**	.58**

Note: SNAP = Swanson, Nolan and Pelham Rating Scale, IA = Inattention Total Score, HI = Hyperactivity/Impulsivity Total Score, ADHD = ADHD Total Score; ODD = ODD Total Score; CBCL-EX = Child Behavior Checklist – Externalizing Scale

* p<.05

** p<.01.

Table 2

Comparison of mothers and fathers SNAP and CBCL ratings

Rating	Mothers			Fathers			t	p	ES
	N	Mean*	SD	N	Mean*	SD			
SNAP-IA	320	2.03	.63	321	1.77	.66	-5.09	<.0001	.40
SNAP-HI	320	1.82	.63	319	1.60	.69	-4.22	<.0001	.33
SNAP-ADHD	319	1.93	.55	319	1.69	.61	-5.15	<.0001	.41
SNAP-ODD	318	1.40	.66	320	1.25	.71	-2.63	<.01	.21
CBCL-EX	320	19.87	6.76	316	17.83	9.31	-2.79	<.01	.25

* Note: Item means are reported for SNAP Rating Scale;

SNAP = Swanson, Nolan and Pelham Rating Scale; IA = Inattention Score, HI = Hyperactivity/Impulsivity Score, ADHD = ADHD Score; ODD = ODD Score; CBCL-EX = Child Behavior Checklist – Externalizing Scale; SD = Standard Deviation; ES = Cohen's *d* effect size.

Table 3

Results of regression analyses

Predictors	SNAP-IA (N=131)	SNAP-HI (N=130)	SNAP-ADHD (N=131)	SNAP-ODD (N=128)	CBCL-EX (N=127)
Child Gender	$\beta = -0.098$	$\beta = 0.072$	$\beta = -0.036$	$\beta = -0.326$	$\beta = -0.024$
Child Race	$\beta = 0.052$	$\beta = -0.146$	$\beta = -0.049$	$\beta = -0.236$	$\beta = -0.009$
Father PSI Total	$\beta = -0.013^{**}$	$\beta = -0.009^*$	$\beta = -0.013^{**}$	$\beta = -0.013^{**}$	$\beta = -0.015^*$
Mother PSI Total	$\beta = 0.007$	$\beta = 0.001$	$\beta = 0.005$	$\beta = -0.011^*$	$\beta = 0.013^*$
Father BDI Total	$\beta = 0.000$	$\beta = 0.029$	$\beta = 0.018$	$\beta = 0.012$	$\beta = 0.011$
Mother BDI Total	$\beta = 0.009$	$\beta = 0.009$	$\beta = 0.010$	$\beta = 0.012$	$\beta = -0.001$

Note: SNAP and CBCL scores are difference scores (father's z-score subtracted from mother's z-score), SNAP = Swanson, Nolan and Pelham Rating Scale, PSI = Parent Stress Index, BDI = Beck Depression Inventory, IA = Inattention, HI = Hyperactivity/Impulsivity, ADHD = ADHD Total Score; ODD = ODD Total Score

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