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The Role of Parent Psychopathology in the Development of Preschool Children with Behavior Problems

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Abstract

Objective—The present study examined associations between early parental self-reported psychopathology symptoms and the later behavioral, emotional, and social functioning of preschool children with behavior problems.

Method—Mothers and fathers of preschoolers with behavior problems ($N = 132$; 55 girls and 77 boys) completed parent psychopathology questionnaires when children were 3 years old and completed measures of children's externalizing, internalizing, and social problems annually from age 3 to age 6. The sample included 61% European American, 16% Latino (predominantly Puerto Rican), 10% African American, and 13% multi-ethnic children.

Results—Every dimension of mothers' and fathers' psychopathology symptoms when children were 3 years old was associated with their own reports of children's externalizing and internalizing problems 3 years later. Several dimensions of maternal psychopathology symptoms at age 3 were associated with mother-reported social skills 3 years later. However, the relation between many dimensions of psychopathology symptoms and child outcome appears to be accounted for by co-occurring psychopathology symptoms. Only maternal ADHD and Cluster A symptoms, and paternal ADHD and depression/anxiety symptoms emerged as unique predictors of child functioning.

Conclusions—These findings suggest that most types of mothers' and fathers' self-reported psychopathology symptoms may play a role in the prognosis of behavioral, social, and emotional outcomes of preschoolers with behavior problems, but that co-occurring symptoms need to be considered.

Keywords

Parent psychopathology; preschoolers; behavior problems; longitudinal

Parent psychopathology has been theorized to be an important risk factor for children's functioning and has been consistently linked with children's externalizing problems (e.g., Chronis et al., 2003), internalizing problems (e.g., Fanti & Henrich, 2010), and social skills

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(e.g., Ashman, Dawson, & Panagiotides, 2008). However, the role of parent psychopathology in predicting functioning *among* young children with behavior problems has been less well-established. Factors that lead to the development of behavior problems in young children may not be the same as those that predict their prognoses once problems develop (DeKlyen, Biernbaum, Speltz, & Greenberg, 1998). Further, because preschoolers with behavior problems are at risk not only for future behavior problems, but also for emotional and social problems (Campbell, 1994; DuPaul, McGoey, Eckert, & VanBrakle, 2001), it is critical to examine predictors of functioning across each of these domains. Our understanding of the role of parent psychopathology in preschoolers' development can also be further advanced by building a stronger knowledge base regarding the role of fathers' psychopathology in preschoolers' development, by examining the less well-studied role of parents' personality disorder symptoms, and by taking into account comorbidity among dimensions of parent psychopathology.

Theoretical Models of the Role of Parent Psychopathology in Children's Development

Theoretical models suggest that parent psychopathology may place children at risk for behavioral, emotional, and social difficulties through a number of processes including shared genetics; disruptions in parenting; exposure to parents' maladaptive cognitions, affect, and behavior; and exposure to stressful environments (e.g., Dodge, 1990; Goodman & Gotlib, 1999), such as negative life-events and lack of parental social support (e.g., McCarty & McMahon, 2003). Parenting has been especially highlighted in theoretical models, and researchers have proposed a number of ways that it might be disrupted by parent psychopathology. For example, parents experiencing symptoms of psychopathology may model deviant behaviors, may be less available or skilled at caretaking, may have difficulty facilitating children's social activities, or may have their interactions with another parent disrupted (Dodge, 1990). Although testing these mechanisms is beyond the scope of this study, these models provide theoretical support for the notion that parent psychopathology might play a role in determining which preschoolers will develop behavior problems, and how these and related problems change over time.

Parental Psychopathology and Child Functioning

There is extensive research linking parent psychopathology to child functioning using both clinical diagnoses and continuous measures of psychopathological constructs. Although both approaches have long-debated merits and limitations, there is some evidence that continuous measures provide more reliable and valid measures of psychopathology (see Markon, Chmielewski, & Miller, 2011). Most psychopathology constructs are thought to be continuous (Widiger & Samuel, 2006); artificially imposing a category/diagnosis may result in lost information and reduced power. The present study therefore uses a dimensional approach to assess parent psychopathology; however, we will reference studies that have used dimensional approaches as well as those that have used parental clinical diagnoses. For clarity, we will use the names of the psychopathological constructs (e.g., depression) to refer to dimensional measures, and the names of DSM disorders to refer to clinical diagnoses.

The vast majority of studies have focused on maternal depression, which has been widely linked with children's externalizing and internalizing problems and social skills (e.g., Chronis et al., 2007). Some research has also pointed to the importance of parental anxiety (e.g., O'Connor, Heron, & Glover, 2002), substance abuse (e.g., Eiden, Colder, Edwards, & Leonard, 2009), antisocial personality disorder (e.g., Johnson, Cohen, Kasen, Ehrensaft, & Crawford, 2006), borderline personality disorder (Riso, Klein, Anderson, & Ouimette, 2000; Stepp, Whalen, Pilkonis, Hipwell, & Levine, 2012), and attention-deficit hyperactivity disorder (ADHD; e.g., Chronis et al., 2003) in children's development.

Less well-known is whether the relations between each of these psychopathology dimensions and child functioning are accounted for by co-occurring symptoms, but there is some evidence that this may be the case (e.g., Barker, Jaffee, Uher, & Maughan, 2011). Moreover, with the exception of antisocial personality disorder symptoms, there is limited research on the relation between parents' symptoms of other personality disorders and child functioning. In addition, fathers have been vastly underrepresented in the literature on parent psychopathology and child functioning (Phares, Fields, Kamboukos, & Lopez, 2005). Finally, the majority of studies have been cross-sectional. Longitudinal studies can provide stronger, though not definitive, evidence for a causal relation between parent psychopathology and child functioning.

Parents Who Experience Symptoms from Multiple Forms of Psychopathology

Effects on child outcome may be greater when parents experience symptoms from more than one type of psychopathology. Different dimensions of parent psychopathology have been consistently correlated with one another (e.g., Sprafkin, Gadow, Weiss, Schneider, & Nolan, 2007) and adults with comorbid psychiatric disorders experience greater symptom severity and poorer psychosocial functioning (e.g., Mineka, Watson, & Clark, 1998). It is therefore not surprising that the few studies to examine multiple forms of parent psychopathology have found that parents struggling with more than one set of symptoms have children with poorer functioning (e.g., Carter, Garrity-Rokous, Chazan-Cohen, Little, & Briggs-Gowan, 2001).

Parent Psychopathology as a Predictor Among Preschool Children with Behavior Problems

A handful of studies suggest that parental depression may play a role in predicting whether preschoolers with behavior problems outgrow their problems (Campbell, 1994; Harvey, Stoessel, & Herbert, 2011), even controlling for other parent characteristics (Chronis et al., 2007). Less is known about the role that other psychopathology symptoms play in the development of preschoolers with behavior problems. Antisocial personality disorder symptoms (Chronis et al., 2007) were not found to predict later conduct problems among preschoolers with behavior problems, nor was a combined measure of parent depression, anxiety, and hostility (Deklyen et al., 1998), but other dimensions have not been studied. Moreover, because children with behavior problems often experience co-occurring

internalizing and social problems (e.g., Campbell, 1994), and children with comorbid symptoms have poorer functioning than children with a single set of symptoms (e.g., Ezpeleta, Domench, & Angold, 2006), it is important to examine a broad range of child outcome variables among children with behavior problems. The only two studies to do so in a sample of preschoolers with behavior problems found that maternal depression predicted subsequent depression in their children (Chronis-Tuscano et al., 2010; 2013). Further research is needed to examine whether other parent psychopathology symptoms predict later behavioral or emotional problems among preschoolers with behavior problems.

Importance of Examining Both Mothers' and Fathers' Reports

Parents' reports of their children's behaviors are influenced by their own functioning (e.g., Chilcoat & Breslau, 1997), making it imperative to gather multiple reports of child functioning. Obtaining ratings of child and parent functioning from both parents allows one to tease apart potential biases and to examine relations for one parent controlling for the other parent's level of psychopathology. This is particularly critical given evidence regarding assortative mating, which suggests that mothers' and fathers' psychopathology may be related to one another (e.g., Maes et al., 1998), and that parental concordance for psychopathology is related to greater psychopathology in children (e.g., Merikangas, Prusoff, & Weissman, 1988).

The Present Study

The present study sought to extend the literature on parent psychopathology and child functioning, by examining the role that different forms of parent psychopathology symptoms play in the subsequent behavioral, emotional, and social development of preschoolers with behavior problems. We sought to address important gaps in the literature. First, fathers' and mothers' psychopathology symptoms were examined to identify their unique and shared contributions to children's development. As previously stated, fathers have been understudied compared to mothers, yet there is evidence that they play an important, and sometimes different, role in children's development (Connell & Goodman, 2002). Moreover, it is essential to examine mothers and fathers simultaneously, given evidence that studies that do not control for the effects of mothers are more likely to find significant paternal effects (Amato & Rivera; 1999). Including both mother and father data also allows one to tease apart the effects of shared method variance and bias on relations between parent reports of psychopathology and child behavior. Second, it is critical to further understand the role of parent personality disorder symptoms, which are understudied, with the exception of antisocial personality disorder, in the parent psychopathology literature. Personality disorders are by definition pervasive, stable, and inflexible and often involve interpersonally-related symptoms (APA, 2013). Given the interpersonal nature of parenting, it is likely that personality disorder symptoms will affect children's development, and the small empirical literature supports this (Riso et al., 2000). Finally, because there is high comorbidity among different types of psychopathology, it is important to control for the effects of comorbid symptoms and to consider the impact of having symptoms of multiple disorders; however, this is rarely done in the parent psychopathology literature. Therefore, in the present study, the following questions were addressed:

1. **Do different types of parent psychopathology symptoms predict the development of preschoolers with behavior problems?** It was predicted that parent-reports of depression, anxiety, ADHD¹, substance use, and personality disorder symptoms at age 3 would be associated with children's poorer functioning at age 6, and with more negative changes from age 3 to age 6 in children's externalizing and internalizing problems, and social skills. We predicted that there would be stronger associations for self-report measures, because psychopathology is likely to influence parents' perceptions; however, we predicted that cross rater relations would corroborate these associations, because theory suggests that parent psychopathology affects not only perceptions of child behavior, but actual child functioning as well.
2. **Are different types of parent psychopathology symptoms independently associated with child functioning?** After statistically controlling for co-occurring psychopathology symptoms, parent-reported symptoms of depression, anxiety, ADHD, substance abuse, and personality disorders were expected to uniquely predict child functioning.
3. **Does having parents with multiple types of psychopathology symptoms predict the development of preschoolers with behavior problems?** Parents who report experiencing symptoms of more types of psychopathology were predicted to have children with worse functioning at age 6 and with more problematic changes in externalizing and internalizing problems, and social skills.

Method Participants

Participants were drawn from a sample of 199 children and their parents who took part in a longitudinal study aimed at understanding the early development of ADHD and ODD among preschoolers. Children ($N = 132$) with two biological or adoptive parents who completed measures of psychopathology and child behavior were included in this study. Children (55 girls and 77 boys) were all 3 years old at the time of the initial screening and were 37.50 to 50.30 months ($M = 44.54$ months, $SD = 3.18$) at the first home visit. The sample was ethnically diverse; 61% were European American, 16% Latino (predominantly Puerto Rican), 10% African American, and 13% multi-ethnic. The median family income was \$59,899. Mothers averaged 13.90 years of education ($SD = 2.73$) and fathers averaged 13.63 years of education ($SD = 2.73$). Average age was 32.79 years for mothers ($SD = 6.36$) and 36.45 years for fathers ($SD = 7.54$).

Procedure

Participants were recruited through state birth records, pediatrician offices, and child care/ community centers throughout western Massachusetts. Children with significant externalizing problems were recruited from 1752 3-year-old children whose parents

¹In Herbert, Harvey, Lugo-Candelas, & Breaux (2013), we examined a number of father characteristics as predictors of child outcome in this sample, including fathers' ADHD symptoms (using the same measure as this paper) and depression (using a different measure of depression), so there is overlap for those analyses. We include them again in this paper, so that mother and father analyses are parallel and so we could examine these variables controlling for other forms of psychopathology and controlling for partners' psychopathology.

completed a screening packet containing the Behavior Assessment System for Children – Parent Report Scale (BASC-PRS; Reynolds & Kamphaus, 1992) and a questionnaire assessing for exclusion criteria, parental concern about externalizing symptoms, and demographic information. Participants had no evidence of intellectual disabilities, deafness, blindness, language delay, cerebral palsy, epilepsy, autism, or psychosis. Inclusion criteria were: (a) parent responded “yes” or “possibly” to: “Are you concerned about your child’s activity level, defiance, aggression, or impulse control?” and (b) BASC-PRS hyperactivity and/or aggression subscale *T* scores fell at or above 65. At Time 1 (T1), families were scheduled for two 3-hr home visits about 1 week apart. Each parent was paid for participation. Home visits were conducted annually, with 123 of the 132 families participating at Time 2 (T2), 108 families participating at Time 3 (T3), and 111 families participating at Time 4 (T4). The study was conducted in compliance with the authors’ Institutional Review Board, and written informed consent was obtained from parents.

Measures

Parental psychopathology—The Millon Clinical Multiaxial Inventory-III (MCMI-III; Millon, Davis & Millon, 1997), a 175-item questionnaire measuring symptoms from Axis I and II disorders, was used to measure parental reports of psychopathology symptoms at T1. Previous research with this data set (Harvey et al., 2011) identified the following dimensions, which were used in the present study: (a) antisocial symptoms (Cronbach’s $\alpha = .80$ for mothers and $.78$ for fathers); (b) borderline symptoms ($\alpha = .82$ for mothers and $.84$ for fathers); (c) Cluster A symptoms (paranoid, schizoid, and schizotypal; $\alpha = .92$ for mothers and $.91$ for fathers); (d) Cluster C symptoms (dependent and avoidant; $\alpha = .87$ for mothers and $.81$ for fathers); (e) anxiety symptoms (anxiety disorders, somatoform disorders, and PTSD; $\alpha = .91$ for mothers and $.92$ for fathers); (f) depression symptoms (depressive, dysthymic, and major depressive disorders; $\alpha = .93$ for mothers and fathers); and (g) substance use ($\alpha = .81$ for mothers and $.88$ for fathers).²

Adult ADHD symptomatology—At T1, parents rated their own symptoms using a 4-point Likert scale ranging from 0 (rarely or never) to 3 (very often) for the 18-item Current Symptoms Scale (Barkley & Murphy, 1998), corresponding to DSM-IV ADHD symptoms. The 18 items were averaged. For this sample, the scale demonstrated good internal consistency (Cronbach’s $\alpha = .83$ for mothers and $.87$ for fathers).

Child internalizing and externalizing problems and social skills—Parents completed the BASC-PRS Preschool Version when children were younger than 6-years-old, and the BASCPRS Child Version for children 6-years and older. Externalizing, internalizing, and social skills *T*-scores from both parents were used. The BASC has excellent internal consistency (α range from $.86$ to $.89$ for these subscales) and good convergent validity (Reynolds & Kamphaus, 1992). The BASC-PRS was completed by all mothers and 130 fathers at T1, 123 mothers and 107 fathers at T2; 112 mothers and 89 fathers at T3; and 110 mothers and 87 fathers at T4.

²Harvey et al. (2011) found that narcissistic, histrionic, and compulsive subscales almost always correlated negatively with other subscales, suggesting that within this nonclinical sample, these subscales may actually measure healthy narcissism, flamboyance, and organization, respectively. Thus, these subscales were not included in analyses.

Analytic Plan

Hierarchical linear modeling was used to examine the relation between parents' psychopathology symptoms and children's subsequent functioning over time. A series of dyadic, longitudinal models were conducted, which take into account dependency between mothers and fathers (see Lyons & Sayer, 2005, for more details). Unconditional models (without predictors in the Level 2 model) were first run with time centered at T1 to determine the nature of the trajectories, using the following Level 1 model: $Y_{tp} = \beta_{1p} \text{ Mother} + \beta_{2p} \text{ Father} + \beta_{3p} \text{ Mother Linear T1}_{tp} + \beta_{4p} \text{ Father Linear T1}_{tp} + r_{tp}$, where Y represents the child outcome variable rated by person p at time t with residual r , Mother is a dummy coded variable indicating whether the mother completed the child outcome measure, Father is a dummy coded variable indicating whether the father completed the child outcome variable, and Mother Linear T1 and Father Linear T1 represent the time at which the child outcome was measured centered at T1 [T1 = 0, T2 = 1, T3 = 2, T4 = 3]. Quadratic time variables were also included and then dropped if they were not significant. Conditional models (with predictors in the Level 2 model) were then run first with time centered at T1 using the Level 1 model described above, and then centered at T4 using the following Level 1 model: $Y_{tp} = \beta_{1p} \text{ Mother} + \beta_{2p} \text{ Father} + \beta_{3p} + \beta_{4p} + r_{tp}$. When time was centered at T1, β_{1p} and β_{2p} represent T1 level of child functioning reported by mother and father, respectively, and when time was centered at T4, β_{1p} and β_{2p} represent T4 level of child functioning. When time was centered at T1, β_{3p} and β_{4p} represent the linear change in child outcome reported by mother and father, respectively. This linear change represents the average change across the four time points if the quadratic term is not in the model, and represents the instantaneous linear rate of change when time is 0 if the quadratic term is in the model. In the conditional Level 2 models, both mothers' and fathers' psychopathology dimensions were used to predict Level 1 parameters of interest; thus coefficients represented the relation between one parent's psychopathology symptoms and child functioning, controlling for the partner's psychopathology symptoms on that dimension. For example, for Cluster A, the level 2 models predicting Time 4 outcome (with time centered at Time 4) were: $\beta_{1p} = \gamma_{10} + \gamma_{11} \text{ Mom Cluster A} + \gamma_{12} \text{ Dad Cluster A} + u_{1p}$; $\beta_{2p} = \gamma_{20} + \gamma_{21} \text{ Mom Cluster A} + \gamma_{22} \text{ Dad Cluster A} + u_{2p}$; $\beta_{3p} = \gamma_{30} + u_{3p}$; $\beta_{4p} = \gamma_{40} + u_{4p}$. All conditional models were first run separately for each psychopathology dimension. Then, to compute trimmed models, all dimensions were entered simultaneously, and were removed one at a time beginning with the dimension with the highest p -value until all dimensions had p -values less than .20.

HLM uses all available time points to estimate trajectories for each individual as long as the individual has data for at least one time point. All participants had at least one time point of data, so trajectories were estimated for all participants. Thus, HLM is robust to missing data in the child outcome variables. There were no missing data for the MCMI-III dimensions psychopathology measures, because only couples who both completed measures of parent psychopathology at T1 were included. One couple had missing data on the measure of parental ADHD and were omitted for analyses involving this dimension. Additional analyses were conducted to explore whether child sex moderated the relation between parent-report of psychopathology symptoms and child outcome. Results revealed no significant interactions, so boys and girls were combined for all analyses.

Results Descriptive Statistics

Collinearity was found between parental self-reports of depression and anxiety symptoms and between antisocial personality and substance use symptoms, so these dimensions were aggregated to create depression/anxiety symptoms and antisocial/substance use symptoms variables, by averaging across each pair of symptom dimensions. Intercorrelations and descriptive statistics for predictor and outcome variables are presented in Tables 1, 2 and 3. Medium-to large-sized correlations were observed among psychopathology dimensions for both mothers and fathers. There were also a number of small-to medium-sized correlations between mothers' and fathers' psychopathology dimensions.

Unconditional Growth Models

Child externalizing problems unconditional growth models—The average quadratic term was not significant for mothers, $\beta = 0.26$, $SE = 0.29$, $p = .37$, or fathers, $\beta = -0.35$, $SE = 0.33$, $p = .29$. However, there was significant variability in the quadratic term for fathers, $\sigma^2 = 3.09$, $p = .004$, which suggests that the size of the quadratic term varied across children. Therefore, the quadratic term was retained for fathers' reports of externalizing problems, but not for mothers', $\sigma^2 = 2.75$, $p = .19$. The average linear rate of change was significant for mothers, $\beta = -1.74$, $SE = 0.33$, $p < .001$, indicating decreases in mother-reported externalizing problems, but was not significant for fathers, $\beta = 0.26$, $SE = 1.12$, $p = .81$. Both mothers' and fathers' linear terms showed significant variability, $\sigma^2 = 5.03$, $p = .006$; $\sigma^2 = 46.24$, $p < .001$, suggesting that there was significant variability in change across children.

Child internalizing problems unconditional growth models—The average quadratic term was not significant for mothers or fathers, $\beta = -0.19$, $SE = 0.30$, $p = .54$; $\beta = 0.28$, $SE = 0.33$, $p = .40$. There was no significant variability in the quadratic terms for mothers or fathers, $\sigma^2 = 2.61$, $p = .37$; $\sigma^2 = 2.89$, $p = .12$, so the quadratic terms were dropped. The average linear slope was significant for mothers, $\beta = -1.73$, $SE = 0.32$, $p < .001$, and fathers, $\beta = -1.74$, $SE = 0.38$, $p < .001$, suggesting significant decreases in internalizing problems over time. There was no significant variability in the linear rate of change for mothers, $\sigma^2 = 3.44$, $p = .16$, but there was for fathers, $\sigma^2 = 6.30$, $p < .001$.

Social skills unconditional growth models—The average quadratic term for social competence was not significant for mothers, $\beta = -0.37$, $SE = 0.27$, $p = .17$, but was significant for fathers, $\beta = -0.83$, $SE = 0.30$, $p = .007$. There was significant variability in the quadratic terms for both mothers, $\sigma^2 = 3.70$, $p < .001$, and fathers, $\sigma^2 = 4.59$, $p < .001$, so the quadratic term was retained. The linear term was significant for mothers, $\beta = 2.04$, $SE = 0.87$, $p = .02$, and fathers, $\beta = 3.06$, $SE = 0.94$, $p = .002$. Additionally, there was significant 2 variability across individuals in the initial linear rate of change for mothers and fathers, $\sigma^2 = 46.45$, $p < .001$; $\sigma = 49.91$, $p < .001$.

Do Parent Psychopathology Symptoms Predict Child Externalizing Problems?

—Paternal antisocial/substance use and Cluster A symptoms predicted increases in mother-reported externalizing problems (Table 4). Higher levels of all maternal and paternal

psychopathology symptoms were associated with their respective reports of externalizing problems at T4. Higher levels of maternal ADHD, depression/anxiety, and Clusters A and C symptoms were associated with more father-reported externalizing problems at T4. Higher levels of paternal depression/anxiety, antisocial/substance use, and borderline symptoms were associated with more mother-reported externalizing problems at T4.

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Do Parent Psychopathology Symptoms Predict Child Social Skills?—Higher levels of maternal Cluster A symptoms were associated with less initial improvement in father-reported social skills (Table 5). Higher levels of maternal ADHD, borderline, depression/anxiety, and Clusters A and C symptoms were related to lower mother-reported social skills at T4. To explore whether our failure to find effects for paternal psychopathology and children's social skills may have been due to controlling for maternal psychopathology, social skills models were rerun for fathers without mothers' psychopathology symptoms. The paternal Cluster A and C personality symptoms became significant predictors of mothers' and fathers' reports of social skills.

Do Parent Psychopathology Symptoms Independently Predict Child Outcome?—To examine whether each dimension of parental psychopathology symptoms uniquely predicted child functioning controlling for other types of psychopathology symptoms, trimmed models were created as described above (Table 6). Maternal Cluster A symptoms significantly predicted mother- and father-reported externalizing behaviors and maternal ADHD symptoms predicted mother-reported externalizing behaviors. Maternal ADHD and Cluster A symptoms significantly predicted mother-reported internalizing problems, and maternal borderline and Cluster A symptoms predicted father-reported internalizing behaviors. Finally, maternal Cluster A symptoms predicted mother-reported and father-reported social skills. For fathers, depression/anxiety symptoms predicted mother-reported externalizing and internalizing behaviors, and borderline symptoms and ADHD symptoms predicted father-reported externalizing behaviors. Paternal ADHD and depression/anxiety symptoms also predicted father-reported internalizing behaviors.

Does Having a Parent with Multiple Types of Elevated Psychopathology Symptoms Predict Child Functioning?

For each of the 15 psychopathology symptom dimensions on the MCMI-III used in the present study, parents whose self-reports fell above the clinical cutoff (BR score of 75) were identified as elevated on that dimension. For the Current Symptoms Scale, parents who endorsed at least six hyperactive or six inattentive items were considered elevated on the

scale. The number of elevations (out of 16) each parent had was then entered as a predictor in the Level 2 models. Mothers with more elevated psychopathology symptom dimensions had children with more externalizing and internalizing problems, and lower social skills, based on both mother-and father-report (Tables 4 and 5). Fathers with more elevated psychopathology symptom dimensions had children with more mother-reported internalizing problems. The number of symptom elevations for mothers and fathers was not associated with linear rate of change in child functioning. To test whether these results were driven by differences between parents with or without self-reported psychopathology symptoms, analyses were repeated only including parents with at least one self-reported elevated psychopathology symptoms dimension. Results remained the same. To test whether these results can be explained by symptom severity, highest symptom variables were created, consisting of the highest symptom score for each parent. These variables were then entered into the original models and rerun, to control for symptom severity. None of the relations remained significant when symptom severity was controlled.

Discussion

The results of this study suggest that early parental psychopathology symptoms may play a role in the prognosis of preschoolers with behavior problems. Every dimension of mothers' and fathers' psychopathology symptoms at age 3 was associated with their own reports of their children's externalizing and internalizing problems at age 6 and several dimensions of maternal reports of psychopathology symptoms were associated with mother-reported social skills. However, the relation between a number of dimensions of psychopathology symptoms and child outcome generally appeared to be accounted for by co-occurring psychopathology symptoms. Consistent with previous research (e.g., Mineka et al., 1998), mothers who reported experiencing more types of psychopathology symptoms at age 3 were more likely to rate their children as having more externalizing and internalizing problems and lower social skills. Fathers who reported experiencing more types of psychopathology symptoms had children with higher maternal ratings of internalizing problems; however, they did not themselves rate their children as having more difficulties.

Relations between Parental Psychopathology Symptoms and Children's Functioning

The present study corroborates research linking parental depression (e.g., Ashman et al., 2008), anxiety (e.g., Edwards, Rapee, & Kennedy, 2010), and substance use symptoms (e.g., Eiden et al., 2009) with child functioning, and builds on the smaller body of research tying parental personality disorder (e.g., Johnson et al., 2006) and ADHD symptoms (e.g., Chronis et al., 2003) with child outcome. Significant cross-rater associations suggest that relations between parent psychopathology and child functioning are not due solely to biased perceptions, although effects were more consistently observed for same-rater relations. Our findings extend previous research by suggesting that early parent psychopathology symptoms may play a role in the social and emotional outcome of preschoolers with behavior problems. They also underscore the importance of including fathers in research by supporting the notion that fathers' symptoms play an important role in children's development, even when controlling for mothers' symptoms (e.g., Reeb, & Conger, 2009).

Although parent psychopathology symptoms were associated with child functioning, they did not generally predict changes in functioning. However, there were several exceptions. Paternal antisocial/substance use and Cluster A symptoms predicted increases in child externalizing symptoms, and paternal antisocial/substance use symptoms predicted increases in child internalizing symptoms. Maternal Cluster A symptoms predicted decreases in child social skills. These associations with *changes* in child functioning provide stronger, though not definitive, evidence that parental self-reported psychopathology symptomatology plays a causal role in children's socioemotional development.

Theoretical models (e.g., Dodge, 1990) have posited a number of mechanisms that may underlie the observed relations between parent psychopathology and child outcome. These include shared genetics, disruptions in parenting, modeling, and disruptions in the child's environment. The role of these mechanisms in children's psychosocial development has been empirically supported (e.g., Ashman et al., 2008). Links between parent psychopathology, disruptions in parenting, and child outcome have been particularly well-documented. Although this literature has predominantly focused on Axis I dimensions (e.g., Goodman & Gotlib, 1999), there is also a small body of research linking personality disorder symptoms to parenting (e.g., Harvey et al., 2011; Stepp et al., 2012). Though somewhat less well-studied, there is also empirical evidence that social support mediates the relation between parent psychopathology and child functioning (e.g., McCarty & McMahon, 2003). Further research is needed to examine whether these mechanisms, previously examined in community samples, also underlie the relation between parent psychopathology and outcomes among preschoolers with behavior problems.

Consistent with theories of assortative mating (e.g., Maes et al., 1998), mothers' and fathers' psychopathology symptoms were correlated with one another, pointing to the importance of taking both parents' psychopathology into account in analyses. Relations between parent psychopathology and child outcome were observed controlling for partners' psychopathology symptoms for internalizing and externalizing problems, suggesting that assortative mating did not account for these findings. However, findings were mixed for children's social skills. Paternal psychopathology symptoms were unrelated to children's social skills when controlling for mothers' psychopathology symptoms, but several relations emerged for fathers when mothers' psychopathology was not controlled. Thus, it may be that fathers' psychopathology symptoms influence child social skills through their effects on maternal distress. It may be that mothers' psychopathology symptoms have a greater impact on children's social skills than fathers' psychopathology symptoms, because women tend to be more socially oriented than men (Chodorow, 1999). Research is needed to explore this possibility.

Unique Parental Psychopathology Symptom Predictors of Child Functioning

The only maternal psychopathology symptom dimension that remained a significant predictor of mother-and father-reported child functioning was Cluster A, further highlighting the need for future studies to take into account co-occurring Axis II symptoms. Additional research is also needed to better understand the mechanisms underlying the relation between reports of these symptoms and child functioning. For example, it may be that isolative and

defensive interpersonal styles carry over to the parent-child relationship or that parents with these traits experience less social support, disrupting parenting and then child functioning.

Paternal depression/anxiety symptoms also uniquely predicted child internalizing problems based on mother and father reports. This finding extends previous research linking paternal depression and anxiety with child functioning (e.g., Reeb & Conger, 2009) and suggests that this link is not accounted for by co-occurring psychopathology. Interestingly, maternal depression/anxiety symptoms did not significantly predict child externalizing, internalizing, or social problems, after controlling comorbid symptoms. Few studies of the relation between parent depression and child functioning have controlled for co-occurring symptoms. O'Connor et al. (2002), Barker et al. (2011), and Foley et al. (2001) found that the relation between maternal depression and child functioning remained controlling for one or two other psychopathology dimensions, including co-occurring drug and alcohol use and anxiety. However, the present study is the first to control for personality disorder symptoms, and suggests that doing so may be critically important.

Parents' reports of their psychopathology symptoms were generally more correlated with their own reports of child behavior than with their spouses' reports. For example, parents' ADHD symptoms were unique predictors of their own reports but not their spouses' reports of child functioning. It may be that parents with ADHD symptoms have lower tolerance for behavioral and emotional problems which biases their perceptions of their children. This finding is consistent with previous research that parental psychopathology colors parents' perceptions of child behavior (e.g., Fergusson, Lynskey & Horwood, 1993), but is the first study to suggest that self-reports of parental ADHD symptoms may color parents' reports of children's behavior.

Multiple Psychopathology Symptoms

This study found that the number of types of psychopathology symptoms experienced by parents predicts child functioning. This extends previous findings that parents with two cooccurring disorders had children with more difficulties than did parents who had a single disorder (e.g., Carter et al., 2001). Several possible mechanisms may be operative. First, genetic predisposition may be stronger in families with parents reporting multiple psychopathology symptoms than symptoms of a single psychopathology. Second, parents reporting multiple psychopathology symptoms appear to experience greater symptom severity (e.g., Mineka et al., 1998), which may cause greater disruptions in parenting (Carter et al., 2001). Results of the present study suggest that greater symptom severity may partially account for the effect of multiple types of symptoms. These potential mechanisms need to be explored in future research.

Limitations—The results of the present study should be interpreted in the context of several limitations. First, parents in this study were not clinically diagnosed, and all psychopathology measures were based on parents' self-reports of symptoms. Although using dimensional measures provides a number of advantages, these findings may not generalize to parents with clinical diagnoses. Second, there are likely individual differences in the impact of parent psychopathology on children. Further research is needed to explore

possible moderators of this relation, including an examination of the interaction among different dimensions of psychopathology. Third, high collinearity between parental psychopathology symptom dimensions may have increased standard errors of estimates making it more difficult to detect unique effects. Fourth, the sample for this study was limited to two-parent families; thus, the results may not generalize to single-parent families. Fifth, our findings may not generalize to other community or at-risk populations; for example factors that contribute to internalizing problems may be different for children at risk for internalizing rather than externalizing problems. Finally, although a longitudinal design provides stronger support for a causal link, the findings of this study do not establish the direction of causality between parental psychopathology symptoms and child outcome.

Implications for Research, Policy, and Practice

Despite these limitations, the present study highlights the potential importance of parent psychopathology symptoms in the development of preschoolers with behavior problems. This study advances existing research on parent psychopathology and child functioning by underscoring the important role that fathers may play in their children's development. Further, findings from this study suggest that parent personality disorder symptoms, which have received relatively little empirical attention, merit further study. With respect to implications for practice, this study suggests that interventions for preschoolers with behavior problems that target parental psychopathology may contribute to children's healthy development. Despite the fact that children of parents with symptoms of psychopathology show poorer parent training treatment outcome (Reyno & McGrath, 2006), the majority of interventions for children with behavior problems do not directly address parental psychopathology, but rather focus primarily on teaching specific parenting practices. Additionally, parent training often involves just one parent, typically the mother, which may be problematic given the role that both mothers and fathers may play in the development of young children with behavior problems. Research has begun to document that interventions targeting maternal depression result in improved child functioning both alone (e.g., Weissman et al., 2006) and when combined with parent training (Chronis-Tuscano et al., 2010, 2013); it will be important to build on this small body of research by extending it to other disorders, particularly personality disorders, and to fathers. Such research could not only advance clinical practice but could provide important experimental evidence to determine whether parent psychopathology plays a causal role in child development.

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Table 1

Descriptive Statistics for MCMI-III Subscales

Variable	Mother		Father		t-test
	M(SD)	% BR 75 ^b	M(SD)	% BR 75	
Cluster A					
Schizoid	45.06 (23.22)	12.9	55.05 (24.45)	27.9	-3.81 ^{***}
Schizotypal	30.38 (25.06)	2.9	34.84 (26.79)	3.6	-1.36
Paranoid	42.66 (29.37)	12.1	42.59 (29.11)	9.3	0.16
Borderline	30.93 (22.78) ^a	5.0	33.06 (26.63) ^a	8.6	-0.70
Antisocial	48.04 (19.95)	10.7	49.28 (21.43)	16.4	-0.05
Cluster C					
Avoidant	40.51 (23.26)	10.7	46.17 (26.27)	20.7	-1.81 [†]
Dependent	47.15 (22.46)	15.0	50.94 (22.38)	20.0	-1.43
Anxiety					
Anxiety	43.15 (28.71) ^a	22.9	41.82 (32.15) ^a	26.4	0.21
Somatiform	30.44 (22.14) ^a	2.9	38.31 (28.80) ^a	5.7	-2.69 ^{**}
PTSD	32.69 (25.46)	5.7	31.56 (25.04)	8.6	0.17
Depression					
Major depression	28.49 (23.25) ^a	5.0	31.21 (26.89) ^a	5.0	-1.24
Dysthymia	24.56 (22.72) ^a	6.4	34.55 (27.42) ^a	10.7	-3.94 ^{***}
Depressive Personality	39.74 (24.36) ^a	12.9	49.79 (30.04) ^a	28.6	-3.16 ^{**}
Substance Abuse					
Alcohol	52.83 (29.97)	15.0	49.05 (29.69)	20.0	1.90 [†]
Drug	40.82 (26.38) ^a	2.1	37.59 (23.41) ^a	4.3	1.38

[†] $p < .10$,* $p < .05$,** $p < .01$,*** $p < .001$

^aIndicates variables for which mothers' and fathers' variances were significantly different from each other using a Levene's Test on an Independent Sample *t*-test.

^bIndicates the percentage of parents who had psychopathology Base Rate scores of at least 75.

Table 2

Intercorrelations among Parental Psychopathology Predictor Variables

Time 1 Predictor	1	2	3	4	5	6	7	8	9	10	11
<u>Maternal predictors</u>											
1. ADHD	--										
2. Cluster A	.36***	--									
3. Cluster C	.44***	.64***	--								
4. Borderline	.49***	.60***	.51***	--							
5. Depression/anxiety	.50***	.77***	.67***	.69***	--						
6. Antisocial/substance	.38***	.47***	.23**	.70***	.44***	--					
<u>Paternal predictors</u>											
7. ADHD	.19*	.00	.03	-.09	-.02	-.06	--				
8. Cluster A	.02	.36***	.18*	.16	.28**	.13	.42***	--			
9. Cluster C	.06	.30***	.17	.11	.24**	.00	.31***	.59***	--		
10. Borderline	.08	.39***	.20*	.23**	.24***	.15	.35***	.67***	.51***	--	
11. Depression/anxiety	.10	.32***	.18*	.08	.28**	.04	.38***	.72***	.61***	.72***	
12. Antisocial/substance	.12	.35***	.17	.23**	.26**	.20*	.31***	.64***	.29**	.74***	.55***

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

 $p < .001$, $N = 132$ for all predictors except Paternal ADHD, which is 131

Table 3

Intercorrelations, Means, and Standard Deviations of Outcome Variables

Outcome Variable	N	M(SD)	1	2	3	4	5
1. Mother-reported externalizing behaviors							
Time 1	132	62.08 (12.07)	--				
Time 2	123	59.78 (10.76)	--				
Time 3	108	58.23 (11.96)	--				
Time 4	110	57.19 (11.97)	--				
2. Father-reported externalizing behaviors							
Time 1	130	56.09 (12.62)	0.66***	--			
Time 2	107	56.53 (10.46)	0.59***	--			
Time 3	89	54.06 (11.09)	0.55***	--			
Time 4	97	53.13 (10.67)	0.67***	--			
3. Mother-reported internalizing behaviors							
Time 1	131	54.18 (11.24)	0.42***	0.30**	--		
Time 2	122	51.42 (11.26)	0.46***	0.14	--		
Time 3	108	51.48 (12.90)	0.53***	0.27*	--		
Time 4	110	48.42 (9.69)	0.57***	0.25*	--		
4. Father-reported internalizing behaviors							
Time 1	130	52.08 (12.33)	0.40***	0.59***	0.59***	--	
Time 2	107	48.55 (10.66)	0.34***	0.51***	0.59***	--	
Time 3	89	47.89 (11.29)	0.33***	0.60***	0.56***	--	
Time 4	87	45.72 (8.87)	0.37***	0.59***	0.62***	--	
5. Mother-reported social skills							
Time 1	132	46.25 (9.68)	-0.31***	-0.17	-0.12	-0.18*	--
Time 2	123	48.07 (9.04)	-0.26***	-0.22*	-0.10	-0.20*	--
Time 3	108	48.96 (8.70)	-0.47***	-0.31**	-0.27**	-0.13	--
Time 4	110	49.21 (9.08)	-0.67***	-0.54***	-0.33***	-0.27*	--
6. Father-reported social skills							

Outcome Variable	N	M(SD)	1	2	3	4	5
Time 1	130	46.56 (8.73)	-0.15	-0.18*	0.01	-0.11	0.38***
Time 2	107	49.03 (7.94)	-0.19*	-0.21*	-0.02	-0.13	0.53***
Time 3	89	50.45 (8.92)	-0.32**	-0.37***	-0.03	-0.18	0.52***
Time 4	87	48.84 (8.15)	-0.40***	-0.38***	-0.12	-0.15	0.49***

*
p < .05,
**
p < .01,

p < .001

Table 4

Maternal and Paternal Predictors of Children's Externalizing and Internalizing Problems

<u>Predictors</u>	<u>Mother Report of Behavior</u>		<u>Father Report of Behavior</u>	
	Predicting Linear Change $\gamma(SE)$	Predicting T4 Outcome $\gamma(SE)$	Predicting Linear Change $\gamma(SE)$	Predicting T4 Outcome $\gamma(SE)$
<u>Externalizing Problems</u>				
<u>Maternal predictors</u>				
ADHD	0.77 (0.88)	8.34 (2.25)**	-0.37 (1.01)	4.69 (2.28)*
Antisocial/substance use	0.14 (0.37)	2.57 (0.96)**	0.35 (0.45)	0.79 (0.98)
Depression/anxiety	-0.19 (0.42)	4.39 (1.01)***	0.50 (0.51)	3.87 (1.04)***
Cluster C	-0.08 (0.37)	3.63 (0.93)***	-0.07 (0.44)	2.87 (0.94)**
Borderline	0.05 (0.36)	3.43 (0.89)***	0.35 (0.43)	1.66 (0.91) [†]
Cluster A	-0.08 (0.42)	5.38 (1.00)***	0.73 (0.51)	4.83 (1.00)**
Multiple elevations	0.05 (0.11)	1.40 (0.28)***	-0.00 (0.15)	1.12 (0.30)**
<u>Paternal predictors</u>				
ADHD	0.52 (0.88)	2.31 (2.27)	-0.08 (1.09)	6.64 (2.32)**
Antisocial/substance use	0.83 (0.34)*	2.70 (0.90)**	-0.03 (0.43)	3.82 (0.92)***
Depression/anxiety	0.61 (0.41)	2.29 (1.00)*	-0.47 (0.49)	3.00 (1.03)**
Cluster C	0.20 (0.38)	1.69 (0.95) [†]	-0.21 (0.44)	3.48 (0.95)**
Borderline	0.47 (0.32)	2.20 (0.80)**	-0.34 (0.40)	3.85 (0.82)***
Cluster A	0.81 (0.40)*	1.14 (0.96)	-0.32 (0.47)	2.71 (0.96)**
Multiple elevations	0.01 (0.07)	0.20 (0.17)	0.06 (0.08)	-0.07 (0.18)
<u>Internalizing Problems</u>				
<u>Maternal predictors</u>				
ADHD	0.91 (0.88)	10.11(2.16)***	0.79 (1.00)	4.74 (2.10)*
Antisocial/substance use	-0.15 (0.37)	2.89 (0.98)**	0.13 (0.44)	0.65 (0.97)
Depression/anxiety	0.20 (0.41)	3.50 (1.03)***	0.47 (0.50)	3.16 (0.97)**
Cluster C	0.46 (0.36)	2.67 (0.97)**	0.21 (0.44)	2.25 (0.92)*
Borderline	-0.12 (0.35)	2.20 (0.93)*	0.03 (0.43)	0.49 (0.90)
Cluster A	0.52 (0.41)	4.43 (1.05)***	0.83(0.50) [†]	4.00 (0.99)***
Multiple elevations	0.04 (0.11)	1.22 (0.28)***	-0.01 (0.14)	0.91 (0.29)**
<u>Paternal predictors</u>				
ADHD	0.29 (0.88)	1.78 (2.17)	-0.70 (1.07)	7.76 (2.16)**
Antisocial/substance use	0.92 (0.34)**	0.69 (0.92)	0.25 (0.43)	2.71 (0.91)**
Depression/anxiety	0.28 (0.41)	2.52 (1.02)*	-0.31 (0.49)	3.94 (0.95)***
Cluster C	0.17 (0.37)	0.68 (0.99)	-0.27 (0.44)	2.95 (0.93)**
Borderline	0.48 (0.32)	1.54 (0.84) [†]	-0.24 (0.39)	3.42 (0.81)***
Cluster A	0.45 (0.40)	0.46 (1.01)	-0.55 (0.46)	2.75 (0.93)**

<u>Predictors</u>	<u>Mother Report of Behavior</u>		<u>Father Report of Behavior</u>	
	Predicting Linear Change $\gamma(SE)$	Predicting T4 Outcome $\gamma(SE)$	Predicting Linear Change $\gamma(SE)$	Predicting T4 Outcome $\gamma(SE)$
Multiple elevations	-0.03 (0.07)	0.38 (0.16)*	0.00 (0.08)	0.25 (0.17)

Note: Predictors were entered individually in separate models.

† $p < .10$,

* $p < .05$,

** $p < .01$,

*** $p < .001$

Table 5**Maternal and Paternal Predictors of Children's Social Skills**

Predictors	Mother Report of Behavior		Father Report of Behavior	
	Predicting Linear Rate of Change in Variable (T1 Model Linear) γ (SE)	Predicting T4 Outcome Variable (T4 Model Intercept) γ (SE)	Predicting Linear Rate of Change in Variable (T1 Model Linear) γ (SE)	Predicting T4 Outcome Variable (T4 Model Intercept) γ (SE)
<u>Maternal predictors</u>				
ADHD	-1.02 (0.74)	-3.74 (1.85) *	-0.60 (0.83)	-2.01 (1.60)
Antisocial/substance use	-0.25 (0.32)	-1.10 (0.79)	-0.69 (0.36) †	-1.10 (0.69)
Depression/anxiety	-0.47 (0.35)	-2.54 (0.84) **	-0.72 (0.41) †	-1.25 (0.76)
Cluster C	-0.60 (0.31) †	-1.71 (0.77) *	-0.32 (0.36)	-1.09 (0.67)
Borderline	-0.14 (0.30)	-1.79 (0.74) *	-0.60 (0.35) †	-0.89 (0.66)
Cluster A	-0.59 (0.35) †	-3.83 (0.82) ***	-1.08 (0.41) *	-1.41 (0.77) †
Multiple elevations	0.04 (0.30)	-0.97 (0.23) ***	-0.05 (0.09)	-0.59 (0.21) **
<u>Paternal predictors</u>				
ADHD	-1.00 (0.73)	2.17 (1.86)	0.12 (0.88)	1.42 (1.64)
Antisocial/substance use	-0.45 (0.30)	-1.17 (0.73)	-0.13 (0.35)	-0.49 (0.65)
Depression/anxiety	-0.43 (0.34)	-0.83 (0.83)	0.31 (0.40)	-0.77 (0.75)
Cluster C	0.40 (0.32)	-0.82 (0.78)	-0.14 (0.36)	-1.29 (0.68) †
Borderline	-0.33 (0.27)	-0.78 (0.67)	-0.12 (0.32)	-0.48 (0.60)
Cluster A	-0.24 (0.34)	-0.37 (0.79)	0.44 (0.38)	-0.99 (0.73)
Multiple elevations	-0.05 (0.18)	0.21 (0.13)	0.02 (0.05)	0.19 (0.12)

Note: Predictors were entered individually in separate models.

† $p < .10$,

* $p < .05$,

** $p < .01$,

*** $p < .001$

Table 6

Trimmed Models for Psychopathology Predicting Child Functioning

<u>Predictors</u>	<u>Mother</u>		<u>Father</u>	
	Predicting Linear Change $\gamma(SE)$	Predicting T4 Outcome Variable $\gamma(SE)$	Predicting Linear Change $\gamma(SE)$	Predicting T4 Outcome Variable $\gamma(SE)$
<u>Maternal predictors of externalizing</u>				
ADHD	--	3.69 (1.74)*	--	--
Antisocial/substance	--	1.30 (0.80)	--	--
Cluster C	--	--	--	--
Borderline	--	--	--	--
Cluster A	1.07 (0.48)*	3.71 (1.10)**	--	4.71 (0.98)***
Depression/anxiety	--	--	--	--
<u>Maternal predictors of internalizing</u>				
ADHD	1.20 (0.91)	8.81 (2.22)***	--	3.46 (2.18)
Antisocial/substance	--	1.83 (0.97) [†]	--	--
Borderline	-0.81 (0.43) [†]	-1.93 (1.23)	--	-2.73 (1.07)*
Depression/anxiety	--	--	--	1.71 (1.27)
Cluster A	0.68 (0.49)	3.30 (1.19)**	0.69 (0.47)	4.26 (1.31)**
<u>Maternal predictors of social skills</u>				
ADHD	--	--	--	--
Borderline	--	--	--	--
Cluster A	-0.69 (0.33)*	-3.68 (0.77)***	-0.91 (0.38)*	-1.48 (0.74)*
Depression/anxiety	--	--	--	--
<u>Paternal predictors of externalizing</u>				
ADHD	--	--	--	4.20 (1.76)*
Antisocial/substance	0.86 (0.33)*	--	--	--
Cluster C	--	--	--	1.36 (0.81) [†]
Borderline	--	--	-0.59 (0.40)	1.58 (0.76)*
Depression/anxiety	--	2.54 (0.86)**	--	--
Cluster A	--	--	--	--
<u>Paternal predictors of internalizing</u>				
ADHD	--	--	--	4.86 (1.75)**
Antisocial/substance	0.88 (0.35)*	-1.52 (0.78) [†]	--	--
Cluster C	--	-1.69 (0.87) [†]	--	--
Borderline	--	--	--	--
Depression/anxiety	--	4.34 (1.19)**	--	2.23 (0.98)*

Note: All psychopathology predictors were entered simultaneously and then predictors were trimmed one at a time until only predictors with $p < .20$ remained in the model.

[†] $p < .10$,

*
 $p < .05$,

**
 $p < .01$,

 $p < .001$