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## The Role of Parent Psychopathology in the Developmental Trajectories of Preschool Children with Behavior Problems

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

A Thesis Presented

by

ROSANNA BREAUX

Submitted to the Graduate School of the  
University of Massachusetts Amherst in partial fulfillment  
of the requirements for the degree of

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Clinical Psychology

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

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## ABSTRACT

### THE ROLE OF PARENT PSYCHOPATHOLOGY IN THE DEVELOPMENTAL TRAJECTORIES OF PRESCHOOL CHILDREN WITH BEHAVIOR PROBLEMS

FEBRUARY 2013

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This study investigated associations among different parental psychopathology dimensions and child functioning. Mothers and fathers of preschoolers with behavior problems ( $n = 132$ ) completed psychopathology questionnaires when children were 3 years old. Children's externalizing, internalizing, and social problems, academic achievement, and cognitive ability were assessed at annual home visits from age 3 to 6. In general, maternal psychopathology symptoms were associated with mothers' reports of externalizing, internalizing, and social problems at age 3 and 6. Additionally, paternal psychopathology symptoms were associated with fathers' reports of externalizing and internalizing problems at age 3 and 6. Mothers with more elevated psychopathology symptom dimensions had children with more mother-reported and father-reported externalizing and internalizing problems, and lower social competence at age 3 and age 6. Fathers with more elevated psychopathology symptom dimensions had children with more mother-reported internalizing problems at age 3 and 6. Only a few parental psychopathology dimensions (maternal ADHD and Cluster A symptoms, and paternal ADHD, depression, and antisocial symptoms) emerged as unique predictors of child functioning at age 3 and 6. These findings suggest that most types of mothers' and fathers' psychopathology may play a role in the behavioral, social, and emotional outcome of preschoolers with behavior problems.

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**CHAPTER I**  
**ROLE OF PARENTAL PSYCHOPATHOLOGY**

**A. Introduction**

Preschoolers with behavior problems are at risk for a variety of future difficulties including conduct disorders, learning problems, neuropsychological deficits, and high rates of internalizing problems (Pardini & Fite, 2010; Piffner, McBurnett, Rathouz, & Judice, 2005). Although the link between family functioning and preschool children's development has been well-established (e.g., Ghanizadeh & Sham, 2007; Raaijmakers, Posthumus, van Hout, van Engeland, & Matthys, 2011) there is a relatively small body of research examining whether family factors play a role in helping preschool children with behavior problems outgrow their difficulties (Campbell, Ewing, Breaux, & Szumowski, 1986; Campbell, Pierce, Moore, & Marakovitz, 1996; Harvey, Metcalfe, Herbert, & Fanton, 2011a; Heller, Baker, Henker, & Hinshaw, 1996; Lavigne et al., 1998; Olson & Hoza, 1993; Palfrey, Levine, Walker, & Sullivan, 1985). Even rarer are studies that examine factors which predict how well preschool children with behavior problems develop emotionally, socially, and academically over time. Since preschool children with behavior problems are at risk for a host of negative outcomes (Campbell, 1990), it is critical to identify factors that might increase risk among these children.

Parents' psychopathology is one aspect of family functioning that is thought to play an important role in children's development. The relation between parental psychopathology and child functioning has been well-established (Lahey, Piacentini, McBurnett, Stone, Hartdagh, & Hynd, 1988). In particular, research has linked children's functioning to parent depression (Befera & Barkley, 1985; Cunningham,

Benness, & Siegel, 1988; Lahey et al., 1988; Nigg & Hinshaw, 1998; Stewart, DeBlois, & Cummings, 1980), antisocial personality disorder (Frick et al., 1992; Johnson, Cohen, Kasen, Ehrensaft, & Crawford, 2006; Lahey et al., 1988; Pfiffner et al., 2005), anxiety disorders (Biederman, Faraone, Keenan, Steingard, & Tsuang, 1991; Dierker et al., 1999; McClure, Brennan, Hammen, & LeBrocq, 2001), substance use disorders (Frick, et al., 1992; Lahey et al., 1988; Loeber, Green, Keenan, & Lahey, 1995; Loukas, Zucker, Fitzgerald, & Krull, 2003), and childhood attention-deficit hyperactivity disorder (ADHD; Chronis et al., 2003; Faraone et al., 1991; Frick, Lahey, & Christ 1991; Nigg & Hinshaw, 1998). However, there are still a number of important gaps in the literature. More research is needed to (a) understand the role of early parental psychopathology in behavioral, emotional, social, and academic trajectories among preschool children with behavior problems; (b) better understand the role of fathers' psychopathology in young children's development, given the disproportionate focus on mothers in research on parent psychopathology (Cassano, Adrian, Veits, & Zeman, 2006; Phares, Fields, Kamboukos, & Lopez, 2005); and (c) examine relations between parent psychopathology and children's outcomes taking into account comorbid parent psychopathology.

### **B. Parental ADHD**

The link between parental ADHD and children's ADHD has been well-documented (Chronis et al., 2003; Faraone et al., 1991; Frick et al., 1991; Nigg & Hinshaw, 1998; Takeda et al., 2010). Furthermore, both maternal and paternal adult ADHD symptoms have been shown to be associated with children's disruptive behaviors (Nigg & Hinshaw, 1998), and higher maternal ADHD symptoms have been shown to attenuate the effects of parent training on their preschool children's disruptive behavior

symptoms (Chronis-Tuscano et al., 2011; Sonuga-Barke, Daley, & Thompson, 2002). However, researchers have not yet examined the role that parental ADHD may play in children's functioning more broadly including their emotional, social, academic, and cognitive functioning.

### **C. Parental Depression**

Maternal depression has been consistently linked with a variety of aspects of child functioning, including ADHD (Befera & Barkley, 1985; Leschied, Chiodo, Whitehead, & Hurley, 2005), externalizing problems (Ashman et al., 2008; Murray, 1992), internalizing problems (Goodman & Gotlib, 1999; Leschied et al., 2005), social functioning (Ashman et al., 2008; Goodman, Brogan, Lynch, & Fielding, 1993), and cognitive/academic functioning (Cogill, Caplan, Alexandra, Robson, & Kumar, 1986; Field, Estroff, Yando, del Valle, Malphurs, & Hart, 1995; Hay, Pawlby, Sharp, Asten, Mills, & Kumar, 2001; Knoche, Givens, & Sheridan, 2007). Paternal depression has been less well-studied, but also has been linked with children's social functioning (Lewinsohn, Olino, & Klein, 2005; Ramchandani, Stein, O'Connor, Heron, Murray, & Evans, 2008), internalizing problems (Carro et al., 1993; Marchand & Hock, 1998; Webster-Stratton, 1988), and externalizing problems (Carro et al., 1993; DeKlyen et al., 1998; Marchand & Hock, 1998; Webster-Stratton, 1988). Although most studies on parent depression have been correlational, recent experimental evidence supports a causal link between parental depression and child functioning. Van Loon, Granic, and Engels (2011) found that children of depressed mothers who became non-depressed over the course of treatment showed a decrease in their externalizing behavior. However, very few studies have examined the role of parental depression controlling for comorbid parent

psychopathology. One study that controlled for other aspects of parent functioning found that after controlling for maternal smoking and alcohol use, maternal age, child sex, and SES, postnatal depression at eight weeks and eight months remained associated with children's behavioral and emotional problems (O'Connor, Heron, & Glover, 2002), supporting the notion that the relation between parental depression and children's functioning is not accounted for by other types of psychopathology or third variables.

Although most studies on parent depression have focused on older children, research has also documented links between parent depression and preschool children's functioning (Brennan, Hammen, Andersen, Bor, Najman, & Williams, 2000; Marchand, & Hock, 1998; Middleton, Scott, & Renk, 2009). A handful of studies suggest that maternal depression may play a role in predicting whether preschoolers with behavior problems later outgrow their early problems (Campbell, 1994; Harvey et al., 2011a). However, research has not examined whether maternal depression places preschool children with behavior problems at risk for developing other types of problems.

#### **D. Parental Anxiety**

Maternal anxiety has been linked with various aspects of child functioning, including ADHD (Chronis et al., 2003; West & Newman, 2003), externalizing problems (Barnett, Schaafsma, Guzman, & Parker, 1991; Dierker et al., 1999), and internalizing problems (Biedel & Turner, 1997; McClure et al., 2001; Sheeber & Johnson, 1992).

Though less well-researched, fathers' anxiety has also been linked with aspects of child functioning, including externalizing problems (Dierker et al., 1999) and internalizing problems (Dierker et al., 1999; Biedel & Turner, 1997). Parental anxiety has also been linked to lower social functioning and academic performance in children (Turner, Biedel,

& Costello, 1987). In one of the few studies to examine anxiety among parents of preschool-aged children, maternal anxiety was linked to comorbid oppositional defiant disorder (ODD) among 3- to 7-year-old children with ADHD (Chronis et al., 2003). Otherwise, little is known about the role that parental anxiety plays in how well preschool children with behavior problems develop emotionally, socially, and academically.

### **E. Parental Substance Use**

There have been mixed findings regarding the relation between parental substance use and children's functioning. In most studies, paternal, but not maternal substance use has been associated with children's behavior problems (Frick, Lahey, & Loeber, 1992; Lahey et al., 1988; Loukas et al., 2003). There is extensive research on the connections between parental substance use and children's externalizing problems, especially oppositional, aggressive, and defiant behavior (e.g., Eiden, Colder, Edwards, & Leonard, 2009; Loukas et al., 2003), as well as some research suggesting links with internalizing problems, social deficits (Chassin, Pitts, DeLucia, & Todd, 1999; Eiden et al., 2009; Reich et al., 1993; West & Prinz, 1987), and cognitive/academic functioning (Wilens et al., 2002). A smaller body of research has examined the effects of parental substance use on preschool children (Eiden et al., 2009; Loukas et al., 2003), and has found that preschool children of alcoholic fathers may have lower social competence and more disruptive behavior problems. However, research has not yet examined the role that parental substance abuse, especially maternal substance abuse, might play in the behavioral, emotional, social, and cognitive/academic trajectories that preschool aged children with behavior problems follow.

### **F. Parental Personality Disorders**

Personality disorders are organized into three clusters based on shared characteristics (American Psychological Association, 2000): (a) Cluster A, which includes paranoid, schizoid, and schizotypal personality disorders, and reflects issues with suspiciousness, social detachment, and eccentricity, respectively; (b) Cluster B, which includes histrionic, narcissistic, antisocial, and borderline personality disorders, and generally reflects issues with excessive attention seeking behaviors, egocentrism, lack of empathy, manipulative behaviors, and difficulty with emotion regulation; and (c) Cluster C, which includes obsessive-compulsive, dependent, and avoidant personality disorders, and reflects problems with excessive perfectionism, high levels of interpersonal neediness, and hypersensitivity to rejection, respectively.

Research examining the relation between parental personality disorders and children's functioning has focused largely on antisocial personality disorder (ASPD). Parental ASPD has been associated with children's ADHD and ODD/conduct disorder (CD), especially for fathers (Frick et al., 1992; Lahey et al., 1988; Pfiffner et al., 2005). Parental ASPD has also been linked with elevated risks of emotional and behavioral problems (Johnson, Cohen, Kasen, Smailes, & Brook, 2006), as well as poor social competence (Eiden et al., 2009). The relation between parental ASPD and cognitive functioning and academic performance has not yet been examined.

Far less research has examined how other types of personality disorders in parents are associated with child functioning. Children of parents with borderline personality disorder have been found to be at increased risk for depression, substance use disorders, and ASPD (Riso, Klein, Anderson, & Ouimette, 2000; Schulz, Soloff, Kelly, Morgenstern, Franco, & Schulz, 1989). Similarly, a study of preschool children's narratives found that children of mothers with borderline personality disorder had

narratives that were characterized by poorer emotional regulation, more traumatic material, more fears of abandonment, and greater role reversal (Macfie & Swann, 2009). Children of parents with paranoid and avoidant personality disorders were found to be more responsive to their parents (Wilson & Durbin, 2011), but the link between these disorders and broader measures of child functioning has not been examined. Although other types of personality disorders have been linked with problematic child rearing behaviors (Johnson et al., 2006) and negative parent-child interactions (Wilson & Durbin, 2011), their association with child outcomes have not been studied. Thus, more research is needed to understand the role that a variety of personality disorders play in preschool-aged children's development.

### **G. Comorbid Psychopathology**

Comorbidity among different forms of psychopathology has been well-documented (e.g., Couwenbergh, van den Brink, Zwart, Vreugdenhil, van Wijngaarden-Cremers, & van der Gaag, 2006; McGough, Smalley, McCracken, Yang, Del'Homme, Lynn, & Loo, 2005). Comorbidity between substance use problems and other Axis I and Axis II diagnoses have been well-documented, particularly for depression and antisocial personality disorder (Fitzgerald, Davies, & Zucker, 2002; Zucker, Ellis, Bingham, & Fitzgerald, 1996). Mood disorders and personality disorders have also been shown to co-occur at higher than expected rates (Martinez et al., 1996; Demulder, Tarullo, Klimes-Dougan, Free, & Radke-Yarrow, 1995). Adults with comorbid psychiatric disorders experience greater symptom severity and poorer psychosocial functioning (Kessler et al., 1996; Mineka et al., 1998), suggesting that the effects of parental comorbid psychopathology may be more detrimental for children than the effects of single parental

disorders. The few studies that have examined this possibility, have found support for this notion. Children of parents with comorbid depression and disruptive behavior problems (Hirshfeld-Becker et al., 2008) and children of parents with comorbid alcohol abuse and ASPD (Moss et al., 2001; Puttler et al., 1998; Zucker, Ellis, Bingham, & Fitzgerald, 1996) experienced more difficulties than children of parents with a single disorder. Few studies have examined the effects of comorbid parental psychopathology on preschool children's functioning (Puttler et al., 1998; Zucker, Ellis, Bingham, & Fitzgerald, 1996), and none have examined it in a population of preschool children with behavior problems.

#### **H. Psychopathology and Change in Children's Functioning Longitudinally**

The majority of studies examining the relation between parent psychopathology and child functioning have been cross-sectional. However, psychopathology has also been linked with child outcome longitudinally, which provides stronger, though not definitive, evidence for a causal effect of parent psychopathology. Longitudinal studies have examined (a) how early parental psychopathology predicts later child functioning; (b) how early parental psychopathology predicts changes in children's functioning; and (c) how changes in parental psychopathology correspond to changes in children's functioning. Many studies have examined the relation between early parental psychopathology and children's later functioning (e.g., Brennan et al., 2000; Chronis et al., 2003; Macfie & Swann, 2009). However, few studies have examined whether early parental psychopathology predicts changes in children's functioning longitudinally (Campbell et al., 1996; Chronis-Tuscano et al., 2011; Harvey et al., 2011a). Many of the studies examining the relation between changes in parental psychopathology and changes



in children's functioning over time have focused on parental depression (e.g., Campbell, Morgan-Lopez, Cox, & McLoyd, 2009; Dietz, Jennings, Kelley, & Marshal, 2009; Gunlicks & Weissman 2008). These studies have found a direct association between reductions or remissions in parental depression and improvement in child outcomes (e.g., Byrne et al., 2006; Modell, Modell, Wallander, Hodgens, Duke, & Wisely, 2001; Weissman et al., 2006). The bulk of longitudinal research on parent psychopathology has focused on maternal depression. More longitudinal studies are needed on other types of maternal psychopathology and on paternal psychopathology, and to understand their role in the developmental trajectories of preschoolers with behavior problems.

## **CHAPTER II**

### **THE PRESENT STUDY**

This study investigated associations between parental psychopathology symptoms and developmental trajectories for preschool-aged children with behavior problems over a four year period. Although many studies have examined the relation between specific parent psychopathology and children's functioning at one point of time (e.g., Connell, & Goodman, 2002; Nigg & Hinshaw, 1998; Pfiffner et al., 1999), fewer studies (Chassin et al., 1999; Eiden et al., 2009; Loeber et al., 1995) have examined the trajectory of these outcomes over multiple points of time. Examining predictors of change provides stronger evidence than cross-sectional or two-point longitudinal analysis, since it reduces the effect of potential confounds, and provides important clinical implications. In addition, only a handful of studies have examined the role that parental psychopathology plays in the development of young children with behavior problems. Since preschool children with behavior problems are at risk for a host of negative outcomes (Campbell, 1990), it is important to identify factors that might increase risk among these children. Furthermore, although associations have been found between both maternal and paternal psychopathology and child development, fathers have been studied much less than mothers, despite repeated calls for more research on fathers (Cassano et al., 2006; Phares et al., 2005). Additionally, although some research has suggested that children of parents who have multiple disorders experience more difficulties than children of parents with single disorders, research is needed to extend this literature to preschool-aged children who might be particularly vulnerable to parents' functioning. The current study sought to fill these gaps in the literature by examining the following questions:

**1) Do different types of parent psychopathology symptoms predict developmental trajectories of preschool-aged children with behavior problems?** It was predicted that parental depression, anxiety, ADHD, substance abuse, and personality disorder symptoms at age 3 would be associated with more negative changes in children's externalizing problems, internalizing problems, and social skills from age 3 to age 6. It was also predicted that parental depression, anxiety, ADHD, substance abuse, and personality disorders symptoms would be associated with children's functioning at age 3 and age 6, including more externalizing problems and internalizing problems, and lower social competence, cognitive ability, and academic achievement.

**2) Are different types of parental psychopathology independently associated with child functioning?** It was predicted that, even after statistically controlling for comorbid psychopathology, parental depression, anxiety, ADHD, drug and alcohol use, antisocial, borderline, and Cluster A and C personality disorder symptoms would each be uniquely associated with child functioning.

**3) Does having parents with multiple types of psychopathology symptoms predict developmental trajectories of preschool-aged children with behavior problems?** It was predicted that parents who show elevations on multiple dimensions of psychopathology symptoms when children are 3 years old would have children with more problematic changes in externalizing problems, internalizing problems, and social skills. It was also predicted that parents with more elevated dimensions of parent psychopathology symptoms when children are 3 years old would have children with worse functioning at age 3 and age 6, including more externalizing problems and

internalizing problems, and lower social competence, cognitive ability, and academic achievement.

## **A. Method**

### **1. Participants**

Participants were drawn from a sample of 199 children and their mothers and fathers who took part in a 4 year longitudinal study aimed at understanding the early development of attention-deficit hyperactivity disorder (ADHD) and oppositional defiant disorder (ODD) among preschoolers. Children ( $n = 132$ ) who had had two biological or adoptive parents who completed measures of psychopathology and child behavior were included in this study. Children (55 females and 77 males) 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 time of the first home visit. The sample was ethnically diverse; 61% were European American, 16% Latino (predominantly Puerto Rican), 10% African American, and 13% were 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 ( $SD = 2.73$ ). Mothers' average age was 32.79 years, ( $SD = 6.36$ ), and fathers' average age was 36.45 ( $SD = 7.54$ ).

### **2. Procedures**

Participants were recruited over a 3-year period by distributing screening questionnaire packets through state birth records, pediatrician offices, child care centers, and community centers throughout western Massachusetts. Children with significant externalizing problems were recruited from 1752 3-year-old children whose parents 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<sup>1</sup>. Participants had no evidence of mental retardation, deafness, blindness, language delay, cerebral palsy, epilepsy, autism, or psychosis. Inclusion criteria were: (a) parent responded “yes” or “possibly” to the question, “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 (approximately 92<sup>nd</sup> percentile).

At Time 1 (T1), families were scheduled for two 3-hour home visits scheduled approximately 1 week apart, and each parent was paid for participation in the study. Home visits were then 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 University of Massachusetts Amherst Institutional Review Board, and written informed consent was obtained from all participating parents.

### 3. Measures

**Parental Psychopathology.** The Millon Clinical Multiaxial Inventory- III (MCMII-III; Millon, Davis & Millon, 1997), a 175-item questionnaire that assesses symptoms of DSM-IV disorders, was used to measure parental psychopathology at T1. The MCMII-III contains scales that measure psychiatric symptomatology from both Axis I and Axis II disorders. Axis I scales from the MCMII-III that were examined in the current study were anxiety, somatoform, dysthymia, major depression, posttraumatic

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<sup>1</sup> A smaller group of non-problem children was also recruited for this original study, but were not included in this study.

stress (PTSD), and alcohol/drug abuse disorders. Bipolar-manic was not included because clinical interviews indicated that bipolar disorder was rare in the sample being studied, and subclinical and clinical levels of mania were unlikely to have similar effects on families. Axis II scales from the MCMI-III were schizoid, avoidant, depressive, dependent, histrionic, narcissistic, antisocial, compulsive, schizotypal, borderline, and paranoid personality disorders. Previous research with this data set (Harvey, Stoessel, & Herbert, 2011b) examined the intercorrelations among these subscales and, based on the pattern of intercorrelations and existing research and theory on these dimensions, identified the following seven dimensions which were used for the present study: (a) antisocial personality disorder (Cronbach's  $\alpha = .80$  for mothers and  $.78$  for fathers); (b) borderline personality disorder ( $\alpha = .82$  for mothers and  $.84$  for fathers); (c) Cluster A personality disorders (paranoid, schizoid, and schizotypal;  $\alpha = .92$  for mothers and  $.91$  for fathers); (d) Cluster C personality disorders (dependent, and avoidant;  $\alpha = .87$  for mothers and  $.81$  for fathers); (e) anxiety (anxiety disorders, somatoform disorders, and PTSD;  $\alpha = .91$  for mothers and  $.92$  for fathers); (f) depression (depressive, dysthymic, and major depressive disorders;  $\alpha = .93$  for mothers and  $.93$  for fathers); and (g) drug and alcohol use ( $\alpha = .81$  for mothers and  $.88$  for fathers).<sup>2</sup>

**Adult ADHD.** Parents completed the Current Symptoms Scale (Barkley & Murphy, 1998) at T1, which was used to assess their ADHD symptoms. The Current Symptoms Scale is an 18 item scale corresponding to DSM-IV ADHD symptoms. Using

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<sup>2</sup> Upon examination of intercorrelations among the MCMI-III subscales, it was revealed that narcissistic, histrionic, and compulsive subscales almost always correlated negatively with other subscales, average  $r(180) = -.22$ , range =  $-.61$  to  $-.01$  for mothers and average  $r(124) = -.25$ , range =  $-.54$  to  $-.01$  for fathers, suggesting that within this nonclinical sample these subscales may actually measure healthy narcissism, flamboyance, and organization, respectively. Therefore these subscales were not included in analyses, since they appeared to measure healthy functioning rather than psychopathology.

a 4-point Likert scale ranging from 0 (rarely or never) to 3 (very often), parents rated their 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.** Parents completed the BASC-PRS Preschool Version at T1, T2, and T3, and the BASC-PRS Child Version at T4. Externalizing and internalizing scores from both parents were used for analysis. The externalizing scale consists of hyperactivity and aggression subscales for the Preschool Version, and of hyperactivity, aggression, and conduct problems subscales for the Child Version. The internalizing scale consists of the anxiety, depression, and somatization subscales for both the Preschool and Child Version. The BASC has excellent internal consistency both for the internalizing and externalizing scales ( $\alpha = .87$  and  $.89$ , respectively for the child and preschool versions) and good convergent validity ( $\alpha = .65$  and  $.79$ , respectively) with the Child Behavior Checklist for internalizing and externalizing scales (Reynolds & Kamphaus, 1992).

**Child social skills.** The BASC-PRS Social Skills scale was used to assess social functioning from ages 3 to 6 (T1, T2, T3, and T4). This scale has demonstrated strong internal consistency ( $\alpha = .89$ ; Reynolds & Kamphaus, 1992).

**Cognitive ability.** Cognitive ability was measured using the McCarthy Scales of Cognitive Abilities (McCarthy, 1972) at T1 and the Wechsler Intelligence Scale for Children, Fourth Edition (WISC-IV; Wechsler, 2003) at T4. The McCarthy measures cognitive ability in children 2 years of age and older. The General Cognitive Index, an aggregate standard score composed of the three core scales: Verbal, Perceptual-Performance, and Quantitative, was used for this study. The McCarthy Scales have

adequate reliability, with split-half estimates ranging from .79 to .88. The Scales correlate well with other cognitive measures. The WISC-IV (Wechsler, 2003) is an individually administered clinical instrument for assessing verbal comprehension, nonverbal perceptual reasoning, working memory, and visuo-motor processing speed of children aged 6 through 16 years. The Full Scale IQ was used. It is composed of four composite scores (Verbal Comprehension, Perceptual Reasoning, Working Memory, and Processing Speed) and 10 core subtests. The WISC-IV has excellent reliability and correlates highly with the previous edition (WISC-III) at age 6 ( $\alpha = .96$  and  $.89$ , respectively; Wechsler, 2003).

**Academic achievement.** The Kaufman Survey of Early Academic and Language Skills (KSEALS; Kaufman & Kaufman, 1993) was used to measure academic achievement at T1 and the Wechsler Individual Achievement Test, Second Edition-Abbreviated (WIAT-II-A; The Psychological Corporation, 1992) was used at T4. The KSEALS measures children's expressive and receptive language skills, pre-academic skills, and articulation skills. It is composed of three subtests: Vocabulary; Numbers, Letters, and Words; and the Articulation Survey. The KSEALS subscales have adequate reliability, with split-half correlations ranging between .88 and .91 for 3-year-old children and good predictive validity for 3 to 6 year old children (Kaufman & Kaufman, 1993). The KSEALS Composite score correlates highly with other measures of achievement and language skills (Kaufman & Kaufman, 1993) and was used to measure each child's academic achievement at age 3. The WIAT-II-A is an individually administered brief test assessing language skills, reading, and mathematics for children aged 5 years and older. It includes three subtests: spelling, word reading, and numerical operations. The



WIAT-II-A has good internal consistency ( $\alpha = .97$ ) at age 6 (The Psychological Corporation, 1992). The overall composite score was used to measure each child's academic achievement at age 6.

#### **4. Analytic Plan**

Descriptive statistics, including means, standard deviations, distributions, and intercorrelations were first examined. Hierarchical linear modeling (HLM) 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 as described by Lyons and Sayer (2005). Unconditional growth models were used to estimate trajectories of mothers' and fathers' reports of externalizing symptoms, internalizing symptoms, social competence, academic achievement and cognitive ability. Quadratic terms were included for externalizing symptoms, internalizing symptoms, and social competence and then dropped if they were not significant. A level 1 file was constructed and included each child functioning variable as an outcome variable, and *parent* and *time* (centered at T4) variables as predictor variables. The mother parent variable was scored 1 for mothers and 0 for fathers, and the father parent variable was scored 0 for mothers and 1 for fathers. The mother time variable was coded -3 for T1, -2 for T2, -1 for T3, and 0 for T4, while all of the father time points were scored 0; and the father time variable was coded -3 for T1, -2 for T2, -1 for T3, and 0 for T4, while all of the mother time points were scored 0. Since several quadratic terms were significant, the model was also run with time centered at T1. The mother time variable for this model was coded 0 for T1, 1 for T2, 2 for T3, and 3 for T4, while all of the father time points were scored 0; and the father time variable was coded 0 for T1, 1 for T2, 2 for T3, and 3

for T4, while all of the mother time points were scored 0. The Level 1 model represents the repeated measures for the mother/father dyads as a function of time, both linear and quadratic, as well as a residual term  $r$ , a measurement of time-specific error of the prediction. The model for the mother/father dyad was as follows:

$$Y_{tp} = (\text{mom})[\beta_{1p} + \beta_{2p}(\text{timeLIN}_{tp}) + \beta_{3p}(\text{timeQUAD}_{tp})] + (\text{dad})[\beta_{4p} + \beta_{5p}(\text{timeLIN}_{tp}) + \beta_{6p}(\text{timeQUAD}_{tp})] + r_{tp}$$

The unconditional Level 2 model was:

$$\beta_{1p} = \gamma_{10} + u_{1p}$$

$$\beta_{2p} = \gamma_{20} + u_{2p}$$

$$\beta_{3p} = \gamma_{30} + u_{3p}$$

$$\beta_{4p} = \gamma_{40} + u_{4p}$$

$$\beta_{5p} = \gamma_{50} + u_{5p}$$

$$\beta_{6p} = \gamma_{60} + u_{6p}$$

This unconditional between-dyad model provides estimates for the population averages for each growth parameter for internalizing, externalizing, and social problems. Deviation for each mother/father dyad from the particular population average growth parameter was represented by the Level 2 random effects  $u_{1p}$ ,  $u_{2p}$ ,  $u_{3p}$ ,  $u_{4p}$ ,  $u_{5p}$ , and  $u_{6p}$ .

In the conditional Level 2 models, each parent psychopathology dimension was used to predict Level 1 parameters of interest. For example, for depression, the level 2 models predicting Time 4 outcome (with time centered at Time 4) were:

$$\beta_{1p} = \gamma_{10} + \gamma_{11} \text{ Mom Depression} + \gamma_{12} \text{ Dad Depression} + u_{1p}$$

$$\beta_{2p} = \gamma_{20} + \gamma_{11} \text{ Mom Depression} + \gamma_{12} \text{ Dad Depression} + u_{2p}$$

$$\beta_{3p} = \gamma_{30} + \gamma_{11} + u_{3p}$$

$$\beta_{4p} = \gamma_{40} + \gamma_{11} + u_{4p}$$

$$\beta_{5p} = \gamma_{50} + \gamma_{11} + u_{5p}$$

$$\beta_{6p} = \gamma_{60} + \gamma_{11} + u_{6p}$$

The level 2 models predicting Time 1 outcome and slope (with time centered at Time 1) were:

$$\beta_{1p} = \gamma_{10} + \gamma_{11} \text{ Mom Depression} + \gamma_{12} \text{ Dad Depression} + u_{1p}$$

$$\beta_{2p} = \gamma_{20} + \gamma_{11} \text{ Mom Depression} + \gamma_{12} \text{ Dad Depression} + u_{2p}$$

$$\beta_{3p} = \gamma_{30} + \gamma_{11} \text{ Mom Depression} + \gamma_{12} \text{ Dad Depression} + u_{3p}$$

$$\beta_{4p} = \gamma_{40} + \gamma_{11} \text{ Mom Depression} + \gamma_{12} \text{ Dad Depression} + u_{4p}$$

$$\beta_{5p} = \gamma_{50} + \gamma_{11} + u_{5p}$$

$$\beta_{6p} = \gamma_{60} + \gamma_{11} + u_{6p}$$

**Question 1.** Each maternal psychopathology symptoms and paternal psychopathology symptoms dimension was entered in separate models (one model for mother and father depression, one model for mother and father anxiety, etc.).

**Question 2.** In order to examine whether each dimension predicted child functioning controlling for other forms of psychopathology, all dimensions that were significant in the single models were entered together in a single Level 2 model.

Variables with the highest *p*-values were then eliminated one at a time, until all predictors had *p*-values less than .20.

**Question 3.** For each of the fifteen psychopathology symptom dimensions on the MCMI used in the present study, parents who fell above the clinical cutoff (BR score of 75) were identified as elevated on that dimension. For the current symptom scale, parents who endorsed at least six hyperactive items or six inattentive items were considered

elevated on that dimension. I then calculated the number of elevations (out of 16) that the parent had. This variable was then entered as a predictor in the Level 2 models.

## CHAPTER III

### RESULTS

#### **A. Descriptive Statistics**

Intercorrelations and descriptive statistics for predictor and outcome variables are presented in Tables 1 and 2. In general, the different types of maternal psychopathology symptoms were strongly positively correlated with each other. Likewise, the different types of paternal psychopathology symptoms were strongly positively correlated with each other. However, maternal psychopathology symptoms and paternal psychopathology symptoms were generally not strongly correlated with each other, with the exception of maternal Cluster A personality disorder symptoms being strongly correlated with all paternal psychopathology symptoms, except ADHD. Mothers' and fathers' reports of children's externalizing and internalizing behaviors, social competence, and cognitive ability were strongly positively correlated with each other. Mothers' reports of externalizing behaviors were associated with lower T4 cognitive ability and academic achievement. Finally, fathers' reports of externalizing behaviors were associated with lower T4 cognitive ability.

#### **B. Unconditional Growth Models**

##### **1. Externalizing problems unconditional growth models**

The average of the quadratic growth factor, which represents the acceleration in the rate of linear change/curvature in trajectories, was not significantly different from zero for mothers and fathers,  $\beta = 0.26$ ,  $SE = 0.29$ ,  $p = .37$ ;  $\beta = -0.35$ ,  $SE = 0.33$ ,  $p = .29$ , respectively. However, there was significant variability in the quadratic term for fathers,  $\sigma^2 = 3.09$ ,  $SD = 1.76$ ,  $p = .004$ , which suggests that the size of the quadratic term varied

significantly across children and may be large for some children. Therefore, the quadratic term was retained for fathers' reports of externalizing behaviors, but not for mothers',  $\sigma^2 = 2.75$ ,  $SE = 1.66$ ,  $p = .19$ . The average linear rate of change was significantly different from zero for mothers,  $\beta = -1.74$ ,  $SE = 0.33$ ,  $p < .001$ , but was not significant for fathers,  $\beta = 0.26$ ,  $SE = 1.12$ ,  $p = .81$ . Both mothers' and fathers' linear terms showed significant variability,  $\sigma^2 = 5.03$ ,  $SD = 2.24$ ,  $p = .006$ ;  $\sigma^2 = 46.24$ ,  $SD = 6.80$ ,  $p < .001$ , respectively, suggesting that there was significant variability in change across children.

## **2. Internalizing problems unconditional growth models**

The average of the quadratic term was not significantly different from zero for mothers and fathers,  $\beta = -0.19$ ,  $SE = 0.30$ ,  $p = .54$ ;  $\beta = 0.28$ ,  $SE = 0.33$ ,  $p = .40$ , respectively. Additionally, there was no significant variability in the quadratic term for mothers or fathers,  $\sigma^2 = 2.61$ ,  $SD = 1.61$ ,  $p = .37$ ;  $\sigma^2 = 2.89$ ,  $SD = 1.70$ ,  $p = .12$ , so the quadratic growth factor was dropped for both mothers' and fathers' reports of internalizing problems. The average linear growth factor was significantly different from zero for both mothers,  $\beta = -1.73$ ,  $SE = 0.32$ ,  $p < .001$ , and fathers,  $\beta = -1.74$ ,  $SE = 0.38$ ,  $p < .001$ ). However, there was no significant variability in the linear rate of change for mothers,  $\sigma^2 = 3.44$ ,  $SD = 1.86$ ,  $p = .16$ , but there was significant variability for fathers,  $\sigma^2 = 6.30$ ,  $SD = 2.51$ ,  $p < .001$ . This suggests that based on father's reports even though children improved relative to peers on average, there was variability in change across children.

## **3. Social competence unconditional growth models**

The average quadratic term for social competence was not significantly different

from zero 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 term for both mothers and fathers,  $\sigma^2 = 1.92$ ,  $SE = 3.70$ ,  $p < .001$ ;  $\sigma^2 = 2.14$ ,  $SE = 4.59$ ,  $p < .001$ , respectively. Therefore, the quadratic term was retained for both mothers' and fathers' reports of social competence. 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 variance across individuals in the initial linear rate of change for mothers and fathers,  $\sigma^2 = 46.45$ ,  $SD = 6.81$ ,  $p < .001$ ;  $\sigma^2 = 49.91$ ,  $SD = 7.06$ ,  $p < .001$ , respectively, suggesting that even though children showed initial improvement relative to peers on average, there was variability in change across children.

#### **4. Academic achievement and cognitive ability unconditional growth models**

The linear term was significant for academic achievement,  $\beta = 7.16$ ,  $SE = 1.52$ ,  $p < .001$ . Additionally, there was significant variability across individuals in the linear rate of change for academic achievement,  $\sigma^2 = 223.61$ ,  $SD = 14.95$ ,  $p < .001$ . The linear term was not significant for cognitive ability,  $\beta = 2.50$ ,  $SE = 2.37$ ,  $p = .29$ . However, there was significant variability across individuals in the linear rate of change for cognitive ability,  $\sigma^2 = 427.74$ ,  $SD = 20.68$ ,  $p < .001$ .

### **C. Do Different Parent Psychopathology Symptoms Predict Trajectories of Child Externalizing Problems?**

#### **1. Predictors of T1 child externalizing problems**

Higher levels of T1 maternal ADHD, anxiety, borderline, depression, drug and alcohol use and Clusters A and C personality disorder symptoms were associated with greater T1 mother reported externalizing problems. Higher levels of T1 maternal ADHD,

anxiety, depression, and Clusters A and C personality disorder symptoms were associated with greater T1 father reported externalizing problems. Higher levels of T1 paternal drug and alcohol use symptoms were associated with greater T1 mother reported externalizing problems. Higher levels of all T1 paternal psychopathology symptoms were associated with greater T1 father reported externalizing problems.

## **2. Predictors of linear rate of change in child externalizing problems**

No maternal psychopathology symptoms predicted linear rate of change in mother or father reported externalizing problems. Higher levels of paternal antisocial personality disorder, drug and alcohol use, and Cluster A personality symptoms were associated with linear increases in mother reported externalizing problems. No other types of paternal psychopathology symptoms were associated with linear rate of change in mother or father reported externalizing problems (see Table 4).

## **3. Predictors of T4 child externalizing problems**

Higher levels of all T1 maternal psychopathology symptoms were associated with greater T4 mother reported externalizing problems. Higher levels of T1 maternal ADHD, anxiety, depression, and Clusters A and C personality disorder symptoms were associated with greater T4 father reported externalizing problems. Higher levels of T1 paternal anxiety, depression, drug and alcohol, antisocial personality, and borderline personality symptoms were associated with greater T4 mother reported externalizing problems. Higher levels of all T1 paternal psychopathology symptoms were associated with greater T4 father reported externalizing problems.

## **D. Do Different Parent Psychopathology Symptoms Predict Trajectories of Child Internalizing Problems?**



### **1. Predictors of T1 child internalizing problems**

Higher levels of all T1 maternal ADHD, anxiety, antisocial, borderline, depression, drug and alcohol, and Clusters A personality disorder symptoms were associated with greater T1 mother reported internalizing problems. Higher levels of T1 maternal anxiety, and Cluster A personality disorder symptoms were associated with greater T1 father reported internalizing problems. Higher levels of T1 paternal anxiety symptoms were associated with greater T1 mother reported internalizing problems. Higher levels of T1 ADHD, anxiety, borderline, depression, drug and alcohol use and Clusters A and C personality disorder symptoms were associated with greater T1 father reported internalizing problems.

### **2. Predictors of linear rate of change in child internalizing problems**

No maternal psychopathology symptoms were associated with linear rate of change in mother or father reported internalizing problems (see Table 5). Higher levels of paternal antisocial and Cluster A personality disorder symptoms were associated with linear increases in mother reported internalizing problems. No other paternal psychopathology symptoms were associated with linear rate of change in mother or father reported internalizing problems.

### **3. Predictors of T4 child internalizing problems**

Higher levels of all T1 maternal psychopathology symptoms were associated with greater T4 mother reported internalizing problems. Higher levels of T1 maternal ADHD, anxiety, depression, and Cluster A and C personality disorder symptoms were associated with greater T4 father reported internalizing problems. Higher levels of T1 paternal anxiety and depression symptoms were associated with greater T4 mother reported

internalizing problems. Higher levels of all T1 paternal psychopathology symptoms were associated with greater T4 father reported internalizing problems.

## **E. Do Different Parent Psychopathology Symptoms Predict Trajectories of Child**

### **Social Competence?**

#### **1. Predictors of T1 child social competence**

Higher levels of T1 maternal depression and Clusters A personality disorder symptoms, were associated with lower T4 mother reported social competence. No maternal psychopathology symptoms variables were associated with T1 father reported social competence. No paternal psychopathology symptoms were associated with T1 mother or father reported social competence.

#### **2. Predictors of initial linear rate of change in child social competence**

Higher levels of maternal Cluster A personality disorder symptoms were associated with less initial improvement in father reported social competence (see Table 6). No other maternal psychopathology symptoms were associated with initial linear rate of change in mother or father reported social competence. No paternal psychopathology symptoms were associated with initial linear rate of change in mother or father reported social competence.

#### **3. Predictors of T4 child social competence**

Higher levels of T1 maternal ADHD, anxiety, borderline, depression, and Clusters A and C personality disorder symptoms were associated with lower T4 mother reported social competence. No maternal psychopathology symptoms variables were associated with T4 father reported social competence. No paternal psychopathology symptoms were associated with T4 mother or father reported social competence.

**F. Do Different Parent Psychopathology Symptoms Predict Child Academic Achievement and Cognitive Ability?**

**1. Predictors of T1 child academic achievement and cognitive ability**

No T1 maternal psychopathology symptoms variables were associated with T1 academic achievement (see Table 5). Higher levels of T1 maternal anxiety and Cluster A personality disorder symptoms were associated with lower T1 cognitive ability. No paternal psychopathology symptoms were associated with T1 academic achievement and cognitive ability.

**2. Predictors of linear rate of change in child academic achievement and cognitive ability**

Higher levels of maternal Cluster A personality disorder symptoms were associated with less initial improvement in reported academic achievement (see Table 7). No other maternal psychopathology symptoms were associated with initial linear rate of change in reported child academic achievement or cognitive ability. No paternal psychopathology symptoms were associated with initial linear rate of change in reported child academic achievement or cognitive ability.

**3. Predictors of T4 child academic achievement and cognitive ability**

Higher levels of T1 maternal Cluster A personality symptoms were associated with lower T4 academic achievement (see Table 5). Higher levels of T1 maternal anxiety and Cluster A personality disorder symptoms were associated with lower T4 cognitive ability. No paternal psychopathology symptoms were associated with T4 academic achievement and cognitive ability.

**G. Does Having a Parent with Multiple Psychopathology Elevations Predict Child**

### **Functioning?**

Mothers with more elevated psychopathology symptom dimensions had children with more mother-reported and father-reported externalizing and internalizing problems, and lower social competence at T1 and T4, with the exception of fathers' reports of social competence at T1, which approached significance (see Table 4). Fathers with more elevated psychopathology symptom dimensions had children with more mother-reported internalizing problems at T1 and T4. Maternal and paternal reports of child T1 and T4 externalizing problems and social functioning, and paternal reports of T1 and T4 internalizing problems were not associated with number of paternal psychopathology symptom elevations. The number of psychopathology symptom elevations in mothers and fathers was not associated with linear rate of change for any mother or father reports of child functioning. In order to test whether these results were being driven by differences between parents with or without psychopathology, analyses were rerun only including parents with at least one elevated psychopathology dimension. Mothers with more elevated psychopathology dimensions still had significantly higher mother-reported externalizing and internalizing problems and social competence at T1 and T4, after removing mothers with zero elevated psychopathology dimensions. Fathers with more elevated psychopathology dimensions still had significantly higher mother-reported internalizing problems at T1 and T4, after removing fathers with zero elevated psychopathology dimensions. These results show that number of elevated parental psychopathology dimensions is related above and beyond simply having psychopathology or not. There is a need for further research to confirm this relationship between multiple parental psychopathology dimensions and child functioning.

## **H. Exploring Gender**

Gender differences have arisen in past research. Therefore, additional analyses were conducted to explore whether similar patterns emerged for boys and girls. Several additional variables were added to the Level 1 Model: gender, the interaction between each maternal psychopathology and gender, and the interaction between each paternal psychopathology and gender. Individual models were run for each psychopathology separately. Due to the likelihood of Type 1 error occurring, given the number of analyses run, alpha was set at .01 for interactions. Results revealed no significant interactions.

### **I. Do Depression, Anxiety, Substance Abuse, ADHD, and Axis II Pathologies Independently Predict Child Outcome?**

To examine whether each dimension of parental psychopathology symptoms uniquely predicts child functioning controlling for other types of psychopathology symptoms, all dimensions of parental psychopathology symptoms that were significant in the single models were entered together in a single Level 2 model. This was not done for academic achievement and cognitive ability, because only one or two maternal psychopathology symptoms and no paternal psychopathology symptoms were significant in the independent models. Including variables with low predictive power in a regression model increases the standard errors of the estimates of the other predictors' regression weights (Berry & Feldman, 1985). Consequently, estimates were improved by removing variables with poor predictive power from the model. To trim the model, variables with the highest *p*-values were eliminated one at a time from the model, until all predictors had *p*-values less than .20 (Table 9 for T1 and Table 10 for T4).

#### **1. Maternal psychopathology**

Maternal drug and alcohol use symptoms remained a significant predictor of

mothers' reports of children's T1 externalizing behaviors and maternal Cluster A personality disorder symptoms remained a significant predictor of mothers' and fathers' reports of children's T1 externalizing behaviors. Maternal ADHD symptoms remained a significant predictor of mothers' reports of children's T4 externalizing behaviors and maternal Cluster A personality disorder symptoms remained a significant predictor of mothers' and fathers' reports of children's T4 externalizing behaviors. Maternal ADHD, antisocial, and Cluster A personality disorder symptoms remained significant predictors of mothers' reports of children's T1 internalizing behaviors, and maternal Cluster A personality disorder symptoms remained a significant predictor of fathers' reports of children's T1 internalizing behaviors. Maternal ADHD, antisocial, and Cluster A personality disorder symptoms remained significant predictors of mothers' reports of children's T4 internalizing behaviors, and maternal borderline and Cluster A personality disorder symptoms remained significant predictors of fathers' reports of children's T4 internalizing behaviors. Finally, maternal Cluster A personality disorder symptoms remained the only significant predictor of linear rate of change for mothers' reports of children's social competence and mothers' and fathers' reports of children's T1 and T4 social competence.

## **2. Paternal psychopathology**

Paternal antisocial personality disorder symptoms remained the only significant predictor of linear rate of change for mothers' reports of children's externalizing behaviors. Paternal depression and Cluster C personality disorder symptoms remained significant predictors of mothers' reports of children's T1 externalizing behaviors and paternal anxiety and antisocial personality disorder symptoms remained significant

predictors of fathers' reports of children's T1 externalizing behaviors. Paternal antisocial personality disorder symptoms remained the only significant predictor of linear rate of change for mothers' reports of children's internalizing behaviors. Paternal ADHD and depression symptoms remained significant predictors of fathers' reports of children's T1 internalizing behaviors. Paternal depression and Cluster C personality disorder symptoms remained significant predictors of mothers' reports of children's T4 internalizing behaviors and paternal ADHD and depression symptoms remained significant predictors of fathers' reports of children's T4 internalizing behaviors.

## CHAPTER IV

### DISCUSSION

The results of this study suggest that early maternal and paternal psychopathology symptoms may play a role in the development of preschool children with behavior problems who are at risk for a range of 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 3 and age 6. Every dimension of maternal psychopathology symptoms at age 3 was also associated with mothers' reports of social competence at age 3 and age 6. However, the relation between a number of dimensions of psychopathology and child outcome generally appeared to be accounted for by comorbid psychopathology. These dimensions included maternal depression and anxiety, and paternal Cluster A. In contrast, maternal Cluster A personality disorder and ADHD symptoms, and paternal depression, antisocial personality disorder, and ADHD symptoms emerged as unique predictors of child functioning at age 3 and age 6, controlling for other forms of psychopathology, with maternal Cluster A and paternal depressive symptoms emerging as the strongest unique predictors. In addition, consistent with previous research (Kessler et al., 1996; Mineka et al., 1998), mothers who reported experiencing more types of psychopathology at age 3 were more likely to rate their children as having more externalizing and internalizing problems and lower social competence at age 3 and age 6. In contrast, fathers who reported experiencing more types of psychopathology had children with greater maternal ratings of internalizing problems, but they did not themselves rate their children as having more difficulties.



## **A. The Relation between Parental Psychopathology and Children's Behavioral, Social, and Emotional Functioning**

The present study corroborates previous research linking maternal and paternal depression (e.g., Ashman et al., 2008; Goodman & Gotlib, 1999; Goodman, Brogan, Lynch, & Fielding, 1993; Leschied et al., 2005; Murray, 1992); maternal and paternal anxiety (e.g., Barnett, Schaafsma, Guzman, & Parker, 1991; Biedel & Turner, 1997; Dierker et al., 1999); paternal substance use (e.g., Chassin, Pitts, DeLucia, & Todd, 1999; Eiden, Colder, Edwards, & Leonard, 2009; Loukas et al., 2003; Reich et al., 1993; West & Prinz, 1987); and maternal and paternal personality disorders (e.g., Eiden et al., 2009; Johnson, Cohen, Kasen, Smailes, & Brook, 2006) with child internalizing problems, externalizing problems, and social deficits. Unlike previous research (e.g., Cogill, Caplan, Alexandra, Robson, & Kumar, 1986; Field, Estroff, Yando, del Valle, Malphurs, & Hart, 1995; Hay, Pawlby, Sharp, Asten, Mills, & Kumar, 2001; Knoche, Givens, & Sheridan, 2007; Wilens et al., 2002), this study found little evidence that parent psychopathology is associated with children's academic achievement and cognitive functioning; only maternal Cluster A personality disorder was associated with both of these child outcomes, and maternal anxiety was associated with cognitive functioning only. This discrepancy is perhaps due to the young age of the children in our sample. The present study extends previous research by suggesting that early parent psychopathology may play a role in the social and emotional outcome of preschool children with behavior problems. In addition, this study adds to the growing body of research that suggests that fathers' psychopathology plays an important role in children's development (e.g., Bogels, & Phares, 2008; Reeb, & Conger, 2009). Finally, although

depression, antisocial personality, and drug and alcohol use have been widely linked to child functioning, the present study adds to the smaller bodies of research on parental anxiety, borderline personality, Cluster A personality, Cluster C personality, and adult ADHD symptoms.

Although parent psychopathology symptoms were associated with age 3 and age 6 levels of child functioning, they did not generally predict changes in preschoolers' functioning. However, there were several important exceptions. Paternal drug and alcohol use, antisocial personality disorder, and Cluster A personality disorder symptoms were predictive of changes in child externalizing symptoms, and paternal drug and alcohol use and antisocial personality disorder symptoms predicted changes in child internalizing symptoms. Consistent with these findings, Chassin, Flora, & King (2004) and Hussong, Flora, Curran, Chassin & Zucker (2008) found that parental alcoholism predicted increases in child drug and alcohol use and internalizing symptoms. However, our findings conflict with Chronis et al. (2007), Harvey et al. (2011a), NICHD Early Child Care Research Network (2004), Munson et al. (2001), and Owens and Shaw (2003) who found that maternal depression was predictive of change in externalizing problems over time. The measure of externalizing problems used in the present study (BASC) contains items measuring both aggression/conduct problems and hyperactivity, whereas these studies used measures that did not include symptoms of hyperactivity. Hyperactivity might be less influenced by parental depression, so using the BASC may have made it more difficult to detect changes in externalizing problems. Because there is such a small body of research examining the relation between parent psychopathology and change in child functioning, it is difficult to determine whether differences between

the present study and previous research is due to differences in measures or sample characteristics. Future research should explore the conditions under which parent depression predicts changes in child functioning.

### **B. Unique Parental Psychopathology Predictors of Child Functioning**

This study was one of the first to simultaneously examine multiple areas of psychopathology in parents, which allowed for an exploration of the relations between psychopathology and child functioning controlling for comorbid conditions. Although most dimensions of parent psychopathology demonstrated simple relations with child functioning, for many of these dimensions, these relations were no longer evident when comorbid psychopathology symptoms were controlled for. The only psychopathology dimension that remained a significant predictor of both mother and father reports of children's social, behavioral, and emotional functioning is maternal Cluster A (schizoid, schizotypal, and paranoid) personality disorder symptoms. This finding is consistent with previous research with this sample (Harvey et al., 2011b) which found that Cluster A traits remained the only significant predictor of aspects of mothers' parenting, including lack of warmth and laxness. Future research will need to explore whether these aspects of maternal parenting mediate the effect of Cluster A on child functioning. The fact that schizotypal items were infrequently endorsed in this sample suggests that characteristics of schizoid and paranoid personality may largely account for the relation between cluster A and child functioning. Further research is needed to better understand the mechanisms underlying the relation between these symptoms and child functioning. For example, it may be that isolative and defensive interpersonal styles carry over to the parent-child relationship. It is also possible that parents with these traits experience less

social support which disrupts parenting and subsequently child functioning. Paternal depression also remained a significant predictor of child internalizing problems based on both mother and father reports. This finding extends previous research linking paternal depression with child functioning in older children (e.g., Reeb & Conger, 2009) to preschool children with behavior problems and suggests that this link is not accounted for by comorbid psychopathology.

Parents' reports of their psychopathology were generally more highly correlated with their own reports of child behavior than with their partners' reports of child behavior. 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 tend to have lower tolerance for behavioral and emotional problems which may bias their perceptions of their children. This finding is consistent with previous research that parental psychopathology may color parents' perceptions of child functioning (e.g., Fergusson, Lynskey & Horwood, 1993; Munson, McMahon, & Spieker, 2001), and is the first study to suggest that parental ADHD specifically may color parents' reports of children's behavior. Interestingly, maternal drug and alcohol use symptoms were associated with their own reports of children's externalizing problems, but with their spouses' reports of internalizing symptoms. It may be that mothers with a history of drug and alcohol use may have a lower tolerance for children's acting out behavior, which may inflate their ratings. In contrast, their drug and alcohol use may lead to internalizing problems in their children, which their spouses but not themselves are sensitive to. More research is needed to explore these possibilities.

Surprisingly, maternal depression symptoms were no longer significant in predicting child externalizing and internalizing problems or social competence, after controlling for comorbid psychopathology. Few studies of the relation between parent depression and child functioning have controlled for comorbid psychopathology. O'Connor et al. (2002), Baker, Jaffee, Uher, and Maughan (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 comorbid drug and alcohol use and anxiety. However, the present study is the first to control for multiple other forms of psychopathology, and suggests that doing so may be critically important. Research has documented that depression is highly comorbid with other forms of Axis 1 (e.g., Kessler et al., 2003; McGinn, Asnis, Suchday, & Kaplan, 2005) and Axis 2 (e.g., McGinn et al., 2005; Shea, Glass, Pilkonis, & Watkins, 1987) disorders. It may be that it is these comorbid conditions that contribute to poor child functioning. Future research should control for other psychopathology symptoms when studying the effects of parent psychopathology.

### **C. Multiple Psychopathology Elevations and Child Functioning**

This study's finding that the number of parental elevated psychopathology symptoms predicts child functioning extends previous research that has found that parents with two co-occurring disorders had children with more difficulties than did parents who had a single disorder (Hirshfeld-Becker et al., 2008; Moss et al., 2001; Puttler et al., 1998; Zucker, Ellis, Bingham, & Fitzgerald, 1996). Several possible mechanisms may explain these findings. First, genetic predisposition may be stronger in families with parents displaying multiple psychopathology symptoms than a single

psychopathology. Additionally, parents with multiple psychopathology symptoms may experience greater symptom severity and poorer psychosocial functioning (Kessler et al., 1996; Mineka et al., 1998), which may cause greater disruptions in parenting. These potential mechanisms need to be explored in future research.

#### **D. 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, so these findings may not generalize to parents with clinical diagnoses. Second, although the sample was ethnically diverse, the sample size was not sufficient to examine the effects separately for different ethnic groups so it is unclear whether the findings apply to all the ethnic groups that were represented in the sample. Third, the observed relations may be affected by shared informant variance because parent report was used to assess their own psychopathology and that of child behavior. Ideally, parental report of child functioning would be supplemented by teacher or caregiver report. Additionally, given the number of analyses that were run for this study, there is an increased risk of Type I error. Finally, although the longitudinal design of this study provides stronger support for a causal link between early parental psychopathology and child functioning than do cross-sectional studies, the findings of this study do not establish the direction of causality between parental psychopathology, and thus parenting, and child outcome.

#### **E. Clinical Implications**

Despite these limitations, the present study suggests that parent psychopathology symptoms may play an important role in the development of young children with behavior problems. Results demonstrated several psychopathology symptoms that may be important. However, for mothers, Cluster A personality disorder symptoms, which

includes paranoid, schizoid, and schizotypal personality disorder symptoms, and reflects issues with suspiciousness, social detachment, and eccentricity, respectively, stood out as a particularly important predictor. For fathers, depression stood out as a particularly important predictor. A critical next step includes identifying the specific mechanisms underlying the relation between parental psychopathology and child functioning. With respect to clinical practice, interventions that target parental psychopathology may contribute to children's healthy development. Research has begun to document that interventions that target maternal depression result in improved child functioning (e.g., Byrne et al., 2006; Modell, Modell, Wallander, Hodgens, Duke, & Wisely, 2001; Weissman et al., 2006). The results of the present study suggest that interventions that target other forms of psychopathology, including parents' characterological problems, and that target comorbid psychopathology when present, may also have a significant impact on parent-child relationships, and thus child functioning. Further research is needed to determine whether and how treatments that target parent psychopathology may help children.

Table 1: Descriptive Statistics for MCMI-III Subscales

Variable	M(SD)	Mothers		M(SD)	Fathers	
		% BR $\geq$ 75 <sup>3</sup>	N		% BR $\geq$ 75	N
Cluster A						
Schizoid	44.73 (22.97)	12.9	132	54.44 (24.72)	27.9	131
Schizotypal	29.74 (24.97)	2.9	132	34.24 (26.73)	3.6	132
Paranoid	42.39 (29.37)	12.1	132	41.99 (28.96)	9.3	132
Borderline PD	30.56 (22.71)	5.0	132	32.40 (26.43)	8.6	132
Antisocial PD	48.32 (20.11)	10.7	132	48.89 (21.26)	16.4	132
Cluster C PD						
Avoidant	40.02 (23.11)	10.7	132	45.54 (26.22)	20.7	132
Dependent	26.67 (22.26)	15.0	132	50.52 (22.27)	20.0	132
Anxiety						
Anxiety	42.45 (28.57)	22.9	132	41.36 (32.26)	26.4	132
Somatoform	29.60 (22.16)	2.9	132	37.64 (28.76)	5.7	132
PTSD	32.29 (25.23)	5.7	132	31.13 (25.05)	8.6	132
Depression						
Major depression	27.75 (22.89)	5.0	132	30.59 (26.68)	5.0	132
Dysthymia	23.90 (22.16)	6.4	132	33.86 (27.23)	10.7	132
Depressive PD	39.13 (24.09)	12.9	132	49.08 (30.00)	28.6	132
Substance Abuse						
Alcohol	52.40 (29.61)	15.0	132	48.20 (29.53)	20.0	132
Drug	41.02 (26.39)	2.1	132	37.31 (23.22)	4.3	132

<sup>3</sup> Indicates 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	12	13	14	15	16	17
Maternal predictors																	
1. ADHD	--																
2. Cluster A	.36 <sup>***</sup>	--															
3. Cluster C	.44 <sup>***</sup>	.64 <sup>***</sup>	--														
4. Borderline	.49 <sup>***</sup>	.60 <sup>***</sup>	.51 <sup>***</sup>	--													
5. Antisocial	.33 <sup>***</sup>	.32 <sup>***</sup>	.11	.61 <sup>***</sup>	--												
6. Anxiety	.44 <sup>***</sup>	.73 <sup>***</sup>	.60 <sup>***</sup>	.65 <sup>***</sup>	.27 <sup>***</sup>	--											
7. Depression	.52 <sup>***</sup>	.73 <sup>***</sup>	.67 <sup>***</sup>	.66 <sup>***</sup>	.25 <sup>***</sup>	.81 <sup>***</sup>	--										
8. Substance	.40 <sup>***</sup>	.57 <sup>***</sup>	.34 <sup>***</sup>	.71 <sup>***</sup>	.80 <sup>***</sup>	.53 <sup>***</sup>	.54 <sup>***</sup>	--									
9. Elevations	.58 <sup>***</sup>	.68 <sup>***</sup>	.65 <sup>***</sup>	.70 <sup>***</sup>	.31 <sup>***</sup>	.73 <sup>***</sup>	.84 <sup>***</sup>	.51 <sup>***</sup>	--								
Paternal predictors																	
10. ADHD	.19 <sup>*</sup>	.003	.03	-.09	-.06	-.06	.02	-.06	-.04	--							
11. Cluster A	.02	.36 <sup>***</sup>	.18 <sup>*</sup>	.16	.10	.24 <sup>**</sup>	.30 <sup>**</sup>	.16	.26 <sup>**</sup>	.42 <sup>***</sup>	--						
12. Cluster C	.06	.30 <sup>**</sup>	.17	.11	-.01	.14	.30 <sup>**</sup>	.02	.22 <sup>*</sup>	.31 <sup>***</sup>	.59 <sup>***</sup>	--					
13. Borderline	.08	.39 <sup>***</sup>	.20 <sup>*</sup>	.23 <sup>**</sup>	.09	.29 <sup>**</sup>	.36 <sup>***</sup>	.19 <sup>*</sup>	.27 <sup>**</sup>	.35 <sup>***</sup>	.67 <sup>***</sup>	.51 <sup>***</sup>	--				
14. Antisocial	.10	.32 <sup>***</sup>	.16	.21 <sup>*</sup>	.15	.20 <sup>*</sup>	.18 <sup>*</sup>	.19 <sup>*</sup>	.18 <sup>*</sup>	.25 <sup>**</sup>	.54 <sup>***</sup>	.20 <sup>*</sup>	.67 <sup>***</sup>	--			
15. Anxiety	.10	.27 <sup>**</sup>	.13	.06	.002	.19 <sup>*</sup>	.26 <sup>**</sup>	.04	.22 <sup>*</sup>	.36 <sup>***</sup>	.68 <sup>***</sup>	.52 <sup>***</sup>	.66 <sup>***</sup>	.40 <sup>***</sup>	--		
16. Depression	.10	.35 <sup>***</sup>	.21 <sup>*</sup>	.08	.02	.22 <sup>*</sup>	.34 <sup>***</sup>	.09	.28 <sup>**</sup>	.36 <sup>***</sup>	.70 <sup>***</sup>	.65 <sup>***</sup>	.71 <sup>***</sup>	.41 <sup>***</sup>	.82 <sup>***</sup>	--	
17. Substance	.14	.37 <sup>***</sup>	.16	.24 <sup>**</sup>	.17	.28 <sup>**</sup>	.29 <sup>**</sup>	.22 <sup>*</sup>	.26 <sup>**</sup>	.36 <sup>***</sup>	.70 <sup>***</sup>	.37 <sup>***</sup>	.76 <sup>***</sup>	.87 <sup>***</sup>	.58 <sup>***</sup>	.65 <sup>***</sup>	--
18. Elevations	.01	.19 <sup>*</sup>	.18 <sup>*</sup>	.05	.06	.18 <sup>*</sup>	.20 <sup>*</sup>	.14	.17	.05	.29 <sup>**</sup>	.20 <sup>*</sup>	.41 <sup>***</sup>	.25 <sup>**</sup>	.41 <sup>***</sup>	.40 <sup>***</sup>	.33 <sup>***</sup>

Note. <sup>\*</sup>  $p < .05$ , <sup>\*\*</sup>  $p < .01$ , <sup>\*\*\*</sup>  $p < .001$ , N=132 for all predictors except Paternal ADHD, which is 131

Table 3: Intercorrelations, Means, and Standard Deviations of Outcome Variables

Outcome Variable	N	<i>M</i> ( <i>SD</i> )	1	2	3	4	5	6	7
1. Mother reports of externalizing problems									
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 reports of externalizing problems									
Time 1	130	56.09 (12.62)	0.66 <sup>***</sup>	--					
Time 2	107	56.53 (10.46)	0.59 <sup>***</sup>	--					
Time 3	89	54.06 (11.09)	0.55 <sup>***</sup>	--					
Time 4	97	53.13 (10.67)	0.67 <sup>***</sup>	--					
3. Mother reported internalizing problems									
Time 1	131	54.18 (11.24)	0.42 <sup>***</sup>	0.30 <sup>**</sup>	--				
Time 2	122	51.42 (11.26)	0.46 <sup>***</sup>	0.14	--				
Time 3	108	51.48 (12.90)	0.53 <sup>***</sup>	0.27 <sup>*</sup>	--				
Time 4	110	48.42 (9.69)	0.57 <sup>***</sup>	0.25 <sup>*</sup>	--				
4. Father reported internalizing problems									
Time 1	130	52.08 (12.33)	0.40 <sup>***</sup>	0.59 <sup>***</sup>	0.59 <sup>***</sup>	--			
Time 2	107	48.55 (10.66)	0.34 <sup>***</sup>	0.51 <sup>***</sup>	0.59 <sup>***</sup>	--			
Time 3	89	47.89 (11.29)	0.33 <sup>**</sup>	0.60 <sup>***</sup>	0.56 <sup>***</sup>	--			
Time 4	87	45.72 (8.87)	0.37 <sup>**</sup>	0.59 <sup>***</sup>	0.62 <sup>***</sup>	--			
5. Mother reported social competence									
Time 1	132	46.25 (9.68)	-0.31 <sup>***</sup>	-0.17	-0.12	-0.18 <sup>*</sup>	--		
Time 2	123	48.07 (9.04)	-0.26 <sup>***</sup>	-0.22 <sup>*</sup>	-0.10	-0.20 <sup>*</sup>	--		
Time 3	108	48.96 (8.70)	-0.47 <sup>***</sup>	-0.31 <sup>**</sup>	-0.27 <sup>**</sup>	-0.13	--		
Time 4	110	49.21 (9.08)	-0.67 <sup>***</sup>	-0.54 <sup>**</sup>	-0.33 <sup>**</sup>	-0.27 <sup>*</sup>	--		
6. Father reported social competence									
Time 1	130	46.56(8.73)	-0.15	-0.18 <sup>*</sup>	0.01	-0.11	0.38 <sup>***</sup>	--	
Time 2	107	49.03(7.94)	-0.19 <sup>*</sup>	-0.21 <sup>*</sup>	-0.02	-0.13	0.53 <sup>***</sup>	--	
Time 3	89	50.45(8.92)	-0.32 <sup>**</sup>	-0.37 <sup>***</sup>	-0.03	-0.18	0.52 <sup>***</sup>	--	
Time 4	87	48.84(8.15)	-0.40 <sup>***</sup>	-0.38 <sup>***</sup>	-0.12	-0.15	0.49 <sup>***</sup>	--	
7. Academic Achievement									
Time 1	115	105.35(19.37)	-0.16	-0.07	0.09	0.12	0.03	0.04	--
Time 4	101	98.60(14.44)	-0.20 <sup>*</sup>	-0.13	-0.11	-0.07	0.14	-0.01	--
8. Cognitive Ability									
Time 1	76	104.62(18.96)	-0.25 <sup>*</sup>	-0.12	0.02	0.03	0.12	0.02	0.45 <sup>***</sup>
Time 4	98	101.87(13.47)	-0.24 <sup>*</sup>	-0.30 <sup>**</sup>	-0.19	-0.22	0.21	0.01	0.69 <sup>***</sup>

Note. <sup>\*</sup>  $p < .05$ , <sup>\*\*</sup>  $p < .01$ , <sup>\*\*\*</sup>  $p < .001$

Table 4: Maternal and Paternal Predictors of Child's Externalizing Behaviors and Linear Rate of Change in Child's Externalizing Behaviors

<u>Predictors</u>	<u>Mother Report of Behavior</u>			<u>Father Report of Behavior</u>		
	Predicting T1 Outcome Variable (T1 Model Intercept)	Predicting Linear Rate of Change in Variable (T1 Model Linear)	Predicting T4 Outcome Variable (T4 Model Intercept)	Predicting T1 Outcome Variable (T1 Model Intercept)	Predicting Linear Rate of Change in Variable (T1 Model Linear)	Predicting T4 Outcome Variable (T4 Model Intercept)
	$\gamma$ (SE)	$\gamma$ (SE)	$\gamma$ (SE)	$\gamma$ (SE)	$\gamma$ (SE)	$\gamma$ (SE)
<u>Maternal predictors</u>						
ADHD	7.35 (2.48)**	0.77 (0.88)	8.34 (2.25)**	5.22 (2.62)*	-0.37 (1.01)	4.69 (2.28)*
Antisocial	1.89 (0.99) <sup>†</sup>	0.07 (0.33)	1.99 (0.89)*	0.39 (1.05)	0.20 (-.41)	0.44 (0.90)
Anxiety	4.86 (1.08)***	-0.30 (-0.75)	4.52 (0.97)***	3.66 (1.18)**	0.27 (0.49)	4.02(1.02)
Cluster C	3.72 (1.03)**	-0.08 (0.37)	3.63 (0.93)***	2.96 (1.08)**	-0.07 (0.44)	2.87 (0.94)**
Borderline	3.38 (1.00)**	0.05 (0.36)	3.43 (0.89)***	1.20 (1.05)	0.35 (0.43)	1.66 (0.91) <sup>†</sup>
Depression	3.53 (1.06)**	-0.04 (0.39)	3.49 (0.96)**	2.26 (1.13)*	0.60 (0.47)	2.98 (0.97)**
Drug & alcohol use	2.36 (1.06)*	0.22 (0.37)	2.69 (0.94)**	0.18 (1.13)	0.65 (0.44)	1.06 (0.96)
Cluster A	5.41 (1.14)***	-0.08 (0.42)	5.38 (1.00)***	3.84 (1.23)**	0.73 (0.51)	4.83 (1.00)**
Multiple elevations	1.34 (0.31)***	0.05 (0.11)	1.40 (0.28)***	1.12 (0.35)**	-0.00 (0.15)	1.12 (0.30)**
<u>Paternal predictors</u>						
ADHD	1.63 (2.52)	0.52 (0.88)	2.31 (2.27)	6.71 (2.68)*	-0.08 (1.09)	6.64 (2.32)**
Antisocial	0.98 (0.92)	0.81 (0.31)*	2.06 (0.83)*	3.04 (0.98)**	-0.08 (0.40)	3.03 (0.85)**
Anxiety	1.56 (1.04)	0.52 (0.39)	2.16 (0.94)*	2.98 (1.14)*	-0.41 (0.46)	2.41 (0.98)*
Cluster C	1.43 (1.05)	0.20 (0.38)	1.69 (0.95) <sup>†</sup>	3.77 (1.11)**	-0.21 (0.44)	3.48 (0.95)**
Borderline	1.57 (0.89) <sup>†</sup>	0.47 (0.32)	2.20 (0.80)**	4.21 (0.95)***	-0.34 (0.40)	3.85 (0.82)***
Depression	1.50 (1.09)	0.55 (0.40)	2.17 (0.98)*	3.76 (1.16)**	-0.45 (0.48)	3.22 (0.99)**
Drug & alcohol use	2.14 (1.03)*	0.72 (0.36)*	3.11 (0.91)**	4.10 (1.10)***	-0.01 (0.44)	4.16 (0.93)***
Cluster A	0.17 (1.09)	0.81 (0.40)*	1.14 (0.96)	3.14 (1.17)**	-0.32 (0.47)	2.71 (0.96)**
Multiple elevations	0.19 (0.18)	0.01 (0.07)	0.20 (0.17)	-0.14 (0.20)	0.06 (0.08)	-0.07 (0.18)

Note: <sup>†</sup>  $p < .10$ , \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

Table 5: Maternal and Paternal Predictors of Child's Internalizing Behaviors and Linear Rate of Change in Child's Internalizing Behaviors

<u>Predictors</u>	<u>Mother Report of Behavior</u>			<u>Father Report of Behavior</u>		
	Predicting T1 Outcome Variable (T1 Model Intercept)	Predicting Linear Rate of Change in Variable (T1 Model Linear)	Predicting T4 Outcome Variable (T4 Model Intercept)	Predicting T1 Outcome Variable (T1 Model Intercept)	Predicting Linear Rate of Change in Variable (T1 Model Linear)	Predicting T4 Outcome Variable (T4 Model Intercept)
	$\gamma$ (SE)	$\gamma$ (SE)	$\gamma$ (SE)	$\gamma$ (SE)	$\gamma$ (SE)	$\gamma$ (SE)
<u>Maternal predictors</u>						
ADHD	8.57 (2.59)**	0.91 (0.88)	10.11(2.16)***	3.43 (2.65)	0.79 (1.00)	4.74 (2.10)*
Antisocial	2.89 (1.03)**	-0.24 (0.33)	2.51 (0.89)**	0.20 (1.09)	-0.04 (0.40)	0.11 (0.88)
Anxiety	3.32 (1.17)**	0.02 (0.40)	3.39 (1.00)**	2.94 (1.18)*	0.27 (0.48)	3.32 (0.94)**
Cluster C	1.92 (1.13)†	0.46 (0.36)	2.67 (0.97)**	1.90 (1.14)†	0.21 (0.44)	2.25 (0.92)*
Borderline	2.37 (1.09)*	-0.12 (0.35)	2.20 (0.93)*	0.44 (1.10)	0.03 (0.43)	0.49 (0.90)
Depression	2.45 (1.15)*	0.30 (0.38)	3.01 (0.97)**	1.66 (1.16)	0.51 (0.47)	2.45 (0.91)**
Drug & alcohol use	2.53 (1.14)*	0.04 (0.37)	2.66 (0.98)**	0.67 (1.18)	0.31 (0.44)	1.16 (0.95)
Cluster A	3.39 (1.27)**	0.52 (0.41)	4.43 (1.05)***	2.63 (1.27)*	0.83(0.50)†	4.00 (0.99)***
Multiple elevations	1.16 (0.33)**	0.04 (0.11)	1.22 (0.28)***	0.91 (0.36)*	-0.01 (0.14)	0.91 (0.29)**
<u>Paternal predictors</u>						
ADHD	1.45 (2.62)	0.29 (0.88)	1.78 (2.17)	8.76 (2.70)**	-0.70 (1.07)	7.76 (2.16)**
Antisocial	-1.05 (0.96)	0.94 (0.31)**	0.36 (0.84)	1.69 (1.01)†	0.24 (0.39)	2.16 (.83)*
Anxiety	2.38 (1.12)*	0.11 (0.39)	2.48 (0.96)*	4.14 (1.14)**	-0.43 (0.46)	3.51 (0.91)***
Cluster C	0.48 (1.16)	0.17 (0.37)	0.68 (0.99)	3.37 (1.16)**	-0.27 (0.44)	2.95 (0.93)**
Borderline	0.81 (0.98)	0.48 (0.32)	1.54 (0.84)†	3.67 (0.98)***	-0.24 (0.39)	3.42 (0.81)***
Depression	1.62 (1.18)	0.39 (0.39)	2.22 (0.99)*	3.94 (1.18)**	-0.14 (0.47)	3.81 (0.93)***
Drug & alcohol use	-0.07 (1.10)	0.73 (0.36)*	1.08 (0.94)	2.57 (1.14)*	0.17 (0.44)	2.91 (0.92)**
Cluster A	-0.16 (1.22)	0.45 (0.40)	0.46 (1.01)	3.52 (1.22)**	-0.55 (0.46)	2.75 (0.93)**
Multiple elevations	0.43 (0.19)*	-0.03 (0.07)	0.38 (0.16)*	0.25 (0.21)	0.00 (0.08)	0.25 (0.17)

Note: †  $p < .10$ , \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

Table 6: Maternal and Paternal Predictors of Child's Social Competence and Linear Rate of Change in Child's Social Competence

<u>Predictors</u>	<u>Mother Report of Behavior</u>			<u>Father Report of Behavior</u>		
	Predicting T1 Outcome Variable (T1 Model Intercept) $\gamma$ (SE)	Predicting Linear Rate of Change in Variable (T1 Model Linear) $\gamma$ (SE)	Predicting T4 Outcome Variable (T4 Model Intercept) $\gamma$ (SE)	Predicting T1 Outcome Variable (T1 Model Intercept) $\gamma$ (SE)	Predicting Linear Rate of Change in Variable (T1 Model Linear) $\gamma$ (SE)	Predicting T4 Outcome Variable (T4 Model Intercept) $\gamma$ (SE)
	<u>Maternal predictors</u>					
ADHD	-2.37 (2.10)	-1.02 (0.74)	-3.74 (1.85) *	-1.17 (1.98)	-0.60 (0.83)	-2.01 (1.60)
Antisocial	-0.38 (0.83)	-0.12 (0.29)	-0.55 (0.71)	-0.20 (0.78)	-0.52 (0.33)	-0.92 (0.63)
Anxiety	-1.46 (0.95)	-0.53 (0.34)	-2.25 (0.81) **	-0.43 (0.90)	-0.49 (0.40)	-1.09 (0.74)
Cluster C	-0.84 (0.89)	-0.60 (0.31) †	-1.71 (0.77) *	-0.60 (0.84)	-0.32 (0.36)	-1.09 (0.67)
Borderline	-1.57 (0.86) †	-0.14 (0.30)	-1.79 (0.74) *	-0.05 (0.82)	-0.60 (0.35) †	-0.89 (0.66)
Depression	-1.96 (0.92) *	-0.31 (0.32)	-2.44 (0.79) **	-0.20 (0.88)	-0.75 (0.38) †	-1.21 (0.71) †
Drug & alcohol use	-0.98 (0.91)	-0.35 (0.32)	-1.54 (0.78) †	-0.02 (0.86)	-0.75 (0.36)	-1.10 (.69)
Cluster A	-2.82 (0.99) **	-0.59 (0.35) †	-3.83 (0.82) ***	0.09 (0.95)	-1.08 (0.41) *	-1.41 (0.77) †
Multiple elevations	-0.87 (0.29) **	0.04 (0.30)	-0.97 (0.23) ***	-0.44 (0.26) †	-0.05 (0.09)	-0.59 (0.21) **
<u>Paternal predictors</u>						
ADHD	3.59 (2.13) †	-1.00 (0.73)	2.17 (1.86)	1.49 (2.01)	0.12 (0.88)	1.42 (1.64)
Antisocial	-0.81 (0.77)	-0.31 (0.27)	-1.25 (0.67) †	-0.59 (0.73)	-0.12 (0.32)	-0.75 (0.59)
Anxiety	-0.87 (0.92)	-0.32 (0.32)	-1.41 (0.78) †	-1.40 (0.87)	0.45 (0.38)	-0.90 (0.71)
Cluster C	-1.40 (0.91)	0.40 (0.32)	-0.82 (0.78)	-1.11 (0.86)	-0.14 (0.36)	-1.29 (0.68) †
Borderline	-0.31 (0.77)	-0.33 (0.27)	-0.78 (0.67)	-0.30 (0.74)	-0.12 (0.32)	-0.48 (0.60)
Depression	0.55 (0.94)	-0.48 (0.33)	-0.15 (0.81)	-0.58 (0.90)	0.11 (0.39)	-0.52 (0.73)
Drug & alcohol use	-0.06 (0.88)	-0.55 (0.30)	-0.90 (0.75)	0.14 (0.83)	-0.15 (0.36)	-0.13 (0.67)
Cluster A	-0.03 (0.96)	-0.24 (0.34)	-0.37 (0.79)	-1.55 (0.91) †	0.44 (0.38)	-0.99 (0.73)
Multiple elevations	0.23 (0.17)	-0.05 (0.18)	0.21 (0.13)	0.15 (0.15)	0.02 (0.05)	0.19 (0.12)

Note: †  $p < .10$ , \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

Table 7: Maternal and Paternal Predictors of Child Academic Achievement

<u>Predictors</u>	Predicting T1 Outcome Variable (T1 Model Intercept) $\gamma$ (SE)	Predicting Linear Rate of Change in Variable (T1 Model Linear) $\gamma$ (SE)	Predicting T4 Outcome Variable (T4 Model Intercept) $\gamma$ (SE)
<u>Maternal predictors</u>			
ADHD	2.28 (3.83)	1.02 (4.25)	-0.90 (3.83)
Antisocial	0.67 (1.52)	-0.35 (1.57)	-1.51 (1.56)
Anxiety	-1.95 (1.76)	-2.64 (1.83)	2.32 (1.73)
Cluster C	0.48 (1.62)	-1.55 (1.69)	0.09 (1.58)
Borderline	-0.33 (1.59)	-0.32 (1.64)	1.17 (1.56)
Depression	-0.94 (1.71)	-1.93 (1.77)	1.61 (1.69)
Drug & alcohol use	0.53 (1.69)	-1.46 (1.70)	-0.00 (1.67)
Cluster A	-3.63 (1.90) <sup>†</sup>	-1.83 (1.97)	3.96 (1.88) <sup>*</sup>
Multiple elevations	-0.47 (0.49)	-0.51 (0.55)	0.64 (0.48)
<u>Paternal predictors</u>			
ADHD	2.16 (4.05)	3.53 (4.16)	-2.50 (4.07)
Antisocial	-1.19 (1.46)	-1.29 (1.52)	-0.69 (1.52)
Anxiety	-1.88 (1.72)	-1.53 (1.74)	1.53 (1.70)
Cluster C	-1.49 (1.71)	-0.40 (1.79)	2.01 (1.69)
Borderline	-1.35 (1.47)	-2.61 (1.52) <sup>†</sup>	0.83 (1.47)
Depression	-0.57 (1.81)	-2.05 (1.87)	-0.16 (1.82)
Drug & alcohol use	-0.99 (1.65)	-3.28 (1.73) <sup>†</sup>	0.37 (1.64)
Cluster A	-0.05 (1.80)	-4.71 (1.86) <sup>*</sup>	-0.90 (1.78)
Multiple elevations	-0.03 (0.32)	-0.30 (0.34)	-0.10 (0.32)

Note: <sup>†</sup>  $p < .10$ , <sup>\*</sup>  $p < .05$

Table 8: Maternal and Paternal Predictors of Child Cognitive Ability

<u>Predictors</u>	Predicting T1 Outcome Variable (T1 Model Intercept) $\gamma$ (SE)	Predicting Linear Rate of Change in Variable (T1 Model Linear) $\gamma$ (SE)	Predicting T4 Outcome Variable (T4 Model Intercept) $\gamma$ (SE)
<u>Maternal predictors</u>			
ADHD	2.10 (3.56)	2.38 (6.50)	-2.06 (3.57)
Antisocial	1.38 (1.40)	1.22 (2.40)	-1.39 (1.40)
Anxiety	-3.48 (1.58)*	-4.42 (3.10)	3.57 (1.58)*
Cluster C	-0.91 (1.51)	-4.15 (2.68)	0.92 (1.51)
Borderline	0.79 (1.48)	-1.95 (2.62)	-0.75 (1.49)
Depression	-2.95 (1.57)†	-1.74 (3.06)	3.04 (1.57)†
Drug & alcohol use	0.59 (1.55)	-0.90 (2.61)	-0.60 (1.55)
Cluster A	-4.50 (1.73)*	-0.69 (3.36)	4.58 (1.74)*
Multiple elevations	-0.67 (0.44)	-0.69 (0.84)	0.67 (0.44)
<u>Paternal predictors</u>			
ADHD	-0.55 (3.80)	-1.13 (6.64)	0.29 (3.82)
Antisocial	-1.56 (1.35)	-2.39 (2.37)	1.51 (1.36)
Anxiety	-2.11(1.57)	3.60 (2.80)	1.99 (1.57)
Cluster C	-0.97 (1.60)	-0.71 (2.69)	1.05 (1.61)
Borderline	-2.68 (1.39)†	0.09 (2.25)	2.58 (1.40)†
Depression	-0.16 (1.71)	-0.78 (2.89)	-0.01 (1.72)
Drug & alcohol use	-1.90 (1.53)	-2.77 (2.67)	1.83 (1.54)
Cluster A	0.02 (1.65)	-0.56 (3.08)	-0.12 (1.66)
Multiple elevations	-0.39 (0.29)	0.69 (0.50)	0.38 (0.30)

Note: †  $p < .10$ , \*  $p < .05$

Table 9: Trimmed Models for Psychopathology in Predicting T1 & T4 Child Functioning and Linear Rate of Change in Child's Functioning

<u>Predictors</u>	<u>Mother</u>		<u>Father</u>		
	Predicting Linear Rate of Change in Variable (T1 Model Intercept) $\gamma$ (SE)	Predicting T1 Outcome Variable (T1 Model Intercept) $\gamma$ (SE)	Predicting T4 Outcome Variable (T4 Model Intercept) $\gamma$ (SE)	Predicting T1 Outcome Variable (T1 Model Intercept) $\gamma$ (SE)	Predicting T4 Outcome Variable (T4 Model Intercept) $\gamma$ (SE)
<u>Maternal predictors of externalizing</u>					
ADHD		3.32 (1.81) <sup>†</sup>	3.59 (1.74) <sup>*</sup>		
Borderline		1.24 (0.86)			-1.37 (0.82) <sup>†</sup>
Drug & alcohol use		2.22 (0.88) <sup>*</sup>			
Cluster A		3.57 (1.11) <sup>**</sup>	4.35 (1.01) <sup>***</sup>	4.58 (1.00) <sup>***</sup>	5.50 (1.12) <sup>***</sup>
<u>Maternal predictors of internalizing</u>					
ADHD		6.08 (1.69) <sup>**</sup>	8.05 (2.12) <sup>***</sup>		3.30 (2.08)
Antisocial		3.15 (1.04) <sup>**</sup>	2.74 (1.06) <sup>*</sup>		
Anxiety					1.82 (1.09) <sup>†</sup>
Borderline					-1.89 (0.92) <sup>*</sup>
Drug & alcohol use		-2.37 (1.32) <sup>†</sup>	-2.49 (1.35) <sup>†</sup>		3.50 (1.24) <sup>**</sup>
Cluster A		3.51 (1.15) <sup>**</sup>	3.48 (1.18) <sup>**</sup>	4.10 (0.94) <sup>***</sup>	
<u>Maternal predictors of social competence</u>					
Cluster A	-0.85 (0.40) <sup>*</sup>	-3.98 (0.76) <sup>***</sup>	-3.98 (0.76) <sup>***</sup>	-1.81 (0.72) <sup>**</sup>	-1.81 (0.72) <sup>*</sup>
<u>Paternal predictors of externalizing</u>					
ADHD					3.84 (1.81) <sup>*</sup>
Antisocial	1.38 (0.60) <sup>*</sup>	-1.18 (0.64) <sup>†</sup>		3.95 (1.80) <sup>*</sup>	
Anxiety				-2.11 (0.96) <sup>*</sup>	-2.23 (0.96) <sup>*</sup>
Cluster C		-1.95 (0.89) <sup>*</sup>		1.47 (0.82) <sup>†</sup>	3.84 (1.81) <sup>*</sup>
Borderline				1.51 (0.97)	1.55 (0.98)
Depression		3.92 (1.10) <sup>**</sup>			
Drug & alcohol use	-1.17 (0.80)		2.26 (0.88) <sup>*</sup>	2.00 (1.11) <sup>†</sup>	2.10 (1.11) <sup>†</sup>
Cluster A	0.82 (0.56)				
<u>Paternal predictors of internalizing</u>					
ADHD				5.31 (1.69) <sup>**</sup>	4.74 (1.72) <sup>**</sup>
Antisocial	0.97 (0.34) <sup>**</sup>				1.90 (1.18)
Cluster C			-2.21 (0.90) <sup>*</sup>		
Depression			4.72 (1.27) <sup>**</sup>	2.57 (0.94) <sup>**</sup>	3.32 (1.15) <sup>**</sup>
Drug & alcohol use			-1.85 (1.08) <sup>†</sup>		-2.58 (1.69)

Note: <sup>†</sup>  $p < .10$ , <sup>\*</sup>  $p < .05$ , <sup>\*\*</sup>  $p < .01$ , <sup>\*\*\*</sup>  $p < .001$



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