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**Behavioral and Emotional Correlates of the CBCL-Pediatric Bipolar Disorder Profile in
Preschool Children**

A Dissertation Presented

by

Jiyon Kim

to

The Graduate School

in Partial Fulfillment of the

Requirements

for the Degree of

Doctor of Philosophy

in

Clinical Psychology

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Abstract of the Dissertation

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A growing body of literature indicates that the CBCL-Pediatric Bipolar Disorder (CBCL-PBD) profile identifies a distinctive group of youths at heightened risk for severe psychopathology, comorbidity, and marked impairment in functioning. However, no clear consensus has been reached yet on how best to conceptualize this group of children. Existing studies have focused on diagnostic variables associated with the CBCL-PBD profile in school-age children and adolescents. Thus, little is known about psychosocial correlates of the profile and characteristics of the profile in young children. Therefore, the current study seeks to examine early developmental correlates of preschool children with and without the CBCL-BPD profile across multiple domains. Participants were an unselected community sample of 493 parents and their three-year-old children. Demographic factors, children's temperament and clinical symptomatology, parental psychopathology and personality, parenting behavior, and life stress and marital functioning were assessed using a broad range of measures, including questionnaires,

semi-structure diagnostic interviews, and standardized observational protocols. Results showed that children meeting criteria for the profile were reported to have temperaments characterized by increased negative affectivity and extraversion, and decreased effortful control compared to children without the profile. Similarly, the profile positive children were observed to be low in exuberance and high in disinhibition/noncompliance in a laboratory setting. In addition, children with the profile were more likely to exhibit symptoms of oppositional defiant disorder (ODD), attention-deficit/hyperactivity disorder (ADHD) and depression. They also showed poorer overall functioning, social competence, and language development. Further, children positive for the profile tended to come from homes characterized by higher maternal negative emotionality and lifetime anxiety disorder. Elevated levels of current depressive symptoms in both parents and hypomanic symptoms in the primary caregiver were also found. Finally, parents of the CBCL-PBD children were more likely to have parenting style lacking in structure and discipline, and to a lesser extent, low in responsiveness and high in hostility. Our findings suggest that the CBCL-PBD profile in a non-clinical sample of preschool children is associated with a constellation of behavioral and emotional problems, functional impairment, parental negative emotionality and affective symptoms, and maladaptive parenting.

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List of Abbreviations

CBCL	Child Behavior Checklist
CBCL-PBD profile	Child Behavior Checklist-Pediatric Bipolar Disorder profile
ADHD	Attention-Deficit/Hyperactive Disorder
ODD	Oppositional Defiant Disorder

Introduction

The recognition and diagnosis of prepubertal bipolar disorder has been the focus of considerable debate and study in the last decade. Once thought of as a rare disorder in children, there has been a substantial increase in the rate of children being diagnosed with bipolar disorder (Moreno et al., 2007; Blader & Carlson, 2007). During the 10-year period between 1994 and 2003, the diagnosis of bipolar disorder in youths increased approximately 40-fold (Moreno et al., 2007). A large number of children diagnosed as having bipolar disorder exhibit severe irritability, affective lability, aggression, and behavioral dyscontrol. This clinical presentation often differs from the classic symptoms of bipolar disorder seen in adults, leading to disagreement over whether these individuals should be identified as having bipolar disorder. For instance, children with bipolar disorder do not always exhibit symptoms of elation and grandiosity. They also tend to show much shorter and more frequent cycles that do not meet the duration criteria of 4-7 days specified by the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV; American Psychiatric Association, 2000). Further, their symptoms do not always follow an episodic pattern, and contrast with the distinct episodes of mood symptoms and recovery between episodes observed in adult bipolar disorder. In addition to disagreement over diagnostic definition and assessment, high rates of comorbidity and symptom overlap with ADHD further complicate the study and treatment of juvenile bipolar disorder (Birmaher et al., 2006; Geller, Tillman, Bolhofner, & Zimmerman, 2008).

As interest in juvenile bipolar disorder mushroomed, investigators increasingly felt the need for an effective screening instrument that could be used as a platform for communication across different research sites and studies. They focused on the Child Behavior Checklist (CBCL; Achenbach & Rescorla, 2000), as patterns of scores on particular subscales have been

found to be linked to bipolar disorder in children in many studies (Mick, Biederman, Pandina, & Faraone, 2003; Youngstrom, Youngstrom, & Starr, 2005). Completed by parents or teachers to rate a child's problem behaviors and competencies, the CBCL is free from clinical interpretations or allegiance to particular diagnostic definitions. The CBCL provides scores on eight syndrome scales: Aggressive Behavior, Social Problem, Somatic Complaints, Rule-Breaking Behavior, Withdrawn/Depressed, Anxious/Depressed, Thought Problems, and Attention problems. In addition, a large body of research supports its validity and reliability. For this reason, the National Institute of Mental Health (NIMH) Roundtable on prepubertal bipolar disorder recommended use of the CBCL across research sites and samples as an additional assessment measure (Nottelmann, 2001).

The CBCL-Pediatric Bipolar Disorder profile (CBCL-PBD profile; alternatively termed the CBCL Juvenile BD phenotype [CBCL-JBD] and CBCL-Dysregulation profile) refers to a pattern of elevated scores on the Attention problems, Aggression, and Anxiety/Depression subscales of the CBCL. The profile was originally proposed as a mean of identifying children and adolescents with bipolar disorder. Biederman and colleagues (1995) found strong correspondence between diagnoses of bipolar disorder based on structured interview and elevated scores on the three subscales.

Subsequent studies have examined the diagnostic utility of the profile in discriminating children with bipolar disorder. In a meta-analysis of seven studies utilizing the CBCL in the assessment of bipolar disorder (Mick et al. 2003), a consistent pattern of elevations in the three subscales of the CBCL was found in children with bipolar disorder across studies. More recently, using receiver operating characteristic (ROC) curve analysis in a sample of ADHD

probands and their siblings, Faraone and colleagues (2005) found the area under the curve (AUC) was 0.97 for probands and 0.82 for siblings for current diagnoses of bipolar disorder.

There is evidence suggesting that the CBCL-PDB profile is stable over childhood. In a longitudinal twin study examining the stability and change of the profile across development, it was found to be stable with correlations ranging from .66 to .77 across ages 7, 10, and 12 years (Boomsma et al., 2006). There is also evidence from a large population-based twin sample showing that the prevalence of the CBCL-PDB profile (approximately 1%) corresponds to that found in epidemiologic studies of bipolar disorder (Hudziak, Althoff, Derks, Faraone, & Boomsma, 2005).

Additional findings from several twin studies indicate that the CBCL-PDB profile is highly heritable. The abovementioned study by Hudziak and colleagues (2005) found that the profile has a heritability of 54-68%, and is influenced by both additive genetic and shared environmental factors. Althoff and colleagues (2006) also found support for moderate-to-high heritability of the profile (.53-.87) in a twin study of a general community sample from the Netherlands. In another study, twin modeling indicated that an additive genetic factor accounted for the largest variance (67%) for the CBCL profile, with unique environmental effects explaining the remainder (Volk & Todd, 2007).

While these studies seem to converge on the conclusion that the CBCL profile is stable, heritable, and captures a clinically significant group of children, many investigators have questioned its utility as a proxy for bipolar disorder in preadolescent youth. For example, Diler and colleagues (2009) examined a large group of 7- to 12-year-old children with either bipolar disorder, major depressive/anxiety disorder, disruptive disorder, or no diagnosis. They found that significantly more children with bipolar disorder met criteria for the profile than those with other

diagnoses or healthy controls. However, the sensitivity and specificity of the profile for a diagnosis of bipolar disorder were modest: 57% and 70-77%, respectively. Moreover, the overall accuracy of the profile for identifying the bipolar diagnosis was only moderate (AUC=.72 for children with psychopathology and .78 for all groups including healthy control). The authors conclude that while the CBCL profile is significantly associated with bipolar disorder in children, the findings do not support the use of the profile as a proxy for the PBD diagnosis (Diler et al. 2009).

The diagnostic efficiency of the CBCL profile may be particularly limited in community clinical samples compared to samples from academic medical centers where many of the previous studies were conducted. Based on an archival data of over 3000 youths from a consortium of community mental health centers, it was found that the CBCL profile did not discriminate clinical diagnoses of bipolar disorder in youths between 4 and 18 years of age (Youngstrom, et al., 2005). Moreover, the CBCL profile did not improve the classification of cases after controlling for the CBCL Externalizing scores. The AUCs in the ROC analyses for the profile were in the poor to fair range, which is substantially poorer than those reported in other studies. The authors note that differences in results may be attributable to different referral patterns and diagnostic methods used in community mental health centers from academic medical centers. Further, high rates of disruptive behavior disorders in a community mental health setting may have been another factor. These findings point to the limitations of the CBCL profile in settings that resemble clinical practice in the community as opposed to academic research setting.

Finally, studies have disagreed on which subscales of the CBCL should be included in the PBD profile. In a group of children between the ages of 9 and 13 with ADHD only or ADHD

and mania, comorbid children differed from those with ADHD on the Withdrawn, Thought Problems, Delinquent Behavior, and Aggressive Behavior subscales (Hazell, Lewin, & Carr, 1999). In another study with offspring of bipolar parents, children diagnosed with ADHD, bipolar disorder, mood disorder, or no diagnosis were compared on the CBCL (Dienes, Chang, Blasey, Adleman, & Steiner, 2002). The study found that children with bipolar disorder differed from those with ADHD on the Aggressive Behaviors, Anxious/Depressed, and Withdrawn subscales of the CBCL.

There seems to be growing evidence showing that the CBCL profile is associated with severe psychopathology and comorbidity rather than being a specific marker for bipolar disorder. For example, in a study of 540 five- to eighteen-year-old youths with ADHD and their parents, the profile identified a small but distinct group of children with severe psychopathology (McGough et al., 2008). While the authors did not formally examine the association with bipolar disorder due to the low prevalence of bipolar disorder in the sample, the CBCL profile group had rates of bipolar disorder diagnoses three to five times greater than other children. However, children positive for the profile were also more likely to have generalized anxiety disorder, oppositional defiant disorder, and conduct disorder. Similarly, other studies have revealed evidence linking the profile to severe disruptive behavior disorder (e.g. Holtmann, Goth, Wöckel, Poustka, & Bölte, 2008; Volk & Todd, 2007) and severe symptomatology in general (Youngstrom, Findling, & Calabrese, 2003) in both clinical and community samples. Additional findings support the association of the CBCL profile with marked impairment (e.g. Biederman et al., 2009, Diler et al., 2009) and suicidality (e.g. Althoff et al., 2006; Volk & Todd, 2007).

Several recent studies have examined longitudinal outcomes of children meeting criteria for the CBCL profile. Meyer and colleagues (2009) investigated the long-term implications of

the CBCL profile in youths at high risk for mood disorders. The study found that while 31% of children who met criteria for the profile at ages 1½-7 years developed subsequent bipolar disorder at ages 18-28 years, the profile was equally or more likely to be associated with other outcomes, including ADHD, anxiety disorders, and cluster B personality disorders. Furthermore, children with the profile were at higher risk for comorbid psychopathology, poorer psychosocial impairment, and suicidal thoughts/behaviors in young adulthood. In a longitudinal study of ADHD patients and siblings, Biederman and colleagues (2009) found that a positive CBCL profile at baseline was associated with a significantly greater risk for bipolar disorder over a mean follow-up period of 7.4 years. However, children with the profile were also at heightened risk for major depression, conduct disorder, impaired psychosocial functioning, and psychiatric hospitalization.

Similar results were found in a German sample of 325 youths followed from birth into young adulthood (Holtmann et al., 2011). This study found that children identified as positive for the profile at ages 8 and 11 were at heightened risk for ADHD, mood and substance use disorders, poor overall functioning, and suicidality at age 19. Moreover, the CBCL profile in childhood was not related to subsequent bipolar disorder. Finally, Althoff and colleagues (2010) reported similar findings from a longitudinal study of a large community sample of over 2000 Dutch children aged 4- to 16-years. Latent class analysis was performed to determine the CBCL profile group. At 14-year follow-up, participants in the JBD profile class at initial assessment were at increased risk for a broad range of psychopathology in adulthood, including mood, anxiety, and disruptive behavior disorders, and drug abuse.

Thus, although it was originally proposed as a marker for juvenile bipolar disorder, recent studies show that the CBCL profile identifies a group of children with a combination of severe

aggression, inattention/hyperactivity, and mood problems who are at risk for a variety of forms of severe psychopathology, marked impairment in functioning, and suicidality. However, no clear consensus has been reached yet on how best to conceptualize this group of children.

There are at least two major gaps in the literature: few studies have examined the CBCL-PBD profile in younger children and there is a paucity of data on psychosocial correlates of the profile. Existing studies exploring the CBCL profile have focused on school-age children and adolescents. As a result, no studies have examined whether there are pre-school aged children who meet the CBCL-PBD profile criteria, and if so, whether it is associated with the same constellation of behavioral and emotional problems as older youth. Exploring the characteristics of the profile in young children can provide a more complete picture of the development and implications of the profile. Additionally, as research on the CBCL profile has focused on validating the phenotype as a diagnostic screening tool, the literature has focused on diagnostic variables, and there is almost no research on psychosocial factors such as temperament traits and parental behavior that may contribute to the wide-ranging and severe problems associated with the profile.

Therefore, the current study seeks to extend the literature on the CBCL-PBD profile by providing a more comprehensive investigation of the correlates of the CBCL-PBD profile in a large community sample of preschool-aged children. Comparisons are made between preschoolers with and without the CBCL-PBD profile across multiple domains, including demographic factors, temperament, clinical symptomatology, parental psychopathology, parental personality, parenting behavior, and life stress and marital functioning. Multiple methods of assessment were used, such as questionnaires, laboratory observations, and structured interviews.

A subsidiary goal of the study is to examine the agreement among different informants (parents, co-parents, and teachers/caretakers) on the CBCL profile. Moreover, we will explore whether the characteristics of children with the CBCL profile vary as a function of informant.

Method

Participants

Participants included an unselected community sample of 552 three-year-old children and their parents from Long Island, NY. The mean age of the children was 3.5 years ($SD = 0.3$). The majority of children were Caucasian (87%) and slightly less than half were female (46%). The mean age of parents was 36.0 years ($SD = 4.4$) for mothers and 38.3 years ($SD = 5.3$) for fathers. Most parents were married (94%). Fifty-five percent of the mothers and forty-seven percent of the fathers had a 4-year college or graduate degree. Participants were recruited through a commercial mailing list and were initially contacted by the Stony Brook University Center for Survey Research. Families with a three-year-old child who lived with at least one English-speaking biological parent and did not have any significant medical conditions or developmental disabilities were eligible for participation. For children who were enrolled in preschool or daycare (71.9% of the sample, $N = 397$), teachers/caregivers were asked to complete questionnaires. Of those, 56.9% ($N = 226$) completed the questionnaires.

Procedure

The study consisted of two laboratory visits and three phone interviews. During the first visit, parents received a complete explanation of the study and provided written informed consent. For children enrolled in a preschool or daycare, consent was obtained to contact teachers/caregivers and send them questionnaires to be mailed back. The initial visit consisted of a structured laboratory observation of the child's temperament. The primary caregiver completed a set of questionnaires on her/himself and the child while the child participated in the observational session. The visit lasted approximately two and a half hours. When parents did not complete the questionnaire packet during this visit, they were instructed to mail the completed packet back at a later time. The second visit consisted of a structured observation of parent-child interaction and a psychophysiological assessment, lasting approximately two hours. While the child participated in the psychophysiological portion of the visit, the primary caregivers were given additional questionnaires. Finally, families were contacted for three phone interviews. The primary caregiver completed a semi-structured diagnostic interview assessing psychopathology in the child. Additionally, structured diagnostic interviews were conducted with each parent to assess their own history of psychopathology. Families received monetary compensation for their participation in the study.

Measures

CBCL-BPD phenotype

Child Behavior Checklist 1½ – 5 (CBCL/1½ – 5). The CBCL/1½ – 5 (Achenbach & Rescorla, 2000) is a widely used parent-report checklist for assessing emotional and behavioral problems in children between the ages of 1½ and 5 years. This 99-item measure has been shown

to have adequate psychometric properties. Parents are asked to rate the child's behavior on 3-point Likert-type scales ranging from 0 (*not true*) to 2 (*very true or often true*). 552 primary caregivers ('parents') and 403 'co-parents' completed the CBCL. In this study, three syndrome scales from parent and co-parent reports are used: Attention Problems (5 items; $\alpha = .64$ and $.69$ for parents and co-parents, respectively), Anxious/Depressed (8 items; $\alpha = .70$ and $.64$ for parents and co-parents, respectively), and Aggressive Behavior (19 items; $\alpha = .90$ and $.90$ for parents and co-parents, respectively).

Caregiver-Teacher Report Form 1½ - 5 (C-TRF: Achenbach & Rescorla, 2000).

Teachers and caregivers completed the C-TRF, a widely used teacher/caregiver report to assess children's behavior at school or daycare. The C-TRF includes 99 items rated on 3-point Likert-type scales ranging from 0 (not true) to 2 (very true or often true) of the child's behavior. A total of 226 teachers and caregivers completed this instrument. The Attention Problems (9 items; $\alpha = .91$), Anxious/Depressed (8 items; $\alpha = .72$), and Aggressive Behavior (25 items; $\alpha = .94$) subscales were selected for use in this study.

Domain 1: Child Temperament

Children's Behavior Questionnaire (CBQ). The CBQ (Rothbart, Ahadi, Hersey, & Fisher, 2001) is a widely used 194-item parent report measure of temperament for 3- to 7-year-old children. Parents are asked to rate the child's reactions/behaviors within the past six months on seven-point scales ranging from 1 (*extremely untrue of your child*) to 7 (*extremely true of your child*). Three broad dimensions of temperament were selected for use in the current study: Negative Affectivity, Extraversion/Surgency, Effortful Control. The factors were identified and validated across different age groups and cultures by the developers (Rothbart et al., 2001). The factors were computed by summing the *z*-scores of the subscales that loaded on each factor. The

CBQ was completed by parents ($N = 516$) and co-parents ($N = 400$). Coefficient alphas for parent- and co-parent-reports were .78 and .75 for Negative affectivity (62 items), .80 and .78 for Extraversion/Surgency (64 items), and .89 and .85 for Effortful Control (65 items).

Laboratory Temperament Assessment. During their visit to the laboratory, children participated in a set of eleven standard episodes from the Laboratory Temperament Assessment Battery (Lab-TAB; Goldsmith, Reilly, Lemery, Longley, & Prescott, 1995) and one additional episode (Exploring New Objects) patterned after other Lab-TAB episodes. The assessment lasted approximately two hours. A parent remained in the room for all episodes except for Stranger Approach. Each episode was videotaped through a one-way mirror and later coded. Ratings of the child's affect and behavior were derived for each episode from videotapes of the assessment and aggregated across episodes. The episodes were:

1. *Risk Room.* The child explored a set of novel and ambiguous stimuli (e.g., cloth tunnel, balance beam, Halloween mask, etc.).

2. *Tower of Patience.* The child and the experimenter took turns building a tower of large cardboard blocks. The experimenter gradually delayed placing her block, forcing the child to wait longer each time for his or her turn.

3. *Arc of Toys.* The child played freely by him- or herself in a roomful of toys for a few minutes, after which the experimenter returned and instructed the child to clean up the toys.

4. *Stranger Approach.* While the experimenter went to get more toys, a male research assistant entered the room where the child waited alone and spoke to the child in a neutral tone while gradually walking closer.

5. *Car Go.* The child and the experimenter played with two remote-controlled racecars.

6. *Transparent Box*. The experimenter locked an appealing toy of the child's choice in a transparent box and left the child with a set of inoperable keys to open the box. After a few minutes, the experimenter returned and explained that she had accidentally given the wrong keys. The experimenter then encouraged the child to play with the toy.

7. *Exploring New Objects*. The child explored a set of novel and ambiguous stimuli, including a mechanical spider, a mechanical bird, and sticky water-filled soft gel balls.

8. *Pop-up Snakes*. The child and the experimenter surprised the child's mother or father using a coiled spring snakes hidden in what appears to be a can of potato chips.

9. *Impossibly Perfect Green Circles*. The child was repeatedly asked to draw a circle on a large piece of paper, while each circle was mildly criticized by the experimenter.

10. *Popping Bubbles*. The child and the experimenter played together blowing bubbles.

11. *Snack Delay*. The child was instructed to wait for the experimenter to ring a bell before getting a snack. The experimenter took increased delays before ringing the bell.

12. *Box Empty*. The child was left alone to open a wrapped gift box that turned out to be empty. The experimenter returned after a few minutes, explained her mistake, and gave several toys for the child to keep.

Principal component analysis based on 537 participants with complete data was performed for data reduction and five components were extracted: Sociability/Assertiveness, Dysphoria, Fear/Inhibition, Exuberance, and Disinhibition/Noncompliance. Variables associated with each factor are as follows: Sociability/Assertiveness (sociability, initiative, dominance), Dysphoria (anger, hostility, sadness), Fear/Inhibition (fear, non-social behavioral inhibition, clinginess), Exuberance (positive affect, anticipatory positive affect, interest), and Disinhibition/Noncompliance (impulsivity, compliance, inhibitory control).

Tape Coding Procedures. Different coding systems were used for the affective, behavior, behavioral inhibition, and inhibitory control variables.

For the affective variables, each instance of bodily, facial, and vocal positive affect, sadness, anger, and fear was rated on a four-point intensity scale. The ratings for each channel (facial, vocal, bodily) were then summed within each episode, and then averaged across the 12 episodes. Next, averaged ratings of bodily, facial, and vocal affect were z-scored and aggregated to yield a composite variable for positive affect ($\alpha = .87$), sadness ($\alpha = .81$), anger ($\alpha = .68$), and fear ($\alpha = .63$) ($Ns = 542$). Interrater reliability, as indexed by the intraclass coefficient (ICC) was .92 for positive affect, .79 for sadness, .73 for anger, and .64 for fear ($Ns = 35$).

Behavior variables were derived from a single rating made for each variable per episode based on the quantity and quality of relevant to each dimension. These ratings were then averaged across the 12 episodes to yield a global rating of sociability ($\alpha = .83$, ICC = .83), initiative ($\alpha = .74$, ICC = .70), dominance ($\alpha = .76$, ICC = .59), anticipatory positive affect ($\alpha = .70$, ICC = .63), interest ($\alpha = .68$, ICC = .84), hostility ($\alpha = .60$, ICC = .84), clinginess ($\alpha = .70$, ICC = .40), impulsivity ($\alpha = .70$, ICC = .75), and compliance ($\alpha = .77$, ICC = .85, all N 's for $\alpha = 542$, ICCs= 35).

Behavioral inhibition was coded using the three episodes specifically designed to assess this construct: Risk Room, Stranger Approach, and Exploring New Objects. Micro-coding procedures based on Goldsmith et al. (1995) and Pfeifer et al. (2002) were used. Behaviors and emotions reflecting behavioral inhibition were coded at 20-30 second intervals for each episode. A summary variable for each code was computed by averaging within each episode. As behavioral inhibition in the social episode (Stranger Approach) was not correlated with behavioral inhibition in the other two non-social episodes, only the latter episodes were used in

this study. The non-social behavioral inhibition composite variable had good internal consistency and test-retest reliability ($\alpha = .84$, $N = 542$; interrater ICC = $.88$, $N = 35$).

Inhibitory control was rated in the Tower of Patience and Snack Delay episodes using a coding system based on Carlson (2005). Relevant behaviors (e.g., failing to wait for his/her turn) coded during these episodes were aggregated to produce a composite global inhibitory control variable ($\alpha = .70$, $N = 542$; interrater ICC = $.98$, $N = 8$).

Domain 2: Child Psychopathology and Functioning

Preschool Age Psychiatric Assessment (PAPA). The PAPA (Egger, Ascher, & Angold, 1999) is a semi-structured interview for assessing parent-reported psychopathology in preschool children between the ages of 2 and 5 years. The PAPA covers a comprehensive set of symptoms from the Diagnostic and Statistical Manual of Mental Disorders, 4th edition, Text Revision (DSM-IV-TR; American Psychiatric Association, 2000) as well as developmentally relevant items, such as eating, sleeping, and play behaviors, that are absent from the current nosology. Adequate test-retest reliability has been found for the PAPA (Egger et al., 2006). Primary caretakers were interviewed ($N = 541$) by graduate students in clinical psychology who received training on the administration of the PAPA by its developers. Interviews were conducted by telephone, which has been shown to yield comparable results to face-to-face interviews using other interviewer-based diagnostic interviews (Rohde, Lewinsohn, & Seeley, 1997). In the present study, four dimensional symptom scales were selected for the analyses: depression, anxiety, ADHD, and ODD. These scales were computed by summing the scores for the items included in each diagnostic category. Internal consistency for the depression, anxiety, ADHD, and ODD scales was $.71$, $.80$, $.80$, and $.73$, respectively. Based on audiotapes of 21 interviews, interrater reliability (ICC) was $.99$ for anxiety, $.98$ for depression, $.99$ for ADHD, and 1.00 for

ODD. Additionally, incapacity ratings across different domains were assessed, including relationships with parents, siblings, and peers, school functioning, age-appropriate activities, and treatment history. These items were summed to construct a summary incapacity rating (ICC =.91).

Vineland Adaptive Behavior Screener Socialization subscale. Prior to the PAPA, the Vineland Adaptive Behavior Screener Socialization subscale (Sparrow, Carter, & Cicchetti, 1987) was administered to the parent ($N = 540$). The socialization subscale is a 15-item screener assessing developmentally relevant interpersonal interactions, play, sensitivity, manners, and responsibility. Items are scored on a 3-point Likert scale ranging from 0 (*never/no*) to 2 (*yes/usually*). Higher scores indicate poorer functioning. The full semi-structured interview from which the screener originated has been shown to have adequate psychometric properties (Sparrow, Balla, Cicchetti, & Doll, 1984). Coefficient alpha for the socialization subscale was .55.

Vocabulary skills. The Peabody Picture Vocabulary Test (PPVT; Dunn & Dunn, 1997) and the Expressive One Word Picture Vocabulary Test (EOWPVT; Brownell, 2000) were administered during the laboratory visit to assess children's receptive and expressive vocabulary skills ($N = 553$).

Domain 3: Parental Psychopathology

Parental Psychopathology. Biological parents were interviewed using the Structured Clinical Interview for *DSM-IV*, Non-Patient Version (SCID-NP; First, Spitzer, Gibbon, & Williams, 1996). The SCID has acceptable levels of reliability and validity (Williams, Gibbon, First, Spitzer, Davies, Borus et al., 1992). Interviews were conducted by two master's-level raters by telephone. When one of the parents was not available, the other parent completed

family history interview on that parent to obtain diagnostic information. The total number of mothers who either completed the SCID or for whom the family history interview was conducted with the co-parent was 540. The total number of fathers who either completed the SCID or for whom the co-parent completed the family history interview was 531. Of these, 539 mothers and 447 fathers completed the SCID. Based on audiotapes of 30 interviews, inter-rater reliability (kappa) for lifetime diagnoses were .93 for depressive disorders, .91 for anxiety disorders, and 1.00 for substance use disorders. Inter-rater reliability for the diagnosis of bipolar disorder could not be assessed because there were too few cases.

General Behavior Inventory. Parents completed the GBI (Depue et al., 1987), a 73-item self-report measure designed to assess chronic/intermittent hypomanic and depressive symptoms, as well as biphasic shifts from the Diagnostic and Statistical Manual of Mental Disorders, 3rd edition (DSM-III: American Psychiatric Association, 1980). Each item is rated on a 4-point scale ranging from 1 (*Never or Hardly Ever*) to 4 (*Very Often or Almost Constantly*). The inventory produces two scales: Depression (46 items) and Hypomania/Biphasic (28 items). One item is included on both scales. Only the parent ($N = 371$) completed the GBI. Alphas for the depression and hypomania/biphasic scales were .97 and .90, respectively.

Diagnostic Inventory for Depression. The DID (Zimmerman, Sheeran, & Young, 2004) is a 22-item self-report measure of symptoms of current Major Depressive Disorder as defined by the DSM-IV (APA, 2000). Items are rated on a 4-point scale reflecting the degree to which each symptom is true of the respondent. The DID was completed by parent ($N = 472$; $\alpha = .85$) and co-parent ($N = 399$; $\alpha = .88$).

Domain 4: Parent Personality

Multidimensional Personality Questionnaire- Brief Form (MPQ-BF: Patrick, Curtin, & Tellegen, 2002). Both parents completed the brief form of the MPQ (Tellegen, 1982), which consists of 155 true/false or forced choice questions assessing personality. The MPQ-BF is composed of 18 scales: 3 validity scales, 3 broad traits, and 11 primary trait dimensions. For the purpose of this study, the 3 broad traits (Positive Emotional Temperament, Negative Emotional Temperament, and Constraint) were used. 475 parents and 401 co-parents completed the MPQ-BF. Coefficient alphas for parent- and co-parent-reports are as follows: Positive Emotional Temperament (48 items; $\alpha = .86$ and $.89$, respectively), Negative Emotional Temperament (36 items; $\alpha = .84$ and $.89$), Constraint (36 items; $\alpha = .69$ and $.80$).

Domain 5: Parenting

Teaching Tasks. The parent-child interaction session involved parents and children engaging in a series of structured tasks (Teaching Tasks; Egeland et al., 1995). Six tasks were used that were moderately challenging and required the parent's support in order for the child to complete the task successfully. In the first task, the parent was asked to read a book with the child and discuss its contents afterwards. The second task was to help the child name as many things with wheels as possible. In the third task, the child had to construct a large shape by using small blocks of various shapes. The fourth task required the child to place colored shapes on a matrix according to their shape and color. In the fifth task, the child had to use an Etch-a-Sketch to trace a maze drawn on its screen. Finally, the session ended with the parent and the child opening a gift bag together and exploring its contents. Videotaped interactions ($N = 525$) were coded by trained research personnel. A number of characteristics of parent behavior, child behavior, and the dyadic relationship were coded for each episode and then aggregated across the six tasks. In this study, four variables were selected for the analyses: parent supportive presence

($\alpha = .88$), parent positive affect ($\alpha = .84$), parent hostility ($\alpha = .76$), and quality of dyadic relationship ($\alpha = .86$). Interrater ICCs ($n = 55$) were .85 for parent supportive presence, .66 for parent positive affect, .83 for parent hostility, and .79 for quality of relationship.

Parenting Styles and Dimensions Questionnaire. The PSDQ (Robinson, Mandleco, Olse, & Hart, 2001) is a 37-item questionnaire designed to assess three styles of parenting: authoritative, authoritarian, and permissive. Parents ($N = 502$) responded to each item on a 5-point Likert-type scale ranging from 1 (*never*) to 5 (*always*). Coefficient alpha was .82 for an Authoritative (15 items), .75 for an Authoritarian (12 items), and .74 for a Permissive (5 items) style.

Domain 6: Stressful Life Events and Marital Adjustment

Dyadic Adjustment Scale. The DAS (Spanier, 1976) is a widely used 32-item self-report measure of marital satisfaction. The DAS was completed by 378 parents and 327 co-parents. In the present study, a total score (32 items; $\alpha = .95$ and $.94$ for parent- and co-parent- report, respectively) was used as an indicator of marital functioning.

Stressful life events. The total number of significant stressful life events involving the child in the 6 months prior to the assessment and during the child's lifetime was assessed in the PAPA (Preschool Age Psychiatric Assessment) interview. Parents were asked about the occurrence of 41 life events in the following areas of the child's life: changes in the household (births, people entering/leaving), marital events, separations from family, moves, illnesses or deaths, accidents and hospital contacts, witnessing or experiencing a traumatic event, abuse/neglect, pre- and peri-natal adversity, and parental stress. Based on 21 interviews, interrater reliability (ICC) was .99 for total number of stressors during the child's lifetime, and .93 for the 6 months prior to the assessment.

Data Analysis

Children were considered to be in the CBCL-PBD profile group if the sum of their *t*-scores on the CBCL subscales Attention problems, Aggressive behavior, and Anxious/Depressed was greater than or equal to 180. While higher cutoff scores have been employed in some other studies (e.g., $\text{sum} \geq 210$, or $\text{each scale} \geq 70$), these generally used psychiatric samples. In non-clinical samples, lower cutoffs are often used. For example, Meyer et al. (2009) reported evidence supporting the validity of using a cutoff score of 60 to define the CBCL-PBD profile and *t*-scores of 60 or greater have also been found to predict clinically significant psychopathology (Chen et al., 1994). Therefore, we used the lower cutoff score in order to increase the number of cases in the CBCL-PBD group.

Independent samples *t*-tests were conducted for all comparisons between groups of children who were positive and negative for the CBCL-PBD profile. To determine the unique contributions of correlates in predicting the CBCL profile, logistic regression analyses were performed using the CBCL profile group as the dependent variable and the correlates that significantly distinguished the two groups in univariate analyses as independent variables in simultaneous regression models. In consideration of multiple comparisons, significance levels were adjusted using a modified Bonferroni correction method (Benjamini & Hochberg, 1995). In the standard Bonferroni procedure, significance level is adjusted by dividing the alpha level by the number of tests. However, this method of controlling for Type I error can be overly conservative, especially with a large number of comparisons. Therefore, we used the modified Bonferroni procedure developed by Benjamini and Hochberg (1995), in which the smallest *p*-

value from a list of rank-ordered p -values is evaluated at $(i/k)\alpha$, where i is the rank for individual p -values and k is the total number of findings. The largest p -value lower than $(i/k)\alpha$, as well as all p -values smaller than or equal to the identified largest p , are considered significant.

Results

552 primary caregivers ('parents') completed the CBCL. Of those, a total of 63 children (11.4%) met criteria for the CBCL-PBD profile. Based on 403 co-parent reports of the CBCL, 24 children (6.0%) fell into the CBCL-PBD group. Out of 226 teacher/caregiver reports, 25 children (11.1%) were identified as positive for the CBCL-PBD profile group. A total of 88 children met criteria according to at least one of the informants. Of those, 20 children (22.7%) were rated positive for the profile by two informants and 2 children (2.3%) met criteria by all three informants.

As displayed in Table 1, cross-informant correlations were in the low (parent and teacher/caregiver, co-parent and teacher/caregiver) to fair (between parents) range. When agreement on categorical classification based on each informant's report was examined, kappa values were .23 ($p < .001$) for between parents and co-parents, .22 ($p = .001$) between parents and teachers/caregivers, and .08 ($p = .20$) between co-parents and teachers/caregivers.

There were no significant differences in gender or ethnicity according to any of the informants between children with and without the CBCL-PBD profile. While there were no differences in the level of parental education between groups based on parent- or teacher-reported CBCL, children with the profile based on co-parent-reported CBCL were slightly, but significantly, more likely to have parents with less education.

Domain 1: Child Temperament

To investigate the associations between child temperament and the CBCL-PBD profile, three temperament factors (negative affectivity, extraversion, and effortful control) from both parent and co-parent reports and five laboratory-observed factors (exuberance, dysphoria, fear/inhibition, sociability/assertiveness, disinhibition/noncompliance) were examined using independent samples t-tests.

For the CBCL phenotype based on parent-reported CBCL, the profile positive group showed significantly higher levels of negative affectivity as reported by both parents and co-parents (see Table 2). Extraversion as reported by parents was significantly higher in the profile positive group, whereas exuberance in laboratory observations was significantly lower than the profile negative group. Disinhibition/noncompliance observed in the laboratory was significantly higher in the profile group, and consistent with that, effortful control as rated by both parents and co-parents was significantly lower in the positive group compared to controls. When all significant results from t-test analyses were entered into a logistic regression analysis, results showed that children in the profile group were uniquely distinguished by parent-reported negative affect, extraversion, and effortful control.

Children positive for the profile based on co-parent-reported CBCL exhibited significantly higher levels of negative affectivity (co-parent report) and extraversion (both parent and co-parent reports) and lower effortful control (both parent and co-parent reports). Logistic regression analysis revealed unique effects for negative affect (co-parent-report) and effortful control (both parent and co-parent reports).

No significant differences were found between groups with and without the profile when the CBCL-PBD profile was based on teacher/caregiver reports.

Domain 2: Child Psychopathology and Functioning

Associations between children's clinical symptomatology and CBCL-PBD profiles were explored using PAPA depression, anxiety, ADHD, and ODD symptom scores, levels of overall functioning, Vineland socialization, and receptive and expressive vocabulary skills.

For children with the profile based on parent-reported CBCL, significant differences were detected for all variables (see Table 3). Compared to those without the profile, these children exhibited significantly more symptoms of depression, anxiety, ADHD, and ODD. Furthermore, children positive for the profile showed greater overall impairment, and poorer socialization skills, and receptive and expressive vocabulary skills. Logistic regression analysis revealed unique effects for symptoms of depression, ODD, and ADHD, and lower Vineland socialization scores.

Generally similar results were found for children classified as being in the profile group on the co-parent-reported CBCL. Significant differences were found for ODD and ADHD symptom scores, overall functioning, socialization skills, and receptive and expressive vocabulary skills. However, the groups did not differ on symptom scores of depression and anxiety. Logistic regression analysis showed unique effects only for ODD symptom scores.

Lastly, the profile group based on teacher-reported CBCL scored significantly higher on the ODD and ADHD symptom scales. Of these, ADHD uniquely predicted the profile group membership.

Domain 3: Parental Psychopathology

To examine the link between profile membership and parental psychopathology, the following variables were examined using independent samples *t*-test: lifetime diagnoses of depressive, bipolar, anxiety, and substance use disorders based on structured interviews, parent

self-reports of chronic/intermittent depression and hypomania/biphasic symptoms, and parent and co-parent reports of current symptoms of major depressive disorder.

Significant differences in parental psychopathology were found between children positive and negative for the profile based on parent reports on the CBCL (see Table 4). The profile group displayed higher rates of maternal lifetime anxiety disorders and primary caregiver's chronic/intermittent hypomanic symptoms, and more symptoms of current major depressive disorder in both parents. Of these, current symptoms of depression in both parents were uniquely significant predictors of profile group membership.

No differences were observed between the profile positive and negative groups when the profile was based co-parent or teacher reports on the CBCL.

Domain 4: Parental Personality

Associations between the CBCL-PBD profiles and parents' personality were examined using self-reports on three broad factors of personality: MPQ positive emotionality, negative emotionality, and control. The profile positive groups based on both the parent- and the co-parent-reported CBCL differed significantly from the profile negative groups on maternal negative emotionality (Table 5). There were no significant differences between groups on the two other dimensions of parental personality. No differences were found between groups based on teacher-reported CBCL-PBD profiles.

Domain 5: Parenting

Characteristics of parent-child interactions based on laboratory observations (supportive presence, parent positive affect, parent hostility, and quality of relationship) and parent-reported styles of parenting (authoritative, authoritarian, and permissive) were examined next.

As shown in Table 6, based on parent reports on the CBCL, significantly more children with the profile had elevated scores on observed maternal hostility, authoritarian parenting style (parent-report), and permissive parenting style (both parent and co-parent reports). Further, these children had significantly lower scores on observations of maternal support and the quality of the parent-child relationship compared to children without the profile. Among these variables, parent-reported authoritarian style and co-parent-reported permissive style emerged as unique predictors of the profile group membership.

Analyses using the profile groups based on co-parent reports of the CBCL revealed somewhat similar results. Children positive for the profile showed significantly higher scores on observed maternal hostility, authoritarian parenting style (both parent and co-parent reports), and permissive parenting style (again, both parent and co-parent reports). Logistic regression analysis revealed that co-parent-reported permissive style was the only unique predictor of the group membership.

Based on teacher-reported CBCL, children with the profile had co-parents who reported significantly higher levels of permissive parenting.

Domain 6: Stressful Life Events and Marital Adjustment

Next, we investigated associations between the profile and stressful life events and marital adjustment. No significant differences were detected between children with and without the CBCL profile, regardless of the informant (see Table 7).

Cross-domain analyses

Finally, correlates from each domain that were identified as unique predictors of the CBCL-PBD profile were entered into a single logistic regression analysis to determine unique predictors of group status across domains. For the CBCL profile based on parent reports, these

variables included negative affect (parent-report), extraversion (parent-report), effortful control (parent-report), symptoms of depression, ODD and ADHD, Vineland socialization (diagnostic interview), parental depressive symptoms (parent- and co-parent self-reports), maternal negative emotionality (self-report), and authoritarian (parent-report) and permissive parenting (co-parent report) styles. Reduced effortful control and elevated levels of negative affect as rated by parents, and depressive and ODD symptom scores provided unique contributions in determining assignment to the CBCL-PBD groups (see Table 8).

For the co-parent-reported profile groups, six variables (negative affect [co-parent report], effortful control [both parent and co-parent reports], ODD, maternal negative emotionality [self-report], and permissive parenting style [co-parent report]) were entered into the logistic regression analysis. As displayed in Table 9, all contributed unique discriminative power in predicting group membership except for parent-reported effortful control. In other words, the profile group was uniquely distinguished by effortful control (co-parent-report), negative affect (co-parent-report), symptoms of ODD, maternal negative emotionality, and permissive parenting style (co-parent report).

Two variables (ADHD, and co-parent reported permissive parenting) were entered into the analysis for the teacher-reported profile groups. Results indicate that co-parent permissive parenting style was a unique predictor in determining group status (see Table 10).

Discussion

The objective of the current study was to examine early developmental correlates of the CBCL-PBD profile in an unselected community sample of preschool children. Characteristics of

preschoolers with and without the profile were compared across a wide range of domains, including child temperament and psychopathology, parent personality and psychopathology, parenting styles, and life stressors and marital adjustment.

A growing body of literature suggests that the CBCL-PBD profile is associated with severe psychopathology, comorbidity, and impaired functioning in both clinical and non-clinical samples of children and adolescents using both concurrent and longitudinal designs (e.g., Althoff, et al., 2006; Althoff, Verhulst, et al., 2010; Ayer et al., 2009; Biederman et al., 2009; Diler et al., 2009; Holtmann et al., 2008, 2011; McGough et al., 2008; Meyer et al., 2009; Volk & Todd, 2007; Youngstrom et al., 2003). However previous research on the CBCL profile has focused on school-aged children and adolescents. Further, the focus of most studies has been on investigating whether the CBCL profile group consists of children with bipolar disorder or severe cases of ADHD. Additionally, there is almost no study that has examined psychosocial factors associated with the profile, such as temperament traits and parenting practices. Therefore, we sought to provide a more comprehensive picture of the development and implications of the profile in preschool children across multiple domains.

In keeping with past findings, we found strong evidence that young children meeting criteria for the profile, regardless of the informant, were likely to exhibit symptoms of ADHD and ODD. Further, children classified in the profile group by either parent or co-parent showed poorer overall functioning, socialization, and language development. The profile group identified by the parent also exhibited higher symptoms of depression and anxiety. In line with previous reports focusing on older children and adolescents, it is clear that the CBCL-PBD profile identifies a group of preschool-aged children with a range of psychiatric problems and impairment.

Consistent with the findings for psychopathology and impairment, young children with the profile were found to have patterns of temperament that are closely associated with psychopathology in older youths and adults. Children positive for the CBCL profile based on parent reports showed increased negative affectivity as reported by both parents and co-parents compared to the control group. The profile positive children were also rated to be more extraverted by their parent, although they were observed to be lower in exuberance. It is worth noting the distinction between extraversion and exuberance. Extraversion combines the processes of emotional and motor reactivity, capturing lower-order traits such as positive anticipation, shyness (reversed), sensation-seeking, activity level, and impulsivity (Rothbart & Bates, 2006). Exuberance, on the other hand, emphasizes the expression of positive affect and encompasses traits such as positive anticipation, positive affect, and interest. Thus, our results can be interpreted as showing that the profile children are less likely to display positive emotions than the profile negative group, but have stronger tendency to approach and explore rewarding stimuli. Further, the profile positive group was rated by both parents and co-parents as lacking in effortful control and observed to be high in disinhibition/noncompliance in a laboratory setting. Findings on the profile group classified by co-parents were similar in that the children were rated by the co-parent to be high in negative affectivity, and by both parents to be high in extraversion and low in effortful control.

These findings are in line with the literature reporting associations between high levels of negative affectivity and multiple types of psychopathology in youth and adults, especially with depression and anxiety disorders, but also conduct disorder, substance use, and ADHD (e.g., Anthony, Lonigan, Hooe, & Phillips, 2002; Austin & Chorpita, 2004; Chorpita, 2002; Krueger, Caspi, Moffitt, Silva, & McGee, 1996; Nigg et al., 2002). High levels of extraversion have been

linked to ADHD (e.g. Nigg, 2006, White, 1999). In addition, low effortful control in children and adolescents has been shown to be associated with a range of externalizing disorders, such as ADHD, substance abuse, and conduct disorder (e.g. Krueger et al., 1996; Nigg et al., 2002; Oldehinkel, Hartman, De Winter, Veenstra, & Ormel, 2004; Wills, Sandy, & Yaeger, 2000). Behavioral disinhibition, a construct distinct from effortful control, describes a temperamental tendency of high approach and disinhibition to novelty. Studies have found that behavioral disinhibition is linked to higher rates of disruptive behavior disorder, mood disorder, and parental bipolar disorder (Hirshfeld-Becker et al., 2002, 2006). It is likely that multiple temperament dimensions contribute, and perhaps interact, in the development of particular disorders (Rettew, 2008). For example, there is evidence showing that the combination of high negative emotionality and high disinhibition/low effortful control are associated with comorbid conduct disorder and ADHD (Cukrowicz et al., 2006) or antisocial behavior (Krueger, Schmutte, Caspi, and Moffitt, 1994). Additionally, longitudinal research shows that early temperamental negative emotionality, poor self-control, and unmanageability predict conduct disorder and severe antisocial behavior (Sanson & Prior, 1999). In light of this evidence, the patterns of temperament traits in young children with the CBCL profile in our sample may contribute to the behavioral disturbances indexed by the profile.

In addition to studying temperament and psychopathology in young children, the current study extends the literature by examining familial and environmental correlates of the CBCL-PBD profile. To date, only one other study has looked at familial and environmental associations with the CBCL profile. In a large clinical sample of children aged 4 to 18 years, Jucksch and colleagues (in press) examined levels of psychosocial adversity as assessed by the psychosocial axis of the ICD-10 (WHO, 1996). Results show that the children in the high profile group had

significantly higher scores across multiple domains compared to the control group of children without clinical *t*-scores on the CBCL. These domains include abnormal qualities of upbringing, abnormal family relationships, family disability (including psychiatric disorder), inadequate family communication, abnormal immediate environment, chronic interpersonal stress, and stressful events resulting from the child's disorder.

In keeping with these findings, results of the present study revealed that the parents of children with and without the profile differed in meaningful ways. Regarding parental personality and psychopathology, children positive for the profile based on parent-reports came from homes characterized by higher maternal negative emotionality and elevated levels of maternal lifetime anxiety disorders. In addition, higher rates of current depressive symptoms were reported by both parents, and higher levels of chronic/intermittent hypomania was reported by the primary parent. These differences were not detected for the profile groups based on co-parent or teacher reports of the CBCL, however.

When parenting behaviors were examined, results revealed that the parenting of the parent-identified CBCL-PBD children was characterized by a lack of structure and discipline, and to a lesser extent, non-responsiveness and hostility. Specifically, observer-rated parent-child interactions in the profile group identified by the parent appeared to be higher in parental hostility, and lower in parental support and the overall quality of the relationship. Further, parents of parent-identified positive profile children reported relying more on authoritarian style, characterized by use of punitive and hostile strategies, and both parents and co-parents reported greater use of permissive styles that are lacking in structure and control. Similarly, in the profile group identified by co-parent reports on the CBCL, parents showed more hostility in the

laboratory observation, and both parents and co-parents reported greater reliance on authoritarian and permissive styles of parenting.

Overall, our findings suggest that the CBCL-PBD profile is not only associated with symptoms of psychopathology, but also with temperamental, emotional, and behavioral dysregulation in both children and their parents. As discussed above, these traits may reflect liabilities for, or comprise vulnerabilities to internalizing and externalizing forms of psychopathology (Nigg, 2006; Shiner & Caspi, 2003). The children in the profile group displayed temperaments characterized by negative affect and behavioral dyscontrol. In addition, mothers of these children were more likely to be high in negative emotionality and rates of lifetime anxiety disorders. The primary parents also reported higher rates of hypomanic symptoms, and both parents exhibited mood disorder symptoms and used maladaptive parenting strategies. Several possible pathways can be postulated to explain these findings. First, parental negative emotionality and maladaptive parenting practices are thought to be associated with problems in child's behavioral adjustment (Deater-Deckard, 2000; Degnan, Almas, & Fox, 2010). Studies have shown that differences in parents' personality traits may translate into different styles of responsiveness to children. In particular, there are robust findings on the association between negative emotionality and less adaptive parenting (e.g. Belsky, Crnic, & Woodworth, 1995; Clark, Kochanska, & Ready, 2000; Spinath & O'Connor, 2003). Similarly, there is an established link between maternal mood disorder and parenting. In a meta-analysis of literature on maternal depression and observed parenting, maternal depression was strongly associated with negative parenting behaviors, such as irritability and hostility toward the child and to a somewhat lesser degree disengagement from the child (Lovejoy, Graczyk, O'Hare, and Neuman, 2000). It is possible that the parent's negative emotionality and psychopathology

interfere with adaptive parenting, and that together, these factors provide an environment that fails to foster the child's development of emotional and behavioral self-regulation (Nigg & Hinshaw, 1998; Hinshaw et al., 2000). Alternatively, there is also evidence that children's behavioral problems and temperament characteristics evoke negative reactions and parenting behaviors from caregivers (e.g. Bates, Pettit, Dodge, & Ridge 1998; Degnan, et al., 2010; Maccoby, Snow, & Jacklin, 1984; Pettit, Laird, Dodge, Bates, & Criss, 2001). This is analogous to Patterson's coercive family process model (Snyder & Patterson, 1995). Thus, children who meet criteria for the CBCL profile may modify their parents' behavior in maladaptive ways. For example, children with heightened sensitivity and negative reactivity to challenges are more difficult to parent, which may elicit more negative emotional responses from their parents. Such children can put added stress on parents who are already prone to high emotional reactivity to stressors, resulting in parenting practices that are characterized by hostility or lack of control.

Indeed, there may be bidirectional and reciprocal effects between child temperament and parenting (Sameroff & Mackenzie, 2003) that influence the development of psychopathology over time. Parental negative affect and suboptimal parenting can adversely impact child emotional and behavioral regulation, which in turn further increases parental negative reactions and maladaptive parenting, resulting in increased vulnerability to negative outcomes for the child. In a study examining parents' negative reactions to children's negative emotionality and self-regulation (Eisenberg et al., 1999), children's regulation at ages 6 – 8 predicted parental distress and punitive reactions 2 years later, which in turn predicted child regulation 2 years after that. Similarly, bidirectional associations were found between child irritability and fearfulness and parental inconsistent discipline in a community sample of children (Lengua & Kovacs,

2005). In the same study, the effects of parenting and temperament on later adjustment problems were additive, each contributing to the development of problem behaviors.

Lastly, it is possible that the relationship between parents' and children's dysregulation is moderated by a third variable, such as shared genetic factors. As discussed earlier, children who are positive for the profile appear to have a genetic predisposition that puts them at risk for dysregulation of mood and behavior (Althoff et al., 2006; Hudziak et al., 2005). The same genetic factors affect the parents, not only predisposing to similar mood and behavioral dysregulation, but likely also to poor parenting. Prospective longitudinal studies are needed to gain further insight into the causal pathways and mechanisms involved in the complex associations between parental personality, parenting behavior, and the emotional and behavioral dysregulation associated with the CBCL-PBD profile.

It is noteworthy that no differences were found in the domain of marital discord and stressful life events between children with and without the CBCL profile. Interestingly, these results are similar to those found in abovementioned study by Jucksch and colleagues (in press), in which the profile group did not differ from the control group on ratings of acute life events or societal stressors.

When correlates of the CBCL-PBD profile were examined simultaneously across all domains, several dimensions of child and parental factors emerged as unique predictors of the CBCL profile group identified by the parent. These include reduced effortful control and high levels of negative affect reported by parents, and symptoms of depression and ODD in children. For the profile group based on co-parent reports, effortful control and negative affect as rated by co-parents, symptom scores of ODD, maternal negative emotionality, and co-parents' permissive parenting style were uniquely associated with the profile. Permissive parenting style of co-

parents also distinguished the profile group as classified by teachers. Thus, the profile groups identified by different informants were distinguished by a highly overlapping set of variables.

With regards to the use of multiple informants, findings within each domain and across domains were strongest with parent reports, although many were supported by co-parent reports. While the primary caretakers (“parents”) are likely to be the most knowledgeable about the child, we cannot exclude the possibility that our findings are inflated by shared method variance between the CBCL profile and our outcome measures.

A secondary goal of the current study was to examine the correspondence among different informants for the CBCL profile. The overall agreement among parents, co-parents, and teachers/caretakers was significant but low, suggesting that a fair amount of unique information is captured by each source. These results are similar to those in another study examining cross-informant agreement on the CBCL profile (Althoff, Rettew, Ayer, & Hudziak, 2010) and comparable to the average level of convergence across informants on most measures of child behaviors. For example, a meta-analysis of cross-informant agreement on children’s problems found a mean correlation of .28 between different types of informants (Achenbach, McConaughy, & Howell, 1987). Therefore, the low agreement across different reporters suggests that their ratings should be regarded as functionally distinct sources of information (Youngstrom, Freeman, & Jenkins, 2009).

The CBCL-PBD profile has been referred to using a variety of labels, reflecting the lack of consensus on its conceptualization. Discussion continues on whether it represents a measure of bipolar disorder, another form of psychiatric disorder, or severe and comorbid psychopathology. Some researchers have proposed that the CBCL profile captures broad impairment in self-regulation of affect, behavior and cognition and therefore have labeled it the

Dysregulation profile (Althoff et al., 2008; Ayer et al., 2009). In the current study, the CBCL profile did indeed identify preschool children with emotional and behavioral dyscontrol, manifesting symptoms of both externalizing and internalizing disorders, as well as temperamental negative affectivity and impulsivity/disinhibition. These findings are also consistent with other constructs referring to children with problems in emotional and behavioral dysregulation, such as Severe Mood Dysregulation (SMD) and mood lability. For instance, SMD (Leibenluft, Charney, Towbin, Bhangoo, & Pine, 2005) in children and adolescents reflects high negative emotional reactivity, hyperarousal (e.g. hyperactivity, distractibility), and abnormal baseline mood (e.g. sadness, anger, irritability). Studies have shown that SMD is associated with both internalizing and externalizing disorders and subsequent depressive and anxiety disorders (Brotman et al., 2006). Similarly, mood lability in children is associated with a range of concurrent psychopathology, comorbidity between internalizing and externalizing disorders, and significant impairment even in the absence of psychiatric disorders (Stringaris & Goodman, 2009).

As discussed earlier, the CBCL profile was originally proposed as a diagnostic tool for identifying children and adolescents with bipolar disorder. While some early studies found that it was associated with pediatric bipolar disorder, there is considerable evidence indicating that it is not specific to bipolar disorder, and many studies have found links to a range of disorders. In the current study, association with a diagnosis of bipolar disorder could not be examined due to the young age of our sample. However, when parents of children with and without the CBCL-PBD profile were examined, no differences were found in the rate of lifetime bipolar disorder as assessed by a structured diagnostic interview. On the other hand, the groups did differ in primary caregivers' self-reported hypomanic and biphasic symptoms. One possible explanation for this

finding is that the profile does indeed index a familial liability for bipolar disorder. Alternatively, these parents may have obtained elevated scores on the GBI-H scale due to similar patterns of behavioral and emotional dysregulation as their children, but may not in fact have bipolar disorder. Hence, the current study produced equivocal findings regarding the association between the CBCL-PBD profile in preschool-aged children and bipolar disorder.

Nonetheless, our findings are consistent with the broader literature indicating that the CBCL-BPD profile is associated with a wide range of symptomatology and impairment, and extends this literature by showing that these associations are evident as early as the preschool period. Thus, the profile is likely to be an early risk marker for severe psychopathology rather than a specific marker for bipolar disorder. Longitudinal studies examining the outcomes of the CBCL profile converge on its association with increased rates of psychopathology and comorbidity, marked psychosocial impairment, and increased risk for suicidality in young adulthood (Biederman et al., 2009; Meyer et al., 2009; Holtmann et al., 2011). With its ease of administration and scoring, and excellent psychometric properties, the CBCL may be a useful tool for identifying children who are at risk for a variety of forms of serious psychiatric illness. Furthermore, the current findings provide evidence for its use in children as young as preschool-age, suggesting that the profile could inform early preventive intervention. While no psychological treatment programs have been validated for young children with severe dysregulation as in the CBCL profile, there are many well-established treatments with strong empirical support for treating ADHD (e.g., behavioral parent training, see Pelham & Gabiano, 2008) and disruptive behavior problems (e.g., parent management training, see Eyberg, Nelson, & Boggs, 2008). Designed to reduce children's aggression and behavior problems, increase

psychosocial functioning, and promote adaptive parenting practices, these interventions may prevent detrimental outcomes associated with early dysregulation.

There are several limitations of this study to be noted. First, because our findings are based on cross-sectional analyses, we cannot draw inferences about causality. Longitudinal follow-up of these families will provide more information on the stability and change in the correlates of the CBCL profile and how they predict subsequent psychopathology and impairment in functioning.

Second, there is a lack of consensus in the literature on approaches to defining the CBCL-PBD profile, as different ways of combining the scale scores or cutoff scores have been employed across studies. For the purpose of this study, a low threshold was used because of our community sample. Therefore, our findings may not apply to the profile group identified by more stringent criteria. Another difference in comparison to prior studies is the use of the preschool versions of the CBCL (CBCL 1½– 5 and C-TRF; Achenbach & Rescorla, 2000). While our findings are consistent with studies of school-age children and adolescents, the preschool forms have not been previously used to identify the CBCL-PBD profile and replication is needed. Lastly, we used multiple outcome measures within each domain, raising the possibility of Type I errors. However, we used a modified Bonferroni correction method (Benjamini & Hochberg, 1995) to minimize the false discovery rate.

Despite these limitations, our study is the first to demonstrate that children as young as preschool-age with the CBCL-PBD profile exhibit similar correlates as those found in older children and adolescents. Furthermore, this study adds to the literature by examining psychosocial, familial, and environmental factors linked to the profile. Thus, our findings provide a more comprehensive picture of the implications of the profile. In sum, the results from

this study are in line with, and extend those from previous research on the behavioral and emotional correlates of the CBCL-PBD profile to much younger children. Our findings suggest that even in a non-clinical sample of preschool children, the profile is indicative of a broad constellation of behavioral and emotional problems, as well as functional impairment. The profile is also associated with temperamental characteristics consistent with behavioral and emotional dysregulation. Furthermore, the parents of these children seem to share similar symptoms and personality traits, and exhibit maladaptive patterns of parenting behavior. Our findings highlight the need for further work on the processes through which the CBCL-PBD profile is associated with serious maladjustment and impairment. In particular, our findings avenues for early intervention and preventive strategies.

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Appendix

Table 1

Cross-informant Agreement on the CBCL-PBD Profile

	Parent – Co-parent	Parent – Teacher	Co-parent – Teacher
Pearson's r	.37**	.25**	.24**
Kappa (k)	.23**	.22**	.08

Table 2

Comparisons between CBCL-PBD Profile Groups and Child Temperament

CBCL-PBD Profile	<i>t</i> - test			Logistic Regression		
	<i>t</i>	Means ^a	<i>SD</i> ^a	OR (CI)	<i>p</i>	
Parent	CBQ Negative Affect – P	4.41***	1.22 -.17	2.19 2.63	1.30 (1.10-1.54)	.002
	CBQ Negative Affect – CoP	2.23*	.82 -.11	2.47 2.65	1.07 (.93-1.24)	<i>ns</i>
	CBQ Extraversion – P	4.81***	1.64 -.17	2.68 2.68	1.22 (1.06-1.41)	.007
	CBQ Extraversion – CoP	1.88	.73 -.10	2.52 2.79		
	CBQ Effortful Control – P	-8.32***	-3.90 .46	3.76 3.72	.77 (.68-.86)	<.001
	CBQ Effortful Control – CoP	-3.62***	-1.63 .22	3.18 3.25	.92 (.80-1.05)	<i>ns</i>
	Lab-TAB Sociability/Assertiveness	-1.20	-.15 .02	.77 1.03		
	Lab-TAB Dysphoria	.31	.04 .00	1.19 .98		
	Lab-TAB Fear/Inhibition	1.69	.20 -.03	1.09 .98		
	Lab-TAB Exuberance	-2.41*	-.30 .03	.99 1.00	.74 (.52-1.07)	<i>ns</i>
	Lab-TAB Disinhibition/Noncompliance	2.83**	.41 -.05	1.21 .96	1.02 (.75-1.39)	<i>ns</i>
	Co-parent	CBQ Negative Affect – P	.28	.15 -.01	2.61 2.64	

	CBQ Negative Affect – CoP	3.54***	1.83 -.11	2.52 2.61	1.38 (1.13-1.70)	.002
	CBQ Extraversion – P	2.61**	1.42 -.08	2.47 2.75	1.11 (.90-1.37)	<i>ns</i>
	CBQ Extraversion – CoP	3.49**	1.87 -.14	2.89 2.72	1.16 (.95-1.42)	<i>ns</i>
	CBQ Effortful Control – P	-4.78***	-3.68 .30	3.94 3.95	.87 (.76-.99)	.033
	CBQ Effortful Control – CoP	-4.88***	-3.11 .19	2.29 3.26	.73 (.60-.89)	.002
	Lab-TAB Sociability/Assertiveness	-1.29	-.29 -.01	1.19 1.01		
	Lab-TAB Dysphoria	-.71	-.14 .01	.72 1.06		
	Lab-TAB Fear/Inhibition	2.16	.39 -.06	1.05 .99		
	Lab-TAB Exuberance	-.86	-.23 .00	1.30 .99		
	Lab-TAB Disinhibition/Noncompliance	1.56	.34 .00	1.00 1.02		
Teacher	CBQ Negative Affect – P	1.47	.73 -.12	3.09 2.64		
	CBQ Negative Affect – CoP	.25	.05 -.11	3.07 2.66		
	CBQ Extraversion – P	2.10	1.17 -.07	2.87 2.75		
	CBQ Extraversion – CoP	1.95	.91 -.28	3.30 2.56		
	CBQ Effortful Control – P	-1.60	-1.20 .21	4.66 4.07		
	CBQ Effortful Control – CoP	-2.21	-1.28 .44	3.90 3.34		

Lab-TAB		.13	.51
Sociability/Assertiveness	2.56	-.19	1.06
Lab-TAB Dysphoria	1.15	.20	.86
		-.05	1.05
Lab-TAB Fear/Inhibition	-.54	-.08	1.02
		.04	1.04
Lab-TAB Exuberance	-.07	-.01	.76
		.00	1.06
Lab-TAB		.12	1.00
Disinhibition/Noncompliance	1.13	-.11	.96

Note. P = parent-reported, CoP = co-parent-reported, CBQ = Children's Behavior Questionnaire, Lab-TAB = Laboratory

Temperament Assessment Battery, *SD* = Standard deviation, OR = Odds ratio, CI = Confidence interval, *ns* = Nonsignificant.

^a Top row: CBCL-PBD positive, Bottom row: CBCL-PBD negative.

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

Table 3

Comparisons between CBCL-PBD Profile Groups and Child Psychopathology and Functioning

CBCL-PBD Profile		<i>t</i> -test			Logistic Regression	
		<i>t</i>	Means ^a	<i>SD</i> ^a	OR (CI)	<i>p</i>
Parent	PAPA Depression	4.33***	13.77 -1.67	27.21 8.23	1.04 (1.01-1.06)	.003
	PAPA Anxiety	4.18***	15.46 -1.92	31.30 18.33	1.01 (1.00-1.03)	<i>ns</i>
	PAPA ODD	9.24***	15.14 6.62	6.85 5.07	1.13 (1.06-1.20)	<.001
	PAPA ADHD	5.37***	10.32 3.07	10.22 5.03	1.06 (1.01-1.12)	.022
	Incapacity	7.09***	2.86 .66	2.30 1.25	1.12 (.89-1.41)	<i>ns</i>
	Vineland	-5.52***	16.43 19.20	3.76 3.61	.88 (.80-.98)	.020
	PPVT	-2.12*	99.26 103.28	13.41 14.04	.99 (.96-1.02)	<i>ns</i>
	EOWPVT	-3.24**	95.55 101.19	14.95 12.65	.99 (.96-1.02)	<i>ns</i>
	Co-parent	PAPA Depression	1.48	8.83 -.31	29.99 12.21	
PAPA Anxiety		1.75	6.23 -1.19	23.76 19.96		
PAPA ODD		4.15***	13.77 7.36	7.41 5.86	1.09 (1.00-1.19)	.040
PAPA ADHD		2.35*	9.27 3.61	11.71 5.60	1.03 (.96-1.10)	<i>ns</i>
Incapacity		2.94**	2.30	2.44	1.05 (.77-1.42)	<i>ns</i>

			.79	1.47		
	Vineland	-2.53*	17.02	3.62		
			19.06	3.84	.92 (.81-1.05)	<i>ns</i>
	PPVT	-2.10*	96.96	11.23		
			103.27	14.16	.99 (.95-1.03)	<i>ns</i>
	EOWPVT	-3.19**	92.70	12.99		
			101.31	12.54	.97 (.93-1.01)	<i>ns</i>
Teacher	PAPA		2.62	10.64		
	Depression	.89	.10	13.55		
	PAPA Anxiety	-.74	-3.67	18.22		
			-.77	18.65		
	PAPA ODD	2.67**	10.66	6.88	1.05 (.98-1.12)	<i>ns</i>
			7.31	5.77		
	PAPA ADHD	2.88**	8.31	8.69	1.09 (1.03-1.15)	.004
			3.19	5.32		
	Incapacity	2.06	1.96	2.75		
			.81	1.38		
	Vineland	-1.15	18.35	2.94		
			19.28	3.88		
	PPVT	-.67	101.64	15.33		
			103.68	14.20		
	EOWPVT	-.97	98.60	13.46		
			101.25	12.79		

Note. PAPA = Preschool Age Psychiatric Assessment, Vineland = Vineland Adaptive Behavior Screener Socialization subscale,

PPVT = Peabody Picture Vocabulary Test, EOWPVT = Expressive One Word Picture Vocabulary Test, *SD* = Standard deviation, OR

= Odds ratio, CI = Confidence interval, *ns* = Nonsignificant.

^a Top row: CBCL-PBD positive, Bottom row: CBCL-PBD negative.

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

Table 4

Comparisons between CBCL-PBD Profile Groups and Parental Psychopathology

CBCL-PBD Profile		<i>t</i> - test			Logistic Regression		
		<i>t</i>	Means ^a	<i>SD</i> ^a	OR (CI)	<i>p</i>	
Parent	Depressive disorder_M	2.09	1.45	.50	1.33 (.55-3.22)	<i>ns</i>	
			1.31	.46			
	Bipolar disorder_M	-.50	1.00	.00			
			1.00	.06			
	Anxiety disorder_M	3.66***	1.57	.50			
			1.32	.47			
	Substance use_M	1.14	1.28	.45			
			1.21	.41			
	Depressive disorder_F	1.14	1.23	.42			
			1.16	.37			
	Bipolar disorder_F	-.70	1.00	.00			
			1.01	.09			
	Anxiety disorder_F	1.17	1.26	.44			
			1.19	.39			
Substance use_F	.70	1.42	.50				
		1.37	.48				
GBI Depression_P	1.68	3.56	7.98	1.25 (1.04-1.49)	<i>ns</i>		
		1.39	3.24				
GBI Hypomania/Biphasic_P	2.61*	1.79	2.98				
		.54	1.25				
DID P	3.03**	8.14	6.85			1.08 (1.01-1.15)	.026
		5.14	5.05				
DID CoP	2.56*	6.49	5.39				
		4.23	5.60				

Co- parent	Depressive disorder_M	.28	1.33	.48
			1.31	.46
	Bipolar disorder_M	-.25	1.00	.00
			1.00	.05
	Anxiety disorder_M	1.45	1.50	.51
			1.35	.48
	Substance use_M	.98	1.29	.46
			1.21	.41
	Depressive disorder_F	1.79	1.33	.48
			1.15	.36
	Bipolar disorder_F	-.44	1.00	.00
			1.01	.09
	Anxiety disorder_F	.05	1.21	.41
		1.20	.40	
Substance use_F	-1.00	1.29	.46	
		1.39	.49	
GBI Depression_P	1.65	4.14	5.88	
		1.53	3.80	
GBI Hypomania/Biphasic_P	1.51	2.07	3.45	
		.67	1.47	
DID P	2.01	7.63	5.87	
		5.35	5.33	
DID CoP	2.13	6.83	4.72	
		4.34	5.63	
Teacher	Depressive disorder_M	-.36	1.29	.46
			1.33	.47
	Bipolar disorder_M	-.34	1.00	.00
			1.00	.07
	Anxiety disorder_M	.97	1.42	.50
		1.32	.47	
Substance use_M	.34	1.25	.44	
		1.22	.41	

Depressive disorder_F	.60	1.17	.38
		1.12	.33
Bipolar disorder_F	-.50	1.00	.00
		1.01	.10
Anxiety disorder_F	-.09	1.17	.38
		1.17	.38
Substance use_F	-.38	1.38	.49
		1.42	.49
GBI Depression_P	1.16	3.10	7.56
		1.16	2.83
GBI Hypomania/Biphasic_P	1.28	1.19	2.14
		.57	1.40
DID P	1.55	6.28	6.15
		4.70	4.54
DID CoP	-.15	3.73	2.91
		3.89	4.97

Note. M = mother-reported, F = father-reported, P = parent-reported, CoP = co-parent-reported, DID = Diagnostic Inventory for Depression, GBI = General Behavior Inventory, *SD* = Standard deviation, OR = Odds ratio, CI = Confidence interval, *ns* = Nonsignificant.

^a Top row: CBCL-PBD positive, Bottom row: CBCL-PBD negative.

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

Table 5

Comparisons between CBCL-PBD Profile Groups and Parent Personality

CBCL-PBD Profile		<i>t</i> - test			Logistic Regression	
		<i>t</i>	Means ^a	SD ^a	OR (CI)	<i>p</i>
Parent	Positive Emotionality_M	-1.59	29.44	7.44		
			31.20	7.67		
	Negative Emotionality_M	5.08***	10.90	5.52		
			7.25	4.76		
	Constraint_M	-.37	26.69	4.21		
			26.92	4.22		
			30.69	10.02		
	Positive Emotionality_F	.21	30.39	8.75		
			9.20	6.95		
	Negative Emotionality_F	1.89	7.31	6.21		
			23.93	4.75		
	Constraint_F	.23	24.02	5.66		
Co-parent	Positive Emotionality_M	-1.60	28.76	8.12		
			31.49	7.67		
	Negative Emotionality_M	3.10**	11.53	6.39		
			7.41	4.78		
	Constraint_M	.60	27.42	4.54		
			26.89	4.18		
			28.85	8.75		
	Positive Emotionality_F	-.90	30.54	8.88		
			10.09	7.34		
	Negative Emotionality_F	-2.08	7.34	6.21		
			23.81	5.97		
	Constraint_F	-.14	23.98	5.56		

Teacher	Positive Emotionality_M	.49	32.34	6.61
			31.57	7.44
	Negative Emotionality_M	-.31	7.08	4.24
			7.39	4.82
	Constraint_M	-1.07	25.60	4.30
			26.59	4.33
	Positive Emotionality_F	-.83	29.41	10.86
			31.11	8.65
Negative Emotionality_F	-.54	6.47	4.43	
		7.25	6.51	
Constraint_F	-.06	23.62	4.79	
		23.69	5.78	

Note. M = mother-reported, F = father-reported, P = parent-reported, *SD* = Standard deviation, OR = Odds ratio, CI = Confidence interval, *ns* = Nonsignificant.

^a Top row: CBCL-PBD positive, Bottom row: CBCL-PBD negative.

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

Table 6

Comparisons between CBCL-PBD Profile Groups and Parenting

CBCL-PBD Profile		<i>t</i> - test			Logistic Regression	
		<i>t</i>	Means ^a	<i>SD</i> ^a	OR (CI)	<i>p</i>
Parent	Maternal Support	-2.89**	4.15	.86	1.01 (.45-2.30)	<i>ns</i>
			4.49	.55		
	Maternal Positive Affect	-1.84	1.95	.32	1.62 (.50-5.24)	<i>ns</i>
			2.02	.29		
	Maternal Hostility	2.61*	1.38	.56	.80 (.40-1.60)	<i>ns</i>
			1.18	.30		
	Quality of Relationship	-3.22**	3.64	.86	1.13 (1.05-1.22)	.002
			4.02	.56		
	PSDQ Authoritative P	-1.33	60.06	7.17	1.03 (.92-1.16)	<i>ns</i>
			61.32	6.55		
PSDQ Authoritative CoP	-.56	55.90	8.01	1.11 (1.00-1.23)	.054	
		56.64	8.30			
PSDQ Authoritarian P	6.11***	23.20	4.92	1.49 (.54-4.16)	<i>ns</i>	
		19.55	4.09			
PSDQ Authoritarian CoP	1.82	21.63	4.08			
		20.29	4.72			
PSDQ Permissive P	3.53***	12.20	3.23			
		10.61	3.16			
PSDQ Permissive CoP	3.42**	12.76	3.60			
		11.06	3.08			
Co-parent	Maternal Support	-1.21	4.32	.75		
			4.51	.54		
	Maternal Positive Affect	-1.99	1.92	.33		
		2.04	.31			
	Maternal Hostility	2.61**	1.35	.33		

			1.18	.28		
	Quality of Relationship	-1.62	3.78	.84		
			3.99	.58		
	PSDQ Authoritative P	-2.71	57.64	9.29		
			61.48	6.54		
	PSDQ Authoritative CoP	.74	57.75	6.20		
			56.47	8.35		
	PSDQ Authoritarian P	4.37***	23.67	3.77	1.09 (.99-1.19)	<i>ns</i>
			19.71	4.32		
	PSDQ Authoritarian CoP	3.01**	23.18	4.37	.57 (.93-1.13)	<i>ns</i>
			20.25	4.63		
	PSDQ Permissive P	4.42***	13.58	3.26	1.10 (.95-1.27)	<i>ns</i>
			10.64	3.15		
	PSDQ Permissive CoP	5.11***	14.35	2.99	1.21 (1.06-1.38)	.006
			11.04	3.09		
Teacher	Maternal Support	-.64	4.41	.54		
			4.49	.60		
	Maternal Positive Affect	.69	2.08	.20		
			2.04	.30		
	Maternal Hostility	-.99	1.17	.19		
			1.22	.38		
	Quality of Relationship	-2.09	3.76	.66		
			4.03	.60		
	PSDQ Authoritative P	1.05	61.95	6.88		
			60.49	6.44		
	PSDQ Authoritative CoP	.17	56.64	10.28		
			56.25	7.60		
	PSDQ Authoritarian P	.45	20.32	4.64		
			19.88	4.59		
	PSDQ Authoritarian CoP	.62	20.79	4.81		
			20.13	4.59		
	PSDQ Permissive P	.72	11.12	3.03		
			10.63	3.23		

PSDQ Permissive CoP	3.51**	13.32	3.36
		10.86	3.04

Note. P = parent-reported, CoP = co-parent-reported, PSDQ = Parenting Styles and Dimensions Questionnaire, *SD* = Standard deviation, OR = Odds ratio, CI = Confidence interval, *ns* = Nonsignificant.

^a Top row: CBCL-PBD positive, Bottom row: CBCL-PBD negative.

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

Table 7

Comparisons between CBCL-PBD Profile Groups and Stress and Marital Adjustment

CBCL-PBD Profile	<i>t</i> - test			Logistic Regression	
	<i>t</i>	Means ^a	<i>SD</i> ^a	OR (CI)	<i>p</i>
Parent	PAPA Lifetime stressors	2.62	4.92	3.44	
			3.92	2.66	
	PAPA Current stressors	1.02	.85	1.11	
			.70	1.02	
DAS_P	-.94	109.64	18.55		
		112.63	18.87		
DAS_CoP	-1.46	108.58	14.56		
		112.79	16.92		
Co-parent	PAPA Lifetime stressors	1.20	4.58	2.96	
			3.89	2.74	
	PAPA Current stressors	1.27	1.17	1.83	
			.69	.97	
DAS_P	-1.91	101.63	25.12		
		113.78	17.10		
DAS_CoP	.02	112.40	18.55		
		112.32	16.58		
Teacher	PAPA Lifetime stressors	1.77	5.12	2.99	
			4.04	2.86	
	PAPA Current stressors	.95	.84	1.18	
			.61	.74	
DAS_P	.42	113.88	20.36		
		111.87	17.59		
DAS_CoP	.31	113.65	15.92		
		112.47	15.58		

Note. PAPA = Preschool Age Psychiatric Assessment, DAS = Dyadic Adjustment Scale, P = parent-reported, CoP = co-parent-reported, *SD* = Standard deviation, OR = Odds ratio, CI = Confidence interval, *ns* = Nonsignificant.

^a Top row: CBCL-PBD positive, Bottom row: CBCL-PBD negative.

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

Table 8

Results of Cross-Domain Logistic Regression Analysis Predicting the CBCL-PBD Profile Groups based on Parent-reports

	OR (CI)	<i>p</i>
CBQ Negative Affect – P	1.27 (1.03-1.57)	.03
CBQ Extraversion – P	1.03 (.87-1.23)	<i>ns</i>
CBQ Effortful Control – P	.81 (.71-.93)	.002
PAPA Depression	1.05 (1.02-1.07)	<.001
PAPA ODD	1.14 (1.06-1.23)	<.001
PAPA ADHD	1.04 (.97-1.11)	<i>ns</i>
Vineland	.93 (.82-1.05)	<i>ns</i>
DID P	.98 (.90-1.06)	<i>ns</i>
DID CoP	1.01 (.93-1.10)	<i>ns</i>
Maternal NEM P	1.08 (.98-1.19)	<i>ns</i>
PSDQ Authoritarian P	1.02 (.92-1.13)	<i>ns</i>
PSDQ Permissive CoP	1.03 (.90-1.18)	<i>ns</i>

Table 9

Results of Cross-Domain Logistic Regression Analysis Predicting the CBCL-PBD Profile Groups based on Co-Parent-reports

	OR (CI)	<i>p</i>
CBQ Negative Affect – CoP	1.38 (1.10-1.72)	.005
CBQ Effortful Control – P	.91 (.79-1.05)	<i>ns</i>
CBQ Effortful Control – CoP	.73 (.60-.89)	.002
PAPA ODD	1.09 (1.02-1.18)	.017
Maternal NEM	1.09 (1.00-1.20)	.053
PSDQ Permissive CoP	1.21 (1.05-1.40)	.009

Table 10

Results of Cross-Domain Logistic Regression Analysis Predicting the CBCL-PBD Profile Groups based on Teacher-reports

	OR (CI)	<i>p</i>
PAPA ADHD	1.06 (1.00-1.13)	<i>ns</i>
PSDQ Permissive CoP	1.23 (1.07-1.43)	.005