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## Early Childhood Psychopathology Prospectively Predicts Social Functioning in Early Adolescence

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### Abstract

**Objective:** Psychopathology in school-age children predicts impairment later in development. However, the long-term psychosocial consequences of early childhood psychopathology are less well known. The current study is the first to prospectively examine how a range of diagnoses and symptoms in early childhood predict psychosocial functioning across specific domains during early adolescence 6 to 9 years later.

**Method:** A community sample ( $N=595$ ; 44.9% female; 88.7% White; 12.6% Hispanic) was assessed for psychopathology at ages 3 and 6 using the Preschool Age Psychiatric Assessment. Diagnoses and dimensional scores for depressive, anxiety, attention-deficit/hyperactivity (ADHD), and oppositional defiant disorders (ODD) were examined. When children were 12 years old, children and parents completed the UCLA Life Stress Interview for Children, a semi-structured interview assessing functioning in multiple domains (academic, behavior, close friends, broader peers, maternal relationship, paternal relationship).

**Results:** Having a diagnosis in early childhood predicted greater impairment in all domains in early adolescence, except paternal relationship. Externalizing disorders predicted impairment in more domains than internalizing disorders. Most of the associations between early childhood psychopathology and poorer functioning in adolescence persisted after taking into account adolescent psychopathology. Moreover, the majority of bivariate associations with depressive, ODD, and ADHD symptoms, but not anxiety symptoms, persisted in a subsample of children who did not meet criteria for a diagnosis in early childhood.

**Conclusions:** Early childhood psychopathology has long-lasting deleterious effects on several domains of psychosocial functioning, often beyond the effects of continuing or recurring

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We also tested models adjusting only for the adolescent psychopathology variables that correspond to the early childhood psychopathology predictors of interest. The same early childhood predictors were significant in both sets of models, so we present only the more conservative models here.

adolescent psychopathology. Findings thereby highlight the validity and clinical significance of early psychopathology.

### Keywords

Internalizing disorders; externalizing disorders; family functioning; peer relationships; parent-child relationships; Pre-school children; adolescence; school performance

Despite burgeoning interest in early childhood psychopathology (Egger & Emde, 2011; Luby, 2016), research in this area is complicated for several reasons. Diagnostic criteria developed for adults can be difficult to apply to young children due to developmental differences in clinical presentation. Specifically, some symptoms may be beyond the capacities of young children or difficult to distinguish from developmentally normative behaviors. Additionally, symptoms in early childhood may be transient and difficult to untangle from rapid changes in maturation or environmental factors, like caregiver relationships (Briggs-Gowan, Carter, Bosson-Heenan, Guyer, & Horwitz, 2006; Carter, Briggs-Gowan, & Davis, 2004). In efforts to address these issues, alternative preschool nosologies that modify existing criteria and identify disorders that are unique to early childhood have been developed (i.e., the Research Diagnostic Criteria-Preschool Age [Scheeringa, 2003] and DC:0–3R and DC:0–5 [Zero to Three, 2005; Zeanah et al., 2017]); however, because comprehensive tests of their reliability and validity are not yet available (Egger & Emde, 2011; Rutter, 2011), classification of early childhood psychopathology is almost exclusively based on the DSM.

There is evidence that most preschool diagnoses assessed using DSM-based structured interviews show continuity with psychopathology in later childhood and early adolescence, providing moderate support for their predictive validity, and highlighting that, in many cases, psychopathology early in life is enduring (Finsaas, Bufferd, Dougherty, Carlson, & Klein, 2018). Moreover, there is evidence that disorders with earlier onsets can be more severe and have more persistent courses and poorer outcomes than disorders with later onsets (de Girolamo, Dagani, Cocchi, & McGorry, 2012; McGorry, Purcell, Goldstone, & Amminger, 2011). However, little is known about the significance and implications of early childhood psychopathology in terms of long-term effects on psychosocial functioning in subsequent developmental periods.

In contrast, concurrent relationships between psychopathology and poorer functioning in youth are well established (e.g., Sijtsema, Verboom, Penninx, Verhulst, & Ormel, 2014), and there is evidence that common psychiatric disorders in later childhood predict poorer functioning in adulthood (e.g., Copeland, Wolke, Shanahan, & Costello, 2015; Costello & Maughan, 2015; Ormel et al., 2017). Similarly, psychopathology in early childhood is associated with concurrent global impairment (Bufferd, Dougherty, Carlson, & Klein, 2011; Keenan, Shaw, Walsh, Delliquadri, & Giovannelli, 1997; Keenan & Wakschlag, 2000; Luby, Belden, Pautsch, Si, & Spitznagel, 2009), and there is evidence for specific relationships between disorders and functioning domains; young children with attention-deficit/hyperactivity disorder (ADHD) and oppositional defiant disorder (ODD) show impairment in peer relationships (Bufferd et al., 2011; DuPaul, Mcgoey, Eckert, & VanBrakle, 2001;

Gadow & Nolan, 2002; Lahey et al., 1998), academic performance (DuPaul et al., 2001; Lahey et al., 1998; Wilens et al., 2002), family functioning and parent-child relationships (DuPaul et al., 2001; Wakschlag & Keenan, 2001; but see Wilens et al., 2002 for a null finding for ADHD), and behavioral functioning (DuPaul et al., 2001; Wakschlag & Keenan, 2001). A more limited body of research suggests internalizing disorders are associated with concurrent impairment in interpersonal domains, including poorer social functioning among depressed preschoolers (Bufferd et al., 2011) and poorer family functioning in young children with anxiety disorders (Towe-Goodman, Franz, Copeland, Angold, & Egger, 2014).

Findings from short-term longitudinal studies across early childhood parallel those described above. In particular, young children with ADHD show poorer global, academic, and peer functioning from ages 5 to 8 (Lahey et al., 2004), and there is evidence for reciprocal relationships between young children's inattention problems and academic achievement from ages 3 to 6 (Metcalf, Harvey, & Laws, 2013). Children with preschool-onset disruptive behavior disorders, depression, and anxiety are more likely to be both aggressors and victims of peer aggression than peers without psychiatric disorders two years later (Belden, Gaffrey, & Luby, 2012), and children with disruptive behavior disorders show poorer global functioning across early childhood (Keenan et al., 2011). Finally, there is evidence that anxiety disorders prospectively predict poorer social functioning across three years in early childhood (Danzig et al., 2013).

These studies highlight the impact of early psychiatric problems across childhood, but, to our knowledge, only two studies have examined prospective relationships between psychiatric disorders in early childhood and adolescent psychosocial functioning. One found that preschool ADHD predicted poorer social and academic functioning in early adolescence (Lee, Lahey, Owens, & Hinshaw, 2008), and the other that parent-reported anxiety in preschoolers was associated with *higher* grades in early adolescence (DiLalla, Marcus, & Wright-Phillips, 2004). In the latter study, anxiety levels were low to moderate, so it is unclear how clinical levels of anxiety may relate to later functioning. Additionally, both studies adjusted for baseline comorbidity but not later psychopathology, so it cannot be determined whether having psychopathology in preschool was associated with impairment beyond the effects of continuing or recurring adolescent psychopathology.

The current study is the first to test prospective relationships between common psychiatric disorders and symptoms scores in early childhood and impairment across a range of psychosocial functioning domains in early adolescence, specifically academic performance, behavior problems at school, the quality and number of relationships with peers and close friends, and the quality of relationships with parents. These domains correspond to several salient developmental tasks of adolescence; competence across them indicates successful adaptation to the environmental demands of this critical period (Masten & Coatsworth, 1998). We also adjust for adolescent psychopathology to determine whether associations are due to persisting or recurring psychopathology, or whether early psychopathology disrupts development and thereby increases risk for poorer functional outcomes. Moreover, we use multivariate models to test the specificity of relationships between early childhood psychopathology and later functioning, and further adjust these models for all adolescent psychopathology. This is a conservative approach as it accounts for any homotypic and

heterotypic relationships that are present between the focal early childhood psychopathology variables and all later forms of psychopathology. Finally, given that even subthreshold disorders have been shown to have negative long-term effects on functioning (Copeland et al., 2015), we examine associations between symptoms and functioning among children who did not meet diagnostic criteria in early childhood.

In line with the cross-sectional and limited longitudinal literature, we hypothesize that early childhood ADHD and ODD will predict impaired functioning in adolescence in the domains of academics, behavior, and peer and parental relationships, and that early depression and anxiety will predict impaired interpersonal relationships. We also hypothesize that some of these relationships will be explained by persisting or recurring psychopathology in adolescence. Finally, we expect that dimensional measures of psychopathology will show a greater number of relationships with later functioning than categorical measures due to greater information captured by dimensional versus categorical measures. We previously reported on patterns of homotypic and heterotypic continuity of diagnoses from early childhood to early adolescence in this sample (Finsaas et al., 2018). To avoid redundancy, the current paper will focus exclusively on functional outcomes in adolescence associated with early childhood psychopathology.

## Methods

### Participants

Participants in the initial wave of this longitudinal study were 559 families with a 3-year-old child. At the second wave, three years later, 50 additional minority families were recruited to increase racial/ethnic diversity ( $N=609$ ; see Bufferd, Dougherty, Carlson, Rose, & Klein, 2012 for recruitment details). Parents provided written informed consent after receiving a description of the study. The study was approved by the human subjects review committee at Stony Brook University, and families were compensated.

Children with a parent who completed a diagnostic interview for at least one of the two early childhood assessments ( $n=595$ ) were included in the current paper. Of these 595 children, 462 (77.6%) had diagnostic data from both early childhood assessments, 79 (13.3%) had age 3 data only, and 54 (9.1%) had age 6 data only. Of the 595 children with diagnostic data from at least one early assessment, 473 (79.7%) also had diagnostic data at age 12.

The mean age of children was 3.6 years ( $SD=0.27$ ; range: 3.0–4.2) at the first assessment, 6.1 years ( $SD=0.43$ ; range: 5.1–7.6) at the second, and 12.7 years ( $SD=0.43$ ; range: 11.5–14.2) at the third. As children had, on average, just turned 6 at the second assessment we considered both the first and second assessments to reflect early childhood. 267 children (44.9%) were female, 528 (88.7%) were White, and 75 (12.6%) were Hispanic. At age 3, 34.5% of families (183/531; missing data were due to failure to respond) had a household income between \$70,001–100,000 and 38.6% (205/531) made over \$100,000. At age 6, nearly half of families had incomes of over \$100,000 (213/457; 46.7%) and at age 12, the majority made over \$100,000 (55.9% [264/472]; missing data due to failure or refusal to respond). Approximately half of parents had graduated from college by the age 3 assessment, or age 6 for families entering the study then (313/586 [57.1%] of mothers and

242/535 [45.2%] of fathers; missing data were due to failure to respond or a parent being absent). At the age 6 assessment, most children were in kindergarten (235/516; 45.5%) or first grade (214/516; 41.5%). At the age 12 assessment, 26.5% (125/471) were in 6<sup>th</sup> grade; 57.3% (270/471) were in 7<sup>th</sup> grade; and 15.7% (74/471) were in 8<sup>th</sup> grade. Most children lived with both biological parents at the age 3 (517/544; 95.0%), age 6 (410/473; 86.7%), and age 12 (385/472; 81.6%) assessments. As detailed elsewhere (Bufferd et al., 2012), the sample's demographic characteristics were reasonably representative of the surrounding county.

Children who completed at least one early childhood interview and the age 12 functioning interview were compared to those who did not complete the age 12 functioning interview on all age 3 and age 6 demographic and psychopathology variables. Children with age 12 assessments were more likely to be female (47.5% [212/446] versus 36.9% [55/149];  $\chi^2(1, N=595)=5.09, p=0.02$ ) and were slightly but significantly younger at the age 3 assessment ( $M=3.61$  years,  $SD=0.26$  versus  $M=3.68$  years,  $SD=0.28$ ;  $t(539)=-2.18, p=0.03$ ) and the age 6 assessment ( $M=6.10, SD=0.43$ , versus  $M=6.27, SD=0.43$ ;  $t(514)=3.46, p<0.001$ ). More mothers of children with an age 12 assessment had completed a bachelors degree by the initial wave (57.1% [254/445] versus 41.8% [59/141];  $\chi^2(1, N=586)=9.99, p=0.002$ ). Children with an age 12 assessment had higher dimensional scores for depression ( $M=4.16, SD=3.38$  versus  $M=3.46, SD=3.40$ ;  $t(592)=-2.16, p=0.03$ ) and ODD ( $M=3.36, SD=3.35$  versus  $M=2.58, SD=3.06$ ;  $t(593)=-2.51, p=0.01$ ).

## Measures

### Child psychopathology.

The Preschool Age Psychiatric Assessment (Egger, Ascher, & Angold, 1999) was the only published diagnostic interview designed to assess a comprehensive range of DSM-IV disorders in early childhood at the time this study began. Parents are interviewed about children's symptoms over the past 3 months. DSM-IV diagnoses were derived using algorithms from the instrument's developers. The PAPA has acceptable test-retest reliability comparable to other semi-structured diagnostic interviews for children and adults (Egger et al., 2006).

Interviews lasted 1–2 hours and were conducted by advanced clinical psychology graduate students by telephone at age 3 and an experienced masters-level clinician in person at age 6. Interviews with parents about children's psychopathology conducted in person and by phone yield similar results (Lyneham & Rapee, 2005). Interviewers were trained by an experienced interviewer from the group that developed the interview.

For this study, we assessed depressive disorders (major depressive disorder, dysthymic disorder, depressive disorder not otherwise specified [NOS]), anxiety disorders (specific phobia, social phobia, separation anxiety disorder, generalized anxiety disorder, and panic/agoraphobia), ADHD, and ODD. See Bufferd et al. (2012) for interrater reliability. Dimensional scores were created by summing ratings of relevant endorsed symptoms (0=absent, 1=subthreshold symptom, 2=threshold symptom). Given that only brief snapshots of time (i.e., three months) were assessed, we combined information from both waves to

increase prevalence and provide a more comprehensive measure of psychopathology in early childhood. Thus, a diagnosis was considered present if given at either the age 3 or age 6 assessment, and the highest dimensional symptom score at either wave was used. One child was missing a score on the early childhood depression symptom variable.

At age 3, parents also completed the ADHD and ODD sections of the Early Childhood Inventory-4 (ECI-4; Gadow & Sprafkin 2000). This parent-rated scale screens for DSM-IV disorders in 3–6 year olds. Coefficient alphas were 0.79 for ADHD-inattention, 0.82 for ADHD-hyperactivity/impulsivity, and 0.85 for ODD. Because of concerns about time to administer the PAPA, the screen was used in the first 60% of the sample ( $n=324$ ) to help determine whether to complete the ADHD and ODD sections of the PAPA. If no more than 1–2 symptoms were endorsed, the interviewer confirmed the absence of significant symptomatology and skipped the relevant section(s). In the remaining 40% ( $n=217$ ), the PAPA ADHD and ODD sections were administered to all parents. Rates of ADHD and ODD in the 60% of the sample that could be screened out of these sections (ADHD: 8/324 [2.5%]; ODD: 30/324 [9.3%]) did not differ from rates in the 40% that completed these sections regardless of screener scores (ADHD: 3/217 [1.4%],  $\chi^2(1, N=541)=0.770, p=0.38$ ; ODD: 21/217 [9.7%]),  $\chi^2(1, N=541)=0.27, p=0.87$ ).

### Early adolescent psychopathology.

The K-SADS Present and Lifetime Version (K-SADS-PL; Endicott & Spitzer, 1978; Kaufman et al., 1997) was used to assess psychopathology at age 12. Diagnoses reflect DSM-IV criteria. Current psychopathology reflects the month preceding the interview. The K-SADS-PL has good-to-excellent test-retest interrater reliability for all diagnoses (Kaufman et al., 1997).

Interviews were conducted by advanced clinical psychology graduate students and a masters-level clinician and were supervised by an experienced child psychiatrist and clinical psychologist. Interviewers administered the K-SADS to parents and then teens. Following K-SADS conventions, in cases where parent and child reports differed, interviewers used their clinical judgment to determine which report to weight more heavily. Interviewers also met with parents or children a second time as needed to clarify discrepancies. As a general rule, interviewers tended to weight parent report more heavily for externalizing disorders and teen report for internalizing disorders; however, interviewers gathered more information as needed and ultimately relied on their clinical judgment to adjudicate between discrepant reports.

Our interrater reliability for the K-SADS is reported elsewhere (Dougherty et al., 2016). In this paper, we use adolescent diagnoses and dimensional scores for depressive disorders (MDD, dysthymic disorder, depressive disorder-NOS), anxiety disorders (specific phobia, social phobia, separation anxiety, GAD, panic, agoraphobia), ODD, and ADHD (ADHD-inattentive, hyperactivity or combined type) as covariates.

### Early adolescent functioning.

The UCLA Life Stress Interview for Children (LSI; Rudolph & Hammen, 1999) is a semi-structured interview that assesses episodic/acute and chronic stress. We used an adapted

version for adolescents and utilized only the chronic stress portion of the interview for this paper. This interview has been widely used and shown good interrater reliability and validity (e.g., Hammen, Shih, & Brennan, 2004). Importantly, while the interview is framed in terms of assessing stress, chronic stress scores are readily interpreted as reflecting social functioning (Harkness & Monroe, 2016). The academic section assesses performance in classes and degree of difficulty with and extra help needed for schoolwork. The behavior section reflects problems with teachers, suspensions and expulsions, and fights with peers at school, as well as the severity and frequency of these behavior problems. The close friends section reflects number of close friends, as well as degrees of mutual satisfaction, conflict, confiding, and stability of relationships. The peers section reflects degrees of popularity, being a victim of bullying, and engagement in social activities with a wider peer group. The maternal and paternal relationship sections reflect degrees of support and trust, amount and quality of time together, and number and severity of arguments. Interviewers use behavioral probes to assess functioning over the past year and assign ratings based on parent and teen reports on a scale from 1 to 5, including half-points (higher scores indicate poorer functioning). A general functioning score was constructed by averaging scores across domains.

Interviews were conducted by trained post-baccalaureate research assistants during home visits with parents and then teens, separately. Ratings were based on information from both informants. Interviews lasted for approximately 45 minutes each. A post-doctoral fellow trained on the interview independently rated functioning using audio-recordings of interviews ( $n=32-33$ ); ICCs ranged from 0.57–0.93 (median=0.85).

The K-SADS interviewer also completed the Children's Global Assessment Scale (CGAS), a global measure of youth's functioning over the past month (Shaffer et al., 1983), based on parent and teen reports. Scores range from 0–100 (100=superior functioning). Two adolescents were missing CGAS scores.

## Data Analysis

Pearson product-moment correlations for diagnoses and dimensional scores with functioning domains were computed in RStudio (version 1.0.136), along with partial correlations adjusting for corresponding psychopathology in early adolescence (e.g., the association between childhood anxiety symptoms and later peer functioning was adjusted for adolescent anxiety symptoms), and associations between dimensional scores and functioning among children who did not meet diagnostic criteria for any disorder in early childhood. Interactions between child sex and early childhood diagnoses and dimensional scores predicting functioning were tested; only 1 of 63 was significant, hence child sex was not included. Adolescent CGAS scores were also regressed on childhood psychopathology.

We estimated multivariate regression models that simultaneously tested as predictors the early childhood psychopathology variables that had significant bivariate associations with each domain of functioning. Childhood psychopathology variables that were significant in these models were then tested as predictors in follow-up models that also adjusted for all early adolescent psychopathology variables (e.g., early childhood anxiety disorders and ADHD significantly predicted peer functioning in the initial multivariate model; these

disorders were then tested as predictors of peer functioning in a follow-up model that also adjusted for early adolescent depression, anxiety disorders, ODD, and ADHD).

All regression models were estimated in Mplus (version 7.31) using robust standard errors and full-information maximum likelihood. We also included psychopathology auxiliary variables identified through attrition analyses using a saturated correlates approach (Graham, 2003) to recapture information in the outcome variable and thereby reduce risk for bias (Enders, 2010). Finally, adolescent functioning variables were standardized whereas psychopathology variables were kept in their original metrics, because the scale for the functioning variables is arbitrary, in that scores only having meaning relative to other scores, whereas the scale for the diagnoses has inherent meaning (i.e., a one unit increase in the diagnostic variables represents the difference between not having a diagnosis versus having one). Standardizing the functioning variables allows the results from regression models to be interpreted in terms of standard deviation units with the mean of the sample representing zero.

## Results

### Descriptives

Descriptive statistics for early childhood and early adolescent psychopathology are presented in Table 1. Dimensional scores across disorder categories and ages are on different scales due to variation in numbers of symptoms assessed. On a scale from 1–5 on the LSI, the mean score was 1.92 ( $SD=0.38$ , range: 1.33–3.83) for general functioning, 1.70 ( $SD=0.76$ , range: 1–5) for academic functioning, 1.39 ( $SD=0.58$ ; range: 1–4) for behavior functioning, 2.09 ( $SD=0.55$ , range 1–5) for close friend functioning, 2.21 ( $SD=0.54$ , range: 1–4) for peer functioning, 1.97 ( $SD=0.41$ , range: 1–4) for maternal relationship functioning, and 2.16 ( $SD=0.60$ , range: 1–5) for paternal relationship functioning. The mean CGAS score was 80.58 ( $SD=11.00$ ; range: 44–100), which corresponds to no more than slight impairment in functioning at home, at school, or with peers.

### Bivariate and Partial Correlations

All early childhood diagnoses and dimensional scores were significantly associated with poorer general functioning in early adolescence as measured using the LSI (Table 2) and the CGAS (Table 3). After adjusting for the corresponding adolescent psychopathology, the relationships between any disorder, ADHD, ODD, and all dimensional scores with LSI scores remained significant, and all relationships with CGAS scores remained significant.

Having any disorder in childhood was associated with poorer functioning in academic, behavior, close friend, peer, and maternal relationship domains during adolescence, and all except the association with close friend functioning remained significant in partial correlations adjusted for adolescent psychopathology (Table 2). Early externalizing diagnoses showed a greater number of significant relationships with functioning than internalizing disorders, and dimensional scores showed a greater number of significant relationships than diagnoses. The majority of associations persisted when adjusting for adolescent psychopathology.



The majority of bivariate associations between early childhood depressive, ADHD, and ODD symptoms with domains of functioning that were significant in the full sample remained significant among children who did not meet diagnostic criteria for any disorder in early childhood (Table 2). Nearly all (8/9) of the associations with depressive and ADHD symptoms with later functioning remained significant when adjusting for the corresponding symptoms in adolescence.

## Multivariate Models

### Diagnoses.

In models including only early childhood disorders as predictors, ADHD and ODD uniquely predicted poorer general functioning (Table 4). ADHD uniquely predicted worse academic functioning, both anxiety and ADHD predicted poorer peer functioning, and only ODD uniquely predicted worse functioning with mother. No disorders uniquely predicted behavior, close friend, or paternal relationship functioning. In models also adjusting for all adolescent disorders, early childhood ADHD predicted poorer academic functioning, early anxiety predicted worse peer functioning, and early ODD predicted poorer functioning with mother.

### Dimensional scores.

In models including only early childhood scores as predictors, depression and ADHD symptoms uniquely predicted poorer general, academic, and peer functioning (Table 4). Both ADHD and ODD symptoms uniquely predicted poorer maternal relationship functioning. Only ADHD symptoms uniquely predicted poorer behavior and close friend functioning. There were no predictors of paternal relationship functioning. In models also adjusting for all adolescent dimensional symptom scores, early childhood depression and ADHD symptoms uniquely predicted poorer general and peer functioning, and early ADHD symptoms predicted poorer academic, close friend, and maternal relationship functioning.

### Discussion

Our findings indicate that early childhood psychopathology is a significant risk factor for poorer functioning in early adolescence, supporting the validity and clinical significance of psychopathology in young children. Moreover, we found that early childhood psychopathology continued to predict poorer functioning in adolescence even after adjusting for all forms of concurrent adolescent psychopathology in the majority of cases. The results of these highly conservative tests suggest that later functional impairment may be due, at least in part, to the disruption of the achievement of early developmental tasks that support adaptive functioning over time, rather than to the homotypic or heterotypic continuity or recurrence of psychopathology alone. In general, dimensional measures of psychopathology showed more relationships with functioning than categorical diagnoses, perhaps due to greater information captured by dimensional measures.

Externalizing disorders predicted impairment in more domains than internalizing disorders across all sets of analyses, highlighting ADHD and ODD as particularly potent risk factors. Furthermore, that the majority of bivariate associations remained significant when adjusting

for psychopathology in adolescence indicates that the impairment already apparent in young children with externalizing psychopathology (e.g., deficits in pre-academic skills and functioning observed in very young children with ADHD; Lahey et al., 1998; Wilens et al., 2002) may inhibit the development of foundational skills necessary for later psychosocial functioning.

Anxiety and depressive disorders predicted poorer interpersonal functioning with peers broadly, and depressive disorders predicted poorer functioning in relationships with fathers, while neither predicted poorer functioning in relationships with close friends or mothers. On the other hand, dimensional scores were related to poorer functioning in nearly all domains, suggesting internalizing symptoms confer general risk for later impairment. One less expected finding was the association between early depression, measured categorically or dimensionally, and poorer early adolescent academic functioning, even after accounting for adolescent depression. Symptoms of depression may interfere with early foundational learning, which, in turn, may impede children's abilities to excel in school at later ages. Moreover, in the multivariate model testing early childhood symptoms, these deleterious effects were present even after adjusting for comorbidity with early ADHD symptoms. This implies that the depression symptoms predicting academic functioning are not merely those that overlap with ADHD, such as poor concentration, but rather are features specific to depression.

Furthermore, the majority of significant bivariate associations between early childhood depressive, ADHD, and ODD symptoms with poorer functioning in early adolescence persisted when tested only among children who did not meet diagnostic criteria in early childhood. This suggests that even young children with subclinical depressive or externalizing symptoms are at risk for poor outcomes. In contrast, of the five significant associations with early anxiety symptoms that were present in the full sample, only the relationship with peer functioning remained significant in the subsample without an early childhood diagnosis. Subthreshold levels of anxiety symptoms in early childhood appear to have fewer or less pronounced deleterious effects on later functioning compared to other disorders, with the threshold for anxiety disorders at this age more clearly demarcating more normative from maladaptive anxiety. Nearly all of the associations between depressive and ADHD symptoms with later functioning in this subthreshold sample remained significant when adjusting for the corresponding symptoms in adolescence, suggesting that the negative long-term effects of these subthreshold symptoms are not, in most cases, due to continuing or recurring symptoms in adolescence.

Of all the adolescent functioning domains, broader social adjustment with peers appears to be the most vulnerable to the deleterious effects of early childhood psychopathology. This is evidenced by significant associations between all early childhood disorders and symptoms and adolescent peer functioning, regardless of concurrent adolescent psychopathology. Moreover, this pattern was present even when considering only children who did not meet the threshold for a diagnosis in early childhood. The negative effects on broader peer functioning may be one mechanism by which even subthreshold-levels of early childhood psychopathology make a lasting impact on a variety of other psychosocial domains in adulthood.

The results of the study should be considered in light of its limitations. First, functioning measures reflect not only the child's impairment, but also, indirectly, the child's environment, including the functioning of parents, teachers, and peers who may limit or enhance the child's ability to operate at an optimal level, as well as his or her reciprocity with this environment. This limitation is largely unavoidable, as psychosocial functioning by definition reflects functioning in the context of relationships and circumstances; however, future work could focus on novel approaches to parsing contributions of the child versus others to levels of functioning. Similarly, there is overlap between the content of symptoms and functioning domains, particularly for externalizing disorders (e.g., problems with teachers count towards an ODD diagnosis and towards a poorer score in the behavior functioning domain); the relationships between early diagnoses and symptoms and later poorer functioning, and particularly the stronger associations present for ODD, may be due in part to this overlap. That being said, this problem is not unique to our study nor to early childhood, but rather reflects the conceptualization of many psychiatric disorders and the construction of diagnostic criteria in the DSM. Moreover, adjusting for continuity by partialing out adolescent psychopathology mitigates this problem, as the overlap between psychopathology and functioning exists at the later time point as well. An additional limitation is that we propose that early disorders and symptoms lead to poorer functioning beyond the effects of continuing psychopathology by disrupting the achievement of developmental tasks, but elucidation of specific pathways is beyond the scope of this paper and should be pursued in future research. We also ran multiple tests, and some effects may be due to chance; thus, we limit our interpretations of specific effects and instead emphasize broader patterns of findings. Additionally, for a portion of the age 3 assessments, children who scored below threshold on the ODD/ADHD screener were not administered these sections of the PAPA, and symptoms for these sections were presumed absent. Some subthreshold symptoms may have been present in some of these children; however, this should reduce precision of measurement and make our tests more conservative. In addition, comparisons of rates of ADHD and ODD in the two portions of the sample revealed no significant differences. There was also evidence of attrition bias; however, we used full-information maximum likelihood estimation and included all psychopathology variables that correlated with missingness as auxiliary variables, which allowed for the inclusion of all children with data on the early psychopathology measures and minimized bias due to missing data. Finally, our sample size was moderate and participants were from the community and predominantly White and middle class, which limits the generalizability of the findings.

In conclusion, our findings indicate that early childhood psychopathology predicts poorer functioning in early adolescence across a variety of domains, supporting the validity and clinical significance of psychiatric diagnoses during this early developmental period. Future work should examine moderators of these relationships, because the later functioning of children with certain temperament characteristics or in particular environmental contexts may be impacted differentially by early childhood psychopathology. Additionally, future research should examine mediators that explain how early childhood disorders affect functioning years later, even in the absence of concurrent psychopathology.

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## References

- Belden AC, Gaffrey MS, & Luby JL (2012). Relational aggression in children with preschool onset (PO) psychiatric disorders. *J Am Acad Child Adolesc Psychiatry*, 51(9). 10.1016/j.jaac.2012.06.018
- Briggs-Gowan MJ, Carter AS, Bosson-Heenan J, Guyer AE, & Horwitz SM (2006). Are infant-toddler social-emotional and behavioral problems transient? *Journal of the American Academy of Child and Adolescent Psychiatry*, 45(7), 849–858. 10.1097/01.chi.0000220849.48650.59 [PubMed: 16832322]
- Bufferd SJ, Dougherty LR, Carlson GA, & Klein DN (2011). Parent-reported mental health in preschoolers: Findings using a diagnostic interview. *Comprehensive Psychiatry*, 52(4), 359–369. 10.1016/j.comppsy.2010.08.006 [PubMed: 21683173]
- Bufferd SJ, Dougherty LR, Carlson GA, Rose S, & Klein DN (2012). Psychiatric disorders in preschoolers: Continuity from ages 3 to 6. *American Journal of Psychiatry*, 169(11), 1157–1164. 10.1176/appi.ajp.2012.12020268 [PubMed: 23128922]
- Carter AS, Briggs-Gowan MJ, & Davis NO (2004). Assessment of young children's social-emotional development and psychopathology: Recent advances and recommendations for practice. *Journal of Child Psychology and Psychiatry*, 45(1), 109–134. [PubMed: 14959805]
- Copeland WE, Wolke D, Shanahan L, & Costello EJ (2015). Adult functional outcomes of common childhood psychiatric problems: A prospective, longitudinal study. *Journal of the American Medical Association Psychiatry*, 72(9), 892–899. 10.1001/jamapsychiatry.2015.0730 [PubMed: 26176785]
- Costello EJ, & Maughan B (2015). Annual research: Optimal outcomes of child and adolescent mental illness. *J Child Psychol Psychiatry*, 56(3), 324–341. 10.1111/jcpp.12371 [PubMed: 25496295]
- Danzig AP, Bufferd SJ, Dougherty LR, Carlson GA, Olino TM, & Klein DN (2013). Longitudinal associations between preschool psychopathology and school-age peer functioning. *Child Psychiatry Hum Dev*, 44(5), 621–632. 10.1007/s10578-012-0356-4 [PubMed: 23334266]
- de Girolamo G, Dagani J, Cocchi A, & McGorry PD (2012). Age of onset of mental disorders and use of mental health services: Needs, opportunities and obstacles. *Epidemiology and Psychiatric Sciences*, 21(1), 1–11. 10.1017/S2045796011000746 [PubMed: 22670405]
- DiLalla LF, Marcus JL, & Wright-Phillips MV (2004). Longitudinal effects of preschool behavioral styles on early adolescent school performance. *Journal of School Psychology*, 42, 385–401. 10.1016/j.jsp.2004.05.002
- Dougherty LR, Smith VC, Bufferd SJ, Kessel EM, Carlson GA, & Klein DN (2016). Disruptive mood dysregulation disorders at age six and clinical and functional outcomes three years later. *Psychological Medicine*, 46(5), 1103–1114. 10.1017/S0033291715002809 [PubMed: 26786551]
- DuPaul GJ, Mcgoey KE, Eckert TL, & VanBrakle J (2001). Preschool children with attention- deficit/ hyperactivity disorder: Impairments in behavioral, social, and school functioning. *J Am Acad Child Adolesc Psychiatry*, 40(5), 508–515. 10.1097/00004583-200105000-00009 [PubMed: 11349694]
- Egger HL, Ascher BH, & Angold A (1999). *The Preschool Age Psychiatric Assessment: Version 1.1*. Durham, NC.
- Egger HL, & Emde RN (2011). Developmentally-sensitive diagnostic criteria for mental health disorders in early childhood: DSM-IV, RDC-PA, and the revised DC: 0–3. *American Psychologist*, 66(2), 95–106. 10.1037/a0021026 [PubMed: 21142337]
- Egger HL, Erkanli A, Keeler G, Potts E, Walter BK, & Angold A (2006). Test-retest reliability of the Preschool Age Psychiatric Assessment (PAPA). *Journal of the American Academy of Child and Adolescent Psychiatry*, 45(5), 538–549. 10.1097/01.chi.0000205705.71194.b8 [PubMed: 16601400]
- Enders CK (2010). *Applied Missing Data Analysis*. New York, NY: The Guilford Press.
- Endicott J, & Spitzer RL (1978). A diagnostic interview: The Schedule for Affective Disorders and Schizophrenia. *Archives of General Psychiatry*, 35(7), 873–43.

- Finsaas MC, Bufferd SJ, Dougherty LR, Carlson GA, & Klein DN (2018). Preschool psychiatric disorders: homotypic and heterotypic continuity through middle childhood and early adolescence. *Psychological Medicine*, 1–10. 10.1017/S0033291717003646
- Gadow KD, & Nolan EE (2002). Differences between preschool children with ODD, ADHD, and ODD + ADHD symptoms. *J of Child Psychology and Psychiatry*, 43(2), 191–201.
- Gadow K, & Sprafkin J (2000). *Early Childhood Inventory-4: Screening Manual*. Stony Brook, NY: Checkmate Plus.
- Graham JW (2003). Adding missing-data-relevant variables to FIML-based structural equation models. *Structural Equation Modeling: A Multidisciplinary Journal*, 10(80–100).
- Hammen C, Shih JH, & Brennan PA (2004). Intergenerational transmission of depression: Test of an interpersonal stress model in a community sample. *Journal of Consulting and Clinical Psychology*, 72(3), 511–522. 10.1037/0022-006X.72.3.511 [PubMed: 15279534]
- Harkness KL, & Monroe SM (2016). The assessment and measurement of adult life stress: Basic premises, operational principles, and design requirements. *Journal of Abnormal Psychology*, 125(5), 727–45. 10.1037/abn0000178 [PubMed: 27254487]
- Kaufman J, Birmaher B, Brent D, Rao U, Flynn C, Moreci P, ... Ryan ND (1997). Schedule for Affective Disorders and Schizophrenia for School-Age Children-Present and Lifetime Version (K-SADS-PL): Initial reliability and validity data. *Journal of the American Academy of Child and Adolescent Psychiatry*, 36(7), 980–988. 10.1097/00004583-199707000-00021 [PubMed: 9204677]
- Keenan K, Boeldt D, Chen D, Coyne C, Duax J, Hart K, ... Humphries M (2011). Evidence for the predictive validity of DSM-IV oppositional defiant and conduct disorders diagnosed in a clinically referred sample of preschoolers. *Journal of Child Psychology and Psychiatry*, 52(1), 47–55. 10.1111/j.1469-7610.2010.02290.x [PubMed: 20738448]
- Keenan K, Shaw DS, Walsh B, Delliquadri E, & Giovannelli J (1997). DSM-III-R disorders in preschool children from low-income families. *Journal of the American Academy of Child and Adolescent Psychiatry*, 36(5), 620–627. 10.1097/00004583-199705000-00012 [PubMed: 9136496]
- Keenan K, & Wakschlag LS (2000). More than the terrible twos: The nature and severity of behavior problems in clinic-referred preschool children. *Journal of Abnormal Child Psychology*, 28(1), 33–46. [PubMed: 10772348]
- Lahey BB, Pelham WE, Loney J, Kipp H, Ehrhardt A, Lee SS, ... Massetti G (2004). Three-year predictive validity of DSM-IV attention deficit hyperactivity disorder in children diagnosed at 4–6 years of age. *American Journal of Psychiatry*, 161, 2014–2020. 10.1176/appi.ajp.161.11.2014 [PubMed: 15514401]
- Lahey BB, Pelham WE, Stein MA, Loney J, Trapani K, Nugent K, ... Baumann B (1998). Validity of DSM-IV attention-deficit/hyperactivity disorder for younger children. *Journal of the American Academy of Child and Adolescent Psychiatry*, 37(7), 695–702. [PubMed: 9666624]
- Lee SS, Lahey BB, Owens EB, & Hinshaw SP (2008). Few preschool boys and girls with ADHD are well-adjusted during adolescence. *J Abnorm Child Psychol*, 36, 373–383. 10.1080/15374410802575313 [PubMed: 17914666]
- Luby JL (Ed.). (2016). *Handbook of preschool mental health: Development, disorders, and treatment* (2nd ed.). Guilford Press.
- Luby JL, Belden AC, Pautsch J, Si X, & Spitznagel E (2009). The clinical significance of preschool depression: Impairment in functioning and clinical markers of the disorder. *J Affect Disord*, 112(1–3), 111–119. 10.1016/j.jad.2008.03.026 [PubMed: 18486234]
- Lyneham HJ, & Rapee RM (2005). Agreement between telephone and in-person delivery of a structured interview for anxiety disorders in children. *Journal of the American Academy of Child and Adolescent Psychiatry*, 44(3), 274–282. 10.1097/00004583-200503000-00012 [PubMed: 15725972]
- Masten AS, & Coatsworth JD (1998). The development of competence in favorable and unfavorable environments: lessons from research on successful children. *American Psychologist*, 53(2), 205–220. 10.1037/0003-066X.53.2.205 [PubMed: 9491748]
- McGorry PD, Purcell R, Goldstone S, & Amminger GP (2011). Age of onset and timing of treatment for mental and substance use disorders: Implications for preventive intervention strategies and

- models of care. *Current Opinion in Psychiatry*, 24, 301–306. 10.1097/YCO.0b013e3283477a09 [PubMed: 21532481]
- Metcalfe LA, Harvey EA, & Laws HB (2013). The longitudinal relation between academic/cognitive skills and externalizing behavior problems in preschool children. *Journal of Educational Psychology*, 105(3), 881–894. 10.1037/a0032624 [PubMed: 24039280]
- Ormel J, Oerlemans AM, Raven D, Laceulle OM, Hartman CA, Veenstra R, ... Oldehinkel AJ (2017). Functional outcomes of child and adolescent mental disorders. Current disorder most important but psychiatric history matters as well. *Psychological Medicine*, 47, 1271–1282. 10.1017/S0033291716003445 [PubMed: 28065168]
- Rudolph KD, & Hammen C (1999). Age and gender as determinants of stress exposure, generation, and reactions in youngsters: A transactional perspective. *Child Development*, 70(3), 660–677. [PubMed: 10368914]
- Rutter M (2011). Child psychiatric diagnosis and classification: concepts, findings, challenges and potential. *Journal of Child Psychology and Psychiatry*, 52(6), 647–660. 10.1111/j.1469-7610.2011.02367.x [PubMed: 21434914]
- Scheeringa M (2003). Research diagnostic criteria for infants and preschool children: the process and empirical support. *Journal of the American Academy of Child and Adolescent Psychiatry*, 42(12), 1504–1512. 10.1097/00004583-200312000-00018 [PubMed: 14627886]
- Shaffer D, Gould MS, Brasic J, Ambrosini P, Fisher P, Bird H, & Aluwahlia S (1983). A children's global assessment scale (CGAS). *Arch Gen Psychiatry*, 40, 1228–31. [PubMed: 6639293]
- Sijtsma JJ, Verboom CE, Penninx BWJH, Verhulst FC, & Ormel J (2014). Psychopathology and academic performance, social well-being, and social preference at school: The TRAILS study. *Child Psychiatry Hum Dev*, 45, 273–284. 10.1007/s10578-013-0399-1 [PubMed: 23917997]
- Three Z to. (2005). *Diagnostic Classification: 0–3R: Diagnostic Classification of Mental Health and Developmental Disorders of Infancy and Early Childhood (Revised Ed)*. Washington, DC: Zero to Three Press.
- Towe-Goodman NR, Franz L, Copeland WE, Angold A, & Egger H (2014). Perceived family impact of preschool anxiety disorders. *J Am Acad Child Adolesc Psychiatry*, 53(4), 437–446. 10.1016/j.jaac.2013.12.017 [PubMed: 24655653]
- Wakschlag LS, & Keenan K (2001). Clinical significance and correlates of disruptive behavior in environmentally at-risk preschoolers. *Journal of Clinical Child Psychology*, 30(1), 262–275. 10.1207/S15374424JCCP3002 [PubMed: 11393926]
- Wilens TE, Biederman J, Brown S, Tanguay S, Monuteaux MC, Blake C, & Spencer TJ (2002). Psychiatric comorbidity and functioning in clinically referred preschool children and school-age youths with ADHD. *J Am Acad Child Adolesc Psychiatry*, 41(3), 262–268. Retrieved from 10.1097/00004583-200203000-00005 [PubMed: 11886020]
- Zeanah CH, Gleason MM, Carter AS, Cohen J, Egger H, Mulrooney K, & Oser C (2017). Introducing a new classification of early childhood disorders: DC:0 – 5™. *Zero to Three*, (January), 11–17.
- Zero to Three. (2005). *Diagnostic Classification: 0–3R: Diagnostic Classification of Mental Health and Developmental Disorders of Infancy and Early Childhood (Revised Ed)*. Washington, DC: Zero to Three Press.

**Table 1.**

## Descriptive Statistics for Psychopathology in Early Childhood and Early Adolescence

	Early Childhood (N=595)				Early Adolescence (n=473)					
	N	Diagnoses		Dimensional Scores		N	Diagnoses		Dimensional Scores	
		%(95% CI)	Mean(SD)	Range	%(95% CI)		Mean(SD)	Range		
Any Disorder	220	36.97 (33.11–41.01)	--	--	96	21.35(16.82–24.26)	--	--		
Depression	36	6.05(4.33–8.36)	3.98(3.40)	0–20.53	8	1.69(0.79–3.44)	0.42(1.67)	0–18		
Anxiety	155	26.05(22.61–29.81)	13.19(9.62)	0–53.26	62	13.11(10.27–16.56)	3.36(5.49)	0–36		
ADHD	36	6.05(4.33–8.36)	2.89(4.36)	0–37	40	8.46(6.18–11.43)	3.41(7.15)	0–33		
ODD	79	13.28(10.71–16.33)	3.16(3.30)	0–16	15	3.17(0.19–5.29)	0.84(2.43)	0–14		

*Notes.* ADHD=Attention-deficit/hyperactivity disorder. ODD=Oppositional defiant disorder. Dimensional scores are on different scales due to variation in numbers of symptoms assessed for each disorder. Rates and dimensional scores in early childhood reflect two three-month periods assessed in early childhood. Rates and dimensional scores in early adolescence reflect the past month.

**Table 2.**

Correlations Between Early Childhood Diagnoses and Dimensional Scores and Early Adolescent Functioning (N=446)

Correlations with Diagnoses (Partial Correlations Adjusting for Corresponding Age 12 Diagnosis)							
	General	Academic	Behavior	Close Friend	Peer	Mother	Father
Any Disorder	0.22 *** (0.15 **)	0.16 *** (0.10 *)	0.13 ** (0.10 *)	0.11 * (0.07)	0.21 *** (0.16 ***)	0.21 *** (0.16 ***)	0.05(0.01)
Depression	0.13 ** (0.10)	0.13 ** (0.13 **)	-0.02(-0.02)	0.06(0.06)	0.15 ** (0.15 **)	0.08(0.07)	0.10 * (0.10 *)
Anxiety	0.10 * (0.09 ^)	0.06(0.05)	0.04(0.05)	0.06(0.05)	0.13 ** (0.12 *)	0.08(0.08)	0.02(0.01)
ADHD	0.25 *** (0.11 *)	0.26 *** (0.10 *)	0.11 * (0.01)	0.13 ** (0.06)	0.17 *** (0.10 *)	0.15 ** (0.07)	0.13 ** (0.06)
ODD	0.20 *** (0.15 **)	0.14 ** (0.11 *)	0.14 ** (0.07)	0.13 ** (0.11 *)	0.16 *** (0.14 **)	0.21 *** (0.16 ***)	0.04(0.03)
Correlations with Dimensional Scores (Partial Correlations Adjusting for Corresponding Age 12 Dimensional Scores)							
Depression	0.30 *** (0.28 ***)	0.27 *** (0.27 ***)	0.10 * (0.09 ^)	0.19 *** (0.17 ***)	0.30 *** (0.26 ***)	0.18 *** (0.15 **)	0.14 ** (0.11 *)
Anxiety	0.15 ** (0.12 *)	0.16 *** (0.13 **)	0.01(0.02)	0.11 * (0.09 ^)	0.19 *** (0.17 ***)	0.10 * (0.08 ^)	0.00(-0.04)
ADHD	0.41 *** (0.18 ***)	0.43 *** (0.16 ***)	0.20 *** (0.04)	0.22 *** (0.10 *)	0.30 *** (0.18 ***)	0.31 *** (0.20 ***)	0.11 * (0.00)
ODD	0.27 *** (0.16 ***)	0.20 *** (0.12 **)	0.18 *** (0.05)	0.16 *** (0.12 *)	0.21 *** (0.16 ***)	0.27 *** (0.15 **)	0.07(0.02)
Correlations with Dimensional Scores among Subthreshold Cases Only (Partial Correlations Adjusting for Corresponding Age 12 Dimensional Scores) (n=375)							
Depression	0.20 *** (0.19 **)	0.19 ** (0.19 **)	0.05(0.05)	0.13 * (0.12 *)	0.24 *** (0.24 ***)	0.13 * (0.12 *)	0.03(0.02)
Anxiety	0.11 ^ (0.09)	0.09(0.08)	0.02(0.02)	0.11 ^ (0.09)	0.20 *** (0.18 **)	0.03(0.02)	-0.05(-0.06)
ADHD	0.27 *** (0.13 *)	0.33 *** (0.17 **)	0.06(-0.04)	0.20 *** (0.10 ^)	0.22 *** (0.14 *)	0.11 ^ (0.10)	0.05(0.02)
ODD	0.13 * (0.10 ^)	0.02(-0.01)	0.08(0.04)	0.13 * (0.12 ^)	0.15 * (0.13 *)	0.14 * (0.11 ^)	0.04(0.03)

Notes. ADHD=Attention deficit/hyperactivity disorder. ODD=Oppositional defiant disorder.

^ p<.10;

\* p<.05;

\*\* p<.01;

\*\*\* p<.001. Correlations among subthreshold cases exclude children who meet criteria for any diagnosis in early childhood.



**Table 3.**

Correlations Between Early Childhood Diagnoses and Dimensional Scores and Early Adolescent Global Functioning as Measured by the Children's Global Assessment Scale (CGAS) (N=444)

Correlations (Partial Correlations Adjusting for Corresponding Age 12 Diagnosis or Dimensional Score)		
		CGAS 12
Diagnoses	Any Disorder	-0.30 ***(-0.21 ***)
	Depression	-0.20 ***(-0.19 ***)
	Anxiety	-0.24 ***(-0.21 ***)
	ADHD	-0.24 ***(-0.11 *)
	ODD	-0.17 ***(-0.11 *)
Dimensional Scores	Depression	-0.37 ***(-0.33 ***)
	Anxiety	-0.30 ***(-0.23 ***)
	ADHD	-0.40 ***(-0.10 *)
	ODD	-0.25 ***(-0.12 *)

Notes. ADHD=Attention deficit/hyperactivity disorder. ODD=Oppositional defiant disorder.

^  
p<.10;

\*  
p<.05;

\*\*  
p<.01;

\*\*\*  
p<.001.

**Table 4.**

Multivariate Models of Early Adolescent Functioning Regressed on Diagnoses and Dimensional Scores in Preschool (N=595)

Models with Diagnoses as Predictors				
		Including Only Early Childhood Psychopathology as Predictors	Additionally Adjusted for Age 12 Psychopathology	
		$\beta$ (SE)	$\beta$ (SE)	
General	Depression-3/6	0.21(0.22)	ADHD-3/6	0.36(0.24)
	Anxiety-3/6	0.14(0.10)	ODD-3/6	0.26(0.14) <sup>^</sup>
	ADHD-3/6	0.82(0.28) <sup>**</sup>	Dep-12	0.85(0.39) <sup>*</sup>
	ODD-3/6	0.37(0.17) <sup>*</sup>	Anx-12	0.13(0.13)
	$R^2$	0.08(0.03) <sup>**</sup>	ADHD-12	1.11(0.20) <sup>***</sup>
			ODD-12	0.70(0.31) <sup>*</sup>
			$R^2$	0.20(0.04) <sup>***</sup>
Academic	Depression-3/6	0.34(0.29)	ADHD-3/6	0.42(0.21) <sup>*</sup>
	ADHD-3/6	0.91(0.26) <sup>**</sup>	Dep-12	0.24(0.30)
	ODD-3/6	0.17(0.15)	Anx-12	0.04(0.13)
	$R^2$	0.08(0.03) <sup>**</sup>	ADHD-12	1.36(0.21) <sup>***</sup>
			ODD-12	0.22(0.26)
			$R^2$	0.19(0.04) <sup>***</sup>
Behavior	ADHD-3/6	0.37(0.25)		
	ODD-3/6	0.29(0.17) <sup>^</sup>		
	$R^2$	0.02(0.02)		
Close Friend	ADHD-3/6	0.38(0.21) <sup>^</sup>		
	ODD-3/6	0.30(0.16) <sup>^</sup>		
	$R^2$	0.02(0.02)		
Peer	Depression-3/6	0.33(0.26)	Anxiety-3/6	0.23(0.12) <sup>*</sup>
	Anxiety-3/6	0.23(0.11) <sup>*</sup>	ADHD-3/6	0.40(0.21) <sup>^</sup>
	ADHD-3/6	0.48(0.23) <sup>*</sup>	Dep-12	1.12(0.48) <sup>*</sup>
	ODD-3/6	0.30(0.16) <sup>^</sup>	Anxiety-12	0.34(0.15) <sup>*</sup>
	$R^2$	0.06(0.02) <sup>*</sup>	ADHD-12	0.44(0.21) <sup>*</sup>
			ODD-12	0.38(0.31)
			$R^2$	0.10(0.03) <sup>**</sup>
Mother	ADHD-3/6	0.45(0.26) <sup>^</sup>	ODD-3/6	0.40(0.16) <sup>*</sup>
	ODD-3/6	0.51(0.18) <sup>**</sup>	Dep-12	1.27(0.72) <sup>^</sup>
	$R^2$	0.05(0.03) <sup>*</sup>	Anx-12	0.01(0.14)

Models with Diagnoses as Predictors				
Including Only Early Childhood Psychopathology as Predictors			Additionally Adjusted for Age 12 Psychopathology	
			$\beta$ (SE)	
			ADHD-	0.57(0.21)**
			ODD-12	1.08(0.42)**
			$R^2$	0.14(0.05)**
Father	Depression-3/6	0.35(0.22)		
	ADHD-3/6	0.46(0.26) <sup>^</sup>		
	$R^2$	0.02(0.01)		
General	Depression-3/6	0.05(0.02)**	Depression-3/6	0.03(0.01)*
	Anxiety-3/6	0.00(0.01)	ADHD-3/6	0.03(0.01)**
	ADHD-3/6	0.08(0.01)***	Depression-12	0.10(0.03)***
	ODD-3/6	0.01(0.02)	Anx-12	0.00(0.01)
	$R^2$	0.18(0.04)***	ADHD-12	0.04(0.01)***
			ODD-12	0.06(0.03)*
			$R^2$	0.32(0.05)***
Academic	Depression-3/6	0.04(0.02)*	Depression-3/6	0.03(0.01) <sup>^</sup>
	Anxiety-3/6	0.00(0.01)	ADHD-3/6	0.03(0.01)*
	ADHD-3/6	0.09(0.01)*	Depression-12	0.01(0.02)
	ODD-3/6	-0.02(0.02)	Anx-12	0.00(0.01)
	$R^2$	0.19(0.04)***	ADHD-12	0.06(0.01)***
			ODD-12	0.00(0.02)
			$R^2$	0.32(0.04)***
Behavior	Depression-3/6	-0.01(0.01)	ADHD-3/6	0.01(0.02)
	ADHD-3/6	0.04(0.02)*	Dep-12	0.01(0.02)
	ODD-3/6	0.03(0.02)	Anx-12	-0.02(0.01)*
	$R^2$	0.05(0.03) <sup>^</sup>	ADHD-12	0.02(0.01)**
			ODD-12	0.12(0.03)***
			$R^2$	0.16(0.05)**
Close Friend	Depression-3/6	0.03(0.02)	ADHD-3/6	0.03(0.01)*
	Anxiety-3/6	0.00(0.01)	Dep-12	0.10(0.03)***
	ADHD-3/6	0.04(0.01)***	Anx-12	0.00(0.01)
	ODD-3/6	0.01(0.02)	ADHD-12	0.02(0.01)*
	$R^2$	0.06(0.02)**	ODD-12	0.00(0.02)
			$R^2$	0.10(0.03)**

Models with Diagnoses as Predictors				
Including Only Early Childhood Psychopathology as Predictors			Additionally Adjusted for Age 12 Psychopathology	
		$\beta$ (SE)		$\beta$ (SE)
Peer	Depression-3/6	0.05(0.02) *	Depression-3/6	0.04(0.02) **
	Anxiety-3/6	0.01(0.01)	ADHD-3/6	0.04(0.01) **
	ADHD-3/6	0.05(0.01) ***	Depression-12	0.14(0.02) ***
	ODD-3/6	0.00(0.02)	Anx-12	0.00(0.01)
	$R^2$	0.12(0.03) **	ADHD-12	0.02(0.01) ^
			ODD-12	0.00(0.02)
			$R^2$	0.19(0.04) ***
Mother	Depression-3/6	0.00(0.02)	ADHD-3/6	0.04(0.02) *
	Anxiety-3/6	0.00(0.01)	ODD-3/6	0.02(0.02)
	ADHD-3/6	0.05(0.02) ***	Dep-12	0.10(0.07)
	ODD-3/6	0.05(0.02) **	Anx-12	-0.01(0.01)
	$R^2$	0.12(0.04) **	ADHD-12	0.01(0.01)
			ODD-12	0.11(0.03) **
			$R^2$	0.22(0.06) ***
Father	Depression-3/6	0.03(0.02) ^		
	ADHD-3/6	0.02(0.01)		
	$R^2$	0.02(0.02)		

^  
 $p < .10$ ;

\*  
 $p < .05$ ;

\*\*  
 $p < .01$ ;

\*\*\*  
 $p < .001$ .

3/6=Age 3 or 6. 12=Age 12. ADHD=Attention-deficit/hyperactivity disorder. ODD=Oppositional defiant disorder.