



# Advances and Directions in Preschool Mental Health Research

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**ABSTRACT**—*Over the last decade, researchers have expanded our understanding of early-emerging mental health problems in preschoolers. In this article, we review the epidemiology, course, and clinical significance of disruptive behavior disorders, attention deficit hyperactivity disorder, anxiety disorders, and depressive disorders in preschoolers. We present findings highlighting advances in preschool psychopathology and treatment research, and provide directions for the field of preschool mental health. To understand preschool psychopathology, we need to take an empirically based, developmentally sensitive approach that includes understanding more fully both normative and atypical development. Such an approach will inform how we define, assess, and treat early mental health problems.*

**KEYWORDS**—*preschool; psychopathology; early childhood; development; mental health*

Most psychological problems in adults have their roots in early childhood. Researchers have sought to understand the emotional and behavioral problems that emerge during the preschool period (ages 3–5). Reliable, empirically validated measures have facilitated the systematic examination of preschool psychopathology. Currently, as many as one in five preschool-aged children meets criteria for psychiatric disorders and many

experience persistent psychopathology, underscoring the public health significance of mental health problems in the preschool years (1, 2). Earlier identification provides a larger window for intervention, which may be more effective than later interventions, possibly because of greater behavioral and neurodevelopmental plasticity in early childhood.

In this article, we review the epidemiology, course, and clinical significance of disruptive behavior disorders (including oppositional defiant disorder, ODD, and conduct disorder, CD), attention deficit hyperactivity disorder, ADHD, anxiety disorders, and depressive disorders. We do not review autism spectrum disorders (for a comprehensive review, see Ref. (3)). Then, we highlight recent advances in preschool psychopathology and treatment research, and conclude with directions for research.

## PRESCHOOL PSYCHOPATHOLOGY

### Epidemiology

Community-based epidemiological studies demonstrate prevalence rates of psychiatric diagnoses comparable to those observed in school-aged children, ranging from 13 to 27% (1, 4, 5). Rates for any anxiety disorder range from 2 to 20%. With regard to specific anxiety disorders, prevalence rates range from 0 to 12% for specific phobia, 1–5% for separation anxiety, 2–5% for social anxiety, 1–7% for generalized anxiety disorder, and 1–2% for selective mutism. ODD and ADHD are frequently diagnosed in preschoolers, with rates ranging from 2 to 17% and 2–13%, respectively. CD and depressive disorders are less common in young children, with rates ranging from 1 to 3% and 0–2%, respectively. These estimates vary across studies, in some instances considerably, due in part to sampling and methodological differences. For instance, the rates for any anxiety disorder vary widely because some studies have investigated only a few specific anxiety disorders.

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### Comorbidity

Similar to rates in older youth and adults, psychopathology in preschoolers has high rates of comorbidity (5–9%) and comorbidity is associated with increased impairment (1, 5). ODD is the most common comorbid disorder during this developmental period, co-occurring with ADHD, depression, and anxiety; anxiety and depression also co-occur even at this young age (1).

### Stability

Preschool psychiatric disorders are relatively stable across 2-, 3-, and 4-year assessments (2, 6–8). In addition, researchers have observed cross-domain longitudinal associations between anxiety and depression, anxiety and ODD, and ADHD and ODD from ages 3 to 6 (2). While long-term followup studies are sparse, onset of psychopathology in the preschool years has been found to predict mental health problems in later childhood and adolescence, including depression and suicide attempts (9, 10).

## RESEARCH ADVANCES: SPECIFIC PSYCHIATRIC DISORDERS

### Disruptive Behavior Disorders

Disruptive behavior disorders, including ODD and CD, represent one of the most common reasons for referral to treatment in preschool-aged children. Children with ODD are angry and irritable, and they fail to comply with authority figures, while children with CD disregard social norms and others' well-being. Recent research has sought to improve early identification and assessment of disruptive behavior disorders during this developmental period.

Researchers have made strides in taking a developmentally sensitive approach to understanding preschool disruptive behaviors. Largely spearheaded by Wakschlag and colleagues (11, 12), research on preschool disruptive behavior has adopted a dimensional approach that investigates disruptive behavior on a continuum from typically occurring, normative to non-normative clinical manifestations of disruptive behaviors. Using an empirical approach, Wakschlag and colleagues identified four domains of preschool disruptive behavior: loss of temper, noncompliance, aggression, and low concern for others, as well as dimensions of severity across domains (11, 12). For example, because temper tantrums are normative during this age, they must occur at a greater frequency or intensity or in developmentally inappropriate contexts to be clinically significant. In contrast, since enjoyment in others' distress is non-normative during this age, the mere occurrence of this behavior suggests pathology. This model of disruptive behavior fits more accurately than competing models, such as the *Diagnostic and Statistical Manual of Mental Disorders* (DSM) categorical model (11). Indeed, DSM criteria have been criticized for their limited acknowledgement of development, with the exception of autism spectrum disorders and recent changes to DSM-5 criteria for post-traumatic stress disorder that now include developmentally distinct manifestations of

symptoms for young children. A dimensional approach addresses these concerns and is consistent with a developmental psychopathology perspective and the National Institute of Mental Health (NIMH) Research Domain Criteria (RDoC) project, which calls for new ways of classifying psychopathology based on dimensions of observable behavior (13).

Wakschlag and colleagues (12) have also applied this approach to developing assessments for early identification, which include the Multidimensional Assessment of Preschool Disruptive Behavior, a parent-report measure, and the Disruptive Behavior Diagnostic Observation Schedule (14), an observational measure of children's oppositional behavior. These assessments provide a promising multimethod, multi-informant approach for identifying clinically significant disruptive behaviors in preschoolers.

### Attention Deficit Hyperactivity Disorder

Children with ADHD are typically inattentive and hyperactive or impulsive, to a degree that their behavior is impaired across many contexts. Preschoolers with ADHD will often have other social and academic difficulties, as well as psychopathology and functional impairment in middle childhood and adolescence (9, 15). Recent research in young children with ADHD has focused on examining, from a neuropsychological perspective (16, 17), the cognitive and neurobiological processes associated with several core deficits involved in ADHD. This work has provided support for the role of children's executive functioning, which refers to top-down cognitive processes that facilitate problem-solving and decision-making, in the etiology of ADHD (18). These processes are integral to behaviors including inhibitory control, attention, social behavior, and planning, all of which are impaired in children with ADHD. Examining these deficits is important to identifying the underlying mechanisms and processes associated with the development of ADHD.

Research has further advanced the neuropsychological perspective of ADHD through neuroimaging studies. In studies of school-aged children with ADHD, some cortical and subcortical regions are reduced, including the cerebellum, basal ganglia, and parietal and temporal areas (19). These brain regions have been linked to attention, executive function, impulse and motor control, and working memory, which encompass core deficits in ADHD. The findings highlight the importance of understanding the early development of these brain regions in children with ADHD. In preliminary research on preschoolers with ADHD, caudate volumes of the basal ganglia were associated significantly with the severity of hyperactive/impulsive symptoms but not inattentive symptoms (20), indicating early specificity in brain regions associated with deficits of ADHD. However, this study did not find differences in cortical volume in preschoolers with ADHD, suggesting that subcortical regions may be implicated in the early etiology of ADHD. Although most neuroimaging studies have focused on school-aged children and

adolescents with ADHD, recent studies with preschoolers offer promise for delineating the developmental trajectories of the brain mechanisms underlying ADHD, particularly during a period of rapid developmental change in children's brain development and basic cognitive and behavioral control abilities.

### Depression

For decades, depression was thought to be nonexistent, rare, or difficult to diagnose in early childhood. However, in studies by Luby and colleagues, developmentally modified diagnostic criteria identified clinically significant depression in preschoolers (for a review, see Ref. 21). These studies also revealed that preschool depression is associated with a family history of mood disorders, alterations in cortisol reactivity, and increased impairment across many settings (21). Preschool depression predicts depression in later childhood, even after considering a history of maternal depression and other established risk factors (10).

In studies examining the neurobiological underpinnings of preschool depression, depression that starts during the preschool years is associated with alterations in functional brain activity similar to those implicated in the pathophysiology of depression in adults. For example, studies have linked depression in the preschool period with increased activation of the amygdala during processing of facial expressions of emotion (22). In addition, among school-age children with depression that began when they were preschool age, disrupted activity in the amygdala has been linked to reduced volume of the hippocampus (23). These children also show atypical functional connectivity between prefrontal regions and the amygdala (24). This work provides compelling evidence for the clinical and neurobiological validity of depression that begins during the preschool period.

### Anxiety Disorders

Studies on anxiety disorders have largely focused on school-age children through adolescence and adulthood. Because fears and anxieties are relatively common in early childhood, this gap in the literature may reflect the challenge of distinguishing clinically significant anxiety from developmentally normative behavior and temperamental variations. Nevertheless, research has begun to contribute to our understanding of anxiety in preschoolers.

Research on anxiety disorders has been bolstered by a multifactorial and integrative emphasis, and by examining many domains and units of analysis, including individual differences in children's temperament, biological-related vulnerability (e.g., cortisol, brain activity, psychophysiology), parenting, and broader environmental experiences (e.g., negative events, learning experiences). For example, a number of child, familial, and temperamental correlates of anxiety disorders in preschoolers have been identified, including higher behavioral inhibition, lower positive affectivity, more sleep problems, greater stress, and higher rates of maternal anxiety disorders (25). Researchers have focused on behavioral inhibition, characterized by the ten-

dency to be fearful or wary in novel situations or with new people, as an early-emerging risk factor for anxiety. In longitudinal studies, behavioral inhibition in early childhood is associated with increased risk for anxiety disorders, particularly social anxiety disorder, in middle childhood and adolescence (26). Researchers have also examined moderating factors that may affect the developmental trajectories of behaviorally inhibited children, including gender, frontal electroencephalogram asymmetry, inhibitory control, and attention (27, 28). Overall, studies of anxiety disorders in preschoolers reveal findings that are consistent with theoretical models of the development of anxiety and parallel relations observed in older youth and adults.

## TREATMENT

Approximately 25% of preschool-aged children in need of mental health services receive treatment (29). Pediatrician referrals have been shown to predict the use of mental health services for preschoolers (30); however, physicians detect psychopathology infrequently, likely due in part to the lack of consensus and training regarding atypical behaviors in this age group. Thus, empirically based assessments that account for developmental processes are critical to improving early detection in preschoolers and to informing treatment (31).

Psychosocial treatments are considered the primary and most effective treatment approach during this developmental period (32). Numerous behavioral parent training (BPT) programs have been developed to address externalizing behavior problems in preschoolers and feature common elements, including increasing positive parent-child interactions and teaching parents effective ways to set limits and discipline (32). Treatment effects led to improved behavioral and emotional outcomes in preschoolers and increased positive parenting, with effects maintained up to 6 years after treatment (33, 34).

Modifications have also been applied to BPT to treat depressive and anxiety disorders in preschool-aged children. BPT treatments that incorporate emotion-regulation skills for depression and exposure-based techniques for anxiety have reduced preschoolers' internalizing symptoms (35, 36). BPT also yields promising outcomes when provided online (37). And BPT programs have been successful in pediatric settings, with pediatric staff trained to lead intervention groups, thereby integrating treatment into primary-care medical settings (34).

In addition to psychotherapy, using psychotropic medications to treat preschoolers' mental health problems is on the rise, with ADHD being the most frequently medicated condition (31, 38). Stimulants reduce preschoolers' ADHD symptoms, yet comorbid conditions and medication intolerance decrease their benefits (39, 40). Data on the effectiveness and safety of psychotropic medications for treating preschoolers' internalizing problems are limited, yet medical professionals' interest in prescribing medications commonly used to treat older youth and adults is growing. Despite this interest, we lack knowledge about the

effectiveness and long-term consequences of medication in young children, so physicians should be cautious before considering medication for children this young.

While researchers have made progress in developing effective treatments for preschoolers, barriers remain. Children and their families have limited access to professionals trained in empirically supported treatments, and the field has few developmentally sensitive assessment tools to identify and evaluate at-risk young children. In addition, insurance coverage for these treatments is limited, and few families can commit the time needed to participate in treatment. Furthermore, even for children who enter treatment programs, unidentified or poorly understood comorbidities (e.g., language or developmental delays) may render therapy less effective. More efforts to address treatment barriers are needed.

### LOOKING AHEAD

Over the past two decades, researchers have made strides in developing diagnostic interviews for assessing preschool psychopathology, and establishing the validity and clinical significance of preschool psychopathology. To advance the field of preschool psychopathology, we must adopt an empirically based, developmentally sensitive approach that distinguishes normative from atypical, clinically significant behavior in young children. Specifically, we recommend expanding Wakschlag and colleagues' (12) approach to other behavioral phenotypes beyond disruptive behaviors (e.g., anxiety, fears, attention, disinhibition, sadness, and irritability).

Because many symptoms of psychological disorders reflect typical behaviors that change extensively during early childhood (e.g., separation anxiety, mood dysregulation), we need data that capture the full range of behavior relevant to psychological functioning to better identify young children at risk for psychopathology. In addition, these data can be used to avoid misinterpreting developmentally typical behavior as pathological. Moreover, longitudinal work that differentiates transient and persistent symptoms can delineate pathways to chronic psychopathology.

This approach requires developing and validating developmentally sensitive tools for assessing the intensity, frequency, duration, and context of young children's emotions and behaviors relevant to behavioral phenotypes associated with constructs such as anxiety, fear, sadness, and irritability. Most approaches require parent or interviewer judgment when determining whether children's behaviors are excessive, persistent, or problematic with regard to context. Instead, establishing developmental norms for these behaviors would create empirically defined guidelines for determining whether a child's behavior is more intense or inappropriate than peers'. Furthermore, this approach would permit a more thorough assessment by capturing behaviors that fall short of a diagnostic criterion (e.g., subthreshold) but that may be relevant to risk for psychopathol-

ogy. Therefore, we need assessments that detect behaviors along the full spectrum relevant to psychopathology. These developmentally sensitive assessments also must be applicable in research and clinical settings, and adaptable to primary care settings for the purpose of early detection and screening.

More work is needed to understand the underlying biology of early-emerging mental illness. Consistent with the NIMH RDoC project that aims to develop new ways of classifying psychopathology based on dimensions of observable behavior and neurobiological measures, researchers should investigate the neurobiological mechanisms underlying these developmentally defined phenotypes that cut across diagnostic categories. Research on normative developmental brain function and processes is also needed to understand more fully how the non-normative brain processes are involved in the development of psychopathology. However, preschool psychopathology cannot be reduced solely to biological underpinnings. Early childhood is a time characterized by critical social influences, including the parent-child relationship and initiation of peer relations. Thus, the developmental pathways to psychopathology are likely complex, involving early environmental, genetic, neurobiological, and physiological influences, which underscores the need for further multifactorial investigations.

Finally, researchers should develop treatment approaches that cut across diagnostic boundaries, particularly given the high rates of comorbidity in preschool psychopathology. The use of principle-based treatment methods would address common elements across preschool psychopathology (e.g., emotion dysregulation, impaired self-control) and allow for the incorporation of treatment elements that target specific presenting problems. Researchers must also focus on training and disseminating empirically supported treatments for young children that reach underserved rural areas and underrepresented minorities. And we need to develop and test the effectiveness of alternative treatment approaches, including web-based assessments and treatments, and smart phone applications, which can reduce costs and increase access to treatment for young children and their families.

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