Advancing a Multidimensional, Developmental Spectrum Approach to Preschool Disruptive Behavior

Lauren S. Wakschlag, PhD, Margaret J. Briggs-Gowan, PhD, Seung W. Choi, PhD, Sara R. Nichols, PhD, Jacqueline Kestler, MPH, James L. Burns, MS, Alice S. Carter, PhD, David Henry, PhD

Objective: Dimensional approaches are gaining scientific traction. However, their potential for elucidating developmental aspects of psychopathology has not been fully realized. The goal of this article is to apply a multidimensional, developmental framework to model the normal–abnormal spectrum of preschool disruptive behavior. The Multidimensional Assessment of Preschool Disruptive Behavior (MAP-DB), a novel measure, was used to model dimensional severity across developmental parameters theorized to distinguish the normative misbehavior of early childhood from clinically salient disruptive behavior. The 4 MAP-DB dimensions are Temper Loss, Noncompliance, Aggression, and Low Concern for Others. **Method:** Parents of a diverse sample of 1,488 preschoolers completed the MAP-DB. Multidimensional item response theory (IRT) was used for dimensional modeling. **Results:** The 4-dimensional, developmentally informed model demonstrated excellent fit. Its factor loadings did not differ across demographic subgroups. All dimensions provided good coverage of the abnormal end of the severity continuum, but only Temper Loss and Noncompliance provided good coverage of milder, normatively occurring behaviors. The developmental expectability and quality of behaviors distinguished normative from atypical behaviors. The point at which frequency of behaviors was atypical varied based on dimensional location for Temper Loss, Noncompliance, and Aggression. **Conclusion:** The MAP-DB provides an innovative method for operationalizing developmentally specified, dimensional phenotypes in early childhood. Establishing the validity of these dimensional phenotypes in relation to clinical outcomes, neurocognitive substrates, and etiologic pathways will be a crucial test of their clinical utility. J. Am. Acad. Child Adolesc. Psychiatry, 2014;53(1):82–96. **Key Words:** developmental psychopathology, dimensional, disruptive behavior, externalizing spectrum, preschool

Disruptive behavior (DB) plays a central role in developmental sequences of psychopathology. It is antecedent to up to 60% of common mental disorders across the lifespan,[1,2] often emerges in early childhood,[3] and is the most prevalent disorder of the preschool period.[4] One reason for DB's centrality to both internalizing and externalizing disorders is the heterogeneity of its defining features. For example, irritability is a key feature of oppositional defiant disorder (ODD) and is also central to a number of other disorders with disrupted emotion regulation (e.g., depression).[5] In contrast, aggressive behaviors, particularly callous aggression, are associated with a distinct antisocial pathway.[6] The utility of a multidimensional approach to ODD for clinical prediction has been robustly demonstrated: disaggregation into dimensions such as "irritable," "headstrong," and "hurtful" differentiates internalizing and externalizing patterns and their co-occurrence.[7-11] Conduct disorder (CD) subtypes, including aggressive and nonaggressive rule breaking and callousness, also distinguish varied clinical risk profiles.[12,13] Parsing the heterogeneity of emergent disruptive behavior may illuminate early markers of divergent developmental and clinical pathways. In particular, modeling the

Supplemental material cited in this article is available online.

dimensional structure of early childhood DB is important for mapping the prodromal phases of clinical patterns, linking them to underlying mechanisms, and targeting prevention before the onset of psychopathological conditions.[14] Application of a multidimensional, developmental framework for early childhood DB is the goal of the present paper.

An important first step toward testing DB dimensional models in young children was testing the application of existing dimensional frameworks to early childhood. This has been demonstrated in clinical and community samples of preschoolers with patterns similar to those in older youth.[15,16] There is also some evidence that callous behaviors are distinguishable at preschool age, with short-term predictive utility.[17-19] However, most dimensional approaches to date have used *DSM* symptom sums; their developmental impossibility/improbability (CD) and/or imprecision (ODD) for capturing early childhood clinical patterns has been previously noted.[3] A key limitation is that dimensions comprising symptoms that capture only severe behaviors cannot provide an ordered metric for characterizing the dimensions along a normal–abnormal continuum.[20] Thus, an important follow-on for advancing a developmental framework is operationalizing dimensions in a manner that addresses measurement challenges inherent in assessing psychopathological processes in early childhood. These challenges include the high level of behavioral variability and the overlap between normative misbehavior and disruptive behavior. Such a developmental approach captures the developmental variation of early childhood by characterizing a continuum of normal to abnormal behaviors, with atypicality derived from deviation from expectable patterns within the age period.[3,21,22] This requires conceptualization of dimensions that are linked to normative developmental processes and operationalization of age-typical behavioral expression.

We previously proposed and provided a preliminary test of a developmentally-informed model of DB in early childhood with 4 distinct dimensions linked to core developmental processes of the preschool period:[3,15] Temper Loss and regulation of frustration; Noncompliance and internalization of rules; Aggression and capacity to modulate aggressive tendencies; and Low Concern for Others and the emergence of empathy and conscience (the theoretical rationale for these dimensions has been extensively discussed).[3,15] Using secondary data analysis, this prior study demonstrated the superior fit of a 4-dimensional model compared to a *DSM*-oriented 2-dimensional ODD/CD model, an irritable/headstrong/hurtful model, and a DB/callous model.[15] However, prior testing of this multidimensional model was constrained by the use of existing measures that were not developed for this purpose. For example, the use of *DSM* symptoms to comprise dimensions has a constricted range (focuses on extreme behaviors), has the same symptoms for all age periods, and does not provide full coverage across dimensional spectra.

Here we use Item Response Theory (IRT)[23] to test the 4-dimensional, developmentally-informed model with a novel measure, the Multidimensional Assessment of Preschool Disruptive Behavior (MAP-DB). IRT is useful for dimensional modeling because it can map the locations of both items and respondents on an underlying latent trait continuum, scaled from mild, commonly occurring behaviors to severe, rarely occurring behaviors. Within the framework of IRT, behaviors are psychometrically defined as "abnormal" or severe when they are rarely occurring (e.g., in less than 5% of the population).

To operationalize behaviors along the normal–abnormal spectrum for early childhood, the MAP-DB incorporates assessment of behavioral frequency, quality, and context. These parameters may provide more nuanced distinction between normative and clinically-concerning behaviors in this age period.[24-26] Milder, normative misbehaviors were theorized to occur in developmentally expectable contexts (e.g., "when frustrated"), whereas atypical behaviors were theorized to occur in developmentally unexpectable contexts (e.g., "out of the blue"). Qualitatively atypical behaviors were conceptualized in terms of intensity (e.g., "hurt someone on purpose"), dysregulation (e.g., "difficulty calming down after tantrum"), intransigence (e.g., "refuse to do as asked, no matter what"), and provocativeness (e.g., "persist in scaring or upsetting someone"). To test the theory that even normative misbehaviors would be atypical if they occurred at higher than average frequencies we used an objective frequency format (i.e., ratings of how often the behavior actually occurred). These are in contrast to subjective ratings (e.g., "never," "sometimes," "often"), which may give the same rating (e.g., "often") to varying frequencies depending on factors influencing the