

# The Preschool Pediatric Symptom Checklist (PPSC): Development and Initial Validation of a New Social/Emotional Screening Instrument

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## ABSTRACT

**OBJECTIVE:** This article describes the development and initial validation of the Preschool Pediatric Symptom Checklist (PPSC), a social/emotional screening instrument for children 18 to 60 months of age. The PPSC was created as part of a comprehensive screening instrument designed for pediatric primary care and is modeled after the Pediatric Symptom Checklist.

**METHOD:** Items for the PPSC were developed by a team of experts who reviewed existing assessment instruments and relevant research literature. Scale construction and initial validation (including factor analysis and tests of construct validity) were conducted with 292 families from pediatric primary care sites and 354 families from referral clinics. One hundred seventy-one additional families were recruited from primary care sites to obtain an independent replication sample.

**RESULTS:** Exploratory factor analysis revealed 4 dimensions of the PPSC: Externalizing, Internalizing, Attention Problems, and Parenting Challenges. These dimensions were incorporated

into a bifactor model that displayed a strong general factor, thus supporting the use of a total score. The PPSC total score shows strong internal and retest reliability, and it identifies children who score in the clinical range of a longer, well-validated, and more comprehensive parent-report instrument (the Child Behavior Checklist), as well as children who are reported to have a range of behavioral diagnoses. Moreover, sensitivity and specificity with respect to these criteria were comparable to those of another well-accepted but longer screener, the Ages & Stages Questionnaire: Social/Emotional. Finally, results for the PPSC total scale remained consistent when replicated in an independent sample.

**CONCLUSION:** The PPSC shows promise as a social/emotional screening instrument for use in pediatric primary care.

**KEYWORDS:** behavioral; child behavior; emotional; pediatrics; questionnaire; screening; social; social behavior

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## WHAT'S NEW

The Preschool Pediatric Symptom Checklist (PPSC) is a brief social/emotional screening instrument designed for use in pediatrics. It is easy to administer and score, and freely available. Initial investigation suggests that it has sound psychometric properties and effectively identifies children between 18 and 60 months with social/emotional problems.

APPROXIMATELY 10% to 15% of preschool children experience social/emotional problems that cause significant suffering to the child and family<sup>1,2</sup> and may lead to later impairments in quality of life and functional status.<sup>3</sup> Most mental health disorders in adulthood have their roots in childhood,<sup>4,5</sup> suggesting that early identification may reduce long-term disability. However, identifying such disabilities in young children can be difficult. Primary

care physicians see patients for only a short time and outside their natural settings. Research has shown that when pediatricians use only clinical impressions rather than formal screening, they frequently fail to identify children with developmental-behavioral problems.<sup>6</sup>

Fortunately, parents have extensive knowledge of and can report on their children's behavior. Soliciting parents' observations via validated screening tests allows for comparison to normative data and systematic interpretation, thus providing an efficient way to identify those at risk for social/emotional problems. To be effective in primary care, a screening instrument must be both accurate and feasible—ideally short, easy to read and understand, simple to score, and inexpensive or free to use. Although several tools are currently available to identify emotional and behavioral problems in young children, their feasibility may be hampered by length, cost, and/or complexity.<sup>7</sup>

One example of a screening tool that meets feasibility criteria is the Pediatric Symptom Checklist (PSC).

Specifically developed to assess school-aged children in primary care settings, the 35-item PSC was designed with pediatric primary care use in mind. Questions are short and the reading level is low. Although scores on 3 subscales can be calculated, the primary use of the PSC has focused on a single overall scale that can be scored rapidly and compared to a predetermined threshold to ascertain the need for further evaluation. The PSC is freely available and can be downloaded from the website.<sup>8</sup> The PSC has been well validated across a range of studies,<sup>9–12</sup> and it has become very popular as a screening instrument in pediatrics.<sup>13,14</sup> The Task Force on Mental Health of the American Academy of Pediatrics cites the PSC as an example of a mental health screening tool that is appropriate for use in pediatric primary care,<sup>15</sup> and the PSC has been endorsed provisionally as a child health outcome measure by the National Quality Forum.<sup>16</sup> Most validation work using the PSC has focused on the overall psychosocial functioning of 6 to 12-year-old children,<sup>9,17–19</sup> although some studies have supported its utilization with children as young as 4 years.<sup>20–22</sup>

Because of the importance of early detection of emotional-behavioral problems and the differing developmental and behavioral expectations for infants and preschoolers compared to school-aged children, we set out to create a screening instrument designed to focus more specifically on the social/emotional health of younger children. We worked with the original developers of the PSC to create 2 new instruments: the Baby Pediatric Symptom Checklist (BPSC) for children below 18 months, and the Preschool Pediatric Symptom Checklist (PPSC) for children from 18 to 60 months. The creation of these 2 measures occurred as part of an ongoing project to develop a comprehensive surveillance instrument for children under 5 years of age, known as the Survey of Well-being of Young Children (SWYC). The SWYC includes 4 components, which assess social/emotional functioning; cognitive, motor and language development; autism; and family risk factors. The BPSC and PPSC were created to address the social/emotional component of the SWYC.

In this article, we describe the development and initial validation of the PPSC. Like the PSC, the PPSC is designed to maximize feasibility in clinical settings: it is easy to score, freely available, and brief enough that it can be administered together with instruments that screen for other problems, such as developmental delays and autism.

## METHODS

### OVERVIEW

Based on an extensive review of existing assessment measures and relevant research literature, as well as feedback from parents of young children and experts in child development, we created a list of candidate items for the PPSC. We enrolled 2 samples of parents to further develop and validate the PPSC: 1 from primary care sites and 1 from referral clinics. Using these data, we conducted analyses to reduce the number of items and create a final

version of the PPSC, and to obtain estimates of internal reliability and construct validity. To replicate our results, we then enrolled an independent sample from a different set of primary care pediatric practices. To establish retest reliability, approximately one-third of this second sample was asked to complete the PPSC a second time 3 to 4 weeks later. All studies were approved by the Institutional Review Board of Tufts Medical Center.

### ITEM DEVELOPMENT AND DESCRIPTION

Our goal was to write items that could be easily and efficiently answered in the context of a pediatric waiting room by parents from a range of educational and cultural backgrounds. Thus, we sought to write questions that were short, easy to read, salient to parents, and appropriate for children aged 18 months through the preschool years. We began by identifying constructs common across several parent-report measures that had previously been validated for children under 5 years, including the PSC, the Child Behavior Checklist 1.5 to 5 years (CBCL),<sup>23</sup> the Infant-Toddler Social and Emotional Assessment,<sup>24</sup> and the Ages & Stages Questionnaire: Social/Emotional (ASQ:SE).<sup>25</sup> In addition, we reviewed relevant literature and generated items based on our clinical experience. Items were developed to encompass 4 domains of interest, including 3 that are included in the PSC (Internalizing, Externalizing, and Attention Problems)<sup>26</sup> and 1 new domain, Parenting Challenges.

The initial list of items was then sent for review to a group of 8 parents of young children and 11 experts in child development representing the fields of psychology, primary care pediatrics, developmental-behavioral pediatrics, and occupational therapy. Reviewers provided feedback regarding clarity, reading level, and relevance of items. In total, this process resulted in a list of 73 new questions. These questions were screened for Flesch-Kincaid reading level. Items with reading levels over grade 6 were further reviewed and rewritten when possible. The average reading level of the final items was grade 1.8. For each item (eg, “Does your child have a hard time calming down?” or “Does your child fight with other children?”), response options were “not at all,” “somewhat,” and “very much.”

### STUDY SAMPLES

Participants consisted of parents of children ages 18 months to 5.5 years recruited from primary care practices and referral clinics in the greater Boston area. Primary care sites consisted of 7 urban practices and community health centers and 7 suburban practice groups. Referral sites consisted of 4 developmental-behavioral assessment clinics (including 2 Neonatal Intensive Care Unit [NICU] follow-up programs), 2 child psychiatric clinics, 2 occupational therapy clinics, and 1 speech and language clinic.

We enrolled the following 3 separate samples:

For scale construction and initial validation:

- 1) 292 families from pediatric primary care practice groups (hereafter, “Primary Care Sample”), and

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