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Declarative title:

Limited evidence exists for the psychometric properties of child-report measures that assess occupational performance in children ages 2-18 years

Cordier, R., Chen, Y. W., Speyer, R., Totino, R., Doma, K., Leicht, A., Brown, N. & Cuomo, B. (2016). Child-report measures of occupational performance: A systematic review. *PLoS One*, 11, e0147751. doi:10.1371/journal.pone.0147751

Synopsis

Objectives: To identify child-report measures that assess occupational performance and to appraise the psychometric properties of these measures.

Design: Systematic Review.

Search strategies: Four databases (Embase, PubMed, PsycINFO, and CINAHL) were searched with search terms related to occupational performance assessment in children. Following this a search was conducted with search terms specific to psychometrics. Two additional databases (Google Scholar and HAPI) were searched for updated or specific psychometric evidence.

Selection criteria: Included measures: assessed occupational performance; involved child-report; were primarily designed for use with children ages 2–18 years; were used by occupational therapists and published in English. Included studies were published papers and manuals with psychometric properties reported.

Method of review: 1766 citations were screened and articles and manuals reviewed for eligible measures. Two reviewers further rated the quality of the included studies and psychometric properties of the measures using the COSMIN checklist (Mokkink et al., 2010) and criteria set out by Terwee et al. (2012), respectively.

Results: Six measures met the inclusion criteria and their psychometric properties were assessed in 15 articles and one manual. Eleven studies that evaluated the psychometric properties of four measures (*Perceived Efficacy and Goal Setting System (PEGS)*, *Children's Assessment of Participation and Enjoyment (CAPE)*, *Preference for Activities of Children (PAC)*, and *Occupational Self-Assessment (OSA)*) were found. The quality of four psychometric studies for the *Make My Day (MMD)* and *Child Occupational Self-Assessment (COSA)* was relatively weak. By integrating the quality of psychometric studies of these measures with the quality of the psychometric properties reported, the *Preference for Activities of Children* had the highest quality evidence as all psychometric properties were evaluated. The overall quality of its psychometric properties was also sound although there were some concerns about reliability and measurement error. On the other hand, the *Make My Day* and *Perceived Efficacy and Goal Setting System* had the least evidence available in terms of psychometric properties.

Conclusions: The overall quality of psychometric properties was limited among most measures. Of the six measures identified in the review, the *Preference for Activities of Children* is supported by the most favourable evidence to date; however, this measure requires ongoing validation. The findings are concerning because these measures are

routinely used to assess children's occupational performance in clinical practice. There is a need for more research to examine the psychometric properties of child-report occupational performance measures and to improve those of existing measures.

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Commentary:

This systematic review of child-report measures of occupational performance adds to a growing pool of evidence syntheses on the quality of available measures for clinical and research use with children (Cordier et al., 2016). Cordier et al. argue that an examination of measures of children's self-reported occupational performance is an important addition to this literature, given the centrality of occupational performance to the outcomes relevant to occupational therapy, and of the importance of children's perspectives in understanding their occupational performance (Cordier et al., 2016).

When considering the methods of the review, the research question was clearly stated and comprehensive information about search terms and dates were provided, making it possible to replicate the initial identification of studies. Strengths of this review included that all measures were evaluated against the COSMIN guidelines, which is the

international standard for measure development (Mokkink et al., 2010). Results were clearly reported to enable easy comparison of the measures.

The authors conclude that of the six measures they identified (MMD, PEGS, CAPE, PAC, COSA, OSA) the PAC exhibited the highest overall psychometric qualities and studies assessing psychometric properties were well designed. However, important gaps in the psychometric evidence were identified for all measures, with 4/6 measures having no reported information for up to half (4/8) of the psychometric properties outlined in COSMIN guidelines. Aside from the clear research directives of this, there are substantial implications for the clinical use of these measures.

In relation to reliability properties, all measures have either insufficient information about their reliability properties or conflicting results about their properties from different studies. Reliability properties are critical in outcome measures if the effects of interventions are to be measured accurately. Confidence in the reliability of a measure enables confidence that scores taken at two different time points (e.g., before and after intervention) reflect true change in the construct being measured (in this case, occupational performance) rather than random variability. The validity and reliability of measures when used with different populations (e.g., children with diverse health conditions or from different cultures) are also under-examined in many of these measures, although were strongest for the PEGS, PAC and CAPE.

The relatively recent growth in the quality and quantity of literature in this area is encouraging, particularly given the considerable challenge of designing measures for contextually and socially embedded constructs such as occupational performance (Imms, 2006; Imms et al., 2016). However, until further research is published, numerical scores from these measures would be best used to illustrate descriptive or indicative information about children's occupational performance, rather than as definitive indices.

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