Using the Rasch model to validate the Peabody Developmental Motor Scales-Second Edition in infants and preschool children

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Background and Purpose
The current research utilized Rasch analysis to examine the dimensional structures of the Peabody Motor Developmental Scales-Second Edition (PDMS-2). The number of scoring points and the item hierarchy of the PDMS-2 were also examined for their usefulness in discriminating various levels of motor development and whether the PDMS-2 items were positioned in a valid hierarchy of difficulty.

Methods
The study tested a total of 231 Taiwanese children using the PDMS-2. The Rasch partial credit model was used for all analyses examining the dimensional structures, appropriateness of the 3-point scaling, and item hierarchy of the PDMS-2.

Results
Five of six PDMS-2 subtests were found to form their respective unidimensional constructs, and the combining of certain subtests constituted the gross motor, fine motor, and overall motor ability, supporting the dimensionality of the PDMS-2. The three-point scales for several items exhibited disordering and were thus simplified into dichotomous scales. Additionally, the hierarchical difficulty of the PDMS-2 items was established and showed considerable dissimilarity from the original hierarchy.

Conclusions
The measurement properties, including dimensionality, scoring scales, and item hierarchies of the PDMS-2 have been validated with the Rasch model to facilitate its clinical usage for infants and preschool children.