Occupation-Based and Occupation-Focused Evaluation and Intervention with Children

A Validation Study of the Assessment of Motor and Process Skills (AMPS)

by

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Akademisk avhandling

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Abstract
Introduction and purpose. Occupational therapists are concerned with enabling people to perform the daily life tasks they need, want, or are expected to perform for fullest possible integration into community living and participation in society. Children with mild disabilities have problems performing personal and instrumental activities of daily living (ADL) tasks at home or school, and that can limit their full integration and participation in their homes and school lives. There is a need, therefore, to identify their specific problems with ADL task performance so as to be able to develop effective interventions. The purpose of this thesis was to contribute evidence to support the valid use of the Assessment of Motor and Process Skills (AMPS) with children, including children living in Middle Europe. More specifically, I aimed to evaluate validity evidence from different sources related to the use of the AMPS in occupation-based and occupation-focused evaluation and intervention.

Method. This thesis consisted of four studies, implemented in two phases. Phase one focused on evaluation of a) validity evidence of the AMPS scales in relation to internal structure and stability of item difficulty calibration values for a Middle European sample compared to samples from other world regions (Study I); b) the stability of the mean AMPS measures between typically-developing children from Middle Europe and from other world regions (Study II); and c) the sensitivity of the AMPS measures to discriminate between typically-developing children and children with and at risk for mild disabilities (Study III). Participants for phase one were from both Middle Europe and from other world regions and they were selected from the AMPS database, Ft. Collins, Colorado, USA. Data were analyzed using many-facet Rasch analyses, ANOVAs, regression analyses, related post-hoc tests, and effect size calculations. Phase two of the research project focused on evaluating validity evidence for the use of the AMPS in the context of a feasibility study with children with mild disabilities implemented in a Swiss setting (Study IV). Data were analyzed based on feasibility objectives and the principles of deductive content analysis.

Results. In Study I, data for 1546 participants from Middle Europe and 144,143 participants from other world regions were analyzed. The participants were between the ages of 3 and 103 years, and they were well or had a variety of diagnoses. The results revealed that overall the item difficulty calibration values of the AMPS remained stable and that only one out of 36 ADL items of the AMPS demonstrated differential item functioning (DIF), but this DIF did not lead to differential test functioning (DTF). In Study II, data for 11,189 typically-developing children from Middle Europe and other world regions who were between the ages of 4 and 15 were analyzed. The results of ANOVAs revealed significant effects for mean ADL motor and for ADL process ability measures by region and a significant age by region interaction effect for mean ADL process ability. Out of 168 estimated contrasts between Middle Europe and the other world regions for mean ADL motor and ADL process ability, only seven were statistically significant (4.17%), and only two were more than ±1 SE from the international means. In Study III, regression analyses of data for 10,998 children, 4 to 15 years, who were typically-developing or with mild disabilities, revealed significant age by group interaction effects. Post hoc t-tests revealed significant group differences in ADL ability at all ages beyond the age of 4. ADL process ability effect sizes were moderate to large at all ages and ADL motor ability effect sizes were mostly moderate to large age 6 and above. In Study IV, the use of the AMPS within the context of a feasibility study based on data for 17 Swiss children with mild disabilities was evaluated. The analyses revealed several strengths and problems that were related to the time, equipment, and materials for administering the AMPS, the adherence to standardized administration procedures, the scope of the AMPS as a test of ADL performance, and the reliable rating by the blinded rater.

Conclusion. This thesis provided evidence to support the validity of the AMPS measures and scales when used to evaluate quality of ADL task performance of persons from Middle Europe. Additionally, this thesis provided evidence that the international age-normative means of the AMPS are likely applicable to children from Middle Europe. Moreover, the findings supported the sensitivity of the AMPS measures to discriminate between typically-developing children and children at risk for and with mild disabilities. When it comes to implementation of the AMPS in the context of a feasibility study, the findings indicated both strengths and problems in using the AMPS as an outcome measure that need to be considered when planning further studies.

Keywords
Activities of daily living, occupational performance, evaluation, Rasch analysis, mild disabilities, attention-deficit/hyperactivity disorder, developmental coordination disorder, learning disorder, sensory integrative disorder, occupational therapy, feasibility, implementation, translational research