**BRIEF REPORT**

Classroom-Based Assessment: Validation for the School AMPS

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The role of the occupational therapist working in the school system is to facilitate a student's task performance or ability to do purposeful and meaningful activities so that the student benefits from the educational experience. To fulfill this role, occupational therapists need assessments that address functional performance issues in the classroom and provide information for effective programming and consultation. The School Version of the Assessment of Motor and Process Skills (School AMPS) is an observational evaluation of functional skills in the classroom. Common classroom activities are observed to assess a child's school motor and school process skills. This study examined the validity of the School AMPS by comparing it to the Peabody Developmental Motor Scale–Fine Motor (PDMS-FM), a common assessment used in local area school districts in Edmonton, Alberta. Results show a higher correlation of the PDMS-FM with the motor scale of the School AMPS than with the process scale of the School AMPS, which was expected. The School AMPS appears to be a promising instrument for measuring the constructs of school motor and school process skills within a naturalistic setting.

School Version of the Assessment of Motor and Process Skills (School AMPS; Fisher & Bryze, 1998) is a psychometrically sound tool that focuses on functional school-related skills in the classroom. Motor and process elements of schoolwork performance (i.e., school motor skills, school process skills) are evaluated by an occupational therapist through observation in the classroom setting. School motor skills include quality of performance in areas of posture, mobility, coordination, strength and effort, and energy. School process skills include quality of performance in areas of attention, using knowledge, temporal organization, using space and objects, and adaptation. The School AMPS was originally developed by Magalhaes (1995) and revised by Fisher and Bryze (1998).

The purpose of this study was to validate the School AMPS further. No gold standard has been established to measure the constructs of school motor and school process performance. Hypotheses regarding correlations to other instruments where the constructs are better established are needed to build a composite picture of how well the School AMPS is measuring what it intends. Within the school system in Alberta, Canada, where this study was conducted, occupational therapists frequently use the Peabody Developmental Motor Scale–Fine Motor (PDMS-FM; Folio & Fewell, 1983) to evaluate children of kindergarten age who are referred for productivity problems in the classroom. This assessment measures the performance component of fine motor development. It is a standardized, product-based assessment conducted in a one-to-one testing format outside of the classroom.

The School AMPS measurement of the construct of school motor skills was compared to the PDMS-FM. A moderate correlation was expected because of the similarity in tasks measured (e.g., cutting, drawing, manipulating small objects) and common elements of fine motor performance. A higher correlation was not expected because of dissimilarities between the two assessments. The School AMPS (motor) tests the quality of all motor performance (e.g., fine motor, gross motor, locomotion, strength, endurance), whereas the PDMS-FM is restricted to fine motor skills only. The School AMPS is focused on occupational performance in a naturalistic setting, whereas the PDMS-FM is functionally based and evaluates the performance component of fine motor development in a controlled clinical environment.

The School AMPS process scale was compared to the PDMS-FM on the assumption that the two scales would measure different constructs. Deficits in process skills (e.g., attention, organization, use of knowledge) can severely affect a child's occupational performance but be unrelated to motor deficits; hence, a lower correlation would be expected between the assessments. Some correlation would be expected, however, because children with motor problems frequently have process problems as well.

The research questions for this study were the following:

- What is the relationship between the PDMS-FM and the School AMPS motor ability measure (correlation of PDMS-FM and School AMPS motor ability measure)?
- What is the relationship between the PDMS-FM and the School AMPS process ability measure (correlation of PDMS-FM and School AMPS process ability measure)?

**Method**

**Sample**

Forty-two children from five public school kindergarten classes were included in the study. This sample of convenience included all children in the kindergarten classes between 5 and 7 years of age for whom a signed consent from the parents was received. Children with neuromuscular conditions (e.g., cerebral palsy, spina bifida), autism, severe sensory disability (e.g., severe vision or hearing impairment), or severe behavior problems cannot be assessed with the PDMS-FM using standardized testing procedures, so they were excluded from the study.

The kindergarten classes comprised children with a range of academic and motor abilities. Fourteen children had been identified as having special needs and were integrated into the regular kindergarten program. The children with special needs had a variety of delays, including speech, motor, perceptual, and cognitive. A mix of lower-income and middle-income families reside in the catchment area.

**Procedure**

Each child was assessed with the School AMPS and the PDMS-FM on the same day (morning or afternoon, depending on the kindergarten placement of the child). Children were randomly assigned to groups where either the School AMPS or PDMS-FM was given first. To administer the PDMS-FM, the child was taken to a quiet room away from the classroom. All items were administered with the child seated at a child-sized table. Because the School AMPS is an observational tool, it was administered in the classroom. A number of typical classroom activities, such as copying text or cutting and pasting, fit the School AMPS criteria for assessment tasks. To administer the School AMPS, each child was observed doing two of these tasks. A short interview with the teacher was conducted before the evaluation to clarify such issues as what product was in keeping with the teacher's expectations for a child who is typically developing and what level of independence and clean-up was expected as recommended by Atchison et al. (1998) and Magalhaes (1995).

The first author (rater) assessed all children. She has extensive experience in using the PDMS-FM and had attended courses in the administration of both the AMPS (Fisher, 1997) and the School AMPS to qualify in administration of the School AMPS. The rater was not informed of the children's classroom performance or the nature of their special needs before evaluation.

**Results**

Each child was scored on the three different tests. For the PDMS-FM, z scores were calculated from the test manual (Folio & Fewell, 1983). For the School AMPS motor scale and process scale, logits (log-odds probability units) were derived from the many-faceted Rasch measurement computer program, FACETS (Linacre, 1987–1994). The PDMS-FM had a mean z score of ~1.17 (SD = 1.19, range = –2.33–1.64). The School AMPS motor scale had a mean
of 2.03 logits (SD = .63, range = .69–3.60). The School AMPS process scale had a mean of .73 logits (SD = .67, range = –1.13–3.01).

Pearson product-moment correlation coefficients were calculated to examine the relationship between the scores of each child on the two instruments. The results were as expected with the School AMPS motor scale, correlating higher with the PDMS-FM (r = .45) than the School AMPS process scale with the PDMS-FM (r = .35). Figures 1 and 2 show the scatter of individual student’s scores on these instruments. The scores shown in Figure 1 have more of a linear relationship than those in Figure 2.

Discussion

As expected, the construct of fine motor development is more closely related to school motor task performance than school process task performance. This finding supports the assertion that the School AMPS motor and process scales measure different constructs. The fact that the correlation between the PDMS-FM and School AMPS motor scale was only moderate supports the assertion that the School AMPS motor scale assesses more than just fine motor skills, although similar tasks are used in the two assessments. These results also may support the assertion that occupational performance in the naturalistic setting may not necessarily correlate highly with functional assessment of performance components in the laboratory or clinical setting.

The assessment results show the unique patterns of performance by individual students. Some performed poorly or well on all three scales; others had significant areas of strengths and weaknesses. The fact that the School AMPS can identify the effect of deficits in process skills on performance and contributions of deficits in motor skill is valuable in planning effective intervention. Different intervention strategies would be implemented for a child experiencing difficulty with organizing his or her space and task approach than for a child struggling with motor control.

The School AMPS continues to be developed through ongoing research of validity, reliability, and clinical use (Atchison et al., 1998; Fisher, Bryze, & Atchison, 2000). The results of this study support the assertions that the School AMPS is not measuring the same constructs as the PDMS-FM and that it measures two different aspects of occupational performance labeled school motor skills and school process skills.

Limitations and Directions for Future Research

This study used a convenience sample of kindergarten children from regular and special education settings in one school system in Alberta, Canada. Replication of results with children of other ages and other socioeconomic and ethnic backgrounds is needed before these findings can be generalized. As well, the high prevalence of children with identified special needs in this sample may have resulted in higher correlations than would have been obtained had children been randomly drawn from the general school population, as the identified children would increase the variability of the group. However, the assessments used in this study are designed to be used with children with special needs and would not be used clinically with children who are not experiencing productivity problems in the classroom.

As cautioned by Magalhaes (1995), Atchison et al. (1998), and Fisher and Bryze (1998), it is important to choose an assessment task that challenges the child in order to maximize observations. For the purposes of this study, no prior knowledge beyond eligibility for participation was obtained about the children before evaluation. Tasks, therefore, were chosen to accommodate the setting and time. In clinical use, prior discussion with the classroom teacher would reveal referral concerns about the child, which would allow the occupational therapist to choose “the just-right challenge.” It is likely that this choice would result in increased reliability of the assessment results.

Continued validation studies contribute to the clinical use of an instrument. The usual method of referral for occupational therapy services in school-based practice is through teacher identification. In clinical practice then, only those children who are determined to be having difficulty in the classroom would actually be assessed with the School AMPS. Once cut-off scores have been determined for the School AMPS, a study using discriminant analysis to determine how well the School AMPS (motor and process scales) scores and classroom teachers agree in identifying children who need services would be valuable both for School AMPS validation and evaluation of current referral practices.

Continued reliability and validity studies of the School AMPS will contribute to its clinical use. It appears that the School AMPS would be a desirable tool for evaluation of outcomes in the clinical setting because its observational format allows multiple data collections over time. As an observational assessment, no bias is created by the participant’s learning of test items, which would facilitate its use for measurement of change. Clinical trials using this assessment...
would provide feedback to guide clinicians in its possibilities for clinical use.

**Implications for Occupational Therapy Practice**

This study contributes to the validation of the School AMPS as an instrument to measure the occupational constructs of school motor skills and school process skills in a naturalistic setting. Occupational therapists in school-based practice need assessments that evaluate occupational performance so that they can provide service from an occupational perspective. Ideally, these tools need to have adequate validity, reliability, and sensitivity in identifying children in need of occupational therapy services and in measuring change.

**References**


