

## Psychometric Properties of the Teacher-Reported Motor Skills Rating Scale

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This study provided further validation for the Motor Skills Rating Scale (MSRS), a questionnaire for early elementary teachers about children's fine motor skills. The three subscales of the MSRS -- Shapes and Letters, Classroom Fine Motor, and Body Awareness -- were differentially associated with children's academic outcomes. The strongest results were for the Classroom Fine Motor subscale, which requires visuo-spatial and attention skills. Results suggest that teachers are able to perceive subtle differences in their students' fine motor skills, that their perceptions are associated with children's measured performance, and that perceptions of visuo-spatial and attention skills are particularly important.

Conventional wisdom holds that children's cognitive skills are the most important to their classroom performance and academic achievement, but this study makes apparent that teacher perceptions of students' motor skills -- those skills necessary for carrying out coordinated movement in the classroom, like holding a pencil or packing a backpack -- are an essential part of the learning equation.

While fine motor skills are not explicitly taught in elementary classrooms, researchers have identified a strong link between these skills and multiple aspects of early school achievement. Many studies confirm this link in various ways, from observational work demonstrating the numerous motor requirements in the classroom, to correlational analyses with large samples showing that kindergarteners with better fine motor skills early in the year have higher achievement levels at the end of kindergarten, third, and fifth grade.

Teachers often informally evaluate children's classroom performance; however, there is a need for practical and economical teacher-report measures to quantify these evaluations in a way that is reliable and useful for researchers, school professionals, and policymakers. The Motor Skills Rating Scale (MSRS) was developed by Cameron and colleagues (2012)<sup>1</sup> to fill this gap and purports to measure teacher perceptions of motor skills in early elementary school children. The scale consists of 19 items that are completed by teachers for individual children. The questionnaire is divided into three subscales, each focusing on different aspects of classroom-relevant motor skills:

Shapes and Letters, Classroom Fine Motor, and Body Awareness. But while Cameron and colleagues (2012) provided preliminary validation for the MSRS, further validation of the measure is needed if the scale is to be used more widely.

### The Study

The goals of the current study were to replicate and extend previous research by testing the MSRS in a different sample of diverse students, to confirm its intended measurement properties, and to explore other direct measures of children's cognitive and social skills associated with its subscales. Participants included 144 kindergarten and 1st grade students, ages 5 to 7, and their teachers. Children attended three low-income urban schools that were part of a larger study on the effectiveness of an after-school visuo-spatial skills program.

A wide range of data was collected, including demographic information, teacher reports of motor skills (the MSRS) along with social skills, direct assessments of children's mathematics skills and general knowledge of the world, and direct assessments of the cognitive skills underlying motor skills (NEPSY).

### Findings

Two main findings emerged from this study. First, the results provide stronger evidence for the validity of this teacher-reported motor skills measure and suggest that the MSRS consistently measures the three related, but distinct, conceptual constructs that it was designed to measure. (Figure 1).

## The Motor Skills Rating Scale (MSRS)

### Classroom Fine Motor Skills:

- Is good at cutting with scissors
- Writes with inconsistencies in letter size
- Can tie own shoes
- Has trouble staying between lines when coloring

### Body Awareness:

- Is rough with objects
- Turns sideways in chair to do written work
- Handles books and materials gently
- Has trouble keeping paper still when writing

### Shapes and Letters:

- Trouble tracing Shapes and Letters
- Struggles to draw simple lines

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This study used a different sample of students; however, we were still able to replicate and validate the measure that was originally developed by Cameron and colleagues (2012). In examining the associations between the MSRS subscales and direct measures of children's cognitive and social skills, the Classroom Fine Motor subscale was strongly correlated with assessments that require visuo-spatial and attention components, such as a rule-based sorting task. In contrast, the Body Awareness subscale was positively correlated with a measure of classroom social skills and negatively correlated with classroom problem behaviors. Even though the Shapes and Letters subscale was strongly related to Classroom Fine Motor, Shapes and Letters was most strongly associated with direct measures that required a sensorimotor component, like a drawing task where children needed to stay in between two lines.

Second, the three subscales of the MSRS were differentially associated with children's academic outcomes, where only Classroom Fine Motor was strongly and positively related to both academic outcomes after controlling for the others. In other words, children whose teachers rated them as having stronger Classroom Fine Motor Skills also scored

higher on direct assessments of general knowledge of the world and mathematics achievement. Our findings corroborate previous studies that have established children's fine motor skills to be important for their academic abilities in early elementary school and draw attention to the visuo-spatial and attention aspects that underlie fine motor competence.

Variation in children's scores on three MSRS subscales

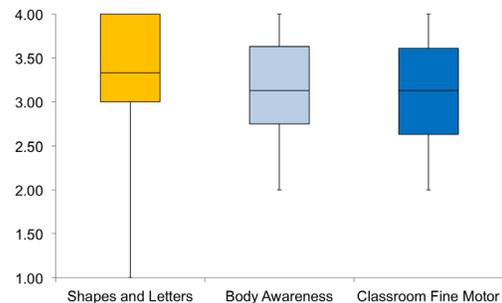


Figure 1

### Practical Implications

If the MSRS is reliable, as this study suggests, it represents a fast, easy, and dependable method of assessing teacher perceptions of children's motor skills within a typically developing population. The MSRS is especially useful for researchers and professionals working with children because the scale can be easily administered, and the items on the MSRS refer to behaviors that are concrete and can be observed in the classroom setting. For children who are struggling with classroom tasks—many of which rely on motor actions—a quick measure of motor skills may help to identify a potential area of difficulty that parents, teachers, or school psychologists may otherwise miss.

Footnote: <sup>1</sup>Cameron, C. E., Chen, W., Blodgett, J., Cottone, E. A., Mashburn, A. J., Brock, L. L., & Grissmer, D. (2012). Preliminary validation of the Motor Skills Rating Scale. *Journal of Psychoeducational Assessment, 30*, 555-566.

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