



PRI MIDDLE SCHOOL FOLLOW-UP STUDY

Research Brief

Fall 2016

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institute

About PRI

PRI's mission is to conduct research aimed at improving the effectiveness of programs for children, youth, and families. Using field research, program evaluation, and research synthesis, our faculty and staff help determine which programs are actually making a difference in the lives of the people they serve. PRI's research addresses many aspects of child and family programs, such as their implementation, costs, dissemination, and social or political support. But the main focus for all of our work is the effects of programs on children and families.



The **PRI Middle School Follow-Up Study** is a longitudinal research project investigating math achievement and cognitive abilities in an urban sample of children from low-income families. All student participants were part of an earlier project that took place in MNPS Pre-K and Metro Action Commission Head Start classrooms. Children in the early study were followed from pre-k until the end of their first grade year.

New funding allowed us to track the same group of students in middle school. Beginning in the 2013-2014 school year when most students were in 5th grade, project staff have directly assessed the math knowledge and math-related skills of more than 500 students annually. We will continue working with this group through the end of their 8th grade year.

Data collected for this project are unique in that they provide extensive information about two critical developmental stages: (1) math skills during the introduction to formal schooling, and (2) the transition from arithmetic to algebra, which happens in the middle grades. This project will help to deepen our understanding of the relationships between early educational experiences and math learning in the middle grades, and will provide additional insights into the connections between math learning and other specific cognitive skills, such as executive function.



Principal Investigator:

Dr. Dale Farran

Funding:

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Study Participants

The PRI Middle School Follow-Up Study team is extremely grateful for the parents, students, teachers, and school staff who have made our study possible. During the 2015-2016 school year, the project had:

- 503 student participants
- 465 parent participants
- 132 teacher participants

Teacher Ratings

Math teachers ($N = 132$) also completed surveys about themselves, their math classes, and any participating students enrolled in their classroom. Student-specific questions focused on math and self regulation (executive function) skills during math class.

Student Assessments

From February to May 2016, 503 students participated in three different types of assessments that included:

1. Standardized Math Assessments: KeyMath 3 Diagnostic Assessments (Numeration, Algebra, Geometry); Woodcock-Johnson Achievement Battery III (Quantitative Concepts, Letter-Word ID)
2. Nonstandard Math Assessments: TIMSS Math Survey of student attitudes towards math
3. Neuro-Cognitive Measures: Symbolic Number Comparison Task, Nonsymbolic Number Comparison Task, Mapping Task, Attention Shifting Task

Key Findings

- On all KeyMath subscales, the average student in this sample is scoring about 2 years below where he/she would be expected to score based on age, and more than two grade levels below where he/she would be expected to score based on grade level. This pattern is worse for Geometry, where the average student is scoring 2.8 years below age expectations and 2.7 grades below grade expectations. Since 5th grade, the scores have gotten lower, indicating that on average students are falling farther behind each year.
- On the Woodcock-Johnson Math Quantitative Concepts subtest, the average student in our sample scored about 14 points, or almost 1 standard deviation, below the expected score of 100. On average, students performed better on the Verbal Letter-Word Identification subtest, with a standard score of 94.2 (only 5.8 points below the expected score of 100).
- Most students tended to feel positively about math, including how much they like math and how important they feel math is. Teachers rate children as “average” who are two grade levels behind.
- Children's math skills showed improvement in pre-k and kindergarten but then had declined by 5th grade and have become progressively worse in middle school.

We would be happy to meet and discuss our results with anyone interested.

New for School Year 2016-2017

Thanks to additional support from the Heising-Simons Foundation, PRI will be able to augment its data collection efforts during the 2016-2017 school year. Beginning in fall 2016, project staff will conduct focus group and interview sessions with participating students and teachers.

These sessions will expand our rich dataset and will help us to gain in-depth knowledge about participants' beliefs, thoughts, expectations, and conceptualizations of math.

Contact Us

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