

Study identifies children at risk for persistent mathematics difficulties

February 25 2015, by Samantha Schwartz



A recent study published in the *Journal of Learning Disabilities* suggests early screening and intervention may prevent persistent math difficulties (PMD) for at-risk children.

The study identifies at-risk [children](#) as being those as young as 2 years old from low socioeconomic status (SES) households; with cognitive and behavioral issues; and with vocabulary and [reading difficulties](#).

Previous studies have found that [young children](#) experiencing [mathematics](#) difficulties will likely continue to experience these difficulties as they grow older. Yet researchers, policymakers and practitioners previously knew very little about which children are likely to experience PMD, according to Paul L. Morgan, associate professor of education in Penn State's College of Education and lead author of the study funded by the U.S. Department of Education's Institute of Education Sciences.

Morgan said the study strongly indicates that the SES status of the family matters quite a lot in terms of increasing children's risk of repeatedly experiencing low mathematics achievement.

"Schools can't do much to change a family's economic circumstances, but schools can decide how they allocate extra resources and how early they intervene to help children who seem to be struggling academically," Morgan said.

Morgan suggested that [early screening](#) and intervention efforts for PMD should be happening systematically at school entry, which he believes often is more beneficial and cost-effective than providing them when children are older.

He added that the findings indicate that interventions may need to be multi-faceted, so that they target both early mathematics and reading difficulties, and behavior problems. He added that struggles in mathematics increase children's risk for behavioral problems in school.

The analyses by Morgan and his colleagues indicated that attending preschool or Head Start could lower the risk for PMD, suggesting that greater access to these early-learning environments may help more U.S. children from experiencing PMD.

"Before entering school, children may not have much informal exposure to mathematics. Conversations and activities that include talking about mathematics may help reduce children's later struggles when they are being taught more formally in the elementary- and middle-school grades," Morgan said.

For this study, Morgan and his colleagues analyzed two nationally representative, longitudinal data sets of U.S. children maintained by the U.S. Department of Education's National Center for Education Statistics. One sample of children was followed from birth to kindergarten entry; the other was followed from kindergarten entry to the end of eighth grade.

For the preschool children, factors that increased the children's risk for PMD included low general cognitive functioning, vocabulary difficulties and being from [low socioeconomic status](#) households.

For elementary- and middle-school students, experiencing reading difficulties, mathematics difficulties and attention-related behavioral difficulties increased the risk of PMD, as did being from lower SES households.

"It appears that children who struggle in mathematics often do not 'grow out of it,' and so a 'wait and see' approach might only have 'wait to fail' consequences for many children." said Morgan.

More information: "Who Is At Risk for Persistent Mathematics Difficulties in the United States?" *J Learn Disabil* 0022219414553849, first published on October 20, 2014 [DOI: 10.1177/0022219414553849](https://doi.org/10.1177/0022219414553849)

Provided by Pennsylvania State University

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