CHILD DEVELOPMENT

Child Development, November/December 2010, Volume 81, Number 6, Pages 1753–1767

Pathways to Mathematics: Longitudinal Predictors of Performance

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A model of the relations among cognitive precursors, early numeracy skill, and mathematical outcomes was tested for 182 children from 4.5 to 7.5 years of age. The model integrates research from neuroimaging, clinical populations, and normal development in children and adults. It includes 3 precursor pathways: quantitative, linguistic, and spatial attention. These pathways (a) contributed independently to early numeracy skills during preschool and kindergarten and (b) related differentially to performance on a variety of mathematical outcomes 2 years later. The success of the model in accounting for performance highlights the need to understand the fundamental underlying skills that contribute to diverse forms of mathematical competence.