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ZMATH 2016f.00872

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A longitudinal study on predictors of early calculation development among young children at risk for learning difficulties.

J. Exp. Child Psychol. 152, 221-241 (2016).

Summary: The purpose of this study was to explore domain-general cognitive skills, domain-specific academic skills, and demographic characteristics that are associated with calculation development from first grade to third grade among young children with learning difficulties. Participants were 176 children identified with reading and mathematics difficulties at the beginning of first grade. Data were collected on working memory, language, nonverbal reasoning, processing speed, decoding, numerical competence, incoming calculations, socioeconomic status, and gender at the beginning of first grade and on calculation performance at four time points: the beginning of first grade, the end of first grade, the end of second grade, and the end of third grade. Latent growth modeling analysis showed that numerical competence, incoming calculation, processing speed, and decoding skills significantly explained the variance in calculation performance at the beginning of first grade. Numerical competence and processing speed significantly explained the variance in calculation performance at the end of third grade. However, numerical competence was the only significant predictor of calculation development from the beginning of first grade to the end of third grade. Implications of these findings for early calculation instructions among young at-risk children are discussed.

Classification: F32 C32 C42
Keywords: calculations; processing speed; numerical competence; learning difficulties; domain-general skills; domain-specific skills
doi:10.1016/j.jecp.2016.07.017