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Concurrent and longitudinal predictors of calculation skills in preschoolers.

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Summary: Early calculation abilities in preschoolers are predictive of mathematics achievement in subsequent grades. Two studies were conducted to evaluate concurrent and longitudinal predictors of early calculation skills. In the first study, 102 preschoolers (57.8 % female; mean age = 60.57 ± 8.66 months) were given vocabulary, language comprehension, and verbal working memory tasks and a test battery that evaluated components of early number competence (quantity comparison, counting, number line, size seriation, semantic knowledge of digits, visual-spatial memory). The children were also asked to complete early calculation tasks, including addition and subtraction calculations. The results of this task constituted the dependent variable. The results showed that vocabulary, size seriation, and visual-spatial memory were significant concurrent predictors of early calculation competence. In the second study, 43 children completed the early number competence battery at time 1 (53.5 % female; mean age = 59.30 ± 3.46 months) and the linguistic and early calculation tasks at time 2, about 10 months later (mean age = 69.43 ± 3.31 months). The analysis of the longitudinal predictors of early calculation showed significant effects for counting and size seriation. The implications for preschool assessment and intervention are discussed.

Classification: F31 F21 C41 C31

Keywords: early calculation; early numerical abilities; mathematics achievement; concurrent predictors; longitudinal predictors

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