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Preventive support for kindergarteners most at-risk for mathematics difficulties: computer-assisted intervention.

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Summary: Weaknesses in early number skills have been found to be a risk factor for later difficulties in mathematical performance. Nevertheless, only a few intervention studies with young children have been published. In this study, the responsiveness to early support in kindergarteners with most severe difficulties was examined with two different computer programs. Two intervention groups were matched by age, visuo-spatial, and phonological working memory, as well as early number skills. After a short and intensive computerized intervention, the results indicated significant intervention effects for verbal counting Wilcoxon $ES(r) = 0.46$, and dot counting fluency, $r = 0.52$, when practiced with GraphoGame Math, as well as for basic arithmetic, $r = 0.63$, when practiced with Number Race. The findings suggest that a targeted computerized practice can produce specific training effects in kindergarteners most at-risk for mathematics difficulties. The results are discussed with regard to practical implications for educational game development.

Classification: C91 F21 F31 D71 U71

Keywords: kindergarten children; learning support; early number skills; mathematics difficulties; computer-assisted intervention

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