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Authors

Van Herwegen, Jo

Costa, Hiwet

Nicholson, Bethany

et al.

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Improving Number Foundations in Preschoolers: ANS versus Symbolic Knowledge

Jo Van Herwegen

Kingston University London

Hiwet Costa

Kingston University London

Bethany Nicholson

Kingston University London

Chris Donlan

University of London

Abstract: The current study examined whether preschoolers who are low achievers (LA) on mathematical tasks benefit more from a training programme that focuses on magnitude comparisons or ANS abilities (PLUS games) compared to games that target symbolic knowledge (DIGIT games).

Twenty-four preschoolers played PLUS games and 21 children played DIGIT games 3 times per week for 5 weeks. Performance scores were compared to 25 typical control children who did not play any games. All children were assessed pre and post-intervention on Test of Early Mathematics (TEMA), a computerized ANS task, the Give a Number task (Wynn, 1990) to assess cardinality and a counting and Digit Recognition task.

The results showed that, although the DIGIT and PLUS groups performed lower than the Control group, both PLUS and DIGIT games improved mathematical abilities in LA children. These results suggest that there is a complex interaction between ANS, symbolic, and formal mathematical abilities.