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Hysteresis in training task of Approximate Number System: transfer effect to symbolic math abilities

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Abstract

From an early age, humans have access to the Approximate Number System (ANS), which allows an approximate sense of quantities. Several pieces of evidence show the emergence of a functional relationship between individual differences in ANS accuracy and mathematical performance, but the correlational nature of the studies do not allow us to clarify the nature of this relationship. In this study, we conducted a randomized controlled trial with a pre and post-test design, which aims to evaluate the hysteresis effect in modulating performance in an approximate quantity comparison task and the subsequent transfer effect on symbolic mathematical performance. One hundred and twenty-eight students from senior kindergarten and first grade of elementary school participated in this study. The results show a hysteresis effect in Reaction Time and efficiency index for First Grade, but no transfer effect to symbolic mathematical abilities was found.