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Mathematics learning development: the role of long-term retrieval.

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Summary: This study assessed the relation between long-term memory retrieval and mathematics calculation and mathematics problem solving achievement among elementary, middle, and high school students in nationally representative sample of US students, when controlling for fluid and crystallized intelligence, short-term memory, and processing speed. As hypothesized, structural equation modeling comparing elementary school students and middle and high school students revealed that long-term retrieval skills became a better predictor of both mathematics calculation and mathematics problem solving as age and grade increased. Future research should focus on the effectiveness of interventions to improve long-term retrieval skills in general, and arithmetic facts retrieval and problem solving procedures in particular, at all grades, including high school.

Classification: C30 F30 F40 D50 C40

Keywords: calculation; high-school students; long-term retrieval; mathematics achievement; problem solving
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