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Should you show me the money? Concrete objects both hurt and help performance on mathematics problems.

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Summary: How do concrete objects that cue real-world knowledge affect students' performance on mathematics word problems? In Experiment 1, fourth- and sixth-grade students ($N = 229$) solved word problems involving money. Students in the experimental condition were given bills and coins to help them solve the problems, and students in the control condition were not. Students in the experimental condition solved fewer problems correctly. Experiment 2 tested whether this effect was due to the perceptually rich nature of the materials. Fifth-grade students ($N = 79$) were given: perceptually rich bills and coins, bland bills and coins, or no bills and coins. Students in the perceptually rich condition made the most errors; however, their errors were least likely to be conceptual errors. Results suggest that the use of perceptually rich concrete objects conveys both advantages and disadvantages in children's performance in school mathematics. (Contains 2 tables and 1 figure.) (ERIC)

Classification: F93 C73

Keywords: word problems; elementary school students; cues; experiments; manipulative materials; object manipulation; mathematics achievement; instructional effectiveness

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