Testing the role of working memory and domain-general skills in fraction comparisons

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Abstract

We tested the hypothesis that working memory may help overcome interference during fraction comparison tasks: Individuals with a higher working memory capacity should outperform those with lower capacity, especially in trials where fraction magnitudes are incongruent to their numerator and denominator components (i.e., 3/4 is greater than 5/8 although 5/8 has the larger components). Third graders (N = 84) completed a fraction comparison task with congruent trials, where the greater fraction had the larger components, and incongruent trials. We found that trial type influenced performance in fraction comparison, with higher accuracy on incongruent than congruent trials, and that this effect was not moderated by working memory, other executive functions, or relational reasoning. However, working memory was related to a fraction estimation task, suggesting a more general association with fraction competency. These findings have implications on the role of domain-general skills in understanding and learning fractions.

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