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Monster Math Race: Chasing Integrated Number Sense

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Abstract

Recent work has suggested that cross-notation understanding (e.g., $2/5$ vs. 0.25) is important for math outcomes. In this study, equivalent fraction, decimal, and percent stimuli were used to examine individual differences in cross-notation and within-notation comparison in undergraduate students ($N=183$). Hierarchical linear regression analyses suggested that cross-notation magnitude comparison accuracy added explanatory power beyond that of within-notation magnitude comparison accuracy in predicting fraction arithmetic calculation and estimation skills, as well as ACT scores. Additionally, participants did not perceive equivalent rational numbers as equivalent when expressed in different notations (e.g., percentages were perceived as larger than equivalent fractions or decimals). Undergraduate students were also randomly assigned to one of two number line interventions: one focused on emphasizing connections among fractions, decimals, and percentages and another focused on developing fraction magnitude representations. Both interventions yielded improvements in rational number understanding, but there were some greater benefits of the cross-notation intervention.