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Interaction Between Mathematical Affect and Feedback During Mathematical Computation: A Computer Mouse-tracking Task

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Abstract

Math affect (i.e., attitudes/beliefs about math) and feedback are predictors of mathematical performance. How these factors jointly influence cognition during mathematical problem-solving is less understood. A computer mouse-tracking task was used to assess math affect and computation ability of 78 undergraduate volunteers, before and after feedback (none; positive; negative). Positive affect toward math significantly predicted better accuracy on mathematical computations, but performance improved noticeably after positive feedback. This led to the question of whether or not feedback and affective components of math impact decision-making. Post-baseline, participants' ability to calculate the mathematical problems sped up significantly — evidence of a practice effect. Individuals with more negative attitudes toward math exhibited more indecision in their responses when they received feedback, whereas participants with more positive attitudes toward computation reduced their indecision after feedback. This suggests that feedback interacts with math affect in important ways, impacting in-the-moment cognitive processing during mathematical calculation.