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Using eye-tracking to examine the role of fluency in the number line placement task

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Abstract

The number line placement task, in which individuals are presented with a target number and mark where it would be located along a number line, has played an important role in the investigation of numerical cognition. However, recent work suggests that different factors may influence performance on the task, making it a poor proxy for mental representation of number. In this study, adults completed a computer-based number line placement task with either standard or non-standard endpoints. Consistent with previous research, responses in the standard condition were best fit by a linear model, while responses in the non-standard condition were best fit by a logarithmic model. In addition, eye-tracking data revealed different looking patterns between conditions, including greater fixations on and more frequent alternation between endpoints in the non-standard condition and a leftward bias in the standard condition. This behavior may reflect differences in number familiarity and strategy use.