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Exploring mental representations for literal symbols using priming and comparison distance effects.

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Summary: Higher-level mathematics requires a connection between literal symbols (e.g., 'x') and their mental representations. The current study probes the nature of mental representations for literal symbols using both the priming distance effect, in which ease of comparing a target number to a fixed standard is a function of prime-target distance, and the comparison distance effect, in which ease of comparing two numbers depends on the distance between them. Can literal symbols that have been assigned magnitude access mental representations of quantity to produce distance effects? Forty participants completed number comparison tasks involving Arabic numerals and literal symbols, a training task, and a working memory task. While both distance effects were present with Arabic numerals, there was no evidence of either with literal symbols. Results suggest that literal symbols may not share the same mental representations of magnitude as other number formats or may access them differently. Additional research is needed to understand mental representations utilized in higher-level mathematics (e.g., algebra), which includes both Arabic numerals and literal symbols.

Classification: C30 H20 C80
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