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How Visual Representations Support Metacognitive Monitoring

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Abstract

Learners often need to compare their own judgments about knowledge with externally generated assessments, yet they may struggle to interpret such information and identify meaningful discrepancies. Although inspectable models are commonly used to support reflection, less is known about how different visual representations shape metacognitive monitoring. To better understand how visual structure influences self-knowledge, we examine how alternative visualizations of self-assessment and external assessment affect interpretation and comparison. We used an interactive environment that presents multiple visual representations of two complementary assessments: individuals' confidence judgments and performance-based feedback. These representations vary in how information is organized, aligned, and contrasted, emphasizing different relationships between the two assessments. We conducted a pilot study with five students. Preliminary results suggest that certain visual structures more effectively support reasoning about discrepancies and reflective judgment than others.