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Assessment of Mathematical Competence by the Transcriptions of Formulas: An Exploration of Spatial and Temporal Metrics

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Abstract

Previous studies have shown that temporal metrics of writing behavior in simple transcription tasks have some potential for use in the assessment of student learning. This study explores whether spatial metrics, specifically the distance between written strokes, may also have potential for the assessment of competence. Students, $N=219$, copied sets of equations with different spatial layouts and equation complexity. Although students' level of competence is manifest to an extent in distributions of distance metrics, the effects of spacing are weaker than with temporal metrics. Stimuli format contrary to the standard mathematical spacing formats may differentiate high and low competent students.