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Experience with Equations in Sequence Promotes Procedural Fluency

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Abstract

Mathematics, by its very nature, is rife with patterns. However, students frequently treat mathematics as a series of isolated and unlinked exercises. The current study examined whether experience with extending mathematical patterns affected adults' ability to solve equations that involved patterns and/or to reason about mathematical relationships in new contexts. Participants who were given 13 trials of pattern extension experience then went on to demonstrate both more efficient problem-solving (i.e., faster response times) and more accurate problem-solving at posttest, relative to individuals who were given an equivalent amount of explicit instruction related to solving the equations. However, there was no difference between the groups in the ability to abstract the structure of the underlying mathematical relationships. These findings suggest that patterning tasks like those used in this study may be useful in supporting math performance.