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Abstract: Prompting learners to generate explanations (self-explanation) can facilitate knowledge discovery and integration (Atkinson et al., 2000; Siegler, 2002) but does not always (Matthews & Rittle-Johnson, 2009). We examined whether greater capacity to retrieve problem-relevant information from memory (higher working-memory capacity) would enhance procedure discovery using self-explanation. Students (N=104; 2nd-4th graders) were instructed about math equivalence either before or after solving problems involving operations on both sides of the equal sign (e.g., 3+7+8=3+_). During problem-solving, some students self-explained answers, and some completed additional practice instead. Problem-solving accuracy was no different across the four conditions at posttest or retention. However, working-memory capacity moderated the effect of condition on retention. Self-explanation did not improve learning if instruction occurred first. However, when students solved problems before instruction, self-explanation benefited those students who were higher in working-memory capacity. Individual differences in learners' cognitive capacities may influence when self-explanation is beneficial as a discovery tool.