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Are analogies enough? Assessing long-term retention of and cognitive supports for science concepts learned using structural alignment

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Abstract

One major challenge in science learning involves acquiring understanding of abstract concepts. Structural alignment (SA) has been shown to aid childrens learning of science concepts; however, research has yet to investigate how analogies affect childrens ability to retain concepts over time. The current study addresses this gap by examining what information children remember and forget about science concepts using SA. Experiment 1 (N=120) instructed children 4-9 years on examples of animal adaptation using SA, then tested their memory or generalization of these concepts immediately or after a delay. Experiment 2 (N=118) used the same design, but prompted children to recall only perceptual or relational information. Results revealed that children rapidly forget and fail to generalize relational information relative to perceptual information, and that this pattern persists even with linguistic supports to recall it. This suggests that additional cognitive supports are needed to facilitate long-term relational learning of science concepts.