Can a Causal Relational Matching-to-Sample Task Reveal Abstract Reasoning Abilities in Preschool Children?

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Abstract

The relational matching-to-sample task (RMTS) is a gold standard in measuring abstract concepts. Most preschoolers and non-human animals do not spontaneously succeed in the classic, two-item version of the task. It is debated whether this failure indicates a lack of abstract reasoning ability, perhaps linked to limited language capabilities, or rather stems from learned biases for other bases of matching. We developed a physical, causal RMTS task for 4- to 5-year-old children based on matching the weight relations within object pairs by asking them to align two balance scale apparatuses. We presented conflicting object matches in half of the trials and a transfer phase with a new set of stimuli. By age five, children benefitted from the causal context of the task, suggesting that not solely abstract reasoning abilities but other factors, like biases to match individual object features, influence their performance in classic arbitrary RMTS tasks.

In L. K. Samuelson, S. L. Frank, M. Toneva, A. Mackey, & E. Hazeltine (Eds.), *Proceedings of the 46th Annual Conference of the Cognitive Science Society.*