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The development of mental simulation as a strategy for solving problems with multiple alternatives

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Abstract

As adults, we readily work through alternative possibilities and their potential consequences in our minds before acting. This capacity for mental simulation enables us to internally explore alternatives without incurring costs of acting in reality. Young children are highly exploratory in the real world, but little is known about their ability to engage in internal exploration via mental simulation. This preregistered study (1) examines developmental changes in the use of mental simulation when solving problems with multiple options, and (2) investigates the influence of resource availability on the tendency to simulate. Adults (N=30) and 4-to 7-year-olds (target N=120; data collection ongoing) completed computer-based puzzles where they chose where to drop balls into a vertical maze to hit a goal. Accuracy and latency to act were measured as indices of mental simulation. Our findings will contribute to understanding children's problem-solving, and could lead to a new conceptualization of their exploratory behaviour.

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