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The impact of context and content similarity on risky choices: Insights from a memory-component model for decisions from experience

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Abstract

How do different memory components impact risky choices? We developed a computational model that unifies components from memory research with decisions from experience. Our model chooses options based on expectations, observes outcomes, stores them in memory, and forms new expectations based on observed outcomes. Their memory activation results from recent encounters, binding outcomes to the context of options, and encoding according to similarity to existing representations, and impacts how much each outcome drives new expectations. We tested the model on data from a multi-armed bandit task: Participants chose repeatedly between three options and received outcome feedback. Two core options appeared in two choice sets with different third options. Core options were chosen less often when they were accompanied by similar (compared with dissimilar) third options. The model matched choice-proportion levels, direction, and size of this similarity effect. We present Bayesian estimates for memory components and discuss implications for theory advancement.