

The Decision Environment and Confidence in Experiential Risky Choice

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Abstract

We investigated how the decision environment influences choice and confidence in a binary decisions-from-experience (DfE) task. We manipulated four aspects of the decision environment: option composition (safe vs. risky; SR, or risky vs. risky; RR), the riskiness of the EV-maximizing choice, feedback type (partial or full), and problem order (SR before or after RR). We found that participants made more EV-maximizing choices and were more confident in SR environments and when the EV-maximizing choice was the safer option. Participants' behavior was influenced by their understanding of the payoff structure: confidence dropped sharply after discovering a previously unexpected outcome, and experiencing RR first led to over-sampling and reduced rewards in later SR environments. A computational model incorporating choice and reward history provided a unifying explanation for these patterns. Our results shed light on how decision environment features interact to shape sampling biases, subsequently altering learning and decision-making outcomes.