

## **UC Merced**

### **Proceedings of the Annual Meeting of the Cognitive Science Society**

#### **Title**

The Decision Environment and Confidence in Experiential Risky Choice

#### **Permalink**

<https://escholarship.org/uc/item/87r546p2>

#### **Journal**

Proceedings of the Annual Meeting of the Cognitive Science Society, 47(0)

#### **Authors**

Li, Kuang-Heng

Han, Prisca S.

Zhao, Wenjia Joyce

et al.

#### **Publication Date**

2025

#### **Copyright Information**

This work is made available under the terms of a Creative Commons Attribution License, available at <https://creativecommons.org/licenses/by/4.0/>

Peer reviewed

# The Decision Environment and Confidence in Experiential Risky Choice

**Kuang-Heng Li**

University of Warwick, Coventry, United Kingdom

**Prisca S. Han**

University of Warwick, Coventry, United Kingdom

**Wenjia Joyce Zhao**

University of Warwick, Coventry, United Kingdom

**Emmanouil Konstantinidis**

University of Warwick, Coventry, United Kingdom

## 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.