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#### **Authors**

Schulze, Christin  
Plonsky, Ori  
Teodorescu, Kinneret

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# Cognitive limitation or sophistication? Probability matching, wavy recency, and underweighting of rare events are associated with pattern search

**Christin Schulze**

Max Planck Institute for Human Development, Berlin, Germany

**Ori Plonsky**

Technion - Israel Institute of Technology, Haifa, Israel

**Kinneret Teodorescu**

Technion - Israel Institute of Technology, Haifa, Israel

## Abstract

People's exceptional ability to identify structure in an uncertain world is often taken as a hallmark feature of human cognition. Yet people search for patterns even in random sequences—a tendency argued to give rise to striking (and often suboptimal) behavioral phenomena in experience-based choice: probability matching, underweighting of rare events, and the wavy recency effect. We tested the role of pattern search across three types of choice paradigms: probability learning, decisions-from-experience, and a gamble with a fixed pattern. Additionally, we included a battery of cognitive ability tests. We found that probability matching, wavy recency, and underweighting of rare events in the absence of patterns were associated with participant's ability to identify existing patterns. By contrast, we found no credible associations between these behaviors and participants' thinking style, intelligence, or memory capacity. These results suggest that prominent deviations from maximization in experience-based choice are associated with people's tendency to search for patterns.