

# **Core Logic: Fourteen-month-olds exclude physical possibilities that would make an agent irrational.**

**Zihan Wang**

Yale University, New Haven, Connecticut, United States

**Nicolo Cesana-Arlotti**

Yale University, New Haven, Connecticut, United States

## **Abstract**

Humans have the capacity for flexible and abstract reasoning that combines knowledge across distinct domains. To investigate the developmental origin of this capacity, we asked whether preverbal infants with limited language and no formal education can use logic to integrate information across physical and social domains. Across three preregistered experiments, we show that both adults and 14-month-old infants spontaneously use disjunctive reasoning to integrate predictions about possible outcomes of a probabilistic physical event with expectations about rational social behavior. In Experiment 1, adults deduced the agent's preference by eliminating alternatives. In Experiment 2, infants were surprised when the agent's behavior violated a logically inferred preference. Experiment 3 ruled out alternative novelty-based explanations. These findings suggest that infant logical inference can be reduced neither to domain-specific representations of physical objects or social agents, nor to language, revealing general-purpose core logic as a foundation of human thought.