



Infants Use Statistical Sampling to Understand the Psychological World

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Introduction

Even young infants use statistical learning to infer the structure of language and the physical world (e.g., Saffran et al., 1996; Téglás, et al., 2011; Xu & Garcia, 2008).

Infants also live in a social world, full of intentional agents acting in accordance with their goals, desires, and beliefs. Do infants also employ probabilistic information to understand their social world?

Research Question

Can infants use statistical/probabilistic information to infer a persons' preferences?

Methods

70 infants (M = 10.19 months) were habituated to one of three conditions in which a live actor removed 5 blue (or red) balls from a transparent box containing both blue and red balls.

Following habituation, each infant saw a test event in which the actor reached for either a cup of blue balls or a cup of red balls.

Design

Each condition differed in the **statistical probability** of the sample selected and the **intentionality** of the actor's actions.

	Improbable	Probable
Intentional	Minority Condition The actor deliberately removed 5 blue balls from a container of mostly red balls.	Majority Condition The actor deliberately removed 5 blue balls from a container of mostly blue balls.
Incidental	Minority-Scoop Condition The actor used a scoop to haphazardly sample 5 blue balls from a container of mostly red balls.	

Minority (20%)
5:20 (blue:red)



Majority (80%)
20:5 (blue:red)



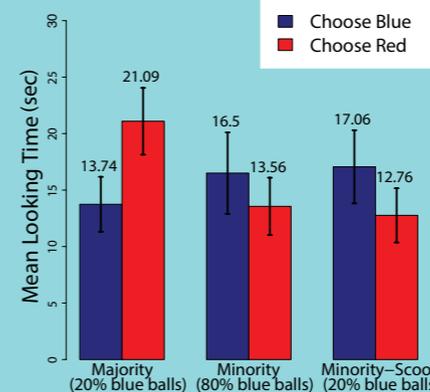
Habituation:



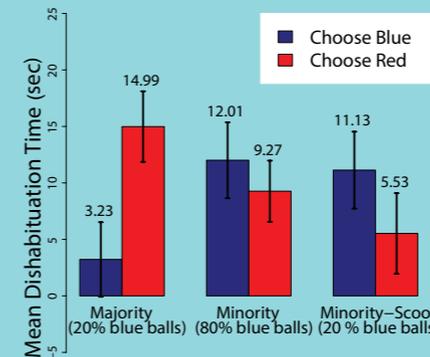
Test:



Results



Infants looked longer to the Choose Red test events (over Choose Blue test events) in the Minority condition, but not in the Majority or Minority-Scoop conditions, $F(1,64) = 4.66, p < .035$



Dishabituation was significantly larger in the Minority Condition when the actor chose red than blue, $U(N = 26) = 41, p < .03$, but there was no difference in the Majority condition, $U(N = 24) = 63.5, p = .63$, or Minority-Scoop Condition, $U(N = 20) = 34.5, p = .31$.

Discussion

This pattern of looking time shows that infants track the agent's actions in terms of their statistical pattern and further that infants inferred a causal state—a desire or preference—from that pattern. In particular, in the Minority Condition, infants inferred the actors preference from her deliberate manipulation of the probabilities.

In conclusion, infants use social-statistical reasoning and do so to infer psychological causes.