



# 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	<b>Minority Condition</b> The actor deliberately removed 5 blue balls from a container of mostly red balls.	<b>Majority Condition</b> The actor deliberately removed 5 blue balls from a container of mostly blue balls.
Incidental	<b>Minority-Scoop Condition</b> 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)

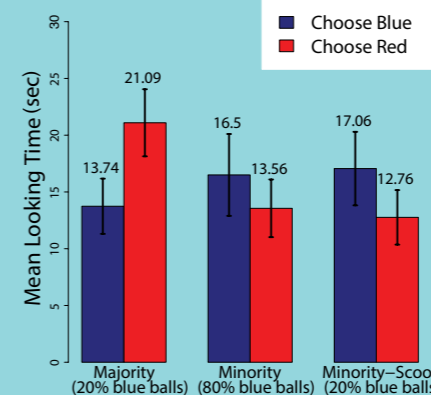
Habituation:



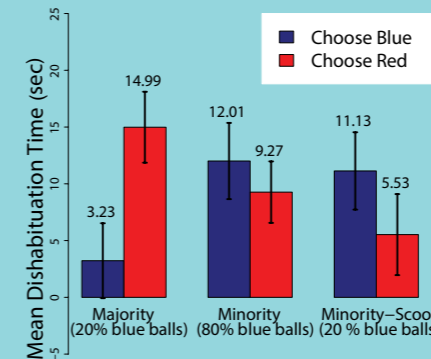
Test:



## 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.