

Introduction

How do infants see the world?



Do this organization^{1,2} account for the early categorization of visual objects in infants?

Methods

Animate

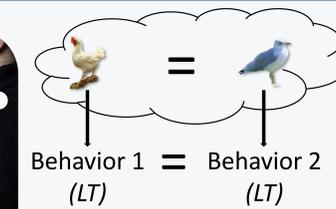
- Human faces
- Human bodies
- nonHuman faces
- nonHuman bodies

Inanimate

- Natural big
- Natural small
- Artificial big
- Artificial small

Infants groups:

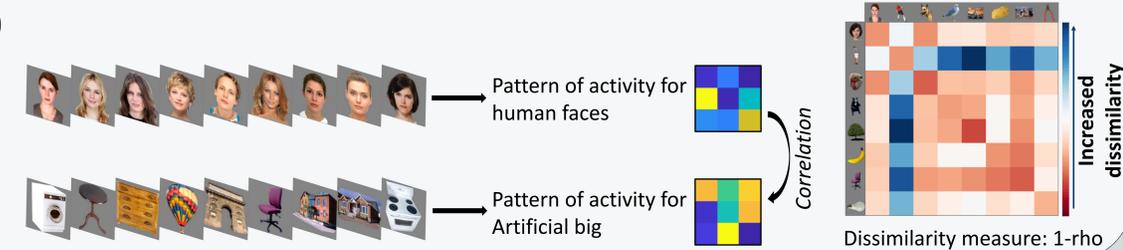
- 4-month-olds (N = 24)
- 6-month-olds (N = 24)
- 8-month-olds (N = 24)
- 10-month-olds (N = 24)
- 19-month-olds (N = 25)



$$\text{Differential looking time} = \frac{|(LT_{right} - LT_{left})|}{(LT_{right} + LT_{left})}$$

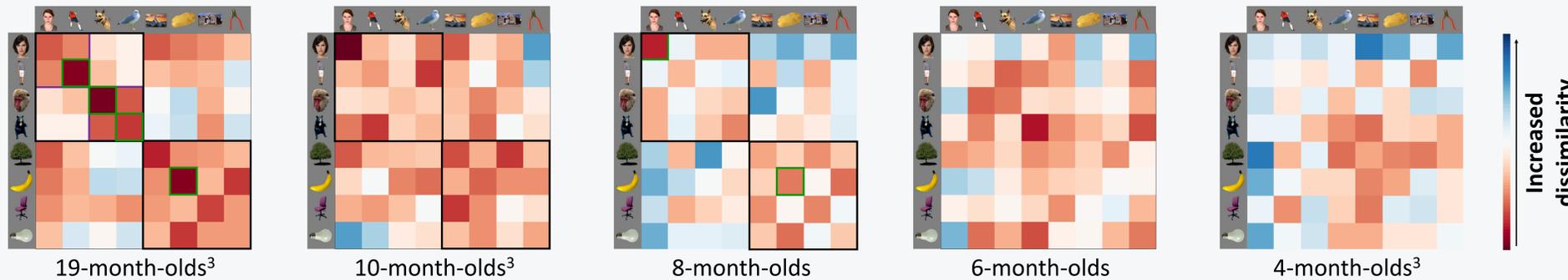
Dissimilarity measure: differential looking time

Adults (N = 15)

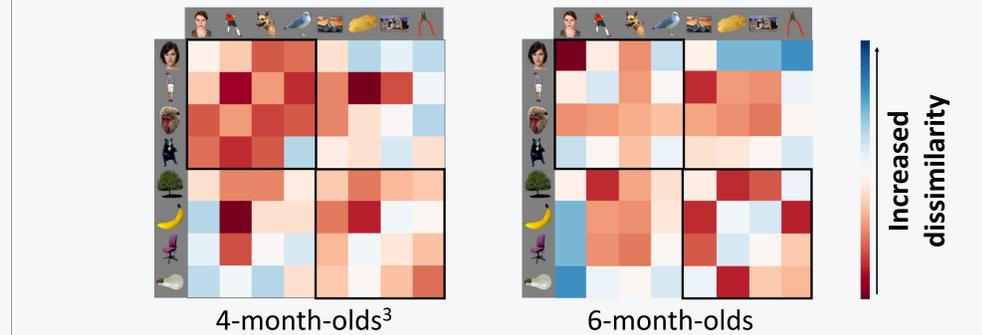


Results

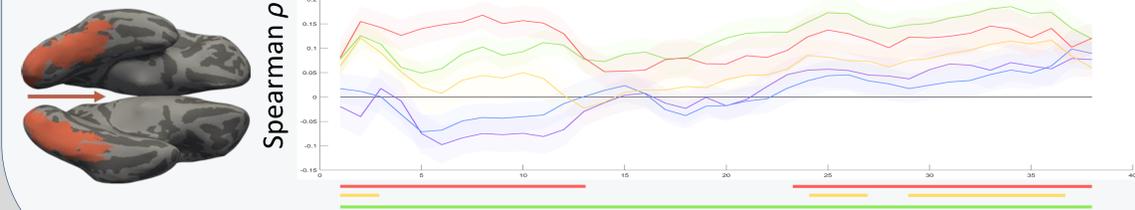
Experiment 1



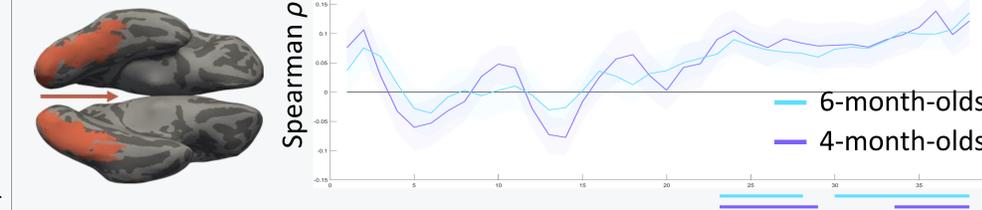
Experiment 2



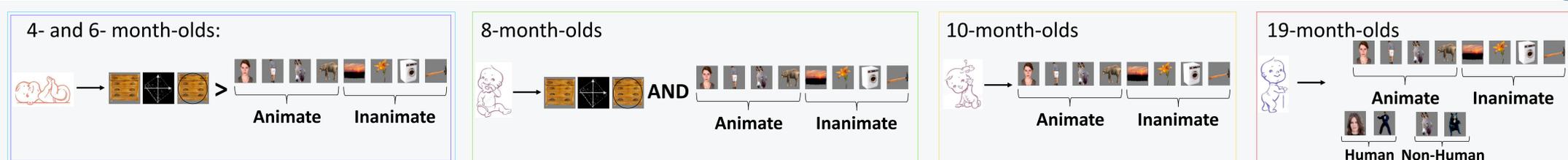
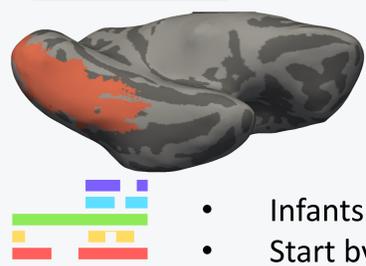
Ventral stream



Ventral stream



Overall



- Infants organize the world by visual categories: Animate and Inanimate
- Start by looking at lower-level visual features, then loose this guidance to look at more categorically-relevant information
- Infants behavior echoes the organization of object information in the adult visual cortex

- Older infants represent more visual categories, matching larger portion of the ventral stream
- The ability to form more and finer-grained visual categories critically depends on the ability to recruit and integrate more and more features

References

1. T. Konkle, A. Caramazza, Tripartite organization of the ventral stream by animacy and object size. *J. Neurosci.* **33**, 10235–10242 (2013).
2. N. Kriegeskorte et al., Matching categorical object representations in inferior temporal cortex of man and monkey. *Neuron* **60**, 1126–1141 (2008).
3. C. Spriet, E. Abassi, J.-R. Hochmann, L. Papeo, Visual object categorization in infancy. *Proc. Natl. Acad. Sci. U.S.A.* **119**, e2105866119 (2022).