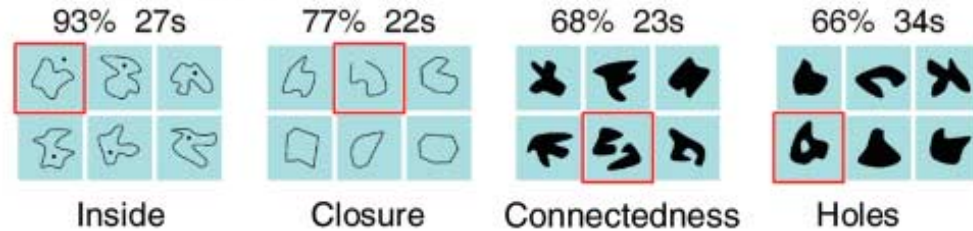


# Geometric knowledge in the Mundurukú

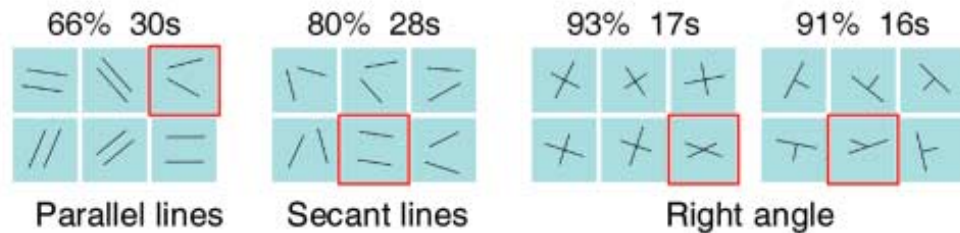
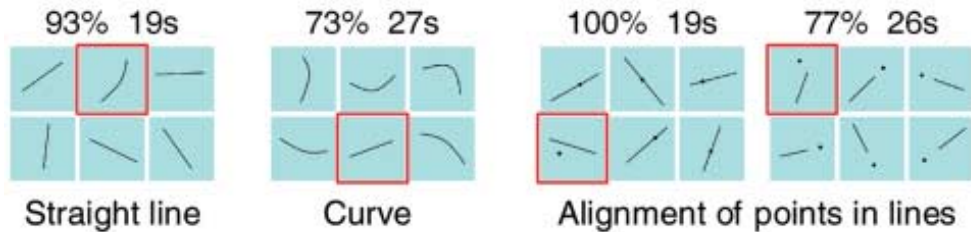
## Initial training



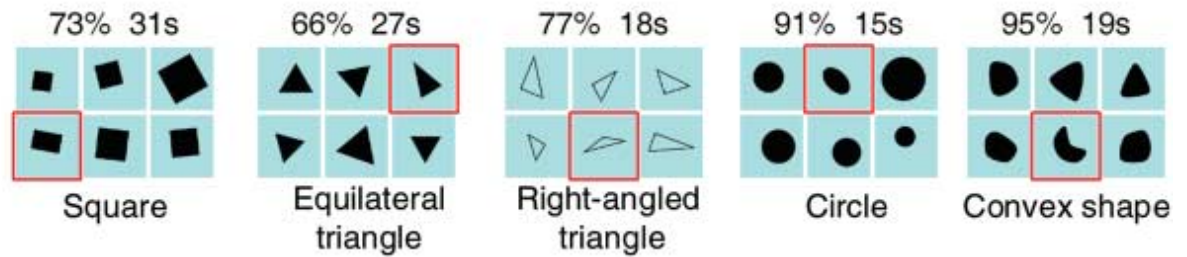
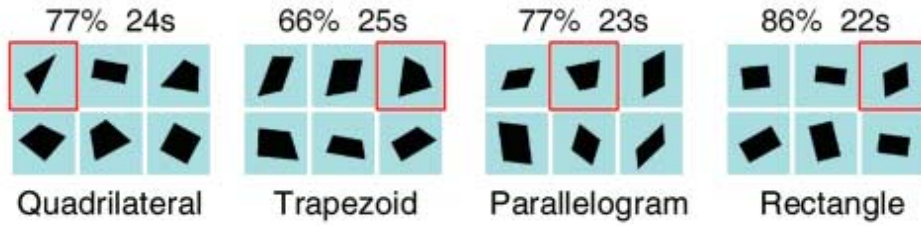
## Topology (76%; ♦)



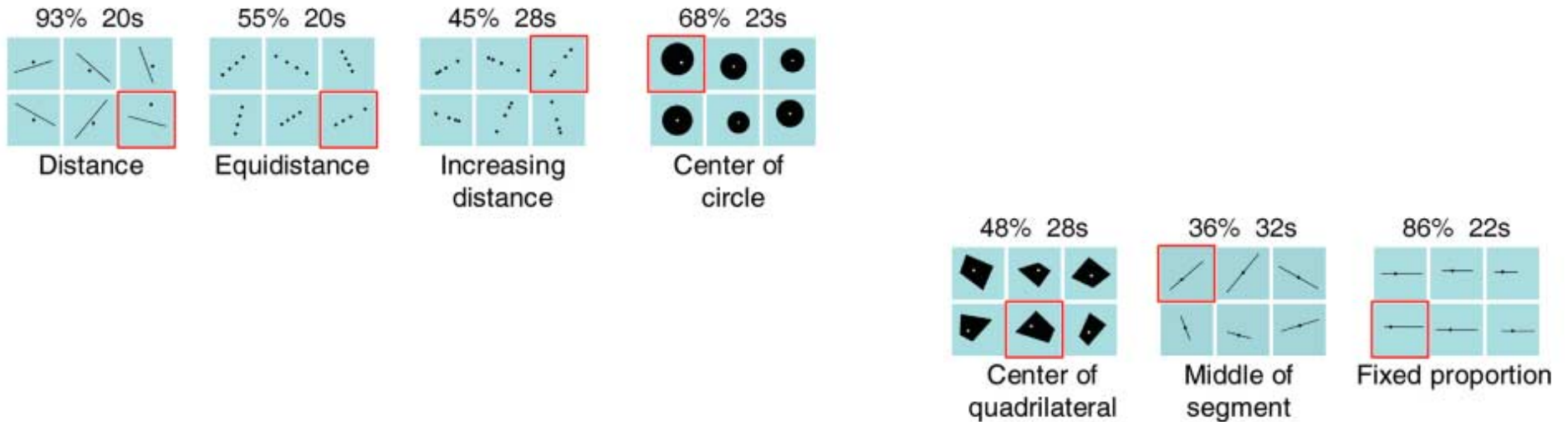
## Euclidean geometry (84%; ■)



## Geometrical figures (79%; ▲)



## Metric properties (62%; ●)



# Native mentalese

- If people are naturally endowed with a certain set of concepts, **what are the concepts?**
  - A central question in **conceptual development**
- Recall that empiricists/behaviorists/connectionists think that there is **one general-purpose learning mechanism** for learning from experience
  - associations, reinforcement, ?backpropagation?
- Rationalists/nativists/cognitivists think that the mind has innate knowledge, including potentially **specialized knowledge about specific domains**
  - Folk (intuitive) physics, math, biology, psychology...

# Poverty of the stimulus arguments

- In many cases, all or nearly all human infants draw identical conclusions from data, even when...
- ...the data itself does not imply the conclusions.
- This implies the infants share some common assumptions, i.e. innate knowledge.
- This argument for the existence of innate knowledge is called an argument from **poverty of the stimulus**.

Ex.: I am thinking of two numbers that multiply to 36. I ask 10 people to guess and all 10 say “18 x 2”. I conclude they all share some common assumptions.

Ex. I speak to 10 infants who all then grow up to share a common notion of *noun* and *verb*. I conclude they all share some innate knowledge of language.

# Conceptual development

- Conceptual development is the study of the development of cognition in infants and children
  - ... via a combination of innate knowledge and learning from experience
- Focus is on the **nature of concepts** as revealed by their developmental trajectory
- Often intertwined with philosophical issues in the nature of concepts

# Folk physics

- Objects
  - coherent, bounded, not interpenetrable, continuously existing
- Motion
  - impetus/momentum/force
  - gravity