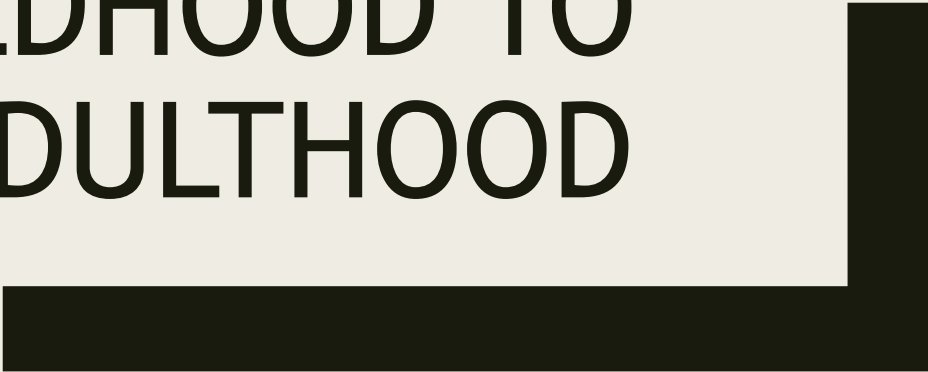


**CHANGES IN COGNITIVE  
FLEXIBILITY AND HYPOTHESIS  
SEARCH ACROSS HUMAN LIFE  
HISTORY FROM CHILDHOOD TO  
ADOLESCENCE TO ADULTHOOD**



Gopnik et al (2017)



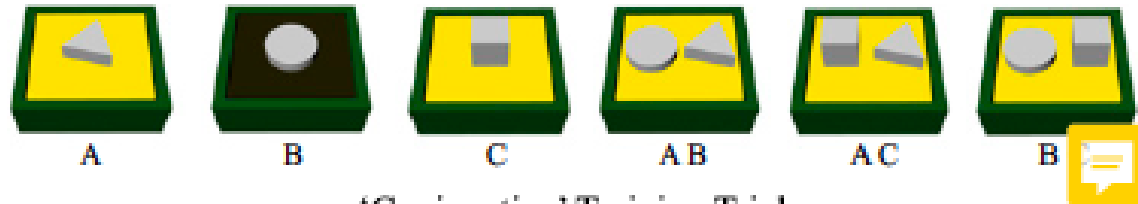


# INTRODUÇÃO

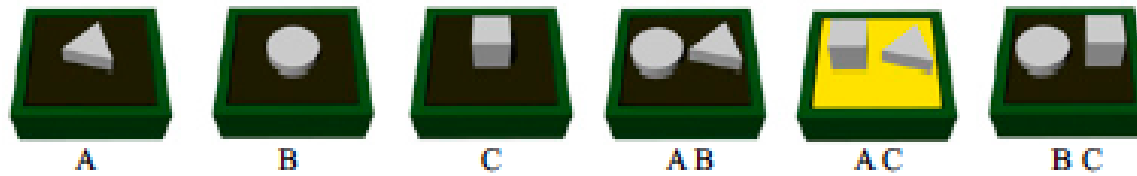
# When Younger Learners Do Better

- Neuroscience: Trade-Offs Between Executive Function and Plasticity.
- Computation: Trade-Offs Between Exploitation and Exploration, and Narrow and Broad Search.
- Cultural Learning: Trade-Offs Between Imitation and Innovation.
- Continuous Knowledge Acquisition vs. Discontinuous Developmental Transition.

'Disjunctive' Training Trials



'Conjunctive' Training Trials



Test Trials



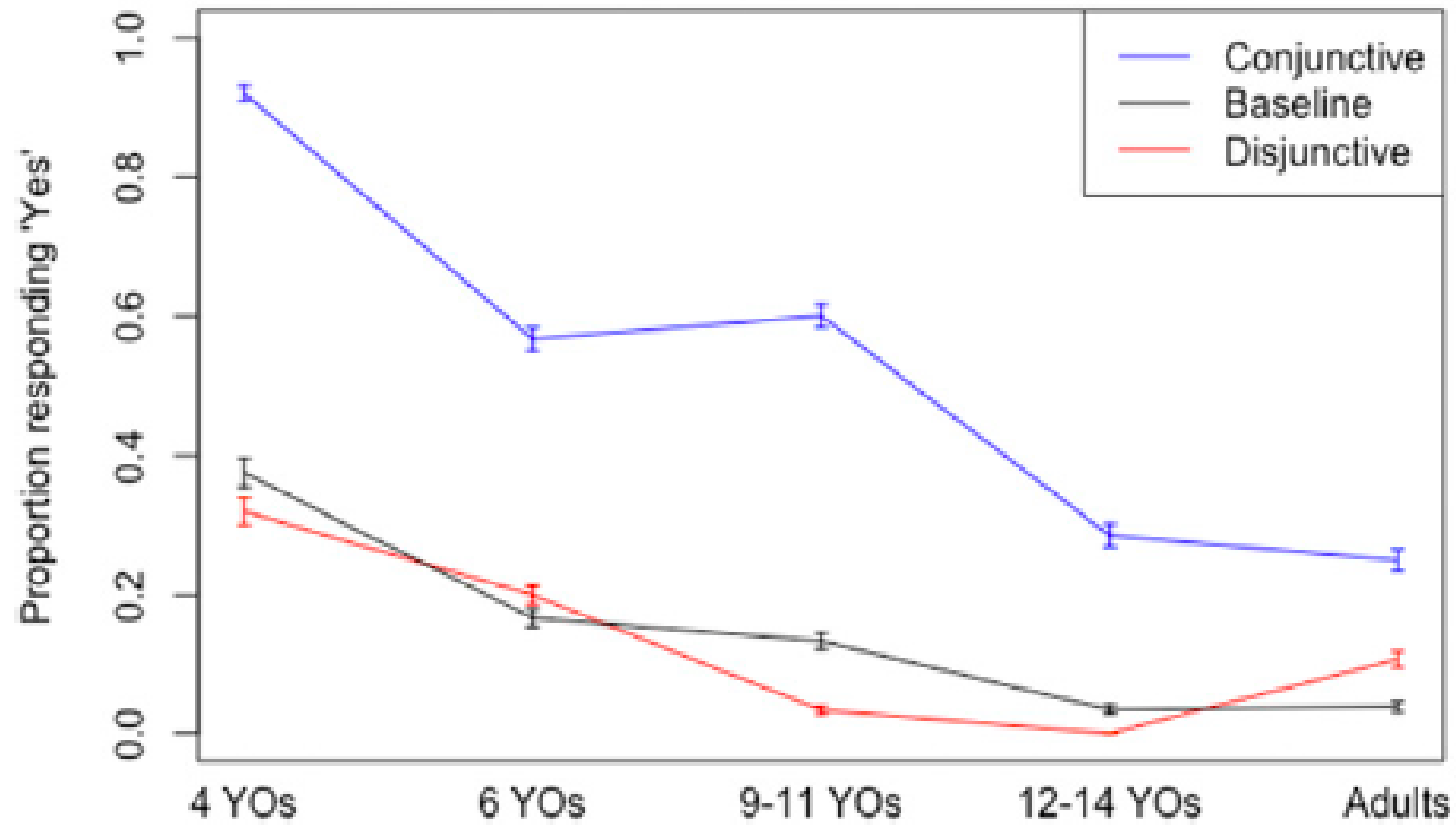
# Experimento 1

- Reasoning About the Causes of Physical Events



**EXP. 1:  
REASONING  
ABOUT THE  
CAUSES OF  
PHYSICAL  
EVENTS**

Proportion of 'D' Object Labels



### Proportion of Multiple Item Interventions

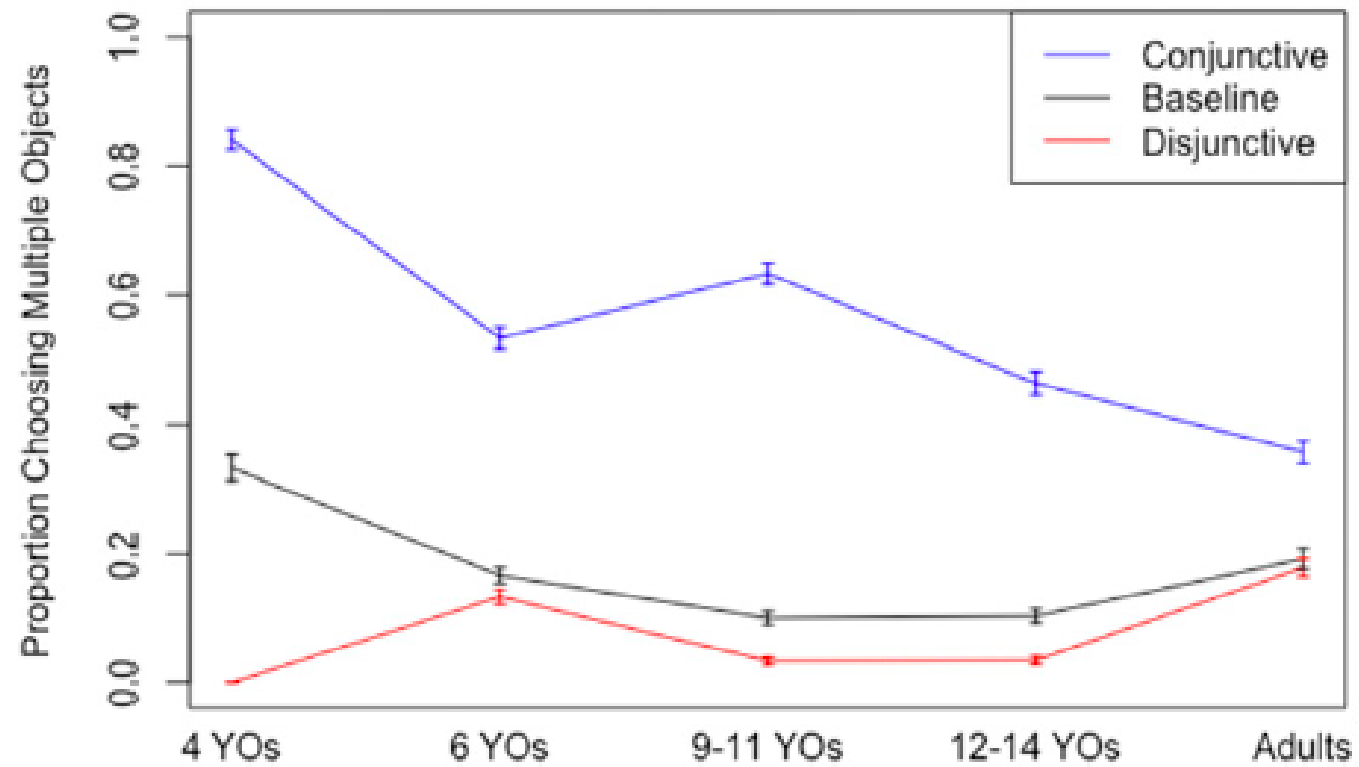


Fig. 3. Proportion of participants choosing either single or multiple items for intervention choice with SEs.

# Exp. 2: Reasoning About the Causes of Actions

- Person versus situation conditions.
  - Person condition
  - Situation condition
- Deterministic versus probabilistic conditions.
  - Deterministic: 4 times
  - Probabilistic: 3 times
- Control condition.





- “Look! Josie’s playing on the trampoline. She’s not scared” in the deterministic condition or “Look! Josie’s playing on the trampoline” in the probabilistic condition).
- At the end of the vignette, the experimenter asked two open-ended explanation questions, one for each doll’s last action on the second activity (e.g., “Why did Josie jump on the trampoline?” and “Why didn’t Sally jump on the trampoline?”).
- “Why did Josie jump on the trampoline? Is it because she’s the kind of person who does brave things, or because the trampoline is safe to play on?” or “Why didn’t Sally jump on the trampoline? Is it because she’s the kind of person who gets scared, or because the trampoline is dangerous to play on?”).
- Prediction questions: person condition x situation condition

*Examples of Person and Situation Explanations*

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Person

Mental states

- She wanted to splash
- She thinks there is a shark in the water
- She thinks she might fall off
- She learned how to ride her bike
- She was in the mood for it
- She liked it
- She is afraid of heights

Physical attributes

- She is younger
- She is bigger
- She does not have a helmet on

Situation

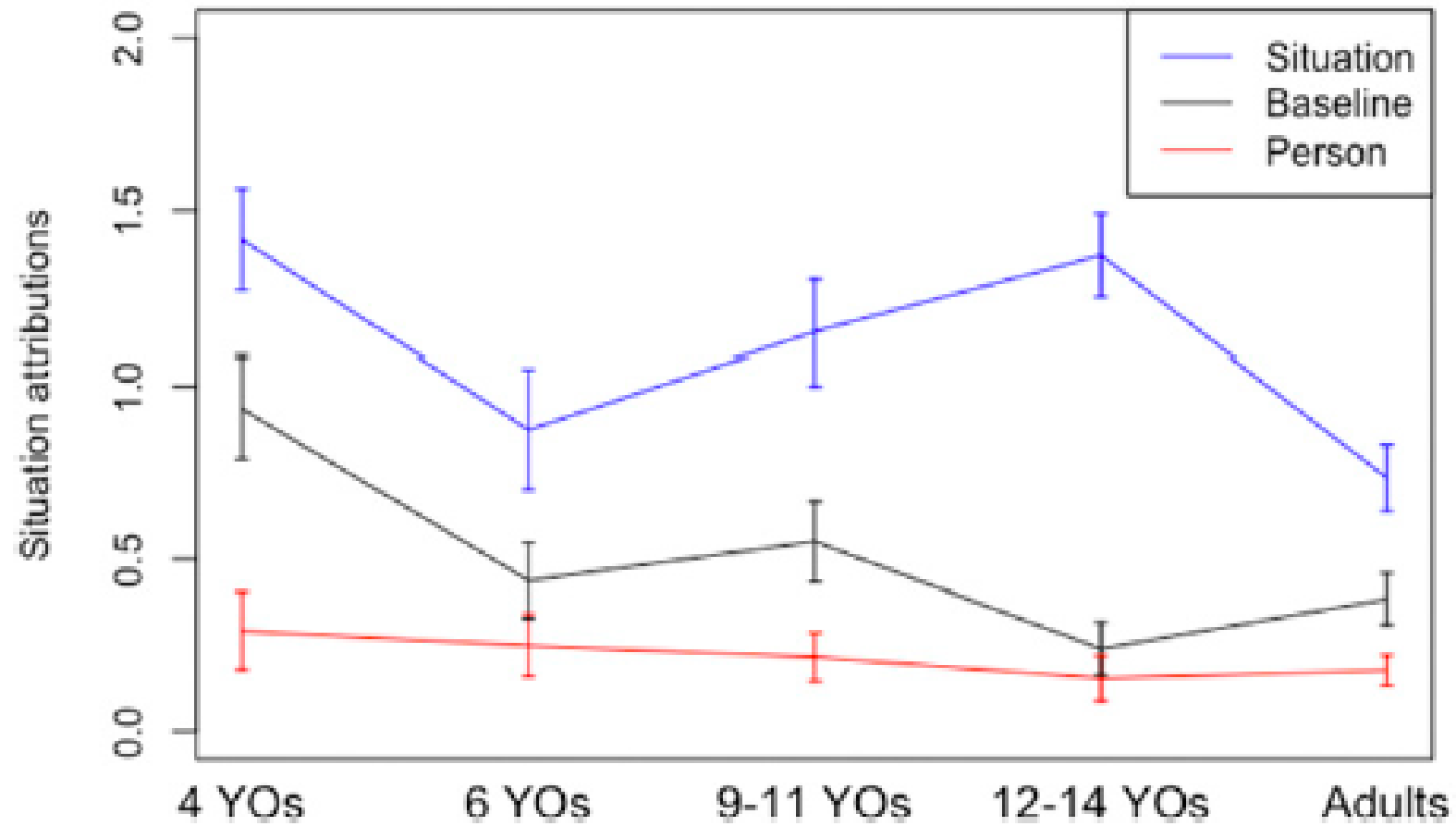
Physical object

- It only has two wheels
- It is too fast
- It looks like fun
- It looked scary
- It might tip over
- It is not over water and it is not high
- Because it is red and blue
- There is netting around it

Social situation

- Josie (other doll) did not want to
  - Sally (other doll) played on it
  - Her friend did it
  - Her friend was not there
-

### Average Situation Attribution Score



# General Discussion and Conclusions

- Os resultados apoiam a hipótese de que a infância estendida permite maior flexibilidade cognitiva em humanos.
- Nas condições conflituosas as crianças de 4 anos x 6 anos agem diferente, mas as de 6 e 9 anos são semelhantes.
- No experimento físico, na condição conjuntiva, os adolescentes se comportam mais como adultos.
- No experimento social, na condição de situação, os adolescente se mostraram mais flexíveis que crianças de 6 anos e adultos.