WORD LEARNING UNDER UNCERTAINTY IN YOUNG CHILDREN AND ADULTS

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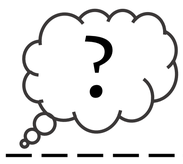
BACKGROUND

- Major challenge of early word learning: referential ambiguity (multiple possible referents for novel words)
- Despite this ambiguity, children infer the referents of novel words with relative ease: e.g., Mutual Exclusivity (ME) effect (Markman & Wachtel, 1988)

➔ How do they resolve this ambiguity & learn words so quickly?

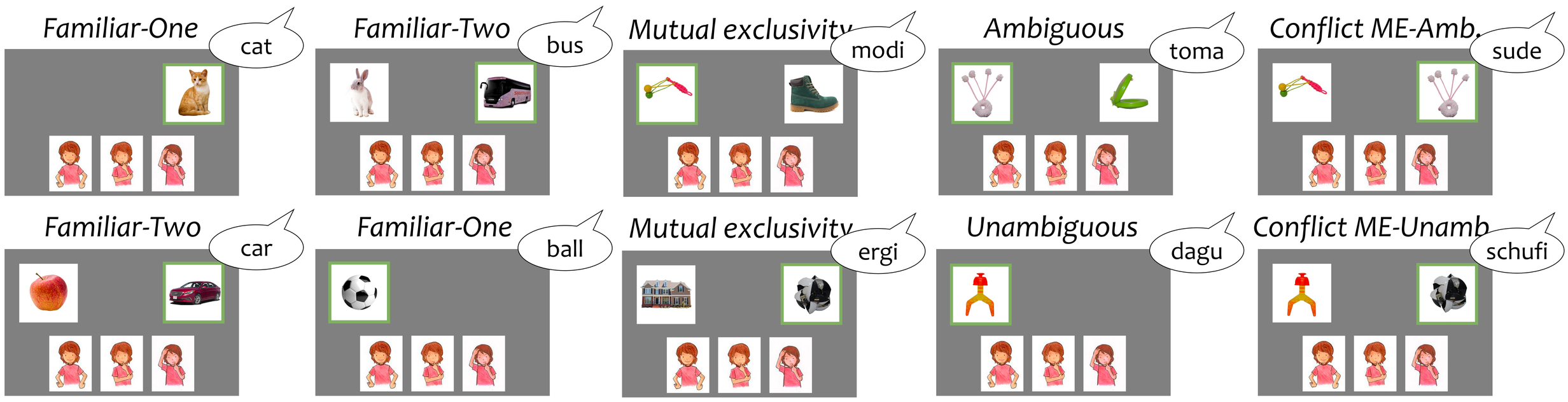
- One way to reduce this referential ambiguity: Preschoolers show systematic social information seeking that is sensitive to the amount of referential ambiguity (Hembacher et al., 2020)
- It remains unclear if children experience uncertainty during referential ambiguity that is explicitly available (as it is other areas, e.g., perceptual identification tasks; Coughlin et al., 2014, Hembacher & Ghetti, 2014), and if word-object-mappings learned in different levels of ambiguity are treated differently & are potentially more prone to updating later on

I. Are children aware of the different levels of uncertainty involved in referent identification?
II. Can they use this information to systematically update word-object links?



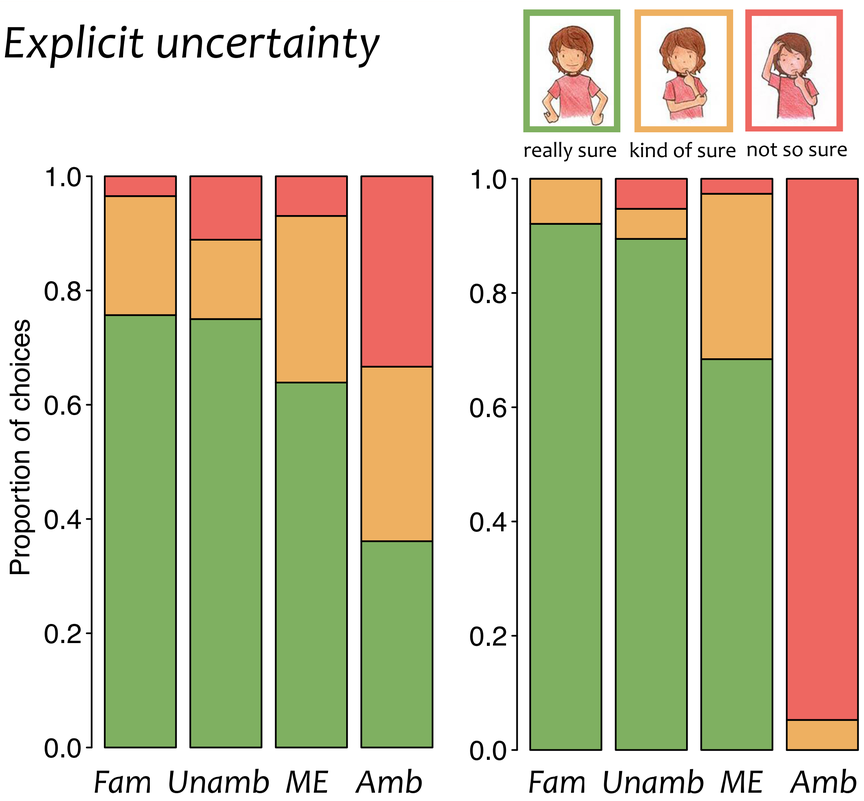
METHOD

Pre-registered study with **4- to 5-year-olds** and **adults**:



RESULTS (preliminary: *N* = 45 children & 19 adults)

Explicit uncertainty



Implicit uncertainty

Response times (Adults)

✗ ME = Familiar-Two (7.3s vs. 7.3s)

✓ ME < Ambiguous (7.3s vs. 8.0s)

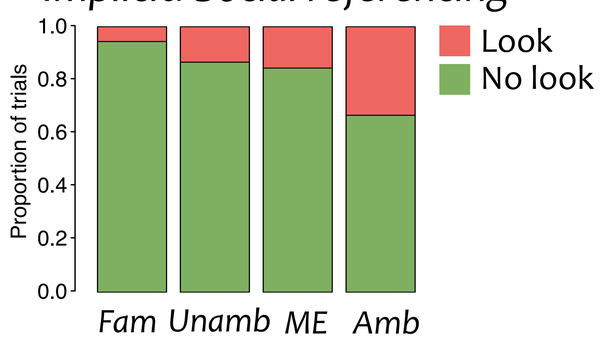
Gaze shift frequency

✓ ME > Familiar-Two (1.7 vs. 1.5)

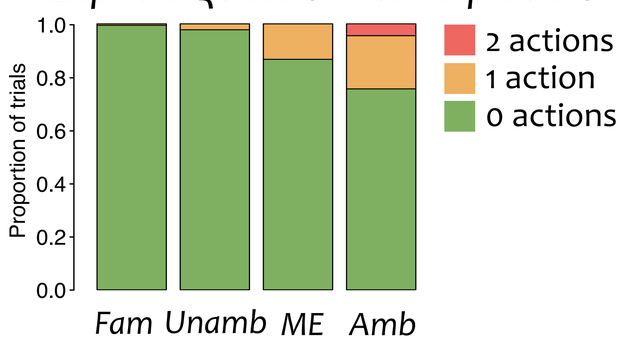
✗ ME = Ambiguous (1.7 vs. 1.6)

Help seeking (Children)

Implicit: Social referencing



Explicit:Questions & Help button



Updating

Adults

✓ ???

Children

- Update dependent on time passed (not learning context) → more willing to update the first object presented

DISCUSSION

- 4- and 5-year-olds' and adults' explicit uncertainty systematically increases with the level of ambiguity in the task
- With increasing referential ambiguity, children spontaneously seek more information

➔ **Children's uncertainty monitoring & active learning may help them to learn words so efficiently**

- While adults used the ambiguity of the learning context as a basis for updating word-object-links, children instead rather updated labels for objects that were learned a longer time ago

➔ Open if if children do not consider the learning context as relevant information for label updating or if the task demands afffected their performance

Coughlin, C., Hembacher, E., Lyons, K. E., & Ghetti, S. (2015). Introspection on uncertainty and judicious help-seeking during the preschool years. *Developmental Science*, *18*(6), 957-971.
Hembacher, E., deMayo, B., & Frank, M. C. (2020). Children's social information seeking is sensitive to referential ambiguity. *Child development*, *91*(6), e1178-e1193.
Hembacher, E., & Ghetti, S. (2014). Don't look at my answer: Subjective uncertainty underlies preschoolers' exclusion of their least accurate memories. *Psychological Science*, *25*(9), 1768-1776.
Markman, E. M., & Wachtel, G. F. (1988). Children's use of mutual exclusivity to constrain the meanings of words. *Cognitive Psychology*, *20*(2).

Link to preregistration:
https://osf.io/gmjru/