Children use disagreement to infer what happened

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Introduction

- A challenge when learning from others about past events is that people can disagree in their interpretations of what happened.
- Disagreement is sometimes caused by an ambiguous event that generates multiple reasonable interpretations.1

Research Questions:

1. Can children use disagreement to infer that an ambiguous event (here, an ambiguous utterance) occurred?
2. Do children’s predictions that ambiguous events cause disagreement explain their inferences in line with Bayesian inferential reasoning?2

Experiment 1: Inference (N = 52 7-11 year olds)

Children completed 4 trials: 2 Agreement trials, 2 Disagreement trials. Examples of an Agreement and a Disagreement trial are below:

Experiment 2: Prediction + Inference (N = 110 7-11 year olds)

Children either completed the Inference task (similar to Experiment 1, now with only the unambiguous and ambiguous options) OR the Prediction task:

Prediction Task: Across ages, children predicted that disagreement would occur more after an ambiguous than unambiguous statement, βambiguous = 1.58, 95% CI [1.14, 2.02].

Inference Task: Experiment 2 replicated the inference results from Experiment 1. We then linked children’s predictions to inferences using Bayes’ theorem: \( p(\text{utterance}|agreement) = p(\text{agreement}|\text{utterance})p(\text{utterance}) \). We assumed prior \( p(\text{utterance}) \) was uniform. The model captures the main trends that children are more likely to infer ambiguous utterances after disagreement than agreement, \( r = 0.96, \text{RMSE} = 0.21 \).

Discussion

Children use disagreement to infer ambiguous events, and this inference is explained in part by their predictions (in line with Bayesian inference). Future work will apply computational models that explain age-related change in inferences.

References & Funding

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