Predicting the Fall:
How Children Make Predictions During Guided Play

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BACKGROUND

- When children have developed naïve theories, they often discount new evidence that is anomalous to their theories.[1]
- Children learn more when they are asked to generate predictions about events that violate expectations.[2]
- Does prompting children to make predictions about anomalous evidence improve their ability to learn from it?

Research Question

Does children's learning improve as a function of prior experience with anomalous evidence?

METHOD

Participants

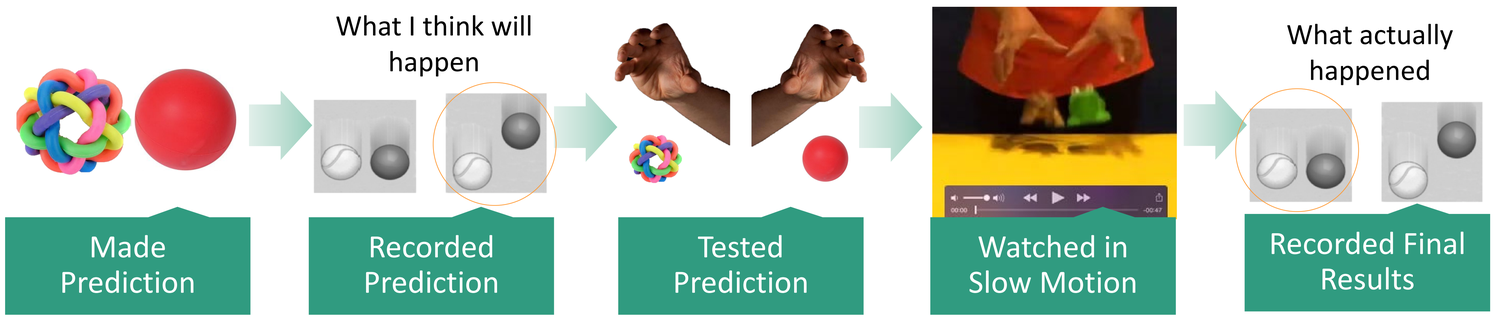
- 39 4-year-old (*M* = 4.51, *SD* = 0.26)
- 40 5-year-old children (*M* = 5.42, *SD* = 0.30)

Outcome

- Assessed whether children's prediction changed across three trials after observing instances of anomalous evidence.

Procedure

Children engaged in an activity where they witnessed 3 examples of heavy and light objects falling at the same rate.



RESULTS

Coding Scheme

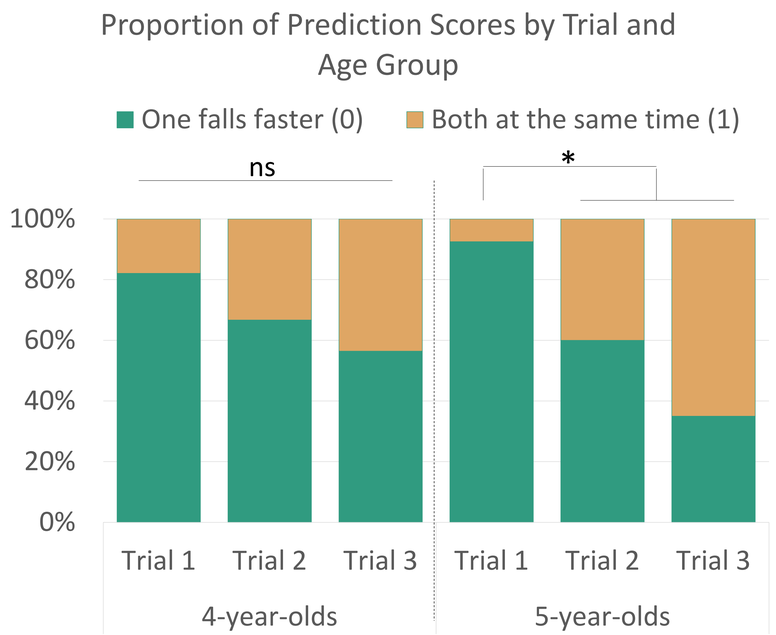
Predictions for each Trial	Score
One object falls faster	0
Both objects fall at the same rate	1

Cochran's Q test

- 4-year-olds made similar predictions across all three trials, $\chi^2(2) = 5.43$, $p = .07$.
- 5-year-olds re-evaluate their predictions about the rate at which objects fall based on previous trials, $\chi^2(2) = 26.60$, $p < .001$.

McNemar tests

- Post-hoc pairwise comparisons (Bonferroni corrections $\alpha = .17$) revealed that 5-year-olds' predictions for Trial 1 were significantly different than Trial 2 ($p = .001$) and Trial 3 ($p < .001$).
- However, Trial 2 and 3 were not different from each other ($p = .05$).



DISCUSSION

- Five-year-olds improved their predictions after the first trial. Four-year-olds' predictions did not improve over time.
- 5-year-olds experience of anomalous evidence leads to belief revision.
- Making predictions about belief violating evidence may activate prior knowledge, generate surprise and help children revise their subsequent predictions.[2]

REFERENCES

1. Chinn, C. A., & Brewer, W. F. (1993). The Role of Anomalous Data in Knowledge Acquisition: A Theoretical Framework and Implications for Science Instruction. *Review of Educational Research*, *63*(1), 1–49.
2. Brod, G., Hasselhorn, M., & Bunge, S. A. (2018). When generating a prediction boosts learning: The element of surprise. *Learning and Instruction*, *55*, 22–31.

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