

# How prediction promotes children's word learning

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## Introduction

- Correlational findings suggest prediction supports language learning<sup>1,2</sup> but empirical evidence is lacking.<sup>3</sup>
- **Does prediction influence how children learn novel words, and if so, how?**
- We hypothesized that learning may differ as a function of how children:
  1. predict the probable, familiar referent
  2. redirect attention to the correct, novel referent when their prediction is inaccurate

## Methods

- Children 3-5 years old (N=56)
- Novel word learning task

### Learning Trials



**Constrained:** Yummy! Let's eat soup. I'll stir it with a spoon/cheem.  
**Unconstrained:** Neat! Look over there. Take a look at the spoon/cheem.



**Constrained:** Vroom! Vroom! You can drive the truck/fep.  
**Unconstrained:** Woohoo! I can see a truck/fep.

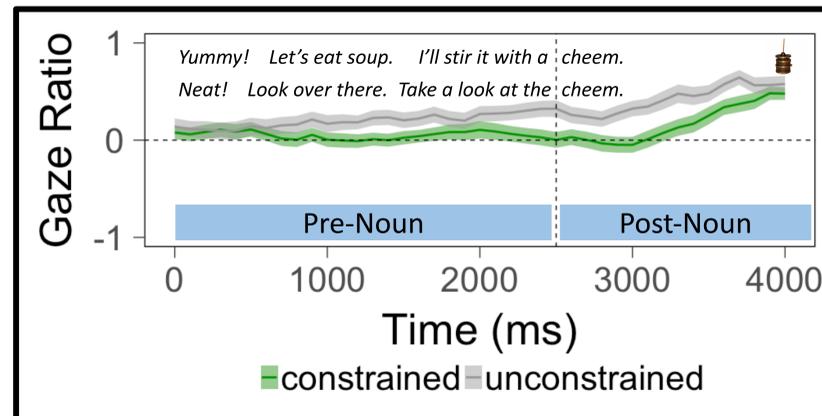
### Test Trials



Where's the cheem?  
 Where's the fep?

## Results

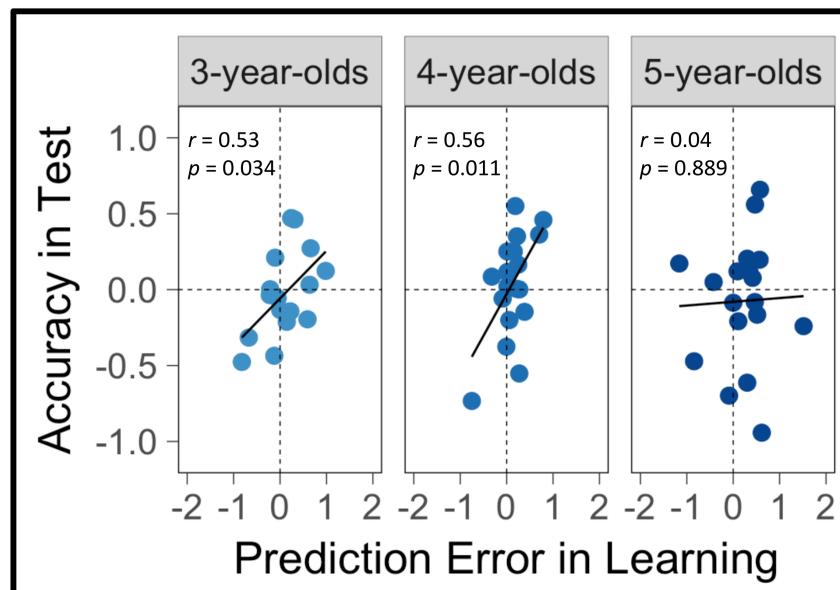
- In learning trials, children used semantic cues to predict the probable referent, but had a novelty bias:



- **In the constrained context, what increases children's accuracy in test trials?**

- Prediction = pre-noun target looks
- Prediction error = post-noun target looks minus pre-noun target looks

- Predicting the familiar referent does not correlate with test accuracy ( $r=0.04$ ,  $p=0.755$ ), but prediction error was marginally correlated with test accuracy ( $r=0.27$ ,  $p=0.052$ ).



## Summary

- **Children make predictions during learning.**
  - They do so in the constrained context and, unexpectedly, in the unconstrained context too.
- **In the constrained learning context:**
  - Prediction alone doesn't explain learning.
  - Redirecting attention to the novel referent may be necessary for learning.
- **In the unconstrained learning context:**
  - Children may use pragmatic cues for prediction.
  - When a speaker says, "Neat! Look over there!" children infer that the novel object is the probable referent.<sup>4,5</sup>

## Future Directions

- Make learning novel words easier.
  - Decrease number of novel words.
  - Increase number of learning trials.
- Make the unconstrained context neutral.
  - We need a context where familiar and novel referents are equally probable.
  - Collect norming data for sentences.
- **A broader question to ponder:**
- Do children learn differently from predictions that are verified vs. predictions that are violated?

## Thanks

References: (1) Borovsky, Elman, & Fernald, 2012; (2) Mani & Huettig, 2012; (3) Rabagliati, Gambi & Pickering, 2016; (4) Kidd, White & Aslin (2011); (5) Kurumada & Clark (2016)



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