

Introduction

Word learning is challenging!

- Infants must determine what words sound like, and what they refer to

Using a two-word switch task¹ with single repeated tokens, 14-month-olds (see Figure 2):

- Learn dissimilar words^{1,3} (neem/lof)
- Fail to learn novel minimal pairs^{1,2} (buk/puk)

Adding talker variability to the task results in 14-month-olds:

- Failing to learn dissimilar words³ (neem/lof)
- Learning novel minimal pairs² (buk/puk)

At 14 months, talker variability helps with difficult word learning tasks, but makes easier word learning tasks more challenging.

Three hypotheses

1. Limited word learning resources

Prediction 1: 17-month-olds have more word learning resources, and will succeed on all versions

2. Talker variability is challenging when it doesn't highlight invariant dimensions

Prediction 2: 17-month-olds will still struggle to learn dissimilar words with talker variability because it is not needed

3. Combined: Word learning skills interact with talker variability

Prediction 3: 17-month-olds can learn dissimilar words with talker variability, but will struggle to learn with minimal pairs with talker variability

Current Study

Participants: n = 60 (n = 72 final sample)

- Mean age = 16.92 months
- 31 males, 29 females

Two-word switch task¹ with 17-month-olds (see Figure 1)

Four conditions:

- No variability – dissimilar words (neem/lof)
- No variability – minimal pairs (buk/puk)
- Talker variability – dissimilar words (neem/lof)
- Talker variability – minimal pairs (buk/puk)

No variability = 1 repeated token of each word^{2,3}

Talker variability = 9 tokens from 9 female talkers^{2,3}

Acknowledgements

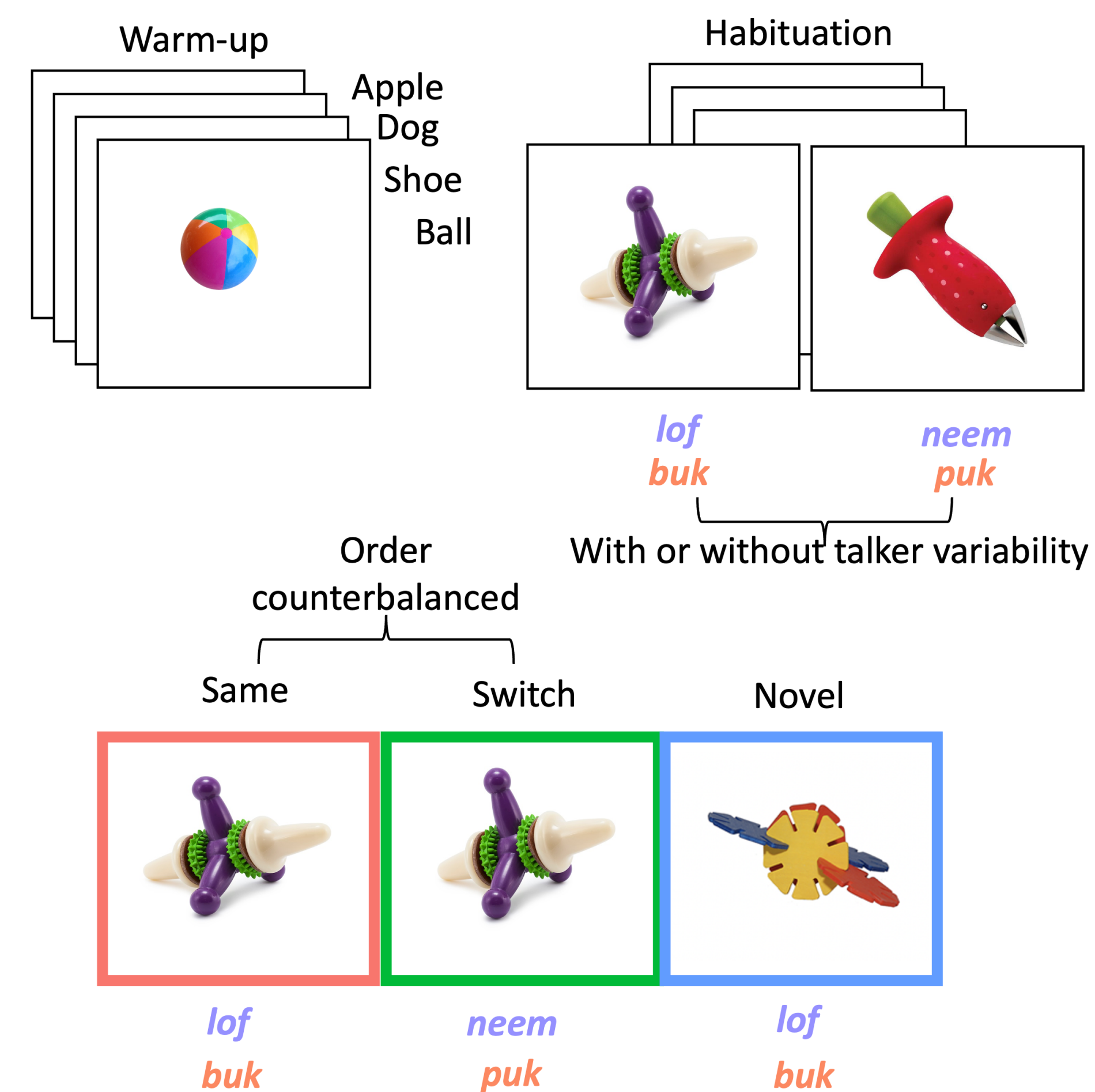
We thank all of the families who participated.

Citations

1. Stager, C. L., & Werker, J. F. (1997). Infants listen for more phonetic detail in speech perception than in word-learning tasks. *Nature*, 388(6640), 381-382.
2. Rost, G. C., & McMurray, B. (2009). Speaker variability augments phonological processing in early word learning. *Developmental science*, 12(2), 339-349.
3. Bulgarelli, F., & Bergelson, E. (2023). Talker variability is not always the right noise: 14 month olds struggle to learn dissimilar word-object pairs under talker variability conditions. *Journal of experimental child psychology*, 227, 105575.
4. Höhle, B., Bijeljac-Babic, R., & Nazzi, T. (2020). Variability and stability in early language acquisition: Comparing monolingual and bilingual infants' speech perception and word recognition. *Bilingualism: Language and Cognition*, 23(1), 56-71.
5. Werker, J. F., & Curtin, S. (2005). PRIMIR: A developmental framework of infant speech processing. *Language learning and development*, 1(2), 197-234.

Procedure

Figure 1. Schematic of Experiment.



Results

Increase in looking time from Same trial to

- Switch trial (p=.03)
- Novel trial (p <.001)
- No significant interactions (yet)

Visual comparison suggests:

- Unclear pattern for distinct words no variability
- They do learn distinct words with talker variability
- They do learn minimal pairs without talker variability
- They do not learn minimal pairs with talker variability

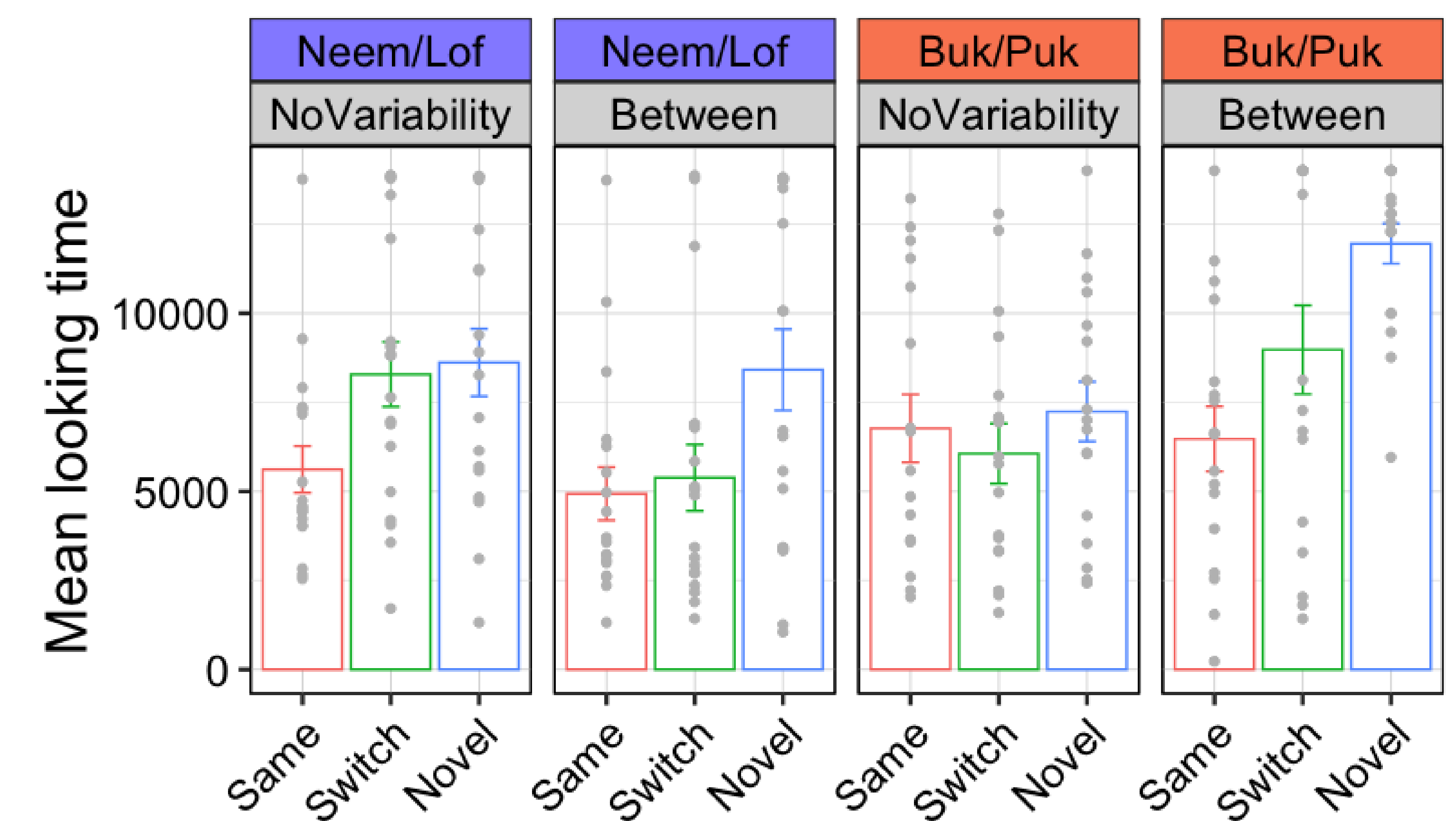
While 17-month-olds can learn novel minimal pairs without talker variability, adding talker variability increases task difficulty, see Figure 3.

Conclusions

- Results to date suggest support for Hypothesis 3: word learning skills interact with talker variability
- More word learning resources makes learning distinct words possible even with variability
- But since talker variability is no longer needed to learn minimal pairs, the addition appears to increase task difficulty and disrupt learning

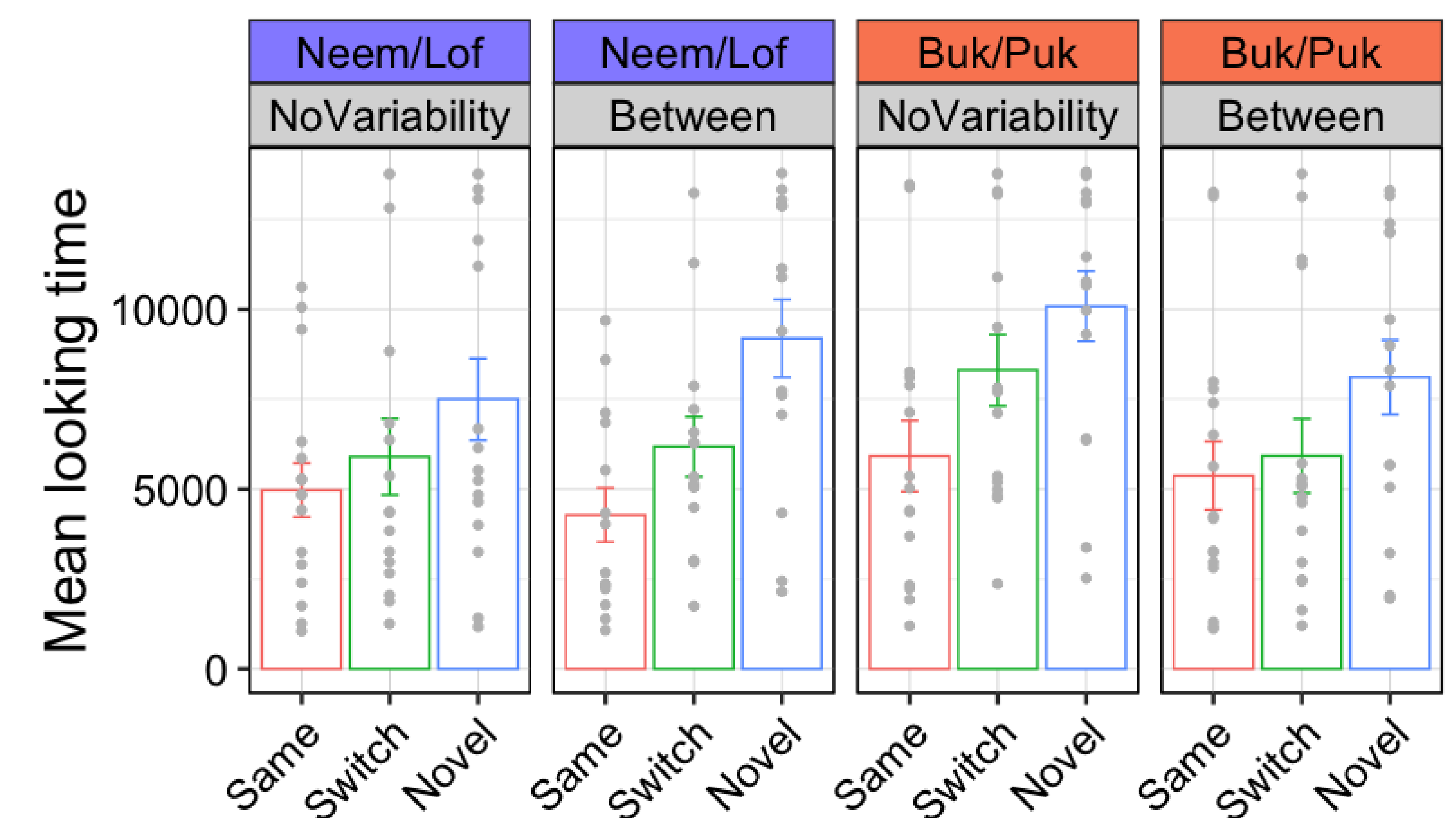
Previous findings: 14-month-olds

Figure 2. From Bulgarelli & Bergelson (2023), minimal pair data from Höhle et al., 2020



Current findings: 17-month-olds

Figure 3. In progress results with 17-month-olds.



Interpretation: when infant word learning skills match the word learning task, talker variability interferes

Future directions: Further test how word learning resources interact with talker variability to determine when talker variability helps and when it increases task difficulty

- Can younger infants (e.g. 12 month olds) learn distinct words with talker variability?
- Can older infants (e.g. 20 month olds) learn minimal pairs with talker variability?