

# 'Long before short' preference in a head-final artificial language: In support of dependency minimization accounts

Maryia Fedzechkina<sup>1</sup>, Becky Chu<sup>2</sup>, T. Florian Jaeger<sup>2</sup>

<sup>1</sup>Psychology, University of Pennsylvania, <sup>2</sup>Brain & Cognitive Sciences, University of Rochester

{mfedze@sas.upenn.edu; bchu@u.rochester.edu; fjaeger@bcs.rochester.edu}

## Abstract

Constituent length affects word order preferences. Speakers of head-initial languages (e.g., English) have been claimed to place short constituents before long ones. Data from head-final languages (e.g., Japanese) tentatively suggest the opposite long-before-short preference.

**However**, evidence for the long-before-short ordering is sparse:

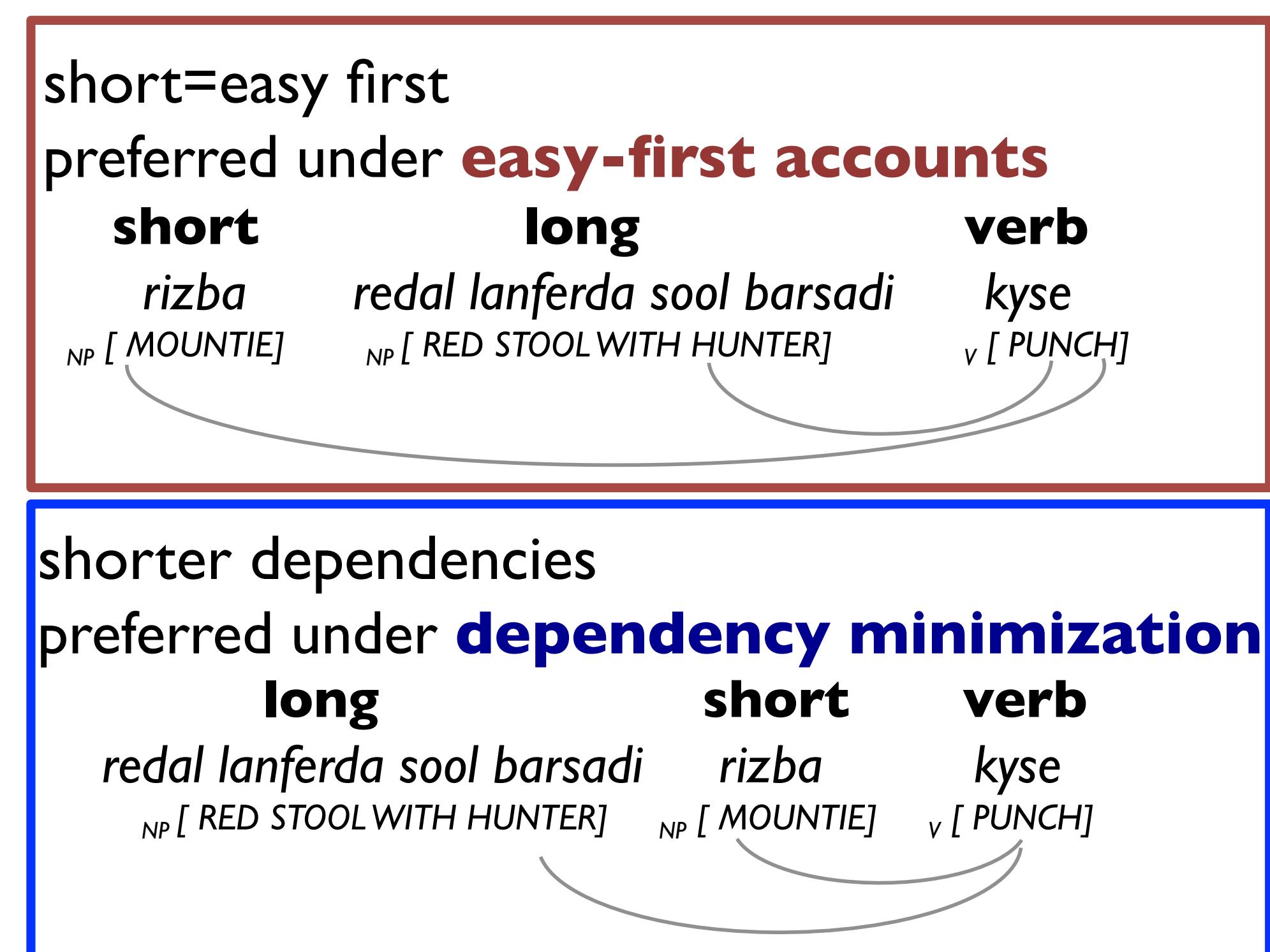
- there are only a few studies on two head-final languages, most of which were corpus studies without controls for important confounds.
- a recent study found no long-before-short preference in a head-final language [4].

We provide a **strong test** of the hypothesis that language headedness influences length-based ordering preferences: We ask whether native language preferences in length-based phrase ordering can be reversed in a newly acquired miniature artificial language of the opposite headedness.

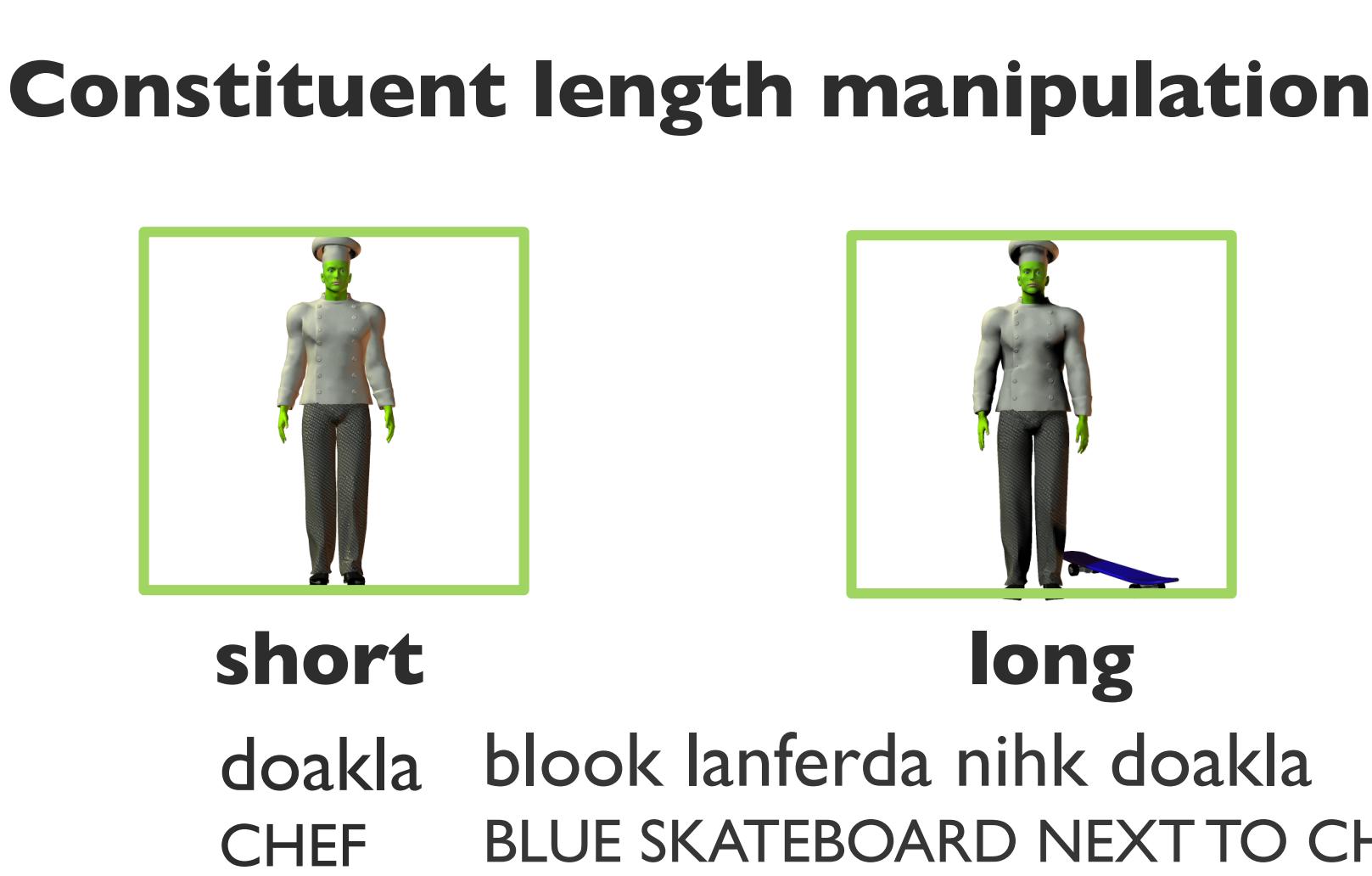
## Two competing accounts

**Easy-first:** start with easy-to-produce (short) constituents while more complex ones are still being planned [1,2].

**Dependency minimization:** minimize dependency lengths to avoid comprehension difficulty [3].

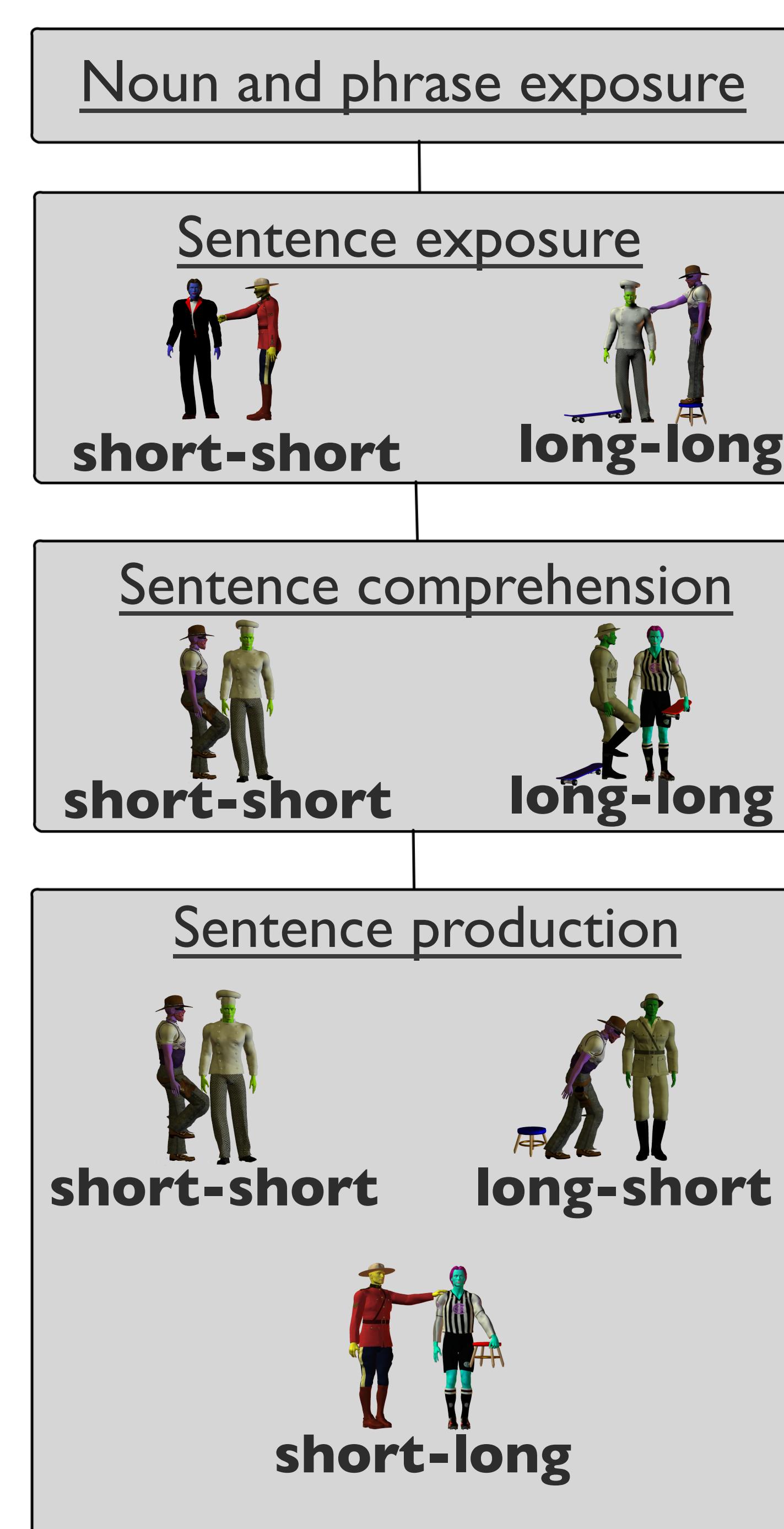


## Experiment design



### A miniature artificial language learning study

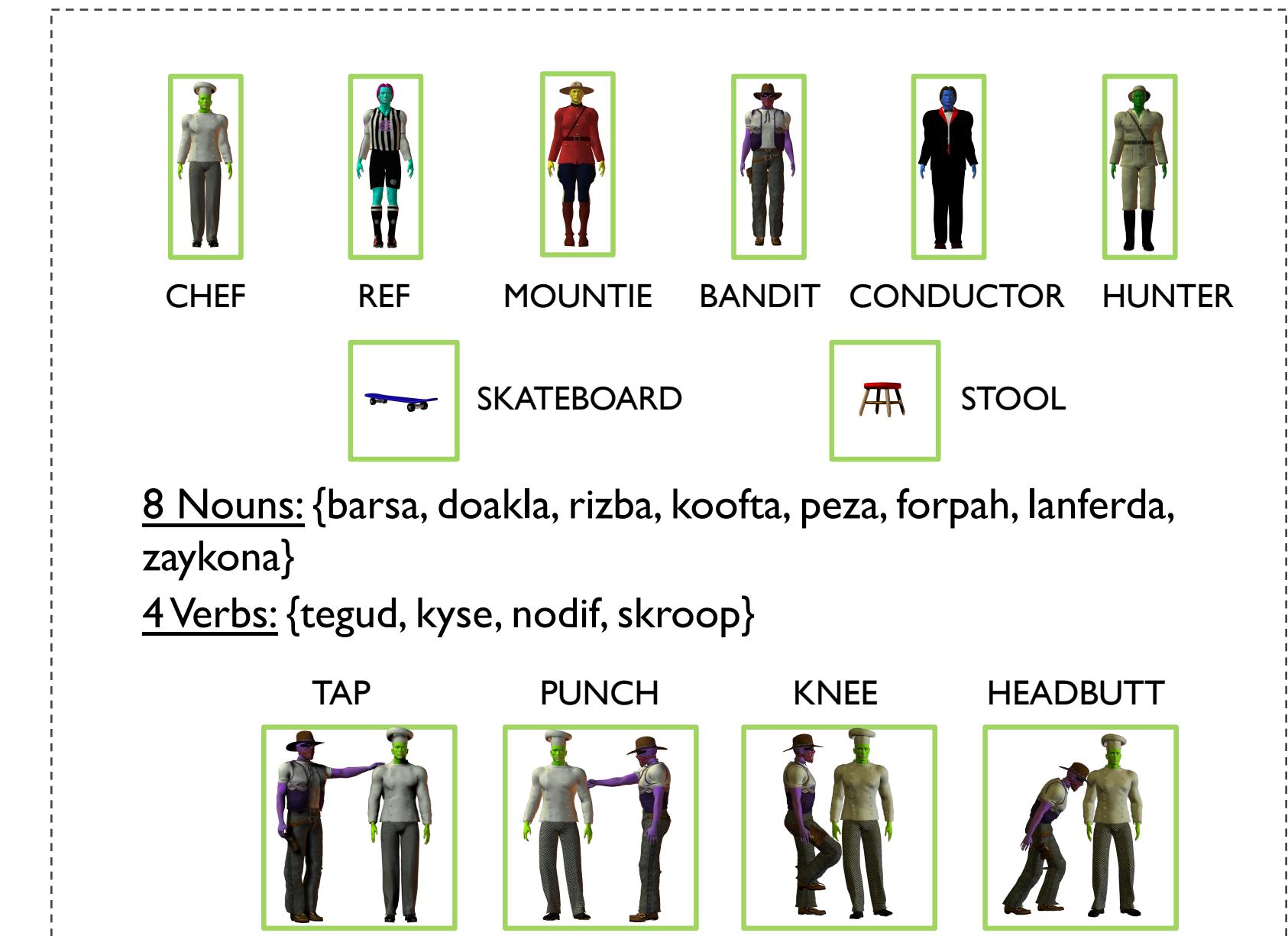
- 34 monolingual English speakers (out of 40 planned)
- over 3 consecutive days



## Input grammar & lexicon

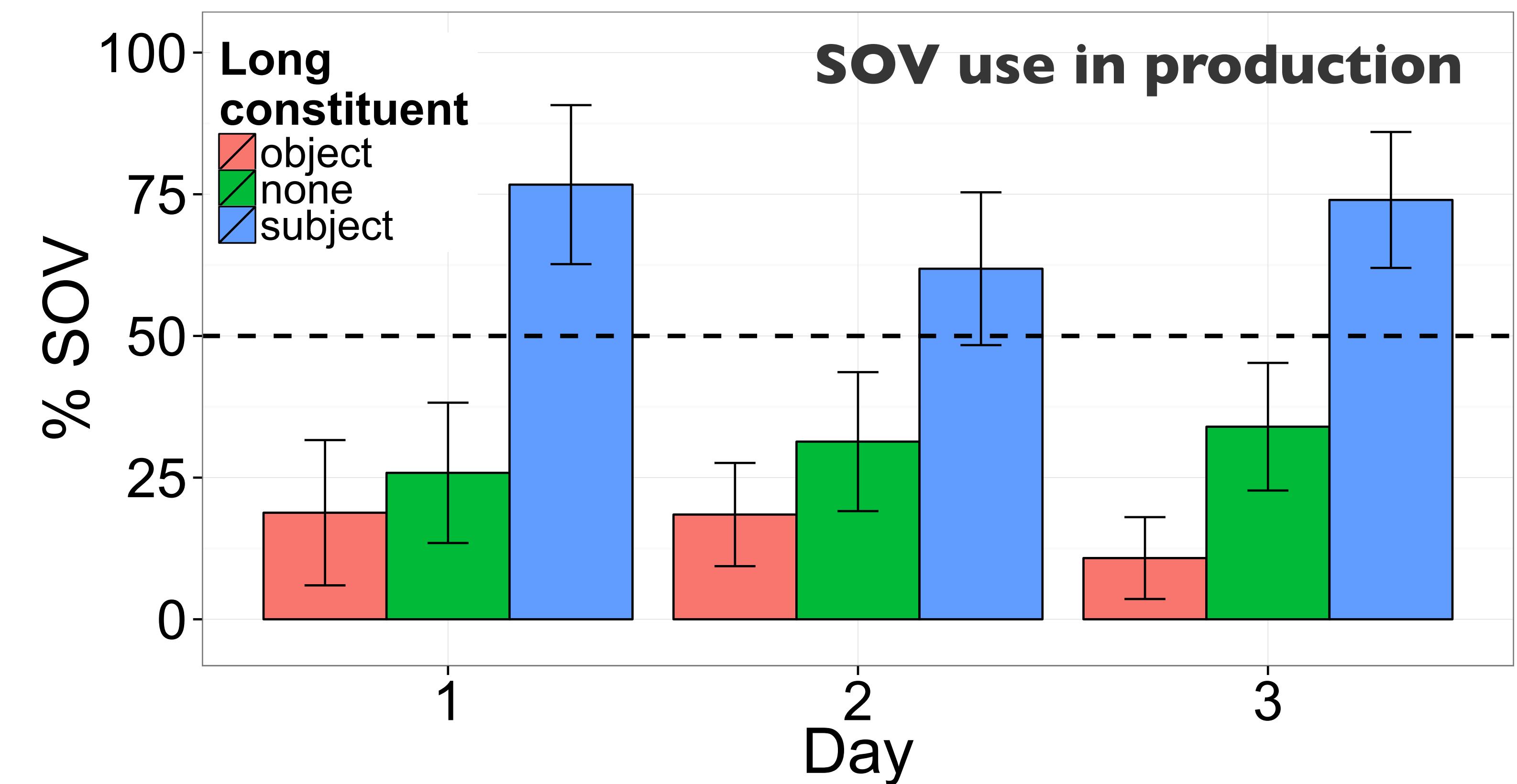
### Input grammar

**SOV/OSV word order 50/50%**  
**Object case-marking 100%**  
(no subject case-marking)



## Results

### Word order use is consistent with dependency minimization accounts



- Learners used significantly more SOV in sentences, in which neither constituent was long compared to sentences with long objects.
- Learners used more SOV in sentences with long subjects compared to all other cases.
- Learners had a baseline OSV preference → cf. Fedzechkina, Jaeger, & Trueswell (Thursday poster).

## Discussion

- We observe a long-before-short preference in a head-final artificial language. This cannot be due to the native language (English), which has **the opposite preference**, or the (artificial) input, which was unbiased.
- Our results are predicted by dependency minimization accounts [3], but are inconsistent with easy-first accounts [1,2].
- The results are not explained by salient-first accounts [5] as subject/object accessibility was held constant.
- Further support for dependency minimization accounts ('Maximize Online Processing' [3]) comes from the observation that learners had an overall OSV preference (despite being monolingual native English speakers): our language case-marked only objects, allowing earlier grammatical function disambiguation in the OSV, compared to SOV order.

## References

- [1] Wasow, T. (1997). Remarks on grammatical weight. *Language Variation and Change*, 9, 81–105.  
[2] Amati, J.E., Wasow, T., Losongco, T., & Ginstrom, R. (2009). Heaviness vs. Newness: the effects of structural complexity and discourse status on constituent ordering. *Language*, 76(1), 28–55.  
[3] Hawkins, J.A. (2004). *Efficiency and Complexity in Grammars*. Oxford: Oxford University Press.

- [4] Lohmann, A. & Takada, T. (2014). Order in NP conjuncts in English and Japanese. *Linguistics*, 152, 48–64.  
[5] Yamashita, H. & Chang, F. (2001). 'Long before short' preference in the production of a head-final language. *Cognition*, 81, B45–B55.

## Acknowledgements

This work was supported in part by NSF CAREER grant IIS-1150028 to TFJ. We thank C. Donatelli, I. Minkina, and A. Wood for their help creating video stimuli.