

# The effects of native phonology and production practice on cross-situational word learning

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## Research questions

Second language (L2) word learning is a complex process. Non-native speakers may have difficulty in learning words with non-native sound sequences (e.g., Flege & Bohn, 2021). Furthermore, the extent to which knowledge obtained from practising one skill, such as listening, may transfer to another skill, such as speaking, is a contentious debate (e.g., Li & DeKeyser, 2017). We investigated how **native phonology** and **production practice** affects **comprehension and speech production of novel L2 words**. We used the cross-situational learning paradigm (CSL, e.g., Tuninetti et al., 2020; Monaghan et al., 2019) to train native speakers of English on **European Portuguese** pseudowords.

## Stimulus material

### Target Pseudowords

Oral (native)	Nasal (non-native)
['davu]	['sēvu]
['vesu]	['dību]
['bilu]	['lōsu]
['sudu]	['vūdu]

### Referents (Horst & Hout, 2014)



## Design

### Cross-situational Learning Task

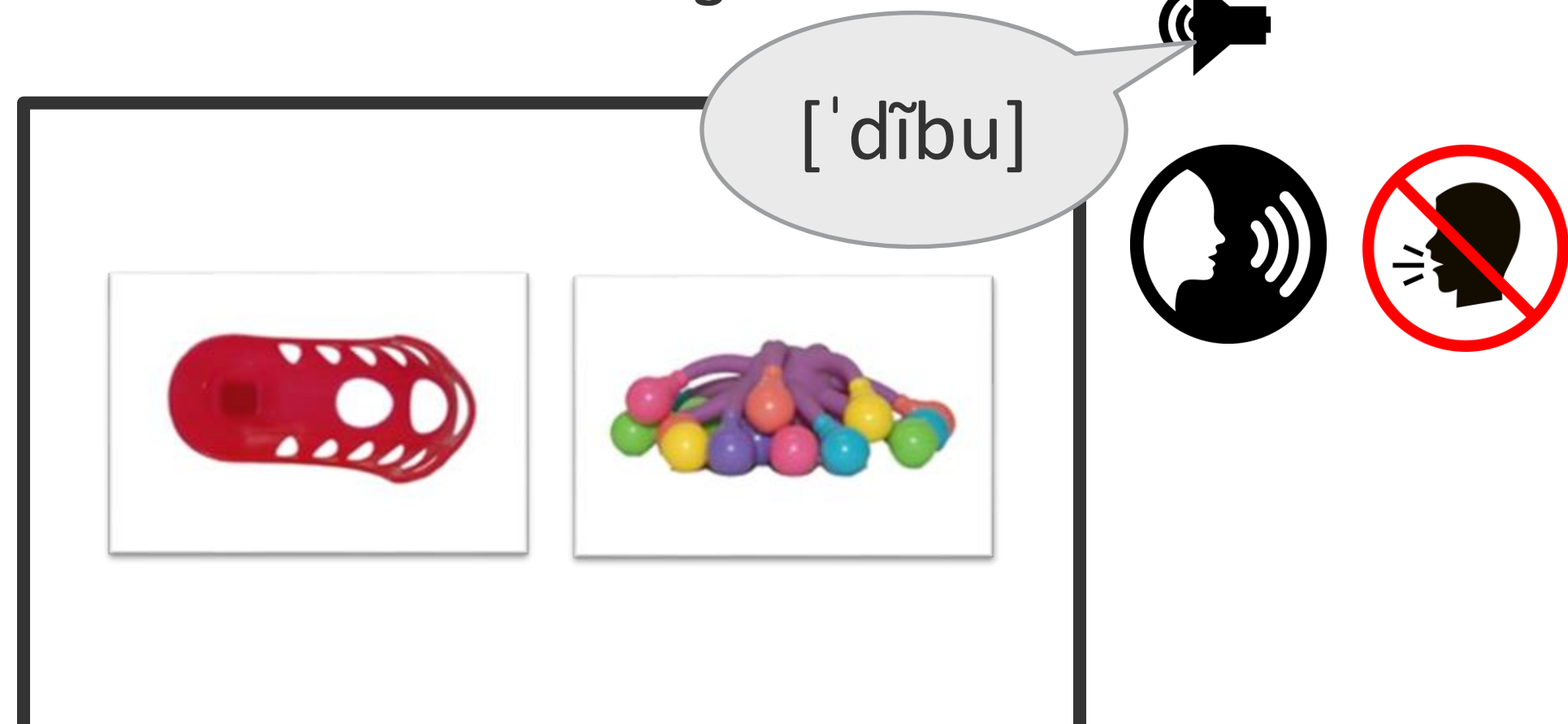
Listen group

Listen+repeat group

Comprehension Test and Production Test

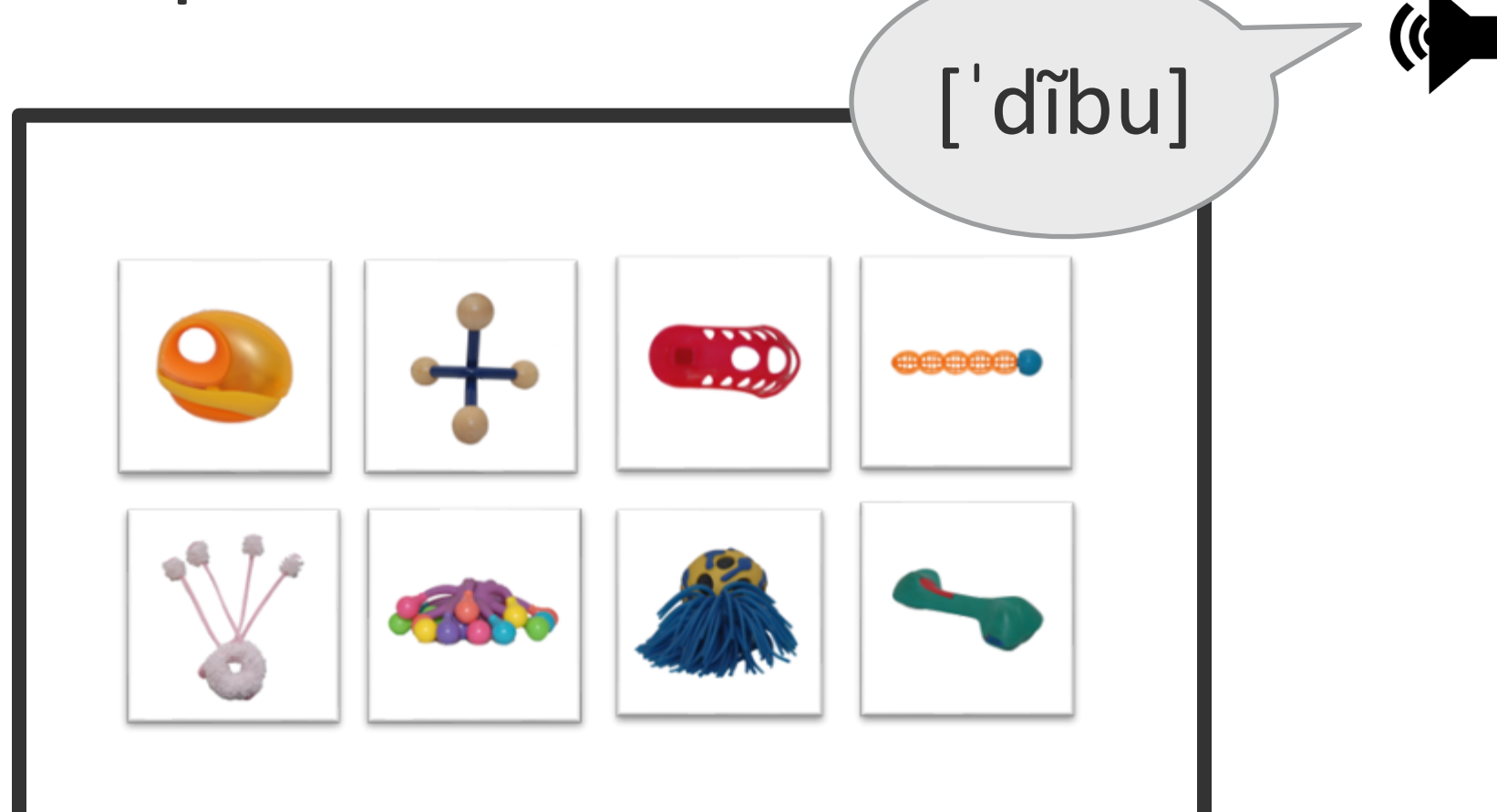
## Paradigm

### Cross-situational Learning Task trial



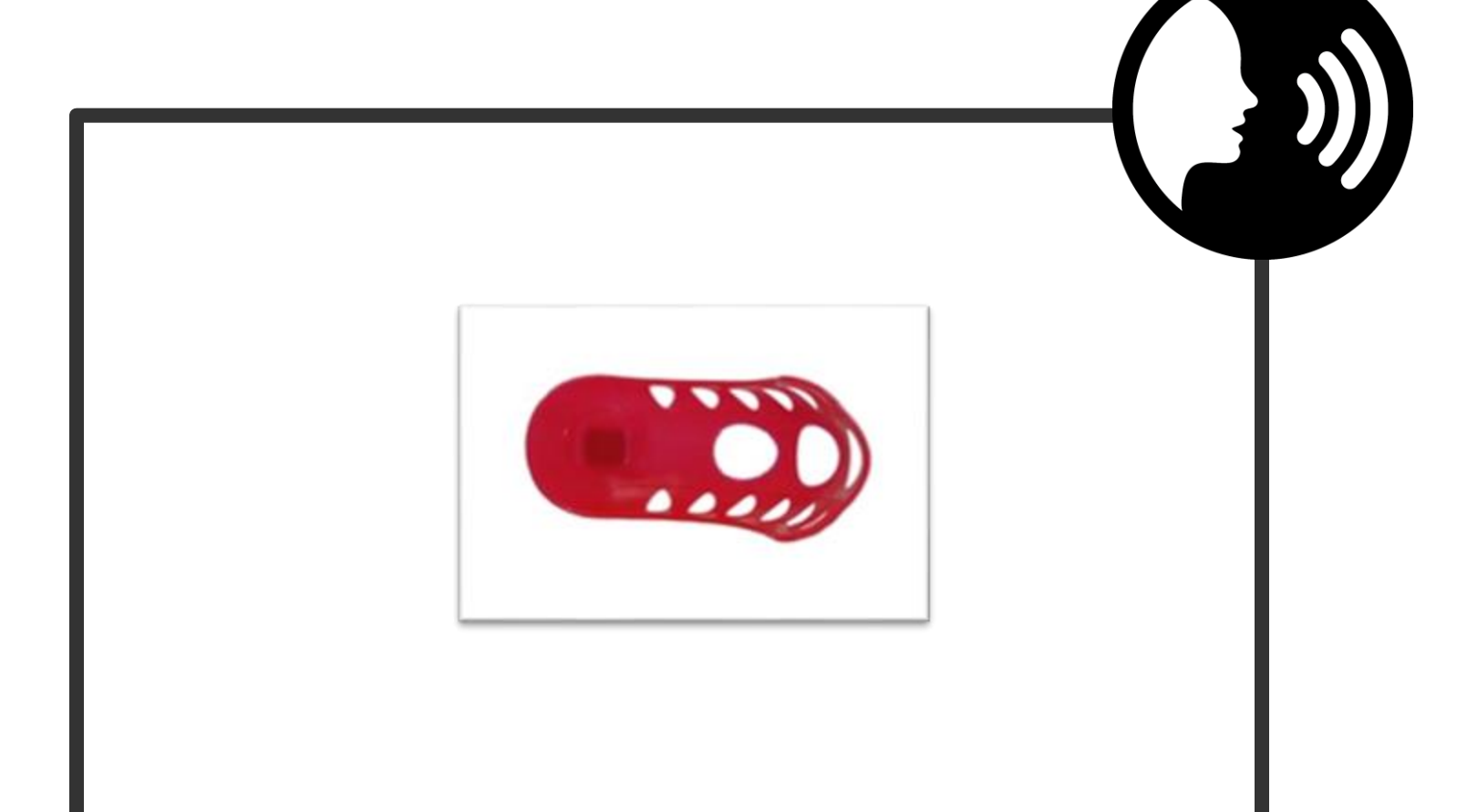
1. Select the picture that matches the word.
2. Repeat the word aloud OR wait silently.

### Comprehension Test trial



Select the picture that matches the word.

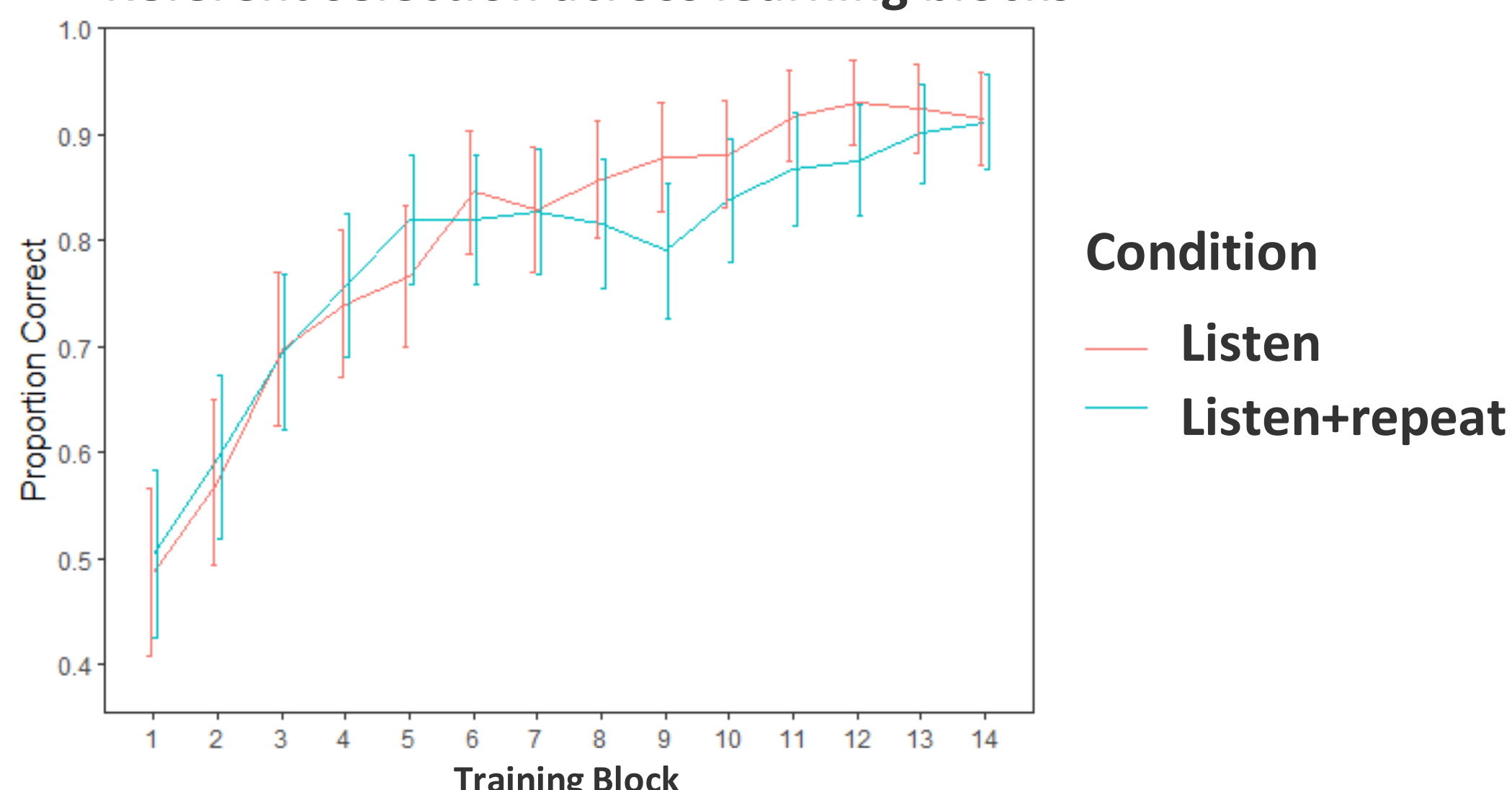
### Production Test trial



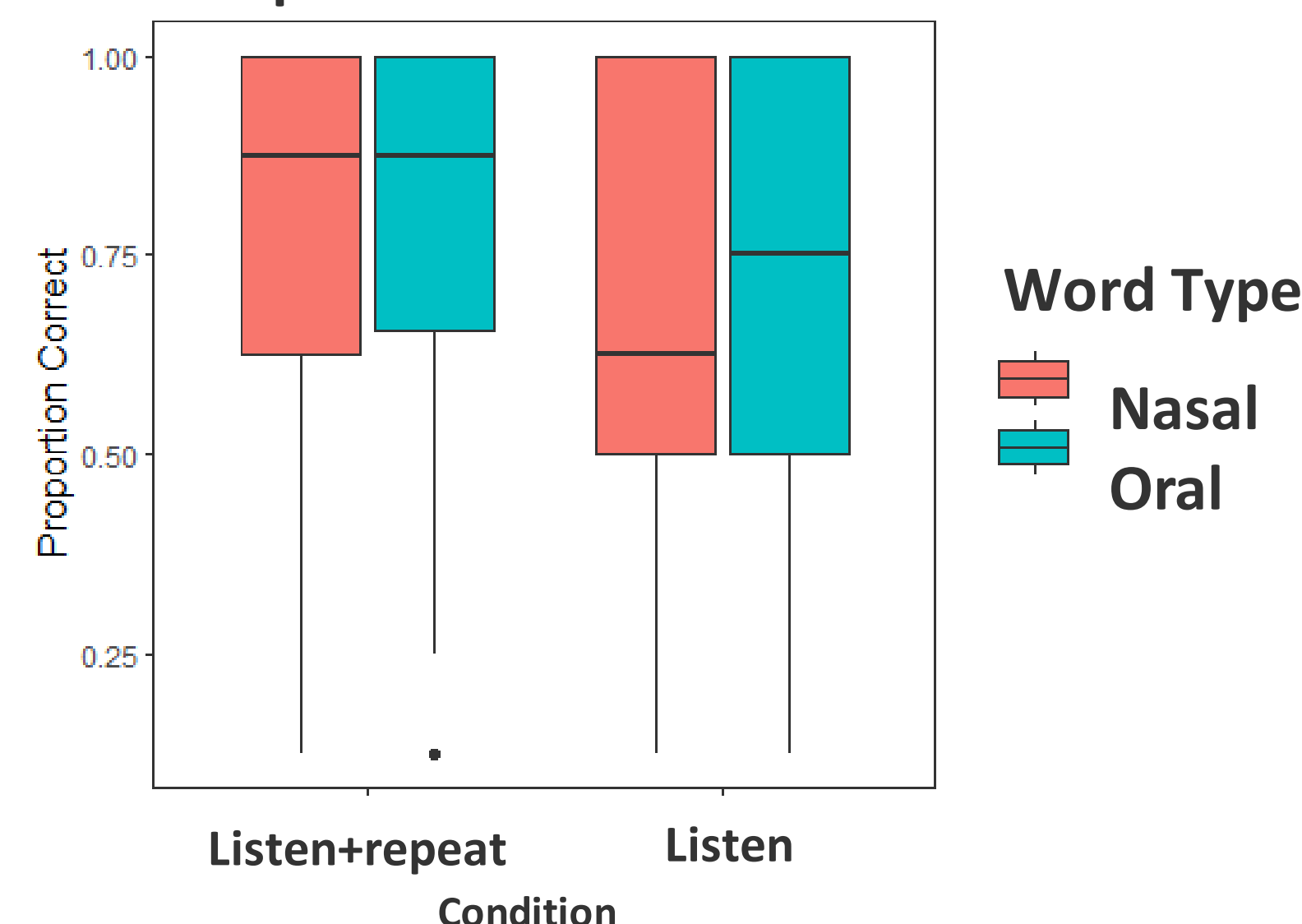
Say aloud the word that matches the picture.

## Results

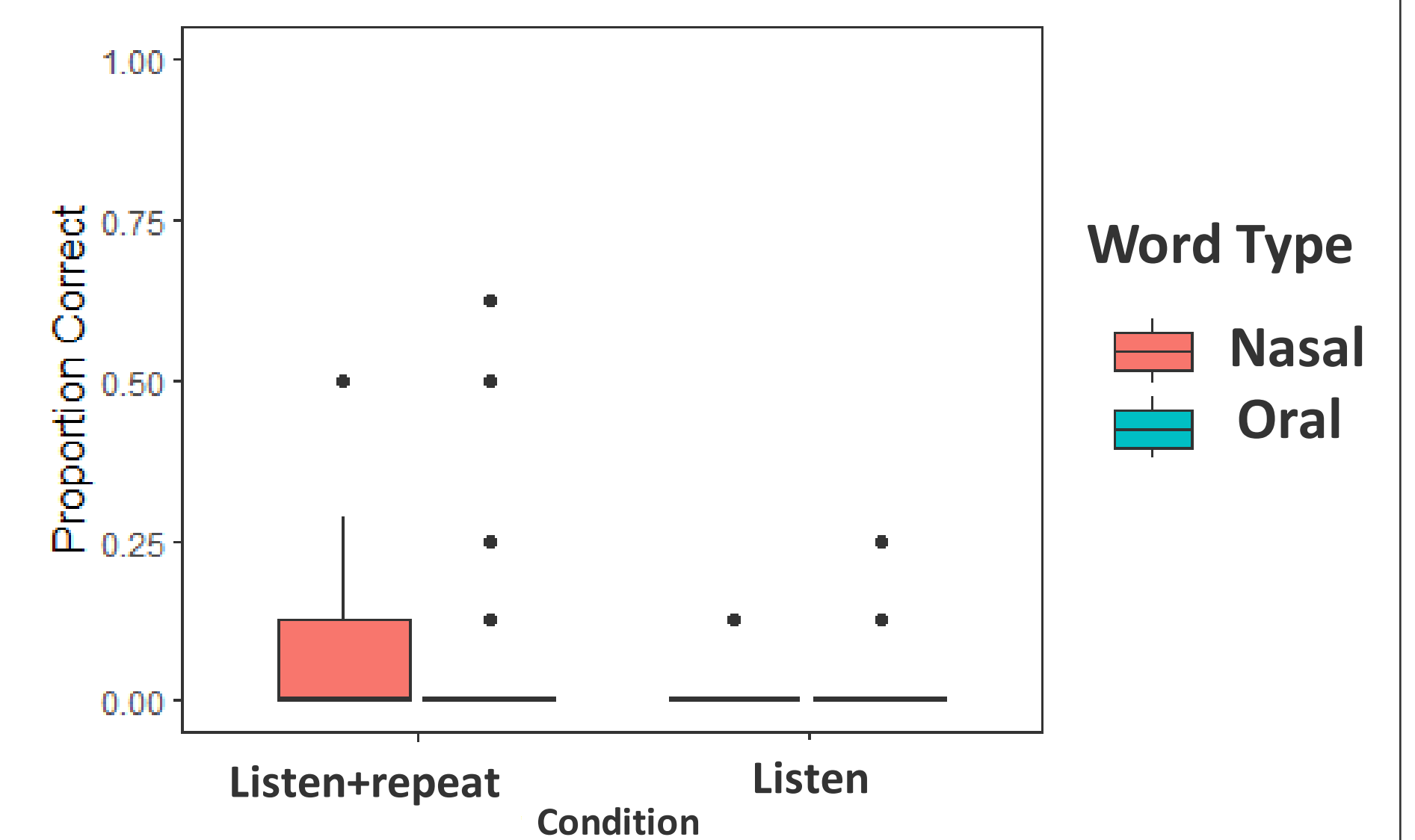
### Referent selection across learning blocks



### Comprehension Test



### Production Test



## Discussion

- In the CSL task, referent selection accuracy improved but pseudoword repetition accuracy declined over training.
  - Possible explanation: learners focus their attentional resources on form-meaning mappings rather than on target-like productions at early stages of word learning.
- No skills specificity effect observed in the CSL Task or the Comprehension Test, except a significant effect of production practice on accuracy in the Production Test.
  - Possible explanation: vocal rehearsal provides learners with experience in speech production planning and articulation which promotes production performance.
- No effect of native phonology in either the CSL Task or the Comprehension Test, but a significant effect of nasal word types in the Production Test.
  - Possible explanation: learners can produce L2 nasal vowels despite limited exposure to them due to the saliency of these sounds in production.
- Future research: Measure the L2 learners' categorical perception of nasal vowels to test whether they are sensitive to nasality before and after CSL. Investigate if learners' low production accuracy scores are due to approximation and use a Levenshtein algorithm adaptation (Levenshtein, 1966) to code their relative accuracy across the different target words.

### References:

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- Horst, J. S., & Hout, M. C. (2014). The Novel Object and Unusual Name (NOUN) Database: a collection of novel images for use in experimental research. Unpublished manuscript.
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- Li, M., & DeKeyser, R. (2017). Perception practice, production practice, and musical ability in L2 Mandarin tone-word learning. *Studies in Second Language Acquisition*, 39(4), 593-620.
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