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

Sophie Bennett(1), João Dinis Fernandes(1,2), Susana Correia(2), Padraic Monaghan(1), and Patrick Rebucchat(1,3)

1. Lancaster University, 2. Linguistics Research Centre of NOVA University Lisbon (CLUNL), 3. University of Tübingen

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

<table>
<thead>
<tr>
<th>Target Pseudowords</th>
<th>Referents (Horst &amp; Hout, 2014)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral (native)</td>
<td>[davu] Davu</td>
</tr>
<tr>
<td>Nasal (non-native)</td>
<td>[sêvov] Sêvov</td>
</tr>
<tr>
<td>[vesu] Vesu</td>
<td>[dibu] Dibu</td>
</tr>
<tr>
<td>[bilu] Bilu</td>
<td>[lôsu] Lôsu</td>
</tr>
<tr>
<td>[sudu] Sudu</td>
<td>[vûdu] Vûdu</td>
</tr>
</tbody>
</table>

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

- 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.

Discussion

References:


Corresponding author:
Sophie Bennett
s.c.bennett@lancaster.ac.uk