The effect of phonological knowledge on word learning in second language acquisition

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Introduction

L1 word learning is strongly related to phonological knowledge
- Studies of English speaking children
- L1 vs. OUT sounds
- IN – correctly produced sounds
- OUT – incorrectly produced sounds
- Word learning
  - Early stage: IN words > OUT words (Leonard, et al., 1981)
  - Later stage: IN words < OUT words (Storkel, 2004)

L2-L1 phonological mapping influences L2 perception
- L1 Japanese-L2 English speakers (Guion, et al., 2000)
  - /s, t, w, v, /b/ → IN
  - //l, /w, // → OUT

Phonology and L2 word learning
- Past studies showed that phonology affects L2 word learning
  - Phonological short-term memory
    - Nonword repetition (e.g., Speciale, et al., 2004)
    - Suppression (Papagno, et al. 1991)
  - Phonotactic patterns (Feldman & Healy, 1998)
  - The relationship between L2-L1 phonological mapping and L2 word learning is unknown

Question
- Is L2 word learning influenced by the speaker’s phonological knowledge of the target sounds (IN vs. OUT) in the word?

Method

Participants
- n = 24
- L1 Japanese – L2 English
- Ages 19 – 33
- High English proficiency (TOEFL score ≥ 570 or equivalent)
- Normal speech, hearing, and cognition

Target consonants
- IN: /s, t, w/
- OUT: /r, l, v/
- IN vs. OUT sounds were verified through a perception task

Auditory stimuli (24 CVC nonwords)
- 4 CVC nonwords selected for each of the 6 target consonants (IN= /s, t, w/; OUT = /r, l, v/)

Visual stimuli
- Each of the nonwords were paired with a picture of a novel object (Kroll & Potter 1984)

Examples

<table>
<thead>
<tr>
<th>Type</th>
<th>IN</th>
<th>OUT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Novel object</td>
<td><img src="image1" alt="Picture" /></td>
<td><img src="image2" alt="Picture" /></td>
</tr>
<tr>
<td>Nonword</td>
<td>seb</td>
<td>wis</td>
</tr>
</tbody>
</table>

Exposure script
- This is a ruk. Say ruk. Find the ruk. Yes, that’s the ruk.

Two measures to test word learning
- Referent Identification (picture choice)
  - Tests semantic representations
  - 4 pictures (target + 3 foils)
  - Scored as correct or incorrect
- Picture Naming
  - Tests lexical representations
  - Correct if 3/3 phonemes are produced correctly
  - OUT words: mispronunciation accepted as correct if the participant’s typical production pattern

Results

Cycles

Set 1 (12 nonwords)

<table>
<thead>
<tr>
<th>Day 1</th>
<th>Day 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline</td>
<td>Cycle 1</td>
</tr>
</tbody>
</table>

Set 2 (12 nonwords)

<table>
<thead>
<tr>
<th>Day 2 Cycle 1</th>
<th>Day 2 Cycle 2</th>
<th>Day 2 Cycle 3</th>
<th>Day 3 1-week post</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline</td>
<td>Cycle 1</td>
<td>Cycle 2</td>
<td>Cycle 3</td>
</tr>
</tbody>
</table>

Implications

L2-L1 phonological mapping can be extended to L2 word learning
- Perceptual training can be used to improve L2 word learning

Future/Ongoing Directions

Comparing data with native English speakers & Japanese speakers with different proficiency levels

Conclusion

- Phonological knowledge influences L2 word learning.
  - IN > OUT only for picture naming
  - Affects lexical representations
  - Does not affect semantic representations
- L2 word learning similar to early-stage L1 in the effect of phonological knowledge

References


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