Factors affecting word learning in adults: A comparison of L2 versus L1 acquisition

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Three Levels for Word Learning:

Semantic

Lexical

Phonological /r/ /a/ /s/

= meaning

= word as a whole unit

= individual sound
Three Levels for Word Learning: L2 acquisition

Semantic level

Lexical level /rais/ or /laɪs/ ??

Phonological level /r/ or /l/ ??

Phonological and Lexical Levels (L1)

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

Phonological and Lexical Levels (L2)

- L2 lexical representations are constrained by familiarity with L2 phonological pattern
  - Phonological short-term memory
    - Nonword repetition (e.g., Speciale et al., 2004)
  - Perceptual difficulties (Cutler et al., 2006)
  - Mapping between phonetic information and word recognition
  - Eye-tracking
    - /r-l/ for L1J-L2E

L2-L1 Phonological Mapping

- Non-native sound discrimination
  - Language-universal \(\rightarrow\) Language-specific
  - L1 influence

L2-L1 Phonological Mapping

- L1 Japanese L2 English speakers (Guion et al., 2000)
  - Identification of English consonants in terms of Japanese categories
    - IN: categorized as a single Japanese consonant
    - OUT: categorized as more than one Japanese consonant
      - /h, s, v, b/ \(\rightarrow\) IN
      - /l, l, 0/ \(\rightarrow\) OUT
**Question**

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

**Participants**

<table>
<thead>
<tr>
<th>L1 Japanese – L2 English</th>
<th>Native English (control)</th>
</tr>
</thead>
<tbody>
<tr>
<td>N = 24</td>
<td>N = 24</td>
</tr>
<tr>
<td>Ages: 19-33</td>
<td>Ages: 18-32</td>
</tr>
<tr>
<td>High English proficiency</td>
<td>English monolingual</td>
</tr>
<tr>
<td>Normal speech, hearing, and cognition</td>
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</tr>
</tbody>
</table>

**Target Consonants**

**IN vs. OUT**

**IN:**
- s
- t
- w

**OUT:**
- r
- l
- θ

**Target Verification**

- Perception and production of target sounds
  - L1 Japanese: IN > OUT
  - NE English: IN = OUT
- Substitution patterns for OUT sounds recorded for each participant

**Word Learning Task**

**Auditory stimuli**

- 4 CVC nonwords for each target consonant

<table>
<thead>
<tr>
<th>Type</th>
<th>IN s, t, w</th>
<th>OUT r, l, θ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nonwords</td>
<td>sig, sig, web, map tid, top, tut, tuk wat, wen, wad, wis</td>
<td>rog, ris, rem, ruk lcf, lut, las, top 0ek, 0ip, 0ed, 0et</td>
</tr>
</tbody>
</table>

**Visual stimuli** (Kroll & Potter, 1984)

- sig
- ruk
Word Learning Task

Exposure

- Exposure script

  This is a *ruk*. Say *ruk*. Find the *ruk*.
  Yes, that's the *ruk*.

Word Learning Task

Referent Identification Measure

- Picture choice
  - 4 pictures (target + 3 foils)
  - Scoring
    - correct / incorrect

- Semantic representations
Word Learning Task

Picture Naming Measure

- Scoring
  - Correct if 3/3 phonemes are produced correctly
  - OUT words: mispronunciation accepted as correct if followed the substitution patterns in the production probe for each participant
  - Lexical representations

Word Learning Task

Repeated exposure-test paradigm

- Baseline → 3 cycles → 1 week post
  - Cycle
    - Exposure → Test (RefID, Naming)
  - Retention
    - 1 week post-exposure test (RefID, Naming)

Referent ID – IN vs. OUT

Picture Naming – IN vs. OUT

Word Learning Task

Results by task

- Ref ID:
  - L1 Japanese = Native English
  - Type: IN = OUT (L1 J & NE)
  - Cycle: cycle 1 < cycle 2 < cycle 3 > 1-week post

- Picture Naming:
  - L1 Japanese ≠ Native English
  - Type: IN > OUT (L1 J) IN = OUT (NE)
  - Cycle: cycle 1 < cycle 2 < cycle 3 > 1-week post
**Word Learning Task**

**Group comparisons**
- Ref ID (semantic)
  - IN: L1 Japanese = Native English
  - OUT: L1 Japanese = Native English
- Picture Naming (lexical)
  - IN: L1 Japanese = Native English
  - OUT: L1 Japanese < Native English \( (p = .001) \)

**Conclusion**
- Phonological knowledge influences L2 word learning.
- Group difference only for picture naming OUT-words
- L1 Japanese: IN > OUT only for picture naming
  - Affects lexical representations (picture naming)
  - Does not affect semantic representations (RefID)

**Implications**
- L2-L1 phonological mapping can be extended to L2 word learning.
- Assessment/Instruction
  - Use of perceptual information to predict L2 vocabulary learning
  - Perceptual training to improve L2 word learning
  - Monitor retention

**Thank you!**
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