

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

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## Three Levels for Word Learning:

Semantic



Lexical

rais

Phonological /r/ /a/ /s/

## Three Levels for Word Learning:

Semantic



= meaning

Lexical

rais

Phonological /r/ /a/ /s/

## Three Levels for Word Learning:

Semantic



Lexical

rais

= word as a whole unit

Phonological /r/ /a/ /s/

## Three Levels for Word Learning:

Semantic



Lexical

rais

Phonological /r/ /a/ /s/ = individual sound

## Three Levels for Word Learning:

Semantic



= meaning

Lexical

rais

= word as a whole unit

Phonological /r/ /a/ /s/ = individual sound

## Three Levels for Word Learning: L2 acquisition

Semantic level



Lexical level /rais/ or /lais/ ??

Phonological level /r/ or /l/ ??

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## Three Levels for Word Learning: L2 acquisition

Semantic level



Lexical level /rais/ or /lais/ ??

Phonological level /r/ or /l/ ??

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## 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)

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## 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-/ for L1J-L2E

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## L2-L1 Phonological Mapping

- Non-native sound discrimination
  - Language-universal → Language-specific
  - L1 influence

e.g., Best et al. (1988), Goto (1971), Trehub (1976), Werker & Tees (1983, 1984)

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## 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
  - /t, s, w, v, b/ → IN
  - /r, l, θ/ → OUT

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## Question

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

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## Participants

### L1 Japanese – L2 English

- N = 24
- Ages: 19-33
- High English proficiency
- Normal speech, hearing, and cognition

### Native English (control)

- N = 24
- Ages: 18-32
- English monolingual
- Normal speech, hearing, and cognition

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## Target Consonants IN vs. OUT

IN:

s t w

OUT:

r l θ

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## 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

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## Word Learning Task Auditory stimuli

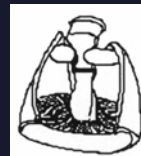
- 4 CVC nonwords for each target consonant

Type	IN s, t, w	OUT r, l, θ
Nonwords	suz, sig, seb, sap tid, top, tut, tok wat, wen, wid, wis	rog, ris, rem, ruk lef, lut, las, lop θæk, θip, θed, θæt

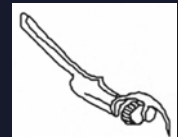
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## Word Learning Task Visual stimuli (Kroll & Potter, 1984)

sig



ruk



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## Word Learning Task

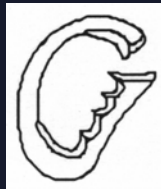
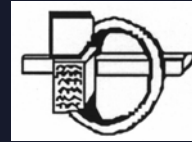
### Exposure



- Exposure script

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

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## Word Learning Task

### Referent Identification Measure



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

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## 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

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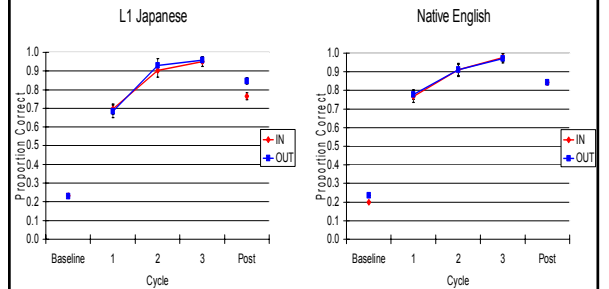


## Word Learning Task Repeated exposure-test paradigm

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

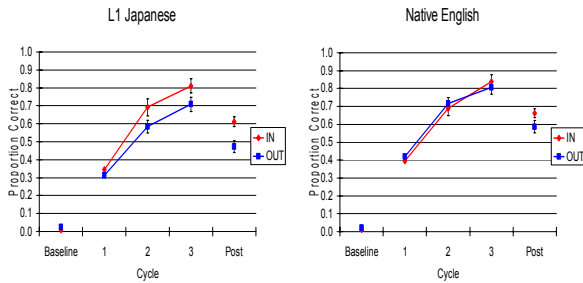
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## Referent ID – IN vs. OUT



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## Picture Naming – IN vs. OUT



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## 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

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## 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** ( $p = .001$ )

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## Word Learning Task

### 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)

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## 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

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## Thank you!



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