Second Language Perception of English Stops by Korean-Speaking Child Learners: Effects of Position and Lexical Knowledge

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Introduction

Position effects in L2 perception

- Speech Learning Model (Flege, 1995)

  "Sounds in the L1 and L2 are related perceptually to one another at a position-sensitive allophonic level, rather than at a more abstract phonemic level" (p. 239)

  → The **position** of a category within a word affects the difficulty of perceiving it

  → It is **positional allophones** rather than abstract phonemes that play a role in L2 category perception

- Takagi (1993):
  Japanese speakers used different Katakana symbols to label English /l/ and /ɹ/ within nonsense words depending on position
- Park and de Jong (2008, 2017):
  Korean speakers' labeling accuracy for English nonsense words containing obstruents differed depending on position
  - Pre-stressed intervocalic position > Initial position > Post-stressed intervocalic position > Coda position

→ Unit of L2 perception: **Position-by-position variants**

Lexical effects in L2 perception

- Mora (2005):
  In the AX task, Spanish/Catalan bilinguals performed better for English phonemic contrasts within **familiar** and **known** words than for those within **unfamiliar** and **unknown** words

Research gaps

- Most studies have tested only advanced adult L2ers
- It remains unknown whether L2 position-by-position variants are mapped onto L1 positional allophones or L1 phonemes

RQs

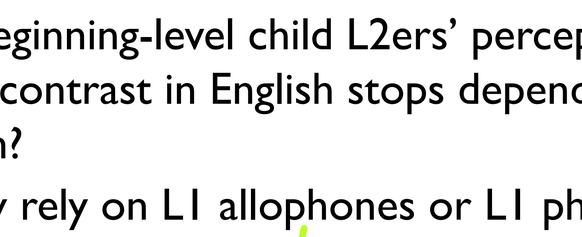
1. Does beginning-level child L2ers' perception of the voicing contrast in English stops depend on word position?
2. Do they rely on L1 allophones or L1 phonemes?
3. Can lexical knowledge effects be detected?

Stops in Korean

- Three-way contrast: lenis, aspirated, fortis
- This distinction is neutralized into lenis in coda position
- Lenis stops become voiced between sonorants

Two scenarios for RQs 1 & 2 (e.g. /p/ vs. /b/)

- Word-initial stops: No difficulty due to the aspiration cue
- Word-medial stops



No difficulty Difficulty

- Word-final stops: Difficulty due to the neuralization in Korean

Method

Participants

- 40 L1-Korean child L2ers of English with beginning-level proficiency
  → Real Word group (**RW**): *n* = 21
  → Nonsense Word group (**NW**): *n* = 19

Task and stimuli

- Two-talker AX discrimination task
- **Real** or **nonsense** word stimuli: 36 critical trials + 36 fillers
  - 9 word pairs
    - Each pair: one word containing a voiceless stop (/p, t, k/) and another containing a voiced stop (/b, d, g/)
    - The contrasting categories appeared in word-initial (*k* = 3), word-medial (*k* = 3), or word-final position (*k* = 3)
    - The order in each pair was manipulated to produce 4 stimuli
  - Stimuli were recorded by 2 male native speakers of English from New York City

Data analysis

- Participants' responses → *d'* scores
- Mixed ANOVA on the *d'* scores with ***Group*** (**RW**; **NW**) as a between-subjects factor and ***Position*** (word-initial; word-medial; word-final) as a within-subjects factor

Results

- Significant effect of ***Group*** ($F(1, 36) = 26.87$, $p < .001$)
- Significant interaction between ***Group*** and ***Position*** ($F(2, 72) = 11.30$, $p < .001$)
  - **RW**: ***Position*** effect ($F(2, 38) = 4.91$, $p < .05$)
  - **NW**: ***Position*** effect ($F(2, 34) = 6.47$, $p < .01$)

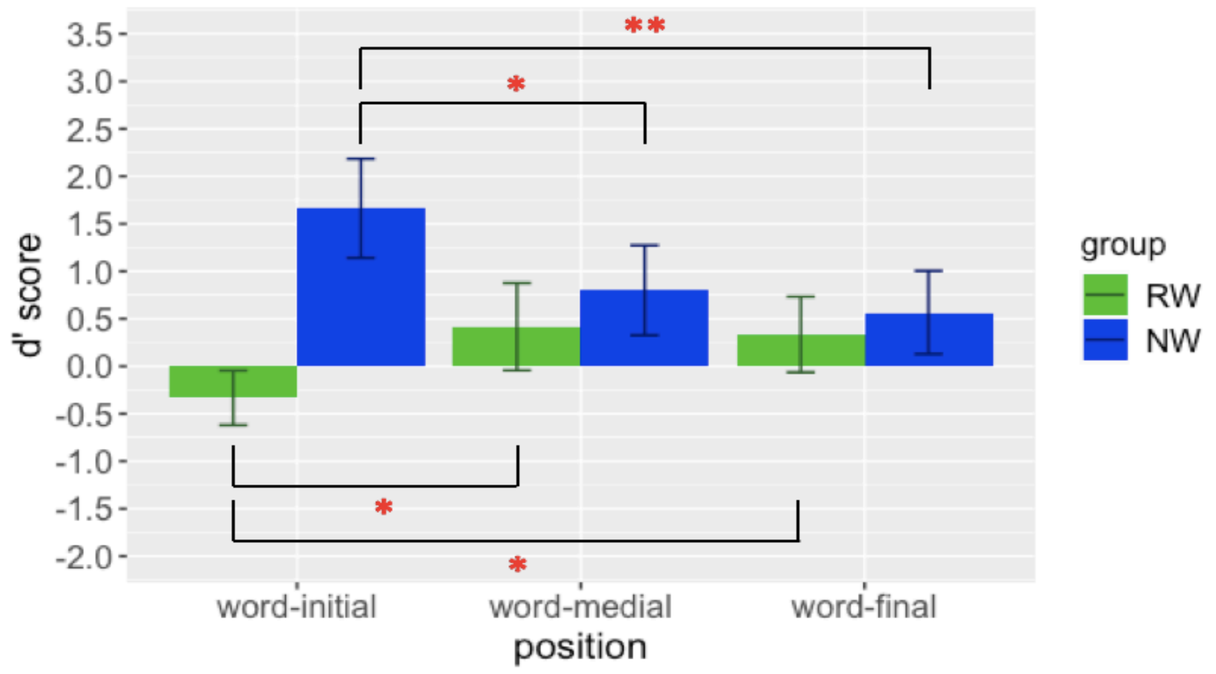


Figure 1. Mean d' score per position and group. Significance level: * $p < .05$; ** $p < .01$.

→ RQ 1: Yes!
RQ 2: L1 phonemes, not L1 allophones
RQ 3: Yes!

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Conclusion

- The perception of an L2 category is affected by its **position**
- **NW**'s performance suggests that, contra the SLM, beginning-level child L2ers map L2 sounds onto **L1 phonemes**
- The difference observed between **RW** and **NW** provides evidence of **lexical knowledge interference effects** in L2 perception; The **RW** participants may have experienced increased processing load due to activating both lexical and phonological representations, which could have inhibited their ability to distinguish the sounds

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