Multisensory Integration of Visual and Auditory Signals during Second Language Learning

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The Selective Attention & Perception Lab

Introduction

- Second language learning (L2)
  - Vowel length changes meaning (e.g., Japanese)
  - Hand gestures - an effective tool to enhance auditory perception in natural classroom environments

- The mechanism behind the gesture effect remains unclear
  - Multisensory integration - McGurk effect
  - Co-occurring nonverbal cues

Methodology

- 36 Japanese learners
  - No Gesture: 20
  - Do Gesture: 16
- 37 pairs of words, e.g.:
  - ki – kii;
  - share - sharie

- Perception Score: Proportion of accuracy
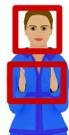- Mora ratio: Long / Short syllable weight

Please pick the word you just heard. Press enter to continue.
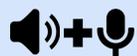
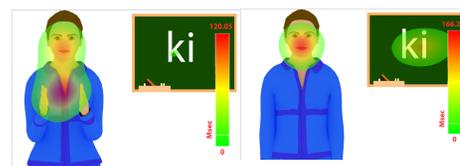| fuu | fu |

KOREWA fuu DESU

ki
- Face
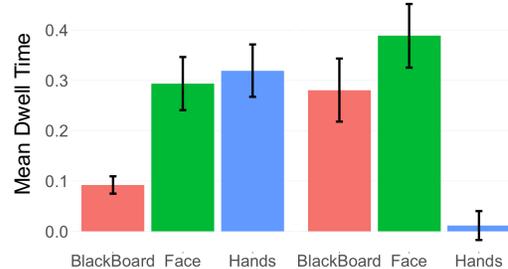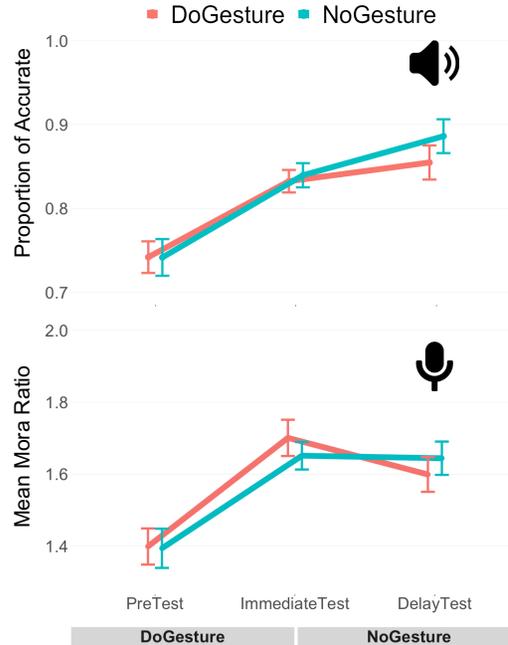- Hands
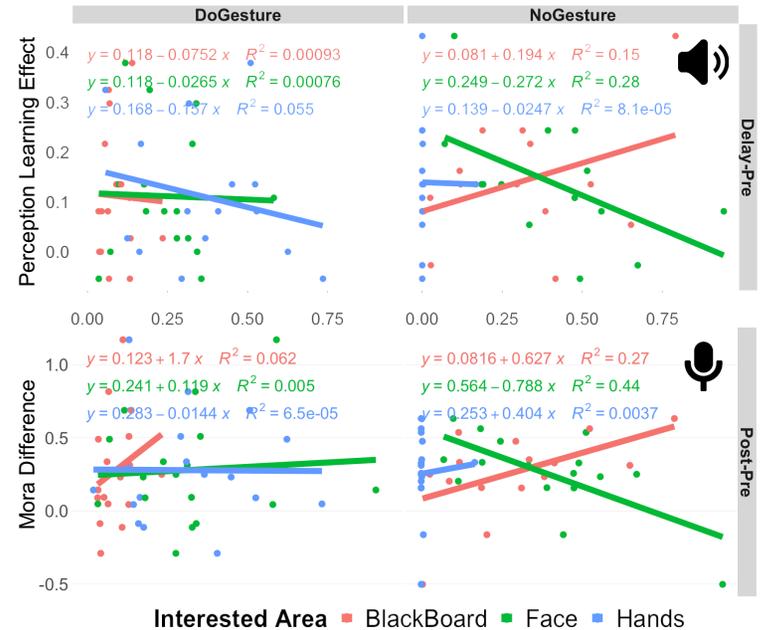- Blackboard

Session 1

--- One week later ---

Session 2

Results

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Discussion

- Visual cues disambiguate speech perception:
  - Gestures < Blackboard
    - No reliable connection between gestures and performance
    - Romaji alphabet might be the most consistent cue across training and testing

- Consist with Hirata et al. (2014) but contradicts a previous classroom study[2]
  - Co-occurring nonverbal cues might exist in a nature classroom
  - e.g. eye-gaze, facial expression, head movement, etc.

Reference

1 . Hirata, Y. 2004b. "Training native English speakers to perceive Japanese length contrasts in word versus sentence contexts," J. Acoust. Soc. Am. 116, 2384–2394.

2 . Iizuka, Nakatsukasa, Braver, & Farley, 2016. Bridge between syllabic and moraic languages: Does gesture help pronunciation learning?. Second Language Research Forum (SLRF) 35. Columbia University.