Technology-based feedback and its efficacy in enhancing perceptual learning of Korean sounds

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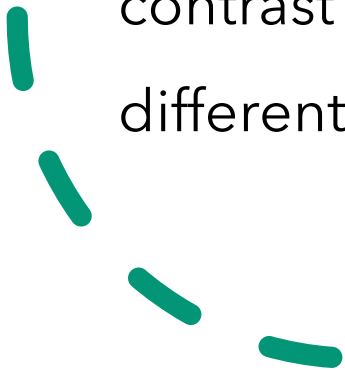## Goals of the study

- To explore the effects of corrective feedback on the perception of second language (L2) sounds by assessing L2 learners' identification accuracy of the Korean three-way contrast through mobile-assisted auditory training with three different feedback types.

Mobile-Assisted Language Learning

- The main characteristics of mobile learning are recognized as the potential for learning process to be personalized, spontaneous, informal and ubiquitous

- Learners feel a greater sense of freedom of time and place, so that they can take the advantage of spare time to learn a second language when and where they are.

- Mobile learning can be considered an ideal solution to language learning barriers in terms of time and place.

Miangah & Nezarat (2012)

Effects of auditory training on L2 perception

- Auditory training, which provides intensive input, would be effective for L2 perception accuracy. (Bradlow et al. 1997; Lively et al. 1993; Rato, 2013; Rochet & Chen, 1992; Trapp & Bohn 2002; Ryu 2020).

- Several extended studies have also shown that the training effects can be retained in the long run. (Bradlow et al. 1997; Bradlow et al. 1999; Lively et al. 1994)

Effects of feedback on L2 perception

- There is not an extensive body of research on feedback on L2 perception. (Bryfonski & Ma 2020, Lee & Lyster 2016)

  - Lee and Lyster (2016) examined the effects of corrective feedback on instructed L2 speech perception in a classroom-based study.

  - They found that an instruction with corrective feedback group outperformed an instruction-only group at the immediate and delayed post-tests as well as on unfamiliar words in in perception of English vowel contrast /i/- /I/ by Korean learners of English.

Research questions

(1) Whether corrective feedback is effective in mobile-assisted auditory training?

(2) How and to what extent do different types of corrective feedback used during auditory training differ in terms of their impact on L2 learners' perceptual accuracy of the Korean three-way stop contrast?

(3) Whether learners' perceptual improvement from pre-test to immediate post-test can be retained at delayed-post test?

Participants

- 71beginning learners of Korean were assigned into four groups (mean age = 20 years old)

Group 1	Group 2	Group 3	Group 4
20 (F14/ M6)	18 (F13/ M5)	22 (F18/ M4)	11 (F11)

Speech materials

The stimuli of pre-,post- and delayed test consisted of a total number of 138 tokens (23 minimal triplets x 2 speakers).

The Korean three-way stop contrast, aspirated, fortis and lenis (e.g., /ph, p', p/), were embedded in initial position in a CV syllable format (e.g., /pha, p'a, pa/).

For training sessions, materials included a combination of 27 minimal triplets of words containing the Korean contrast in the same format, yielding a total of 162 tokens (27 minimal triplets x 2 speakers).

Procedure

- All participants completed a pre-test, three training sessions, an immediate post-test and a delayed-test.

- Learners heard a sound and were asked to select the corresponding word on their mobile screen.

- Final score of their response was provided at the end of the tests and training sessions.

Four feedback types

- Feedback 1: Only correct/incorrect feedback

- Feedback 2: Correct/incorrect and visual feedback

- Feedback 3: Correct/incorrect and audiovisual feedback

- Feedback 4: No feedback

Data analysis

For statistical analysis, a mixed effects logistic regression model with the *lme4* package in R (R Core Team, 2017) was conducted.

Response (correct, incorrect) was the dependent variable. Test (pre-, post-, delayed-test), Contrast (aspirated, lenis, fortis), Feedback (only correct/incorrect feedback, visual feedback, audiovisual feedback, no feedback), and their interaction were included as fixed effects.
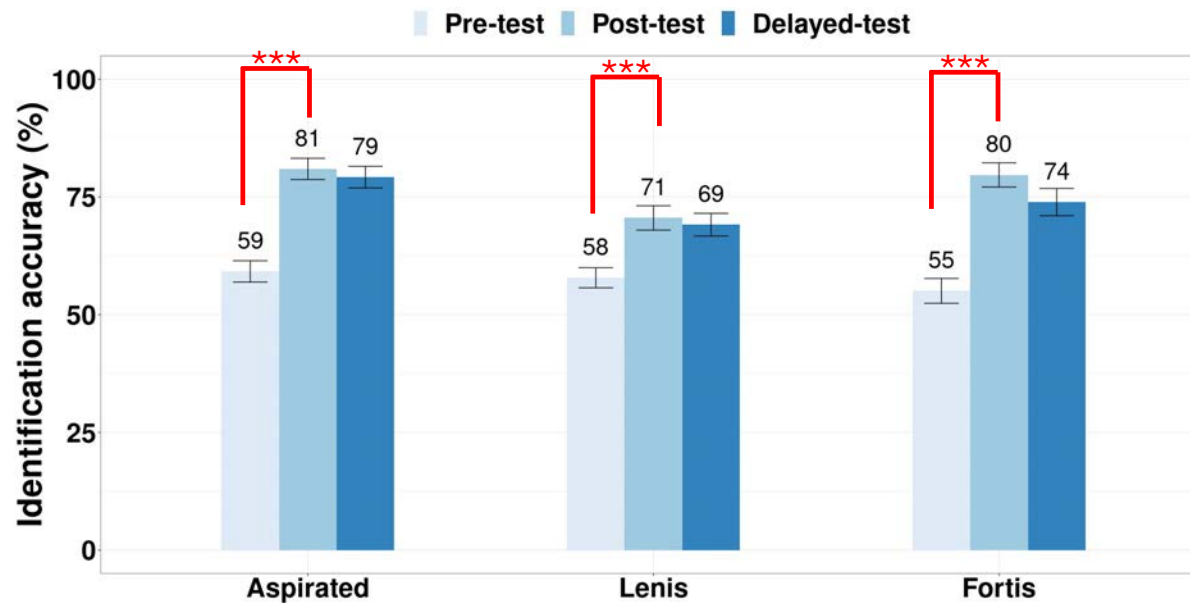
Intercepts for subjects and items as well as by-subject random slopes for Test were added as random effects.

Effects of auditory training on the Korean three-way stop contrast

- Difficulty of perception: Fortis>> Lenis >> Aspirated
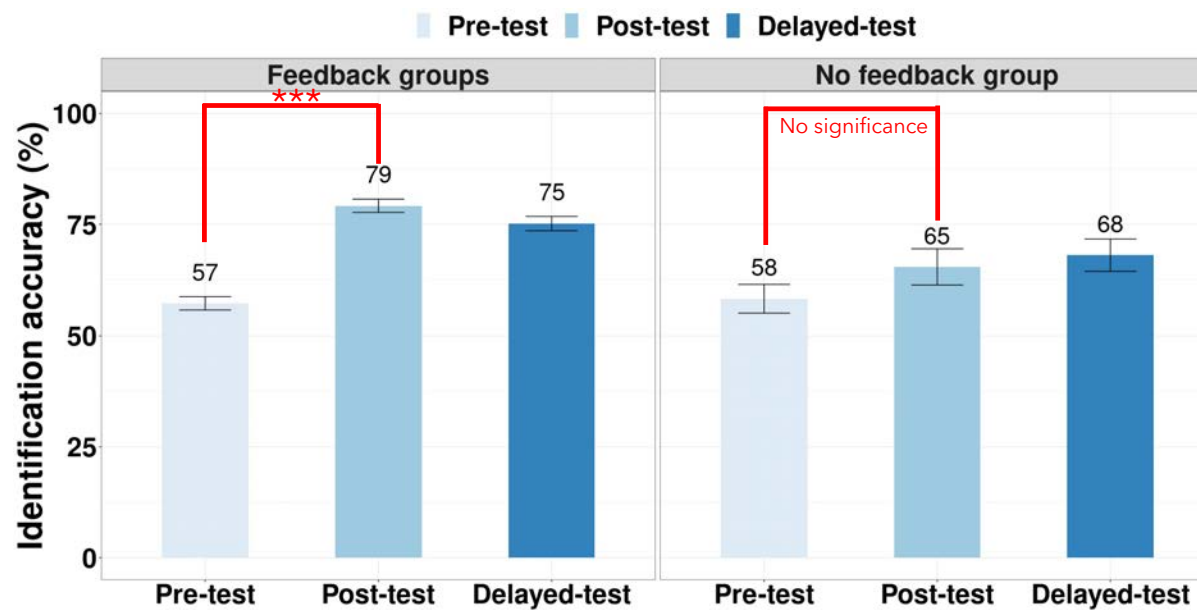- Degree of perceptual improvement: Fortis (25%) >> Aspirated (22%) >> Lenis (13%)

Effects of feedback on L₂ perception

Pre-test: There is no significant difference among the four feedback groups
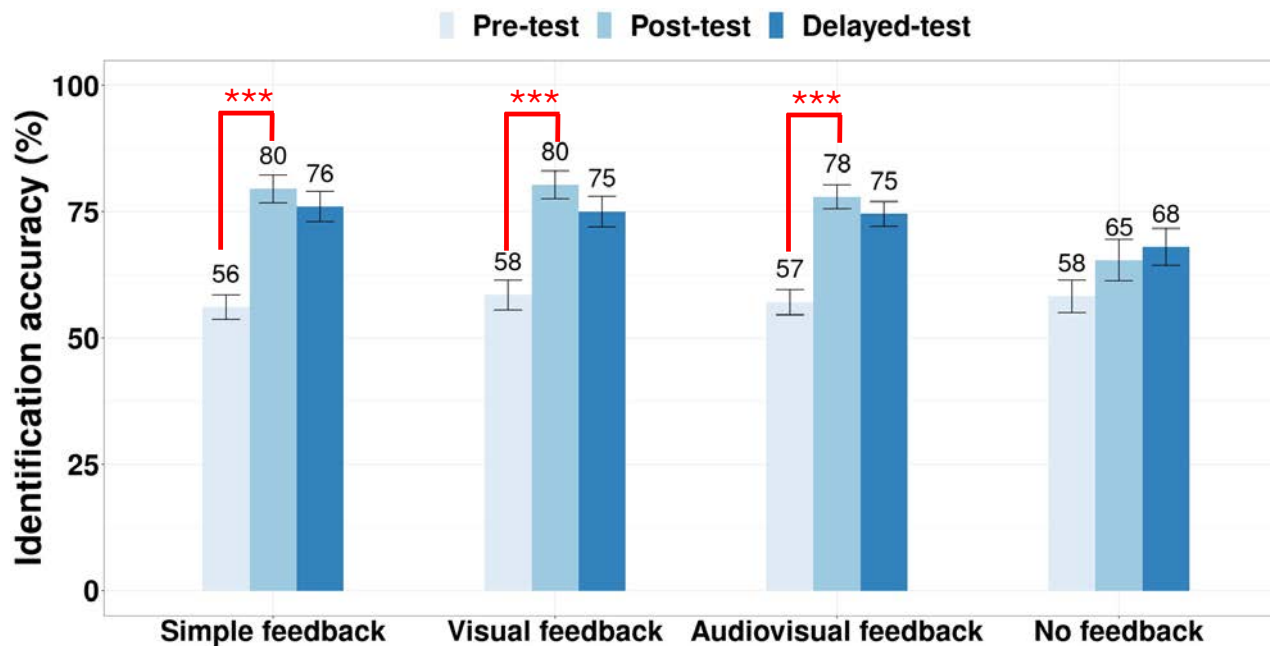
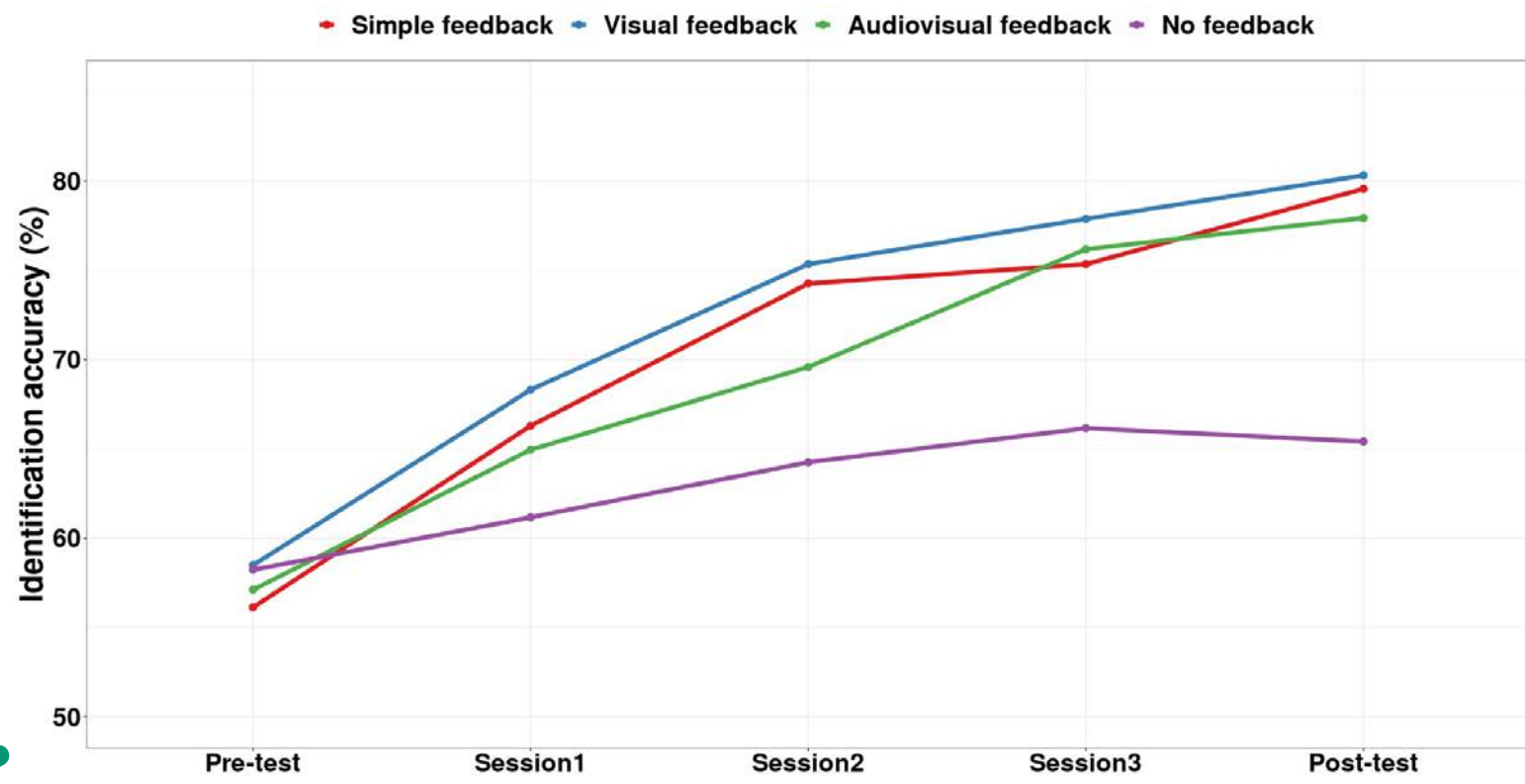Post-test: Feedback groups ($p > 0.05$) >> No feedback group

Effects of different types of feedback

Post-test: Simple feedback, visual feedback, audiovisual feedback are effective in perception of the Korean three-way stop contrast (p-value < 0.05)
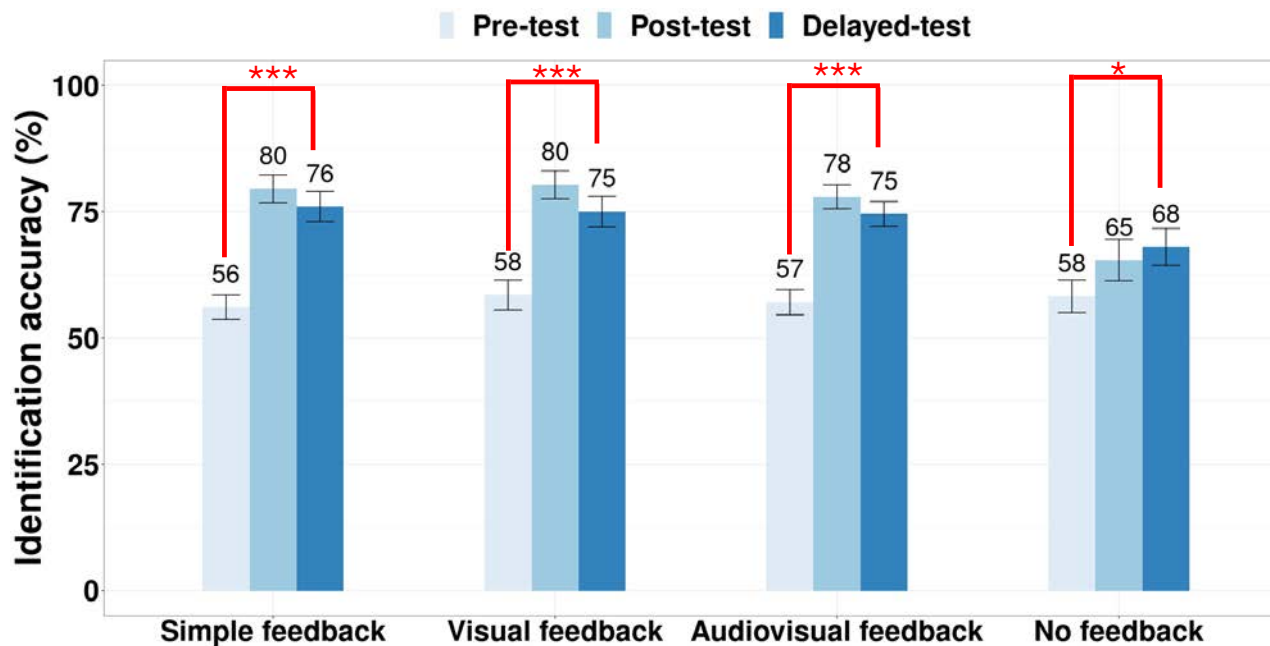
Perceptual improvement during training

Long-term retention effects of correct feedback on L2 perception

- Delayed-test: All feedback types have long-term effects on the perception of the Korean contrasts (p-value < 0.05)

Conclusions and pedagogical implications

- Learners benefit from mobile-assisted auditory training with different types of feedback to improve the perception of the Korean-three way stop contrast.
  - Degree of perceptual improvement: Fortis (25%)>> Aspirated (22%)>> Lenis (11%)

- All types of feedback are effective in developing perceptual L2 sound learning.
  - Learners can choose any type of corrective feedback they prefer to improve their perception ability of L2 sounds.

- Learners can take the advantage of use mobile-assisted auditory training to facilitate their L2 sound learning at a convenient time and place.

Any questions or comments?

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