Effects of different types of mobile-assisted feedback on the perception of Korean sounds

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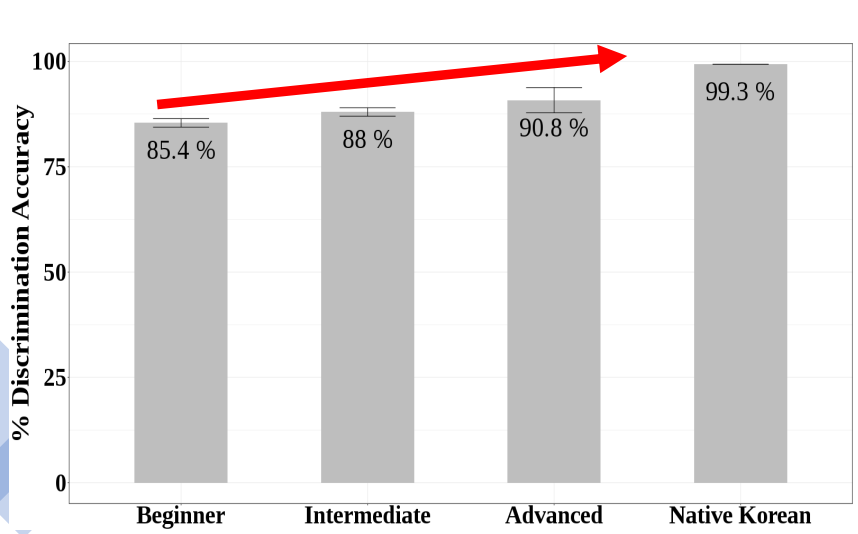
The 30th International Conference for Korean Language Education

Previous studies in L2 acquisition

- Second language (L2) learners of Korean often experience major difficulties in perceiving Korean stop three-way contrasts do not exist in their native languages (Kim & Lotto 2002, Chang 2010, Jung & Kwon 2010, Holliday, 2015, Wu & Cho 2019, Kong 2019)
- Computer-based training can be beneficial for L2 learners to improve their perceptual accuracy of L2 sounds (Bradlow et al 1997, Hardison 2003, Logan et al 1991, Wang & Munro 2004)
- Many SLM studies have found effects for corrective feedback on L2 grammatical, lexical, and pragmatic targets. However, there are only a handful of research studies probing the effects of corrective feedback on L2 speech perception (Lee & Lyster 2016, Bryfonski & Ma 2020)

Perception of Korean three-way contrasts

- Ryu (2017): Mandarin listeners' ability to discriminate and identify the Koran three-way contrast increases with their Korean language experience



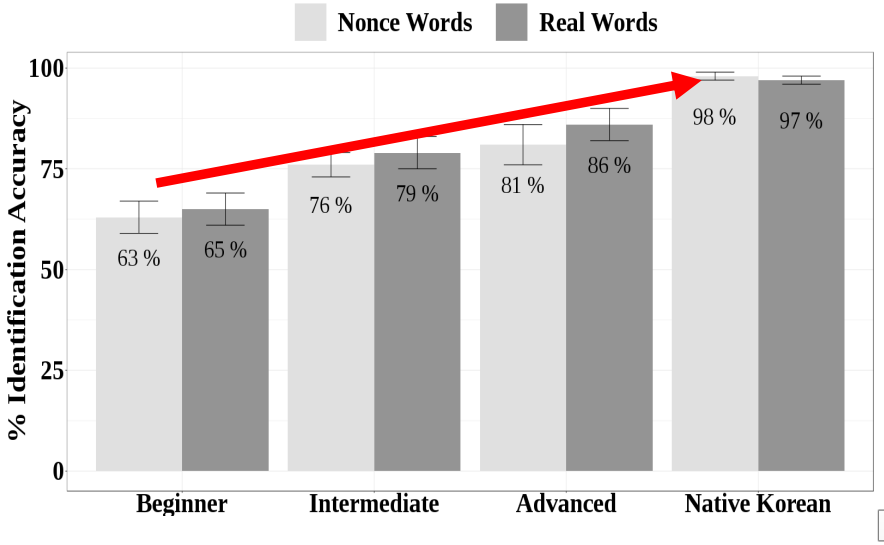


Figure 1. Discrimination and identification accuracy of Korean contrasts by L2 experience

Effects of perceptual training on L2 acquisition

- Ryu(2019): Effects of learners' attention on L2 perception in web-based perceptual training

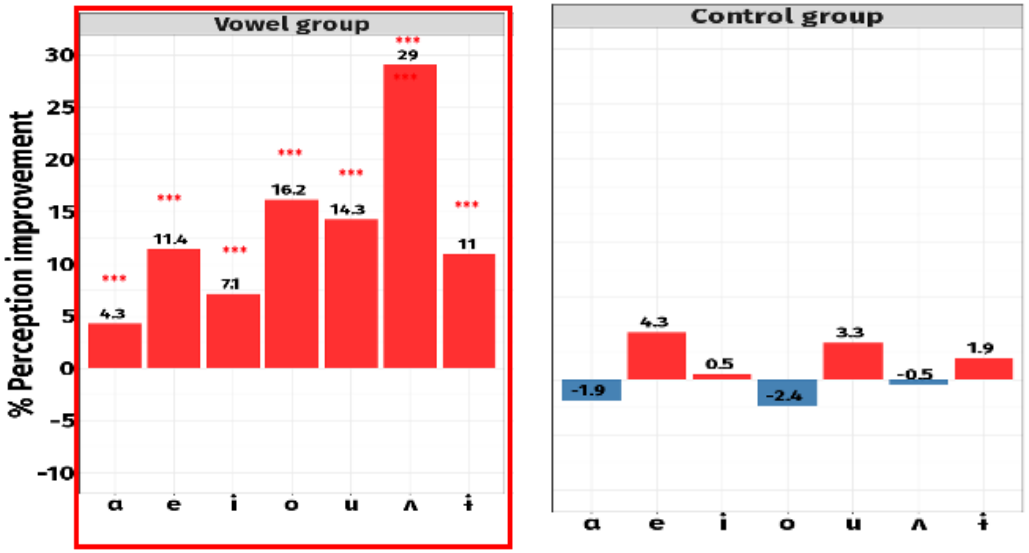


Figure 2. Perception improvement of individual vowels by group

Effects of corrective feedback on L2 acquisition

- An increasing number of studies have been devoted to examining the relationship between feedback and L2 learning (Tomasello & Herron 1988, 1989, Lightbown & Spada, 1990, White 1991)
- There is not an extensive body of research that have investigated the effects of feedback on speech perception (Lee & Lyster 2016, Bryfonski & Ma 2020).

  - Lee & Lyster (2016): An instruction with corrective feedback group outperformed an instruction-only group in perception of English vowel contrast /i/- /I/ by Korean learners of English.

    ✓ L2 learners benefit from corrective feedback on L2 speech perception, because they can indicate errors and have opportunities to confirm their L2 linguistic knowledge.

Goals

- To evaluate the effectiveness of a mobile-assisted auditory perceptual training program on the perception of Korean stop three-way contrasts by L2 learners of Korean

- To explore the pedagogical value of corrective feedback on L2 perception

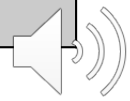
Participants

- 56 university-level learners of Korean were randomly assigned to one of four groups and participated in three training sessions.
- Each group received a specific type of corrective feedback when they made perceptual errors during the training sessions.

Design of the study

To measure learners' perceptual performance in identification, pre-test and post-test were used.

	Pre-test	**Training**	**Post-test**
Feedback	No	Four different feedback types	No
Task	Identification task		
Platform	Online (developed using jsPsych)		



Procedure

- All groups were asked to identify a sound they heard and click a corresponding button on the screen.

L2 learners

Identification task

Different feedback types

- **Group 1**: received an “incorrect” message on a screen
- **Group 2**: received an “incorrect” message and a correct answer in a written form was also provided.

Different feedback types

- **Group 3**: received an "incorrect" message and had to try until they got a correct answer
- **Group 4**: received an "incorrect" message and a correct answer was provided both visually and auditorily

Stimuli

- 126 stimuli (63 monosyllabic Korean words (CV) * 2 repetition) were used at pretest, posttest and training sessions
- Auditory stimuli were recorded by two native Korean speakers (F1, M1) in their 20s

Statistical analysis

- A mixed-effects logistic model in R (Baayen 2008; R CoreTeam 2012)
  - The package *lme4* (Bates et al 2011)
  - Dependent variable: Response (correct:1, incorrect:0)
  - Fixed effects: Test (pre-test, post-test), group (G1, G2, G3, G4) and their interactions
  - Random effects: Speakers, items

Perceptual accuracy of Korean stop contrasts after training

- There was significant main effects of Test, suggesting that training is helpful in improving L2 perception

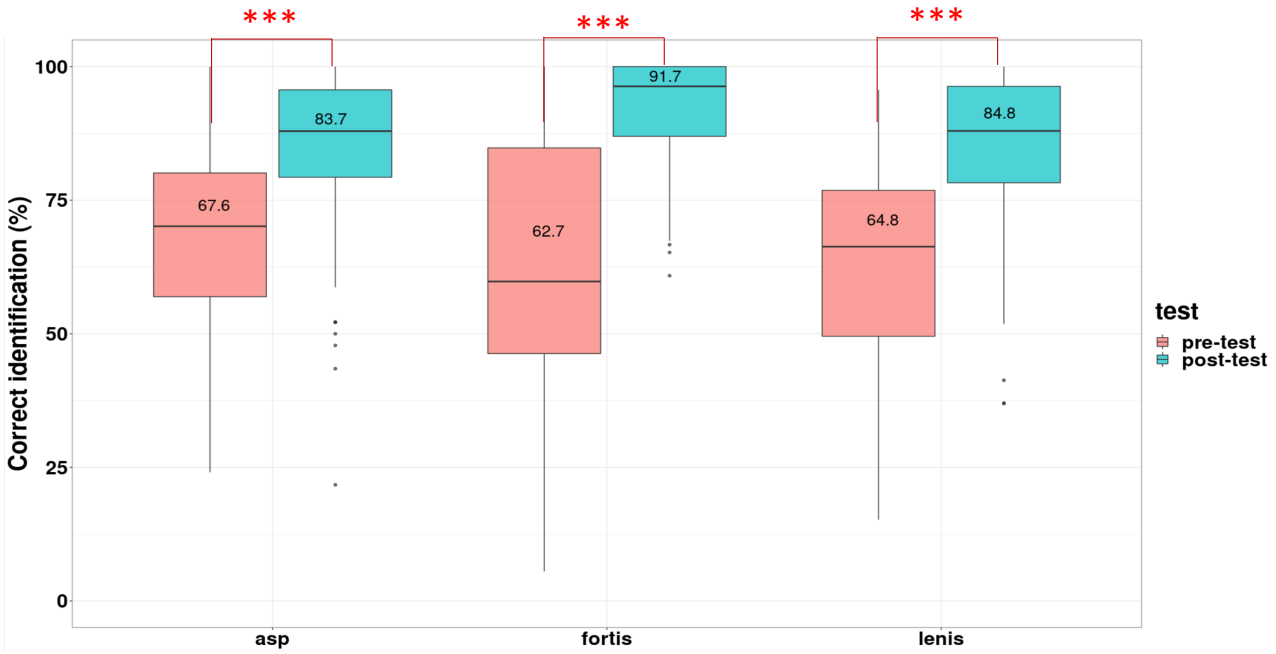


Figure 3. Identification accuracy of the Korean stop three-way contrasts after training

Perceptual accuracy of Korean stop contrasts by different feedback types

- There was significant main effects of FEEDBACK
  - All feedback types play a key role in helping the L2 learners to acquire target L2 phonemes
  - Interestingly, Group 1 is significantly more effective than Group 4, suggesting that less is better in terms of giving feedback.

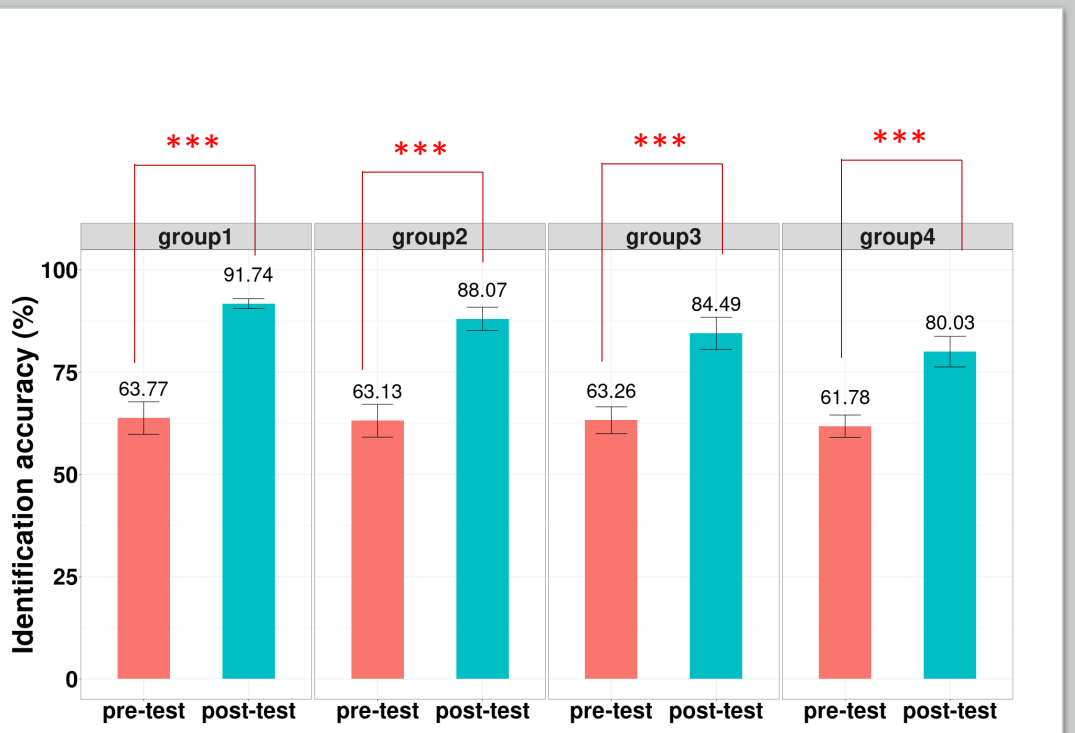


Figure 4. Identification accuracy of the Korean stop three-way contrasts by group

Perceptual development during mobile-assisted training sessions

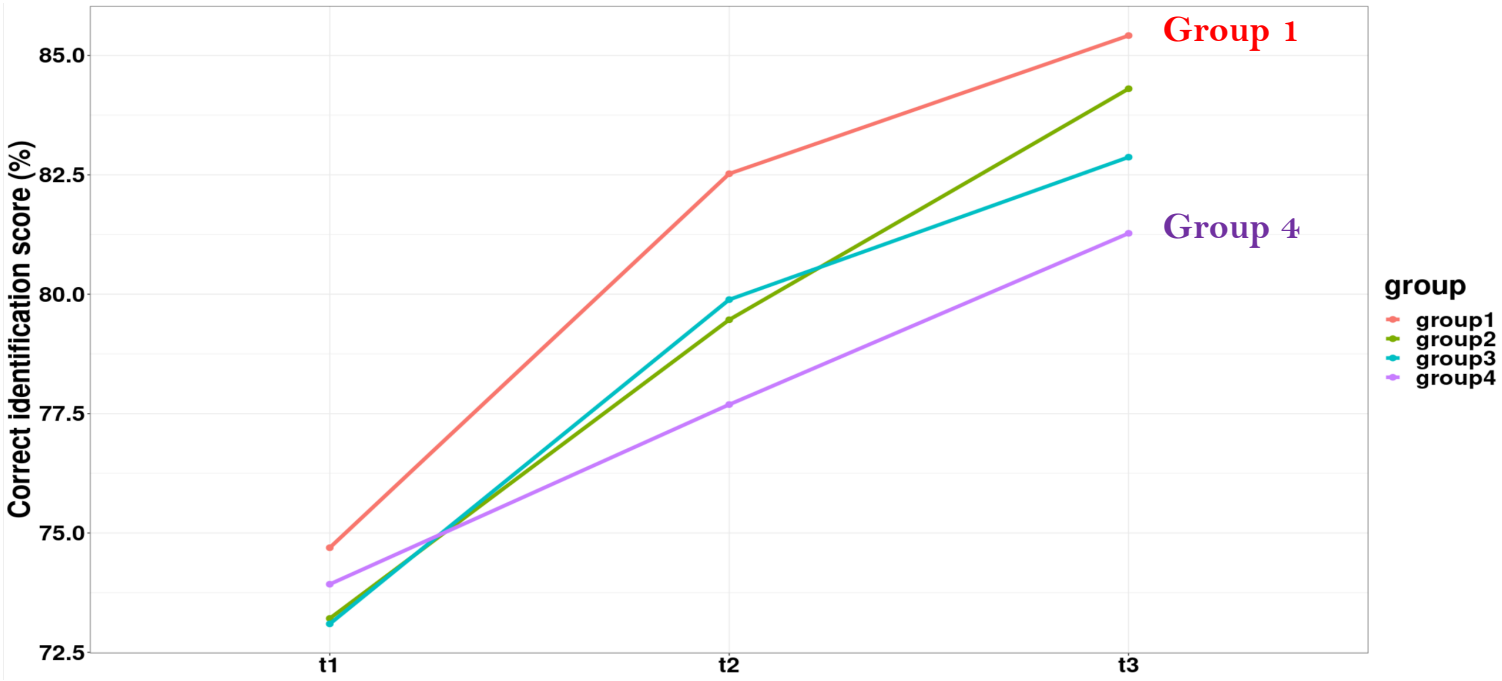


Figure 5. Identification accuracy of the Korean stop three-way contrasts by group during three training sessions

Conclusion

- All feedback groups showed significant improvement in identifying Korean three-way stop contrasts during training, suggesting that learners' attention to target sounds with feedback lead to improvement in L2 perception.

- Interestingly, there was a significant difference between Group 1 and Group 4 with respect to perceptual accuracy, suggesting that less is more when it comes to giving feedback.

    - Group 1, which received a simple “correct-or-incorrect” message as feedback, showed higher perceptual accuracy than Group 4, which received a “correct-or-incorrect” message as well as a right answer in visual and audio.

Pedagogical implications

- Mobile-assisted perceptual training is useful for L2 learners to improve their perception of L2 segments
- Feedback provides L2 learners with opportunities to reflect on and consolidate their linguistic knowledge
- Providing the learners with time and opportunity for self-repair clearly benefits L2 perception