Mobile-assisted language training: effects of corrective feedback on L2 sound perception

Penn State University

Na-Young Ryu

American Association for Applied Linguistics (AAAL) 2021 Virtual Conference

Mobile-assisted language learning

- Mobile-assisted language learning (MALL) is the use of smartphones and other mobile technologies in language learning.
- Mobile technology can offer numerous practical uses in language learning.
    - It helps overcome many limitations in a traditional classroom (Ahn & Lee, 2015).
        - Lack of language-use opportunities, Individualized learning, feedback and interactions
    - It offers a seamless learning experience (Liu & Chen, 2015).
        - Learners can practise at their own pace, at a time and location of their choosing.

Purpose of this study

- To evaluate the effectiveness of mobile-assisted phonetic training with different types of corrective feedback on the perception of the Korean three-way stop contrast.

Corrective feedback in L2 acquisition

- The study of corrective feedback on has received considerable attention in L2 acquisition (Brow 2016 for a meta-analysis of feedback).

- However, there are only a handful of previous studies that have investigated the benefits of corrective feedback on L2 speech perception (Lee & Lyster 2016).

Korean three-way stop contrasts

- Korean has a three-way laryngeal contrast of stops and affricates between aspirated, fortis (tense), and lenis (lax), which are known to be difficult to acquire accurately by L2 learners whose native language has a two-way contrast due to the different use of acoustic cues as well as the acoustic similarities and differences between native language (L1) and L2 sounds.

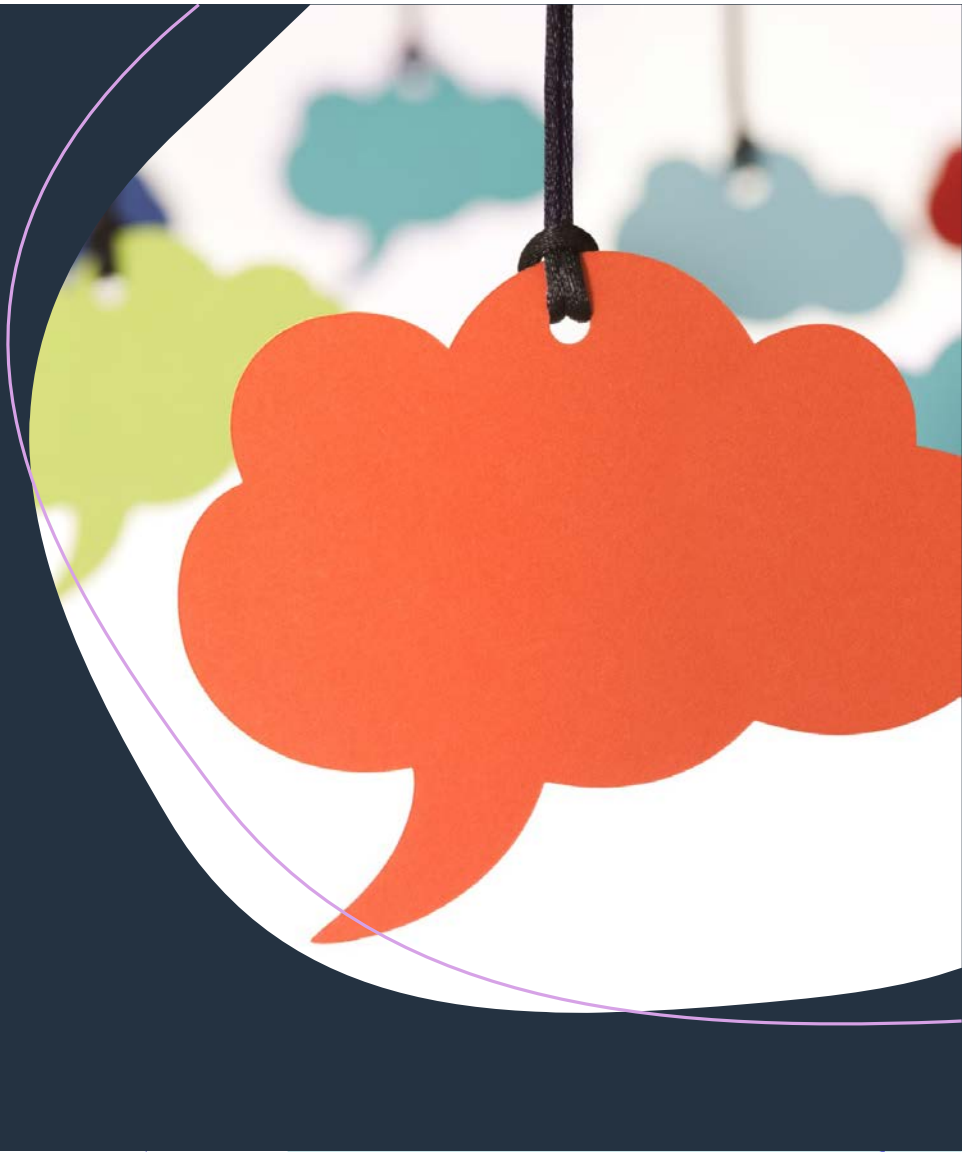
Research questions

(1) Do learners improve their perception accuracy of the Korean three-way stop contrasts through mobile-assisted phonetic training?

(2) How and to what extent do three different types of corrective feedback provided during phonetic training differ in terms of their impact on L2 learners' perceptual accuracy of the contrast?

Methods

- Participants
- Speech materials
- Procedures
- Statistical analysis



Participants

- A total of 44 university-level learners of Korean participated in this study (10 males, 34 females, mean age = 20 years old).
- They were enrolled in a beginner-level Korean language course at the time of the study.

Participants

- Participants were assigned into four groups.
  - **Three training groups** were provided with a different type of corrective feedback
  - **A control group** not receive any training.

Speech materials

- The stimuli of pre- and post-tests consisted of a total number of 138 tokens (23 minimal triplets x 2 speakers).
  - The Korean three-way stop contrast, aspirated, fotis 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 groups completed online identification tasks using their mobile phones for the pre- and post-tests.
- The training groups took part in three identification training sessions held over a period of approximately 1 week, each session lasting about 20 minutes.

Procedure: Identification task

- During each training session, learners heard a sound and were asked to select the corresponding word on their mobile screen.
- They received immediate corrective feedback for their response on each trial. To allow for the provision of corrective feedback on perceptual errors, three types of corrective feedback were provided.

Procedure: Feedback types

Feedback 1 (only correct/incorrect feedback): Learners were provided with only a ‘correct’ or ‘incorrect’ message, indicating whether their response was right or wrong.

Feedback 2 (correct/incorrect and visual feedback): When learners chose a wrong answer, they received an ‘incorrect’ message as well as the correct answer in written form in order to help them notice their errors and see the answer visually.

Feedback 3 (correct/incorrect and audiovisual feedback): When learners chose a wrong answer, they received an ‘incorrect’ message accompanied by the correct answer in both written and spoken form to provide more detailed information containing both audio and visual signals simultaneously.

Statistical 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-test), Contrast (aspirated, lenis, fortis), Feedback (only correct/incorrect feedback, visual feedback, audiovisual 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.

Results

Effects of mobile-assisted phonetic training

- **Finding 1**: There is a significant difference in the identification accuracy of the Korean three-way stop contrast between the three training groups and the no-training group at post-test .
- The training groups showed higher perceptual accuracy for the Korean contrast compared to the no-training group at post-test.

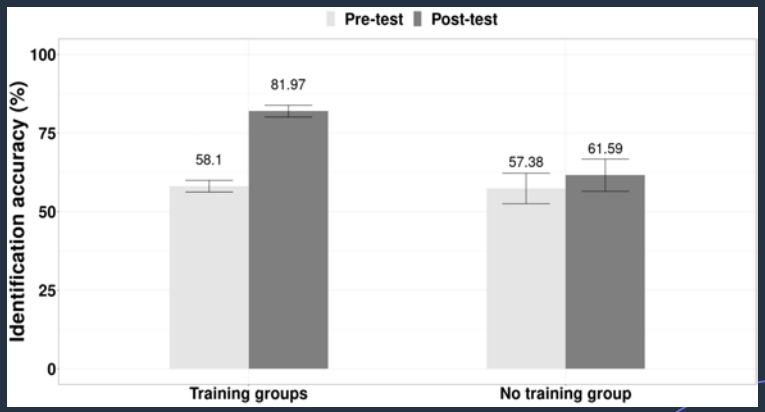


Figure1. Comparison of identification accuracy of the Korean contrast by the trained groups and the un-trained group at pre- and post-test

Effects of mobile-assisted phonetic training

- They achieved 87.02 % accuracy for the fortis stops, 79.22 % accuracy for lenis stops, and 79.67 % accuracy for aspirated stops at post-test.
- This finding confirms that mobile-assisted phonetic training is effective for L2 learners to improve their perceptual ability of difficult L2 sounds.

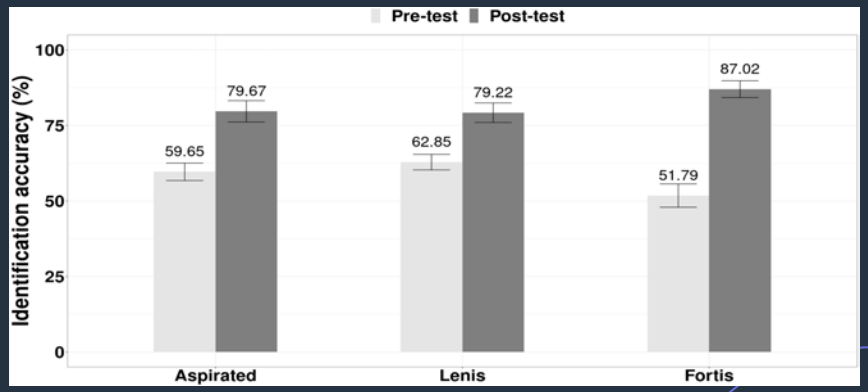


Figure 2. Training groups' identification accuracy of the three phonation types of Korean stops at pre- and post-test

Effects of corrective feedback

- **Finding 2**: All training groups, which were provided with different feedback types during training, achieved significantly higher identification accuracies at post-test than at pre-test. This result indicates that all forms of feedback have a positive impact on learners' perceptual ability of L2 contrasts.

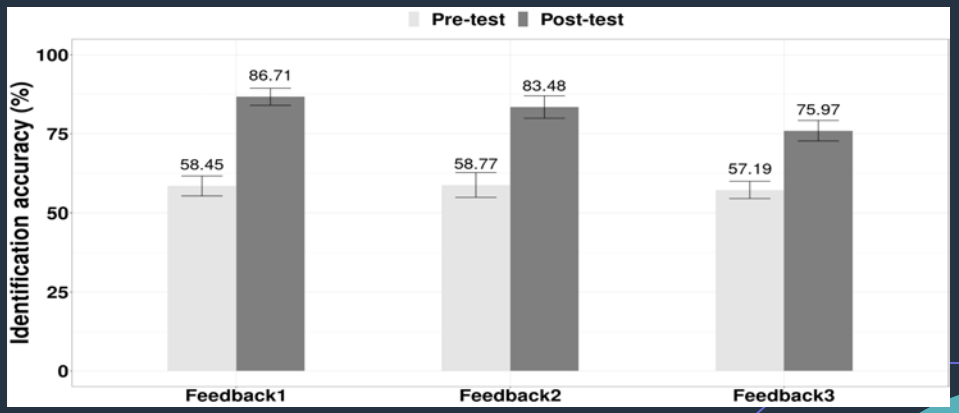
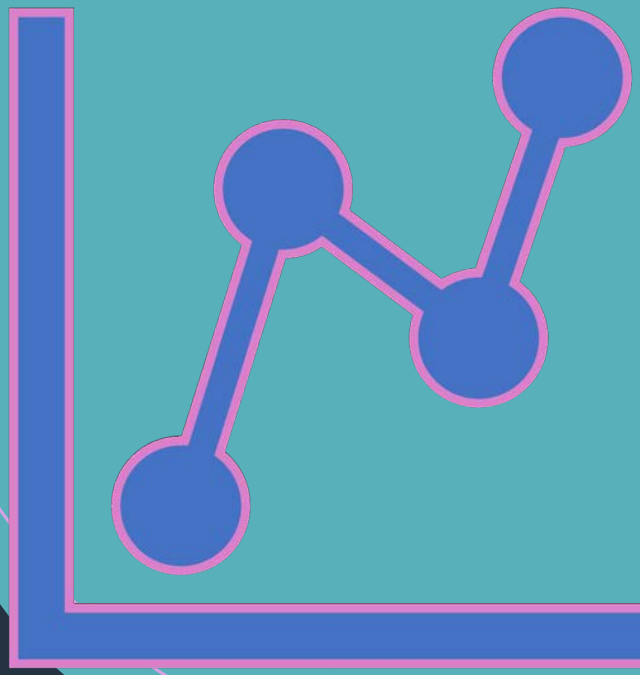


Figure 3: Identification accuracy of the Korean contrast by the three feedback trained groups

Effects of corrective feedback

- Post-hoc tests showed that **Feedback 1 group** outperformed **Feedback 3 group** in the identification accuracy of the contrast at post-test.
- **Simple feedback**, namely providing only a 'correct' or 'incorrect' message, contributed to more accurate L2 perceptual learning than **complex feedback** which provided additional audiovisual information.



Conclusions

- This study examined the effects of mobile-assisted phonetic training with different feedback types on the perception of the Korean three-way stop contrast which is difficult to acquire for L2 learners.
- Results revealed that mobile-assisted phonetic training groups performed better in the identification task at post-test compared to the no training group. In addition, the identification accuracy of the fortis stops, which presented the most difficulty for learners at pre-test, significantly improved after phonetic training.

Conclusions

- This study also aimed to assess the effectiveness of three types of corrective feedback and identify which type of feedback promotes better L2 perceptual learning.
- The results demonstrated that all feedback types employed during training sessions resulted in significant improvement in the perception of the Korean contrast, suggesting that learners' perceptual skills can indeed be improved with all three types of mobile-generated feedback.
- Of the three different feedback-trained groups, Feedback group 1 that received the simple 'correct/incorrect' feedback significantly outperformed Feedback group 3 that received additional audiovisual feedback.

Pedagogical implications

- Mobile-assisted phonetic training is effective in improving the perception of L2 sounds.

- When it comes to giving feedback in perceptual training, less is more.