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2aSC4. Training Korean second language speakers on English vowels and prosody
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This study trained thirty-six Korean L2 speakers on vowel identification and prosody recognition (focus and lexical stress), with the aim of investigating the extent to which training improves general speech perception abilities or specific underlying processes. Vowel training was accomplished with a high-variability identification training technique (multiple talkers and words), and prosody training was accomplished using a category discrimination task in which they needed to choose sentences based on focus or words based on syllable stress. The results demonstrated that both trainers improved syllable stress perception, vowel training improved vowel identification more, and prosody training better improved focus perception in sentences. Both types of training can thus work in a complementary fashion to improve overall speech recognition.

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1. Introduction

Previous work on perceptual training has tended to focus on segments. The present study examined whether a similar kind of approach can be effective for improving English prosody perception (i.e., word focus within sentences and syllable stress within words) among Korean L2 speakers. This study also compared vowel training with focus-stress training to see whether training develops overall speech abilities or improves specific abilities that are similar to those that have been trained. Thirty-six Korean subjects completed vowel identification and focus-stress recognition training, as well as pre/post perception tests (i.e., stress recognition, focus recognition, vowel identification). Half of the subjects started with vowel training first and other half began with focus-stress training first.

2. Method

2.1 Participants

Thirty-six Korean L2 speakers participated. Their age ranged 20 to 41 years (median = 25 years and 5 months). Subjects reported that they had learned English for 11 to 30 years (median = 15 years). Their length of living in English-speaking countries varied from 2 months to 10 years (median = 10 months). None of subjects reported hearing disorders.

2.2 Training stimuli and procedure

Focus-stress recognition trainer

Two female and three male British English native speakers recorded stimuli focus training. Sixty-one BKB (Bamford-Kowal-Bench; Bench et al., 1979) sentences were used for focus training. Each BKB sentence had a question intending to stress the first or last word of the target sentence. For example, ‘She made her bed’ was proceeded by questions like ‘Who made her bed?’, intending to put focus on she or ‘What did she make?’, intending to put focus on bed.

Sixty-eight English words were prepared for stress recognition training, chosen from an English dictionary and a previous study (Cutler, 1986). English speakers were asked to read each target word in terms of its grammatical form (i.e., the noun contract /'kɔntrækt/ vs. the verb contract /'kɔntrækt/).

The focus-stress trainer had oddity and identification tests. In the oddity test, three stimuli were played in a row and one of them had a different stress pattern or focus. Subjects were asked to choose the different stimulus, and received feedback. For the identification test, a stimulus was played and they had to click on a button to indicate whether the focus or stress position was initial or final. There were five sessions of training.

Vowel identification trainer

The vowel trainer was used in a previous study (Iverson and Evans, 2009). Two male and three female British English native speakers recorded 14 British English vowels divided into 4 groups: /ɛ/, /a/, /ɔ/ (e.g., bet, bart, bat, but); /i/, /ɪ/, /æɪ/, /ɛɪ/ (e.g., feel, fill, file, fail); /u/, /ʊ/, /ɒ/ (e.g., was, woes, wars); and /u/, /aʊ/, /s/ (e.g., shoot, shout, shirt). Subjects heard individual words, had to choose which response in the set matched what they heard, and they received feedback. There were five sessions of training.

2.3 Pre, mid and post tasks

For the vowel identification test, a female Southern British English native speaker recorded 14 English vowels: beat /ɪ/, hit /ɪ/, bet /ɛ/, Burt /ɔ/, hat /aɪ/, Bart /aɪ/, Bot /ɔ/, but /aɪ/, bought /ɔ/, boot /aʊ/, bait /ei/, bite /æɪ/, bout /aʊ/ and boat /əʊ/. On each trial, one of the stimuli was randomly played and subjects were required to mouse-click the word they heard on the computer screen. After a short practice, subjects completed 56 trials.

For the stress recognition test, subjects heard three bisyllabic English word recordings and were asked to pick the one with a different stress pattern. For example, subjects could hear upset /ʌpset/ - contest /'kɔntest/ - increase /ɪn'kriːs/. In this case, they should choose the second stimulus that stressed the first syllable. They completed 36 trials after a short practice.

For the focus recognition test, subjects listened to three BKB recordings (i.e., The house had a nice garden – A boy fell from the window – The lorry carried fruit) and they were asked to select the one with different focus.

3. RESULTS
FIGURE 1. Proportion correct of vowel identification

As shown in Figure 1, both trainers helped improve vowel identification abilities but the vowel trainer seemed to be more effective than the focus-stress trainer. Both groups showed a significant difference before and after training ($p < 0.05$), and there was a significant interaction between trainers ($p < 0.05$), meaning that the vowel trainer worked better than the focus-stress trainer for vowels.

FIGURE 2. Proportion correct of focus recognition

Figure 2 displays the results of the focus recognition test. A significant difference was shown before and after training ($p < 0.05$). The interaction between trainers was also significant ($p < 0.05$), meaning that each trainer affected focus recognition abilities independently. Although both trainers improved focus recognition abilities but the focus-stress trainer improved focus perception more than the vowel trainer.
Figure 3 shows the results of the stress recognition test. A significant difference was found before and after training ($p < 0.05$), meaning that both trainers improved stress recognition abilities. The interaction between trainers was significant ($p < 0.05$); the focus-stress trainer was more effective than the vowel trainer even though both trainers improved scores.

4. CONCLUSION

The present study demonstrated two main findings. First, this study demonstrated that focus/stress abilities can be improved with focus-stress auditory training like previous studies had shown with segments. Second, the present study demonstrated that each type of training improves separate but overlapping abilities; vowel training had a greater effect on vowel recognition abilities and focus-stress training had a greater effect on focus and stress recognition abilities. That is, training improves specific underlying abilities rather than a general ability to complete speech tasks. It thus seems plausible that different training approaches can be combined to have an overall larger improvement on speech recognition.

REFERENCES


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