

## Acquisition of Korean stops by L1-Chinese and L1-English learners

Sue Yoon, Kaori Idemaru

University of Oregon  
syoon5@uoregon.edu, idemaru@uoregon.edu

Traditionally, voice onset time (VOT) was regarded as the primary phonetic cue to the Korean three-way stop contrast (lenis, fortis, and aspirated stops) in the speech of the older generation (Silva, 2006). However, recent research findings suggest that contemporary speakers of Korean distinguish the three categories of Korean stops using fundamental frequency (F0) in addition to VOT in production and perception (Kim, 2004; Silva, 2006; Kang & Guion, 2008; Kang, 2010). The current study explores whether learners of Korean have acquired this newer trend. Specifically, the two main goals are: (1) to investigate whether L2 learners of Korean have incorporated the use of F0 in discerning the Korean stops to the same extent as contemporary speakers of Korean in production, (2) to examine if the learners' use of the acoustic cue is reflected in their perception of the stops. Eight native speakers and twelve learners of Korean (six L1-Chinese speakers and six L1-English speakers) participated in the production and perception experiments. They produced /Can/ and /Cuk/ words (C = /p, p<sup>h</sup>, p\*, t, t<sup>h</sup>, t\*, k, k<sup>h</sup>, k\*/) embedded in a carrier sentence. For each token, two acoustic measurements, VOT and F0 (measured as fundamental frequency), were taken. The findings of the production experiment indicate that native speakers rely heavily on F0 to make the three-way stop distinction in production, and this tendency is more robust in female speakers' speech. As for the learner groups, some seem to use F0 as a cue in their stop production, but noticeable individual variation in the cue usage is observed. As a follow up to the production experiment, a perception experiment was performed, in which participants listen to acoustically manipulated stimuli and attempt to make the stop distinction. Stimulus continua were created by varying VOT and F0 systematically in the /Can/ context. According to the preliminary results of the perception experiment, both the native speaker group and the two learner groups seem to use F0 as a perceptual cue to categorize the three-way stop contrast, but with different weighting. In sum, it is observed that both learner groups use F0 as an acoustic cue as well as a perceptual cue to make the three-way stop distinction together with VOT. But their use of F0 is not as robust as native speakers' use of F0 to this distinction. In addition, the findings of the current study indicate that usage patterns seem to vary extensively across individuals within the learner groups. Altogether the results suggest that these learners' use of F0 and VOT cues to the three-way Korean stop distinction has not reached native-like level.

## References

- Kang, K. H., & Guion, S. G. (2008). Clear speech production of Korean stops: Changing phonetic targets and enhancement strategies. *The Journal of the Acoustical Society of America*, 124(6), 3909-3917.
- Kang, K.H. (2010). Generational differences in the perception of Korean stops. *말소리와 음성과학*, 2(3), 3-10.
- Kim, M. (2004). Correlation between VOT and F0 in the perception of Korean stops and affricates. In *INTERSPEECH*.
- Silva, D. J. (2006). Acoustic evidence for the emergence of tonal contrast in contemporary Korean. *Phonology*, 23(02), 287-308.