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Paper Title: Production of fricatives by Korean learners of L3 Spanish

This research will be one of the pioneering studies to investigate multilingualism in phonology, with native speakers of a non-European language (L1 Korean) learning English as a second language (L2 English) and Spanish as a third language (L3 Spanish). This experiment was conducted to analyze the phoneme /s/ in Korean, English, and Spanish produced by Korean learners with different levels of proficiency in their L2 and L3. Up until now, in the field of L3 acquisition, a majority of the research focused on vowels or stop consonants (Cabrelli Amaro & Wrembel, 2016). In particular, voiceless alveolar fricative has rarely been studied. Although Spanish /s/ phoneme is widely believed to be very similar to the English /s/ (Hualde, 2014; Schwegler, et al., 2010), Korean has a unique system of fricatives, with a two-way contrast between two fricatives between lenis /s/ (ㄱ) and fortis /s*/ (ㅋ).

The learner participants are divided into four groups, based on their L2 and L3 proficiency levels. There will be two levels of proficiency, beginner/intermediate and advanced, for each L2 and L3. Thus, we will have four groups of Korean learners (i.e., advanced English – advanced Spanish, advanced English – beginning Spanish, low-intermediate English – advanced Spanish, and low-intermediate English – beginning Spanish learner groups) and three monolingual native speaker groups (i.e., L1 Korean, L1 English, and L1 Spanish).

The experiment was conducted fully online, using Google Form (Language Background Questionnaire) and Google Slide (Read-aloud Task, Story-narration Task). Self-recorded voice files using smartphone applications were received via email. In the read-aloud task, twelve bisyllabic target words were embedded in test sentences. All the items were repeated three times. Also, a short picture description task was administered in each language to complement the grouping criteria. The groupings are mainly based on self-reports and official test scores, but the number of word tokens and the number of word types used in their narration are to be analyzed to ensure the groups differed from each other in terms of proficiency.

The results elicited for this abstract includes read-aloud productions in Korean, English, and Spanish from four Seoul Korean female speakers (Table 1). All the participants have learned English as a second language and Spanish as a third language. No one had experience of residing in a foreign country for more than a year. Two participants (i.e., KLNH1 and KLNH7) had advanced English – high-intermediate level of Spanish and the other two participants had intermediate English – beginning level of Spanish (i.e., KLNH2 and KLNH8).

Acoustic analyses were mainly conducted in Praat software (Boersma & Weenink, 2021). First, TextGrid files were created with the test sentences aligned to the sound files by EasyAlign (Goldman, 2011). Then, phone segmentation was performed using Montreal Forced Aligner (McAuliffe, 2017). The sounds of interest (/s(*)/) were manually corrected using both the waveform and the spectrogram. After the corrections were made, center of gravity (CoG) was extracted using a Praat script (Carignan, 2009). The script took CoG values from FFT spectra after passing Hann band filter between 500 Hz and 10,000 Hz. A 25-ms window centered around midpoint of the segment was used (Cho, et al., 2000). The values presented below have been normalized by z-score normalization (Figure 1). It was found that each learner has a specific category of English /s/ that is different from both Korean /s/ and /s*/. This was especially true for advanced learners of English. However, they produced Spanish /s/ in their own ways (one sounded like her Korean /s*/; some sounded like their English /s/). Further analysis of native speaker groups and additional learner participants will be included in the near future.

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Table 1. Participant Language Background

	L2	Age of Acquisition	Self-report on Proficiency	L3	Age of Acquisition	Self-report on Proficiency	Experience of Living Abroad
KLNH1	English	7	Advanced	Spanish	15	Intermediate	-
KLNH2	English	8	Intermediate	Spanish	18	Beginner	-
KLNH7	English	6	Advanced	Spanish	13	Intermediate	9 months (US)
KLNH8	English	6	Intermediate	Spanish	20	Beginner	-

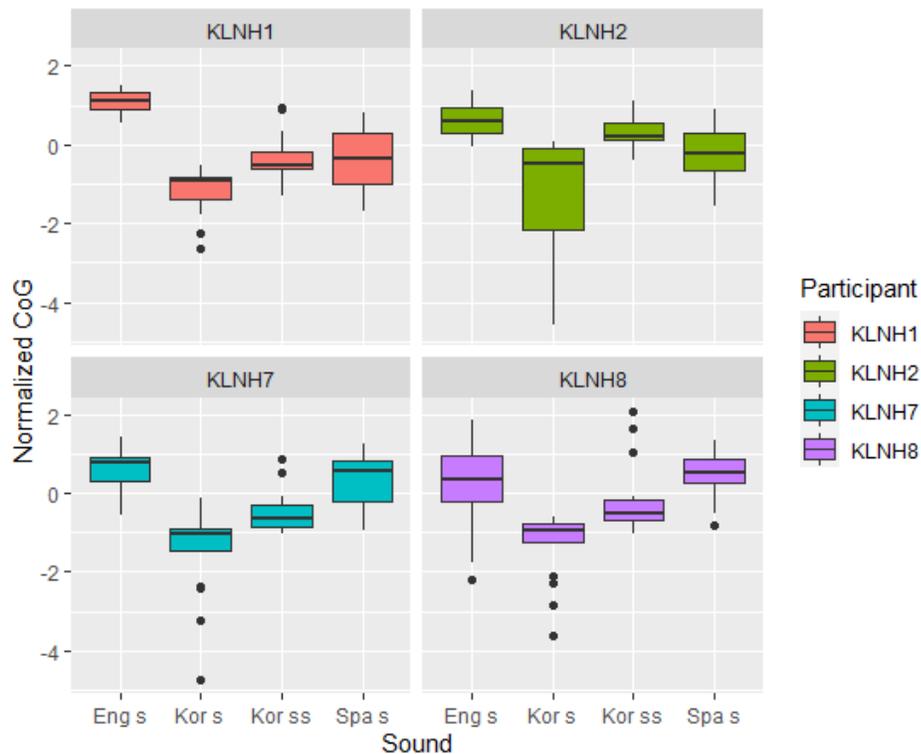


Figure 1. Normalized Center of Gravity of /s(*)/ by Korean Learners of Spanish