

Perspectives on the Korean Laryngeal Contrast from Cross-Linguistic Perceptual Similarity

The three-way laryngeal contrast in Korean plosives has been described in various ways in previous linguistic studies. The majority of these analyze the contrast as one between a glottalized (“tense”) series, an unaspirated (“lax”) series, and an aspirated series¹—all underlyingly voiceless, although the lax series is typically voiced intervocally. However, Kim and Duanmu (2004) have recently argued that this sort of analysis is problematic for phonological theory because, among other reasons, having to describe a tense series that appears to be phonologically distinct only in Korean (e.g. by positing a feature [tense]) overgenerates such unattested sounds as tense aspirated /b^{h*}/ or /p^{h*}/. Kim and Duanmu propose instead that the Korean stop contrast be characterized as one between voiceless unaspirated plosives, voiceless aspirated plosives, and voiced plosives (which are devoiced word-initially).

The present study contributes to the growing body of research on this unusual laryngeal contrast with a perceptual survey of plosives from three other languages (Sindhi, Spanish, and Shanghaiese) with systems of laryngeal contrast that are similar to and different from the Korean system in various ways. How do Korean speakers perceive phonation in these other languages in terms of the laryngeal categories of Korean? Do Korean speakers’ perceptual patterns provide evidence in favor of a particular analysis of the Korean laryngeal system? What are the acoustic correlates of these perceptual patterns? Data collected in a cross-language speech perception experiment with 12 native speaker subjects (see, e.g., Fig. 1 and 2 on the next page) generally support Kim and Duanmu’s analysis of the Korean contrast as one between voiceless unaspirated, voiceless aspirated, and voiced categories. Acoustic analyses further indicate that the voicing distinction manifests itself in the f₀ of the following vowel: f₀ is on average 20-30 Hz lower following a voiced/lax plosive than following a voiceless plosive.

Korean speakers’ perception of consonants from other languages has several implications for the analysis of Korean laryngeal contrast. First, as seen in their consistent identification of Sindhi voiced unaspirated obstruents as Korean lax obstruents, Korean speakers are clearly attuned to voicing in initial position; this cannot be accounted for by a Korean laryngeal system that contains only voiceless stops. Second, Korean speakers consistently perceive voiceless unaspirated consonants in Sindhi and Spanish as Korean tense consonants, a result that is in keeping with an analysis of the tense series as a plain voiceless unaspirated series. Finally, breathiness appears to be an important factor in Korean speakers’ percept of initial voicing. When there is little or no breathiness on the following vowel (measured in terms of spectral tilt), even voiced plosives are often perceived as the “tense” voiceless unaspirated series, suggesting that breathiness might be regarded as the word-initial realization of voicing in Korean. In short, this study provides experimental evidence for interpreting what has most often been described as a typologically unique laryngeal contrast as simply a different realization of the familiar contrast in voicing and aspiration found in many other languages of the world.

¹ These are typically transcribed as /p*, t*, k*/, /p, t, k/, and /p^h, t^h, k^h/, respectively.

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Figure 1. Perceptual matrix with Sindhi word-initial and word-medial consonant stimuli (percent responses)

| | | ...sounds like Korean: | | | | | | | | | | | | | |
|--------------------|-------------------|------------------------|----------------|----|----|----------------|----|----|-----------------|-----|----|----------------|----|----------------|----|
| | | p | p ^h | p* | t | t ^h | t* | tʃ | tʃ ^h | tʃ* | k | k ^h | k* | s ^h | s* |
| Sindhi stimulus... | p | 2 | 3 | 95 | | | | | | | | | | | |
| | p ^h | | 100 | | | | | | | | | | | | |
| | b | 79 | | 21 | | | | | | | | | | | |
| | b ^h | 67 | 17 | 8 | | | | | | | 6 | | | | |
| | t | | | | 12 | 4 | 79 | | | | | | | | |
| | t ^h | | | | | 92 | | | | | | 8 | | | |
| | d | 33 | | 12 | 37 | | 17 | | | | | | | | |
| | d ^h | 2 | | | 75 | 4 | | | | | | | | | |
| | tʃ | | | | | | | 29 | 25 | 46 | | | | | |
| | tʃ ^h | | | | | | | 6 | 94 | | | | | | |
| | tʃ* | | | | | | | 92 | | 6 | | | | | |
| | tʃ ^h * | | | | | | | 65 | 6 | | | | | | |
| | k | | | 3 | | | | | | | 17 | | 78 | | |
| | k ^h | | | | | | | | | | | 100 | | | |
| | g | | | | | | | | | | 75 | | 25 | | |
| | g ^h | | | | | | | | | | 83 | 8 | 8 | | |
| | z | | | | 8 | | 8 | 75 | | 8 | | | | | |
| d | 4 | | 4 | 12 | | 46 | | | | | | | | | |

Figure 2. Perceptual matrix with Spanish word-initial and word-medial consonant stimuli (percent responses)

| | | ...sounds like Korean: | | | | | | | | | | | | | |
|---------------------|-----|------------------------|----------------|----|-----|----------------|----|----|-----------------|-----|----|----------------|----|----------------|----|
| | | p | p ^h | p* | t | t ^h | t* | tʃ | tʃ ^h | tʃ* | k | k ^h | k* | s ^h | s* |
| Spanish stimulus... | p | 58 | | 42 | | | | | | | | | | | |
| | b | 92 | | 8 | | | | | | | | | | | |
| | t | 8 | | 4 | 42 | 4 | 42 | | | | | | | | |
| | d | | | | 100 | | | | | | | | | | |
| | tʃ | | | | | | | 83 | 8 | 8 | | | | | |
| | tʃ* | | | | | | | 58 | | | | | | | |
| | k | | | | | | | | | | 54 | | 46 | | |
| | g | | | | | | | | | | 92 | | 8 | | |
| | s | | | | | | | | | | | | | 33 | 67 |

References

Kim, Mi-Ryoung, and San Duanmu. 2004. Tense and Lax Stops in Korean. *Journal of East Asian Linguistics* 13: 59-104.