

Non-adjacent segmental effects on the VOT variation of stops in Korean and English

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This study will show that phonological OCP patterns are phonetically grounded by investigating the VOT variation of stops in Korean and English. It, furthermore, argues that the VOT modulation of stops only occurs when another stop is adjacent on the consonantal tier. Avoidance of similarity (e.g., OCP) and its relevance to phonotactic constraints against identical phonemes occurring within a certain domain have been discussed a lot in the phonological literature (Gallagher 2010). Many studies showed that this dissimilatory pattern is phonetically motivated. For example, Svantesson & Karlsson (2012) showed that VOTs of aspirated stops are shortened before another aspirated stops in Mongolian. Oh et al. (2020) also found that VOTs of C_1 and C_2 in the sequence of C_1VC_2V are shortened when C_1 and C_2 are aspirated stops in Korean. That means that the effect of the non-adjacent segments on VOT modulation of aspirated stops in Korean is bidirectional. In addition, they contend that long VOT and long closure duration in contrast to the [+asp] feature function as the target and/or trigger for the VOT modulation. Based on these findings, they argue that the shortening of VOT occurs within the domain of vowel-to-vowel interval to satisfy the isochrony tendency (Steriade 2012).

We conduct two production experiments to investigate if the VOT modulation occurs cross-linguistically and furthermore to find the motivation for the VOT shortening. In Experiment 1 (Korean), we investigate whether the VOT shortening occurs even when a nasal coda intervenes between two aspirated stops in Korean within the vowel-to-vowel interval. 16 Korean speakers produced 46 C_1VC_2V and 46 C_1VNC_2V nonce words where C is a lenis, tense, aspirated, or nasal stop. A phonetic analysis of their production reveals three results. First, long VOTs are shortened when the stops are followed or preceded by a stop with long closure duration and/or long VOT. Second, the VOT shortening does not take place when there is a nasal coda between two stops (see figure 1). Third, the duration of a nasal stop is not affected by the following long consonant even there is no coda between them. In Experiment 2 (English), eight English speakers recorded 36 C_1VC_2V and 36 C_1VC_2 nonce words under variation in voicing of C . The results show that only VOTs of C_1 are shortened when the voiceless stop C_1 is followed by another voiceless stop (see figure 2). We discuss the results from two experiments in light of the gestural difficulty account (Walter 2007). We claim that the repetition of similar phonetic cues is repaired when the similar segments include larger-scale or more effortful gestures and when the similar segments are in closer proximity (adjacent in the consonantal tier).

Figure 1. C₁ VOT as a function of C₁ and C₂ in Korean C₁VC₂V and C₁VNC₂V words

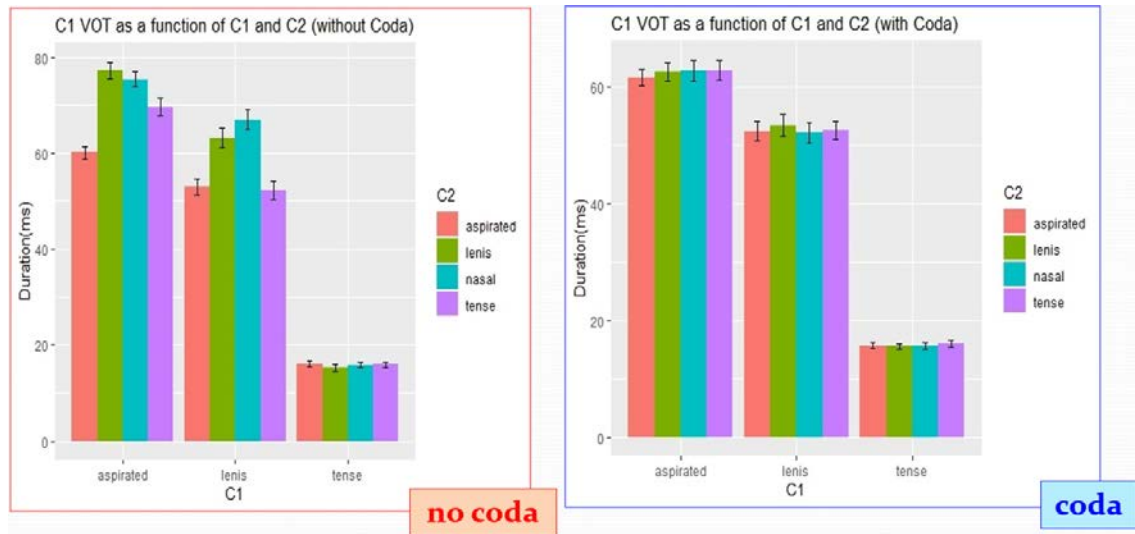
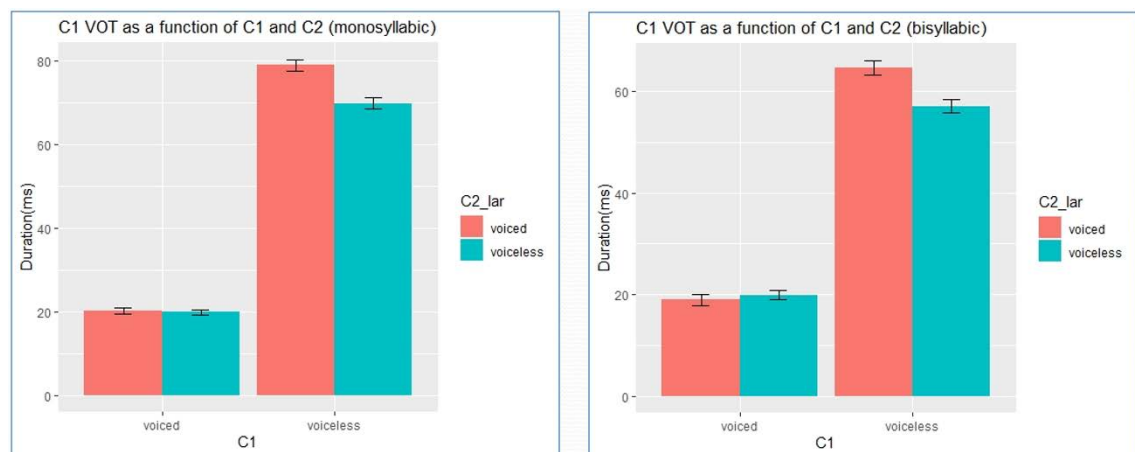


Figure 2. C₁ VOT as a function of C₁ and C₂ in English mono- and bi-syllabic words



Selected References

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