

Phonetic evidence for compound tensification in Korean as a function of morphological context

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Compound tensification (CT) in Korean refers to tensification of a plain obstruent at the onset of the second component in a noun-noun subordinate compound. This study investigates the phonetic evidence for CT by examining the durational patterns of Korean word-medial stops in simplex and compound nouns in a production experiment. CT's occurrence is not fully predictable and has been suggested to occur probabilistically based on various factors such as etymology and frequency. Previous studies used dictionary, survey, or experimental data (e.g., [1]) to understand the environment for CT, assuming derived consonants will surface as tense. This multi-participant, systematic acoustic study investigates the phonetic nature of derived consonants by comparing word-medial underlyingly plain stops in compounds to their counterparts in simplex nouns, and to word-medial underlyingly tense stops in both simplex and compound nouns. On the standard phonological view, derived stops should have durational properties different from underlying plain stops in simplex nouns but similar to underlying tense stops by becoming longer [2]. The findings show that durational patterns of underlyingly plain stops are driven by CT, which is conditioned by preceding sound context. Duration was also modulated by morphological context, showing consistent reduction in compounds.

Methods: Experiment stimuli consist of 48 words balanced for the target word-medial consonant type (plain or tense), morphological context (simplex or compound), and phonological context preceding the target word-medial consonant (non-high vowel, obstruent, or sonorant). Each condition was represented by two items (Table 1). Stimuli were controlled for their length (2-3 syllables) and the context following a target consonant (a non-high vowel). The target words were presented within carrier sentences read by 12 L1 speakers of Seoul Korean (8 female, 4 male), each sentence appearing once in a random order across four experiment blocks.

Analysis: Duration was measured on the target word-medial stop including closure and release. A mixed-effect regression analysis of duration was conducted with following predictors: target consonant type, morphological context, preceding sound context, and all interactions of these to explore distinct patterns across conditions. Random effects included random slopes for subject and consonant type, and a random intercept for word item.

Results: Durations of plain stops differed in compounds compared to simplex nouns, depending on the preceding context. When preceded by a vowel or an obstruent, underlyingly plain stops in compounds mirrored patterns for their counterpart in simplex nouns (Figure 1a-b). The similarity involving post-obstruent plain stops could be a result of another process called Post-Obstruent Tensification (POT), in which a plain obstruent preceded by another obstruent becomes tense (e.g., [3]). POT's occurrence is further supported by the similarity of post-obstruent stop to that of underlyingly tense stops in the same environment. However, post-sonorant stops were significantly longer in compounds than in simplex nouns (Figure 1c; mean difference: 31 ms, $p < 0.01$). When further divided into their perceived category by the experimenter (Seoul Korean L1), plain stops perceived as tense showed a similar distribution to post-sonorant underlyingly tense stops in compounds (Figure 2). These results align with previous findings that CT is conditioned by the preceding context, with CT least likely to occur after a vowel and most likely to occur after a sonorant (e.g., [4]). Additionally, durations of target word-medial stops were shorter in compounds than in simplex nouns, implying a broader effect of morphological structure.

Conclusion: Durational patterns of underlyingly plain, derived stops in compounds compared to those in simplex nouns and underlyingly tense stops provide phonetic evidence for CT varied by preceding sound context. Consistent reduction in stop duration within compounds

suggests that the morphological context plays a role in shaping the phonetic patterns of these stops, which warrants further investigation.

Table 1. Stimulus conditions. ‘#’ and ‘.’ denote word boundary and syllable boundary, respectively.

Morphological Context		Preceding Context		Consonant Type	
Simplex	(C)	V	{ Non-high V, Obstruent, Sonorant }	{ Plain, Tense }	Non-high V (C)
Compound					

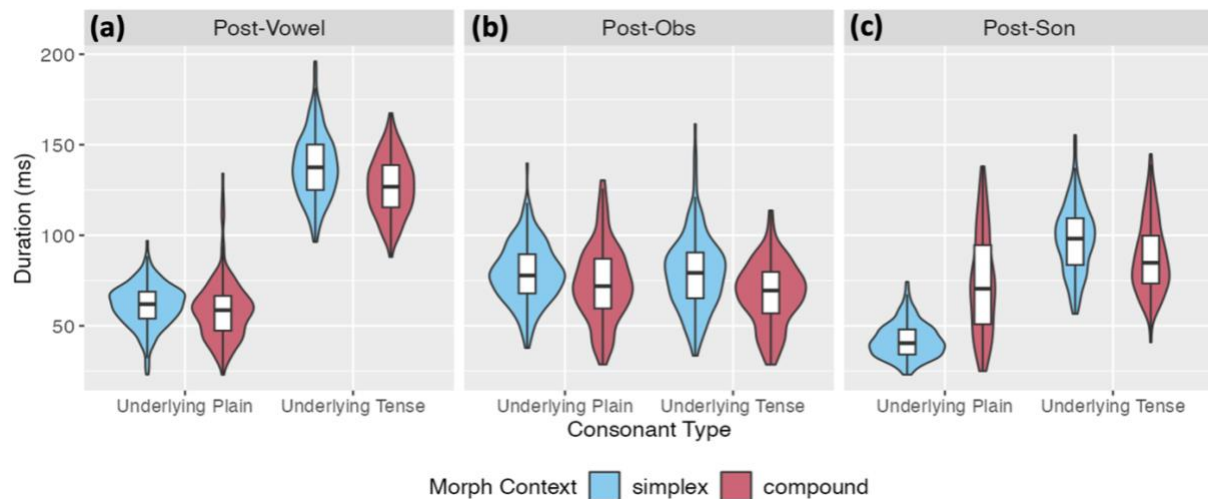


Fig. 1. Durations of underlying plain and tense stops preceded by (a) vowel, (b) obstruent, and (c) sonorant.

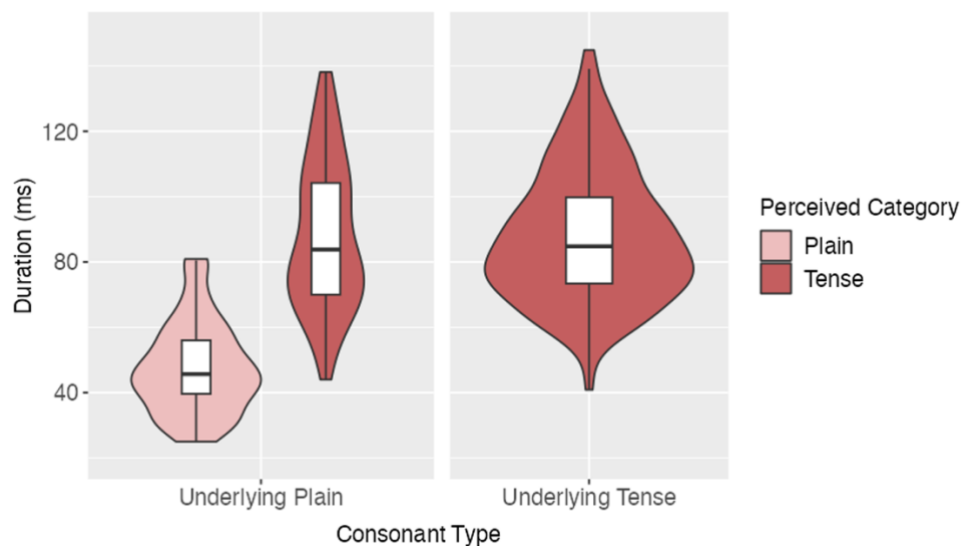


Fig. 2. Post-sonorant stops in compounds by their perceived categories.

References

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