

The string-based domains of duration preservation

This talk concerns the domains of duration preservation in compensatory lengthening (CL), based on empirical and experimental data. CL refers to the lengthening of a vowel triggered by the deletion of a neighboring consonant, e.g., CVC → CV:. Previous generalizations about CL hold that (i) the deletion of postvocalic codas is likely to trigger CL, whereas the deletion of prevocalic onsets never does (Hayes 1989); and (ii) that the deletion of sonorants is likely to trigger CL, whereas the deletion of obstruents never does (Kavitskaya 2002). I first present the results of my cross-linguistic survey, showing that the typological patterns are more accurately characterized as implicational universals, in terms of three properties of the trigger consonant: (i) position, (ii) sonority, and (iii) adjacency to the target vowel. Specifically, I argue that (i) if the loss of a prevocalic consonant triggers CL, so does the loss of a postvocalic consonant; (ii) if the loss of an obstruent consonant triggers CL, so does the loss of a sonorant consonant; and (iii) if the loss of a non-adjacent consonant triggers CL, so does the loss of an adjacent consonant.

This novel typology indicates that the domains of duration preservation in CL are string-based, not syllable-based, and the phonological unit of segmental duration must be the X-slot (cf. Levin 1985, Gordon 2006), not the mora (Hayes 1989), so that onsets bear timing units that can be reassigned to the neighboring vowel after the loss of the onset melody. I further hypothesize that some domains (e.g., VC) are more likely to preserve their duration than others (e.g., CV and VCC) based on the perceptual salience of the resulting change in duration.

An ABX discrimination and an ABX similarity judgment experiments were conducted with English speaker participants to confirm this hypothesis. The AXB discrimination task used nonce word stimuli which differ in the duration of one consonant, [m] or [s], located in (i) postvocalic position (V_(C)), (ii) prevocalic position ((C)_V), (iii) postconsonantal position (VC_), and (iv) preconsonantal position (_CV). The baseline duration of the target consonant was 150 ms, modified in four steps: 50 ms, 100 ms, 200 ms, and 250 ms. For example, an ABX triplet consisted of **a**m_[100 ms] vs. **a**m_[150 ms] vs. **a**m_[150 ms], and the participants chose whether the third sounded the same as the first or the second. Results show that listeners were more sensitive to the duration modification of a postvocalic consonant ($d'=1.94$) than that of a prevocalic consonant ($d'=1.6$), postconsonantal consonant ($d'=1.38$), and preconsonantal consonant ($d'=1.59$), providing support for the current hypothesis. The ABX similarity judgment task was designed to directly test whether the duration of the VC sequence is more likely to be preserved than the duration of the CV sequence in VCV sequences. For example, participants were asked whether **a**_[150ms]**m**_[150ms]**a**_[150ms] sounded more similar to **a**_[200ms]**m**_[100ms]**a**_[150ms] (lengthening the preceding vowel) or to **a**_[150ms]**m**_[100ms]**a**_[200ms] (lengthening the following vowel) when the intervocalic consonant is shortened. It is shown that listeners were more likely to preserve the lost duration of the intervocalic consonant in the preceding vowel (57.6%) than in the following vowel (42.4%). To conclude, the domain for duration preservation is string- or sequence-based, and the duration of VC sequences is more likely to be preserved than that of CV and VCC sequences, with a typological and perceptual basis.

References

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