Acoustic correlates of plosive and affricate gemination in Cypriot Greek

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Cypriot Greek (CyGr) is a variety of Modern Greek that exhibits a gemination contrast for most consonants in its phonetic inventory in both word-medial and word-initial position. Geminates in Cypriot Greek occur also post-lexically either as the result of assimilation yielding true geminates (e.g. /tin#sɨ’mɛn/ → [tis:i’mɛn] ‘the flag.ACC’ or of concatenation which results in false geminates (e.g. /tis#sɨ’mɛs/ → [tis:i’mɛs] ‘the flag.GEN’). Payne and Eftychiou (2006) showed that in the case of the nasal /n/ followed by a word-initial geminate lateral /l/, the nasal fully assimilates to the geminate creating an even longer segment, i.e. a kind of ‘super-geminate’: e.g. /tɔn#l’liɔn/ → [tɔ’lːˑiɔn] ‘the little.MASC.ACC’. The existence of CyGr super-geminates was verified by Armosti (2011b) in the case of the sonorant [l] and the fricative [ʃ].

Regarding CyGr plosive and affricate lexical geminates, they are known to be rather unusual, as they are distinguished from singletons by both longer closure and longer release (e.g. Arvaniti and Tserdanelis 2000; Arvaniti 2001; Tserdanelis and Arvaniti 2001). As for plosive and affricate post-lexical gemination, it is impressionistically reported by Davy and Panayotou (2004) to differ from lexical gemination with regard to its phonetic realisation, something though that awaits empirical confirmation.

In order to formally investigate this unexplored area of CyGr phonetics, an acoustic experiment on the process of post-lexical gemination of CyGr plosives and affricates of all places of articulation was designed and conducted. The aim was to examine whether post-lexical gemination of CyGr plosives and affricates is acoustically different from lexical gemination, and, if so, which acoustic correlates cue the lexical and which the post-lexical contrast. Also, it was intended to examine whether super-geminates can exist in the case of plosives and affricates as well. Finally, the effect of gemination on the abutting vowels was investigated.

The results of the study indicated that super-geminates also exist in the case of non-continuants as they are distinctively longer than both singletons and geminates. Also, while CyGr plosive and affricate geminates are longer than their singleton counterparts by means of closure duration and release (i.e. frication and/or aspiration), post-lexical gemination (and super-gemination) is achieved by elongation of closure duration. Thus, longer closure duration can be considered the main cue to geminates (be they lexical or post-lexical), while frication/aspiration elongation functions as an enhancing correlate for the lexical contrast between singleton and geminate non-continuants.

Regarding the abutting vowels, it was shown that the preceding vowel (V1) remains unaffected by gemination, but the following vowel (V2) shortens after lexical geminates. Importantly, V2 remains unaffected by post-lexical gemination. Post-lexical plosive and affricate geminates in CyGr are false geminates as they are always the result of concatenation: e.g. /kɛn n̥tʃp p̥v l̥v/ → [.cpɛn.tʃp.p̥v.l̥v] ‘(they) are old jeeps’. V2 shortening occurs only after true geminates: /kɛn k(ɛ) i p̥v l̥v/ → [cpɛn.tʃp.p̥v.l̥v] ‘it’s the cleaver cut too’. This compensatory relationship between the consonant and its following vowel can be an indication of mora sharing, in the inverse way of the one advanced by Broselow et al. (1997). This finding contributes to Armosti’s (2011a) thesis that true geminates in CyGr are moraic, while false geminates are not. As true plosive and affricate geminates are enhanced by longer aspiration in CyGr (something that does not hold for false geminates), aspiration could be considered a correlate of phonological weight. This claim can be supported with evidence from other varieties of Modern Greek but also from other unrelated languages that exhibit a correlation between aspiration/frication and phonological weight.
References:


