

Intrinsic Vowel Duration

in Standard Austrian German and Modern Standard Albanian

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Introduction

It has been observed in many languages, including Standard German (Antoniadis & Strube 1984, Strange & Bohn 1998) that duration depends on vowel height and is considered to be a phonetic universal (Maddieson 1997). In Dutch, this universal tendency has become phonologized (Gussenhoven 2004). This is usually explained by the fact that, for an open¹ vowel, the tongue and the jaw have to overcome a greater distance in order to move into and out of a consonantal constriction than for a less open vowel (Catford 1977: 197). Consequently, lower/more open vowels are longer than high/less open vowels. However, this physiological explanation has recently been challenged by Tauberer & Evanini (2009) who claim that intrinsic vowel durations are stored in the grammar.

The tendency for low vowels to be intrinsically longer than high vowels is nearly undisputed, however, the study on Creek vowels by Johnson & Martin (2001: 86) and the study on the vowels of Standard Austrian German by Moosmüller (2007) show different results.

The vowel inventory of Standard Austrian German (SAG) comprises 13 vowels primarily distinguished by constriction location. As has been already exemplified in other languages (e.g., Swedish, French, Estonian, Egyptian Arabic), SAG additionally occupies the pre-palatal constriction location for the /i, ɪ, y, ʏ/ vowels, whereas the palatal constriction location is occupied by /e, ε, ø, œ/ (Moosmüller 2007). /i, ɪ/, /y, ʏ/, /e, ε/, and /ø, œ/ are contrasted by vowel height. These results would predict that /i, y, e, ø/ do not differ for vowel duration.

The vowel system of Modern Standard Albanian (MSA) comprises 7 vowels. /i, y, e/ are articulated at the palatal constriction location, i.e., /i, y/ are distinguished from /e/ by vowel height. Consequently, in MSA, /e/ should be longer than /i, y/.

Therefore, we hypothesize:

H.0.0: Language-independently, /a:/ is significantly longer than /e/ and /i/, and, for SAG, /a/ is significantly longer than /ε/ and /ɪ/.

H.0.1a: In SAG, /e/ is not significantly longer than /i/.

H.0.1b: In SAG, /ε/, being lower than /ɪ/, is statistically longer than /ɪ/.

H.0.2: In MSA, /a/ is significantly longer than /e/, which in turn is significantly longer than /i/.

H.1 (alternative hypothesis): Vowel duration does not depend on tongue height.

Method

16 speakers of SAG and 16 speakers of MSA were asked to read a list of sentences. /a, i, ɪ, e, ε/ vowels (for SAG) and /a, i, e/ vowels (for MSA) of bi-syllabic words have been segmented manually and measured for duration (2190 in total). For statistics, one-way t-tests have been calculated ($p > 0.05$).

Results

By now, the data of 14 MSA speakers and 9 SAG speakers have been analyzed. It holds for all speakers of both languages, that /a/ is significantly longer than the respective higher vowels, thus corroborating H.0.0.

As concerns H.0.1a, two groups of speakers emerged: For 5 speakers, /e/ is significantly longer than /i/, for the remaining four speakers, no significant differences emerged. A similar pattern can be observed with

¹ Catford (1977) discusses vowel duration as depending on the degree of openness of the vowel, whereas in the later literature (e.g. Maddieson 1997), vowel duration is correlated with vowel height. However, vowel height and vowel openness are not interchangeable (see Wood 1982 for a discussion).

respect to H.0.1b: For 4 speakers, /ɛ/ is significantly longer than /ɪ/, for 5 speakers, no differences can be observed.

As concerns H.0.2, again two groups of speakers can be distinguished: three speakers show significantly longer vowel durations for /e/ than for /i/, whereas for 11 speakers, no significant differences can be observed.

Conclusion

The results obtained are difficult to interpret. Yet, in both languages analyzed, vowel duration depends neither on vowel height nor on the degree of openness. Interaction with the “post-vocalic voicing effect” (which has to be described as “post-vocalic lenis effect” in SAG) might play a role and superpose the universal tendency. The individual differences observed in both languages point to the fact that phonologies of a language are, to a certain degree, speaker dependent, as has already been observed in Moosmüller (2007) for vowel features.

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