

Word-initial glottalization in the function of articulation rate and word class

Tekla Etelka Grácz^{1,3}, Alexandra Markó^{2,3} and Karolina Takács²

¹Dept. of Phonetics, Research Institute for Linguistics, HAS, ²Dept. of Phonetics, Eötvös Lorand University,

³MTA-ELTE “Momentum” Lingual Articulation Research Group

Irregular phonation (laryngealization, glottalization) is a phonation type characterized by the irregular vibration of the vocal folds. It corresponds to regions of voiced speech with substantial, abrupt, cycle-to-cycle changes in either the spacing or the amplitude of the glottal impulses or both. In such cases, the deviation from periodicity exceeds the usual jitter and shimmer values that are present in regular phonation (see Surana & Slifka 2006).

According to the international literature, irregular phonation is a multifunctional phenomenon. Regarding the aims of the present study the most relevant role of irregular phonation is boundary marking. Irregular phonation often occurs before a word-initial vowel in English (Dilley et al. 1996), in German (Kohler 1994), and in Hungarian (Markó 2013). Comparisons in German revealed that the appearance of word-initial irregular phonation is more frequent if the speech rate is slower (Pompino-Marschall & Žygis 2010; 2011). In Polish phrase-initial irregular phonation is more probable if the lexeme is a content word (as opposed to when it is a function word) (Malisz, Žygis & Pompino-Marschall 2013).

Some of the glottalization's functions were also shown for Hungarian speech (Markó 2013), however a systematic analysis of the articulation rate and word class has not been carried out so far. Therefore, in the present study we plan to answer the following questions: (1) Is irregular phonation significantly more frequent in the case of word-initial vowels if the articulation rate is slow (as opposed to fast)? (2) If it is so, can this effect be shown in spontaneous and/or read speech? (3) Does the type of the word (content word vs. function word) have an effect on glottalization?

Our hypotheses are the following. H1: Irregular phonation is significantly more frequent in the case of word-initial vowels if the articulation rate is slow, but the frequency of occurrence of glottalization doesn't change hand in hand with the articulation rate. H2: In read utterances the articulation rate effect is larger than in spontaneous speech. H3: Word-initial vowels are glottalized to a similar extent in case of content words and function words (due to the forms of the Hungarian definite articles *a/az*).

In order to investigate these questions, spontaneous and read utterances of 12 speakers (6 females, 6 males, aged between 20 and 45 years) were selected from BEA Hungarian spoken language database (Gósy 2012). The read material consisted of 25 utterances, while from the

spontaneous subcorpus approximately 2 minutes of speech per subject in an interview situation were chosen. The annotation of glottalized realizations was performed in accordance with the methodology of previous studies (e.g. Dilley et al. 1996; Böhm & Ujváry 2008; Markó 2013), combining visual and auditive information, in Praat (Boersma & Weenink 2015).

In the present study all of the word-initial vowels that occurred in the material will be analyzed. We are planning to measure the duration, the articulation rate and the average syllable duration of the entire speech interval concerned, as well as the duration of the word-initial vowel and the syllable. Relative frequency of occurrences and possible correlations between the data of duration and rate and occurrences of irregular phonation will be analyzed.

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