

Attitude as a dimension of sound change

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Introduction. The quantity opposition in the Hungarian vowel system has been subject to changes in the last decades, resulting in a shortening and eventual neutralisation of long high vowels in unstressed position. This was an ongoing sound change process around 1960, as was shown in [4]. The duration ratio of long and short vowels has generally decreased compared to other quantity languages such as Slovak [1].

[3] investigated in a perception experiment to what extent tenseness information was used for distinguishing between long and short vowels. The study included old and young listeners who were also tested for their explicit and implicit attitude towards language usage. Both age and implicit attitude were relevant factors in the perception of vowel quantity: old and conservative listeners relied more strongly on the tenseness cue when identifying long and short vowels, but only in unstressed position.

However, age-related differences in the perception of F1 and F2 do not necessarily reflect a sound change process. It was shown in [2] that both F1 and F2 tend to become lower with increasing age, when speech samples of the same speaker are compared. It is possible that listeners are biased by their own vowel production when identifying vowels and that their judgements are interrelated with their own vowel space. In this study, vowel production of old and young speakers was compared and related to the midpoint of their articulatory space.

Methods. Target words contained long /o/ and /u/ in stressed and unstressed position and were embedded in meaningful carrier sentences. Sentences were read by 25 speakers (12 above 50 years, 13 in the age of 18–20 years), where gender was evenly distributed between groups. Speakers were tested for their implicit linguistic attitude by the same method as described in [3]. Additionally, the sustained vowels /a e i o u/ were recorded from all speakers. All sentences and sustained vowels were read 5 times. Results were analysed by linear mixed effect models, with the fixed effects age and implicit attitude and random factor speaker.

Results. First, the centroid of the vowel space for each speaker was calculated (mean of F1 and F2 for the sustained vowels /a i u/, respectively). Age and implicit attitude and their interaction had a significant effect on both F1 and F2 of the centroid ($p < 0.05$). There was an overall shift towards lower vowels in the speech of both young and liberal speakers with a tendency for centralisation (see Fig. 1).

The comparison of F1 and F2 of embedded vowels showed a similar tendency: both formants were significantly higher for young and liberal speakers.

Discussion. We can account for the effect of attitude on F1 and F2 variation if we assume an exemplar-based model of production, in which variants are labelled for speaker, style, and context (amongst other things), and production is based on a random sampling of a sound category [5]. In such a model, differences that mostly follow from biological changes related to the aging of the vocal tract [2] can be re-interpreted as being distributed on an older/conservative–younger/liberal axis. According to the findings of [6], information on whether a word is used more by older or younger speakers is available for the individual. We argue that this is also true for phonetic concomitants of age, suggesting that the connection between age and attitude in a sound change process is a relevant and complex one.

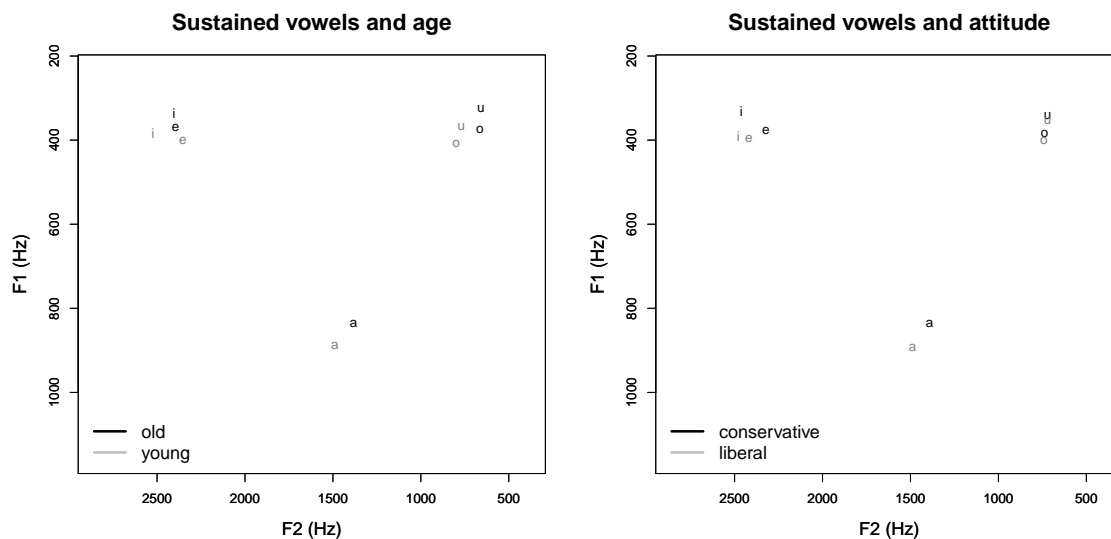


Figure 1: Vowel space based on sustained vowels, according to left: age, right: implicit linguistic attitude.

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