SEX-SPECIFIC DIFFERENCES IN VOWEL UNDERSHOOT. CONSEQUENCES FOR THE PERCEPTION OF CLARITY AND TEMPO

Adrian P. Simpson

Institut für Germanistische Sprachwissenschaft, Universität Jena
AdrianPSimpson@gmail.com

Kurzfassung:

Since the seminal work of Lindblom [7] a wealth of studies have investigated undershoot and the factors governing its occurrence and variability. However, although sex-specific differences in reduction patterns have been found in adults [2, 1, 3, 10], as well as in children [8], possible sex-specific differences in formant transitions and in particular undershoot have received little attention [4]. In a large acoustic study of German vowels using data from the Kiel Corpus of Read and Spontaneous Speech [5, 6, 9] a number of unexpected sex-specific differences in correlations between the first two vowel formants and vowel duration were identified. In particular, several statistically significant correlations between acoustic vowel quality and duration present in male vowel categories were absent in their female congeners. The absence of a significant correlation between F1 or F2 and duration suggests that the acoustic target of a vowel has been attained within the range of durational variability. Two main explanations are possible for this. First, female speakers exhibit faster post- and pre-consonantal formant transitions allowing them to attain vocalic target positions earlier than male speakers. The second possibility is that there is no difference in the dynamics of formal transitions, but female vowels are in general longer, hence increasing the chance that the vowel target will be attained by the temporal midpoint of the vowel. This paper explores both possibilities and considers the implications this might have on our perception of clarity, but also on our perception of sex-specific differences in tempo.

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