

## **Tendencies and rules in production and perception of vowel duration**

### **Abstract**

This study, based on acoustic measurements and perceptual experiments, investigates various aspects of vowel timing in Hungarian.

Chapter 1 gives a critical review of classical and current research on durational variability in natural speech and evaluates the existing accounts on underlying processes. It discusses contextual phonetic factors known to exist in the languages of the world in details, paying special attention to the question of universal character vs. typological and/or language specific constraints in their effect.

Chapter 2 deals with segmental timing in Hungarian and focuses on the context-induced variations of phonologically short Hungarian vowels. It reports results from the acoustic measurements of CVC(C) sequences read by a female speaker in isolated sentences. Analyses into the effect of the following factors have been performed: post-vocalic consonant (voicing, manner, length, consonant clusters), pre-vocalic consonant, word-based syllable position and position of the word in the sentence. The statistical evaluation of these factors and their interactions inter alia shows that 1. voicing of the postvocalic stops in sentence-medial position is not consistent, only the pre-pausal position gives rise to the negative correlation between vowel and consonant duration; 2. durational patterns have a clear syllable-timed character: a) in the stressed syllables the vowels have moderately but significantly shortened; b) both the singleton vs. geminate post-vocalic consonant and CV\$C vs. CVC\$C syllable structure have induced consistent lengthening.

Chapter 3 explores the nature of interrelation between spectral and temporal features. It presents a series of experiments that investigates the role of formant pattern in differentiating Hungarian short/long pairs proper. For evaluating the correlation between length and quality, realizations of stressed vowels produced by a male speaker in isolated sentences have been analyzed. The comparison of the formant frequencies has shown clear-cut differences between the closed and half-closed pairs. The frequency values of phonologically short/long vowels could be separated in the F1-F2 space only in the latter pairs. The perceptual relevance of the central/peripheral contrast observed has been tested in listening experiments. The results have proved that in identifying half-closed vowels listeners use spectral information as a secondary cue.

The new methods used in this study can serve as a basis for ongoing research in exploring temporal structure of present-day Hungarian.