

## ON SEGMENT DURATIONS IN WORDS AND PHRASES

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Two experiments have been conducted investigating durations of segments on the word and on the phrase level. A limited speech material consisting of acute accent words made up by nonsense syllables was used. On the word level the number of syllables and the position of the stressed syllable were varied. The following observations were made regarding stressed vowel durations:

1. There is a compensation for word length in terms of number of syllables such that the vowel duration decreases as a function of increasing word length. However this compensation is not complete.
2. Vowel duration is increased towards the end of the word i.e. there is a final lengthening effect.

The same observations were noted for unstressed vowels and for stressed and unstressed consonants. The number and position of words in a phrase gave similar results for the vowel durations but to a lesser degree.

The above observations are summarized by the following rule:

$$\text{Duration} = \frac{k \cdot D}{\frac{m_p}{n_p} \alpha_p \cdot \frac{m_w}{n_w} \alpha_w}$$

With a correction for increased duration in phrase initial position this rule has been applied in producing synthetic speech.

## Litterature:

- Lindblom B. and Rapp K. 1971. Reexamining the Compensatory Adjustment of Vowel Duration in Swedish Words. STL-QPSR 4, 19-25
- Carlsson R., Granström B., Lindblom B., and Rapp K. 1972. Some Timing and Fundamental Frequency Characteristics of Swedish Sentences: Data, Rules, and a Perceptual Evaluation. STL-QPSR 4, 11-19