ABSTRACT

ACOUSTIC VOWEL REDUCTION AS A FUNCTION OF SENTENCE ACCENT, WORD STRESS, AND WORD CLASS

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The effect of sentence accent, word stress, and word class (function words versus content words) on the acoustic properties of 9 Dutch vowels in fluent speech was investigated. A list of sentences was read aloud by 15 male speakers. Each sentence contained one syllable of interest. This could be a monosyllabic function word, an unstressed syllable of a content word, or a stressed syllable of a content word. The same syllable occurred in all three conditions. Sentence accent was manipulated with questions that preceded the sentences. A total number of 3465 vowels were segmented from the syllables and analysed. It was found that all three factors mentioned above had a significant effect both on the steady-state formant frequencies (F_1 and F_2) and on the duration of the vowels. Word stress and word class had a stronger effect on the vowels than sentence accent. A listening experiment showed the perceptual significance of the acoustic measurements. It appeared that spectral vowel reduction could be better interpreted as the result of an increased contextual assimilation than as the tendency to centralize. We also studied changes in the dynamics of the formant tracks due to the experimental conditions. It was found that formant tracks of reduced vowels became flatter, which supports the view of an increased contextual assimilation. Three simple models of vowel reduction are discussed.