

The relation between variation in vowel quantity and vowel quality

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This paper investigates the relation between the variation in vowel quantity and vowel quality under the influence of the phonetic context and prosodic prominence in English. In English, a vowel is longer when it finds itself in a prosodically strong position, followed by a voiced consonant, in a short foot as compared to the same vowel in a prosodically weak position, followed by a voiceless consonant, in a long foot (cf. Abercrombie 1964; Chen 1970; Rakerd, Sennett & Fowler 1987). Also, shorter vowels tend to be closer to the center of the acoustic vowel space than longer ones (Lindblom 1990). There seems to be, then, a correlation between the variation in vowel quality and vowel quantity. The present contribution, however, tests the hypothesis that the variation in vowel quality does not correlate in a linear manner with the variation in vowel quantity. The prediction is that vowel quality may be influenced by the same factors which influence vowel quantity (i.e. by prosodic prominence, phonetic context, phonostylistics), but that different factors may affect vowel quality and vowel quantity independently and in distinct ways.

The investigation is supported by an empirical study, in which the variation in quality and in quantity of the vowels /i:/ and /ɪ/, triggered by the prosodic position, by the sonority of the following segment and by the length of the foot in which the vowel finds itself is measured. A vowel followed by a voiced stop in a one-syllable foot in a prosodically strong position is the context for the longest duration, and a vowel followed by a voiceless stop in a three-syllable foot in a prosodically weak position the context for the shortest duration. The experiment investigates all the possible combinations of the three factors (foot length, the sonority of the following segment and prosodic prominence), which amounts to 12 contexts altogether. A hierarchy based on length is established and compared with the hierarchy based on quality. The presence of a linear relation between the two, or absence thereof, can then be verified.

It will be suggested that if the hypothesis is confirmed, and, in particular, if prosodic factors are found to influence vowel quality independently of duration, then a potential link between the rhythm of a language and the extent of its variation in vowel quality can be postulated.

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