

Voicing-dependent vowel duration in Japanese children

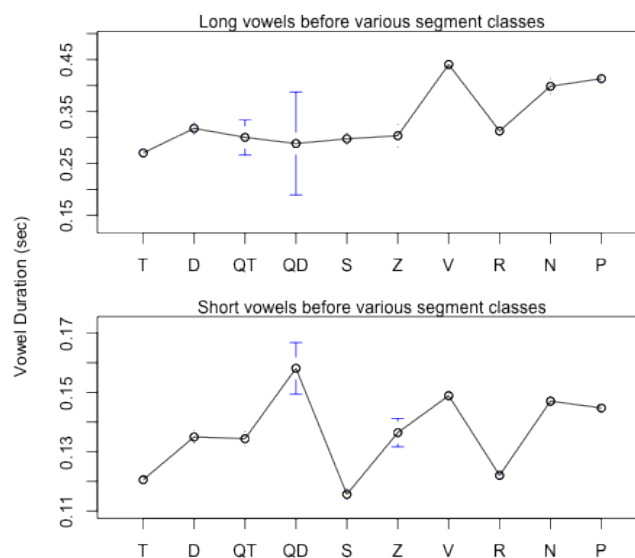
The present study gives a developmental analysis of vowel durations in Japanese. The primary goal is to find if there is any voicing-dependent durational variations of vowels for children speaking Japanese. Longitudinal data of 3 children's speech from NTT infant database (Amano et al., 2008) were analyzed.

The duration of stressed vowels in English is primarily governed by the voicing of the following consonant (House, 1961). In adult speech, vowels preceding voiceless consonants are approximately two-thirds the duration of vowels preceding voiced consonants (Mack, 1982). A developmental analysis of English-speaking children reveals that they acquire the difference before the age of 2 and there is no clear developmental trend thereafter (Ko, 2007). This suggests that the duration of vowels are not controlled by English phonology, but governed by more universal properties of postvocalic voicing.

However, durational variation of vowels in Japanese have not been focussed in terms of postvocalic voicing, presumably because there is no such striking difference in adult speech of Japanese as in English. A preliminary analysis of the database reveals that the postvocalic voicing do have an effect on vowel duration both in short and long vowels in Japanese. Fig. 1 shows vowel durations before various segment classes. Differences of vowel duration between voiced and voiceless environments suggest that subphonemic durational difference is persistent in short vowels. The pattern in long vowels is different, suggesting an effect of syllable structure.

The effect of syllable structure and geminates, developmental trend of long and short vowels, acquisition of lexicon for Japanese children, and implications on the leaning of English vowel length will be discussed.

Fig. 1: Vowel duration (T/D for voiceless/voiced stops, QT/QD for voiceless/voiced geminate stops, S/Z for voiceless/voiced fricatives, V for vowels, R for sonorants, N for moraic nasal, and P for pause).



References

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