

Length as a contrastive feature in Vietnamese vowels
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In previous research, people find that there is a mismatch between production and perception, where some acoustic differences in productions are not used as perception cues, and some perception cues are actually not the production targets. This study looks for such a mismatch in the production and perception of four vowels in Vietnamese dialects.

As noted in Emeneau (1951) and Thompson (1965) studies of Vietnamese grammar, there are two monophthongs, /ɐ/ and /ʌ/ in Vietnamese which have a limited distribution - non-open position only and are considerably shorter than the other nine monophthongs. These two monophthongs are grouped into pairs with another two monophthongs /a/ and /ə/, respectively, which have similar formant values, as described in Han (1966). In Labov and Baranowski (2006), the perception experiments show that a 50 msec difference between two overlapped vowels is enough to act as a cue for categorical perception between short *e* and /ah/ in American English.

In this study, I measure the similarity in their formant values and the difference in their duration. My research question focuses on two matters in production: how much difference there is in their duration and if there is a correlation between the formant similarity and the duration difference. As for perception, what do native speakers use as perceptual cues if the vowels are merged or close-to-merging in any of the dialects?

This research looks at both the production and perception aspects of these two vowel pairs in three dialects of Vietnamese: Hanoi, Hue and Saigon. The production data is a recorded wordlist embedded in framed sentences with 54 tokens of each of the short vowels and 72 tokens of the long vowels for each of the three dialects. The normalized vowel charts for all speakers of each dialect show that these two pairs of vowels are distinct in Hanoi dialect, nearly distinct in Hue dialect, and nearly merged in Saigon dialect. Going in the opposite direction from the formant values, the duration difference appears in Saigon and Hue dialects only, which indicates that duration might be important as a perceptual cue for speakers of these two dialects to compensate for the similarity in the formant values.

A perception test built from recorded and synthesis speech was done with 17 native speakers of the Hanoi dialect and Saigon dialect. The perception test has both differentiation and identification tasks for the vowels of these two pairs, using both genuine recorded tokens and shortened and lengthened tokens by synthesis. The perception experiment results show that while speakers of the Saigon dialect identify duration as an important perceptual cue for both pairs, speakers of Hanoi dialect only identify duration as a perceptual cue for one pair. This shows that as one acoustic feature becomes less prominent, another acoustic feature becomes important. Even though speakers might not produce that feature, they still rely on it for their perception.

References:

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