

Non-coarticulatory vowel nasalization in Taiwanese Mandarin

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This paper presents a variationist study of non-coarticulatory vowel nasalization in Taiwanese Mandarin. Vowels in Standard Mandarin, like those in English, exhibit only coarticulatory nasalization, specifically when followed by nasal coda consonants (Duanmu, 2007; Yuan & Liberman, 2011). We noticed, however, that many Taiwanese Mandarin speakers also nasalize certain vowels in non-coarticulatory contexts (i.e., vowels neither followed nor preceded by nasal consonants). We hypothesize this is due to contact in Taiwan between Mandarin and Taiwanese Hokkien (aka Taiwanese), which has phonemic nasal vowels (Chung, 1996). Contact effects are not uncommon. Coda consonants in Hong Kong Cantonese have even been influenced by a dialect of Hokkien (Ding, 2010). However, we are not aware of another case of non-coarticulatory vowel nasalization attributable to contact with a language that has phonemic nasalization. If, as we hypothesize, vowel nasalization in Taiwanese Mandarin stems from contact with Taiwanese, the frequency of nasal vowels should co-vary with speakers' exposure to and/or fluency in Taiwanese.

Method. Preliminary work identified 12 morphemes of interest. We developed a short story that includes at least two instances of each morpheme and a word list that includes at least one instance of each. To rule out coarticulatory nasalization, no target vowel in the story or word list is preceded or followed by a nasal consonant.

Twenty-one native speakers of Taiwanese Mandarin, ages 20 to 66 (mean 33.3), were recorded reading the story then the word list. Speakers were also asked their hometown, ethnicity (Hokkien, Hakka, Waishengren, or Aboriginal), gender, age, education, ability to speak and understand Taiwanese, and the language(s) spoken at home during childhood. The nearly 1,000 vowel tokens were double-coded impressionistically as nasal or non-nasal by two researchers working independently. Intra-rater and inter-rater reliability averaged above 90%, and a second listening resolved virtually all inconsistencies.

Results. A stepwise logistic regression was conducted in Rbrul (Johnson, 2009) with speaker and morpheme as random factors, and story/list, ethnicity, gender, age, education, Taiwanese proficiency, and home language(s) (coded as 1—no Taiwanese, 2—some Taiwanese, or 3—only Taiwanese) as fixed factors. The analysis showed a significantly greater proportion of nasalized vowels among word-list items than story items (38.9% vs. 18.1%; $p < 0.001$) and a significant positive relationship between the amount of Taiwanese spoken at home and the proportion of nasalized vowels ($p < 0.05$).

Discussion. The significant relationship between home language(s) and nasalization supports our hypothesis that vowel nasalization in Taiwanese Mandarin stems from contact with Taiwanese. The greater proportion of nasalized vowels among word-list items, however, seems counterintuitive at first. Why should nasalization, which is non-standard in Mandarin, be more frequent in list reading, which favors greater attention to speech and (in other studies, at least) more standard pronunciations? We believe this represents the converse of an intrinsic duration effect. That is, just as phonemically nasalized vowels tend to be longer than their non-nasal counterparts (e.g., Rothe-Neves & Valentim, 2012)—arguably because the velum is a relatively sluggish articulator (cf. Lehiste, 1970)—it seems faster speech disfavors variable nasalization.

References

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