

Palatal Contrast Neutralization in Japanese: phonetic interference or borrowing gap?

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Japanese displays limited palatal contrast. As can be seen in table 1 below, the voiceless alveolar obstruents [t] and [c̥], for example, contrast before the vowels [a o u], but not before the vowels [i] and [e].

Table 1

vowel	unpalatalized	palatalized
[a]	[ta]	[c̥a]
[o]	[to]	[c̥o]
[u]	[tu]	[c̥u]
[i]	---	[c̥i]
[e]	[te]	---

Some attempts have been made to describe the pattern phonologically, but they do not reference the phonetic properties of the sounds (Vance 1987, Jorden 1998, Akamatsu 2000).

One explanation for the contrast neutralization before [i] and [e] is that consonants before these vowels do not behave in the same way that consonants behave before [a o u]. Ultrasound imaging provides direct evidence of the articulatory settings of a particular sound. Consonants may not contrast in palatality before [i] and [e] because of the articulatory properties associated with that position. Coarticulatory effects of the vowel may limit a Japanese speaker's ability to produce a palatal contrast. This poster presents experimental data that test this explanation of the contrast neutralization.

The present analysis examines data from ultrasound imaging of the tongue of six native speakers of Japanese. Within subject comparisons of ultrasound data show no clear distinction between the articulation of [te] and other nonpalatal consonants, as can be seen in the first subject's data in graph 1 below.

The present study suggests that the articulatory properties of vowels do not play a role in the palatal contrast neutralization. Furthermore, a historical perspective explains how the contrast came about, borrowing from Chinese, and also explains why the borrowings from English into Japanese over the last fifty years have allowed in [c̥e] and [ti] sequences, as in [c̥estu] 'chess' and [pa:c̥ei:] 'party'.

Graph 1

