Velar palatalisation in Tohoku Japanese

Naoya Watabe, Hiroto Noguchi, Chuyu Huang, Ayako Hashimoto, Ai Mizoguchi, Mafuyu Kitahara & Sanae Matsui
(University of Tokyo; Tokyo Medical and Dental University; Nagoya Gakuin University; Tokyo Kasei Gakuin University; Maebashi Institute of Technology and National Institute for Japanese Language and Linguistics; Sophia University; & Nanzan University and Sophia University)

Keywords: Japanese, Tohoku dialects, phonetics, palatalisation, variation and change

This study focuses on consonant palatalisation observed in several Tohoku (North-eastern Japanese) dialects. In standard Japanese, alveolar stops and fricatives /t, d, s, z/ change to alveo-palatals when they precede a front high vowel [i]. In contrast, previous research has documented that velar stops /k, g/ also undergo palatalisation in some Tohoku dialects, though this pattern ceases to appear among the younger generations (Ohashi 1997). The goals of this study are (i) to describe the occurrence of velar palatalisation in present-day Tohoku dialects and (ii) to conduct a phonological analysis of the observed patterns.

The data collection was carried out as follows. We recorded the speech sounds of 25 participants from several places in Aomori and Miyagi prefectures from the end of August to the end of September 2023. The target words were 22 nouns including /k, g/ preceding /i/. 12 nouns including /k, g/ preceding /a/ or originally palatal consonants /t͡ɕ, d͡ʑ/ preceding /i/ were added for comparison with the target words. The participants were instructed to pronounce the sentences explaining the objects in their dialects. The pictures of the target words and the example carrier sentences 'This is X, certainly X.' were presented visually on a computer screen. The recorded sounds were annotated using Whisper and Julius and inspected by the authors for annotation errors. Those annotated data were analysed by using Praat, and the spectral centre of gravity (CoG: Zygis 2003 and Tanaka 2023) was measured.

As summarised in Figure 1, the CoG on /k, g/ preceding /i/ was significantly higher than that on /k, g/ preceding /a/ for only four speakers (27, 54, 59, 65). Moreover, Figure 2 indicates that the sound patterns did not vary by age group: no significant difference was confirmed as for the CoG between the velars preceding /i/ and the originally palatal consonants (β = -580.550; S.E. = 281.724; t = -2.061; p = .061). These results suggest that velar palatalisation is generally unattested in the dialects concerned. On the other hand, the CoG on /k, g/ preceding /i/ and on /t͡ɕ, d͡ʑ/ preceding /i/ were partially overlapped for most of the participants, which means that the velars were palatalised in some words. These observations lead to the conclusion that velar palatalisation in Tohoku Japanese is no longer a phonologically motivated process and occurs in some cases as a fossil of the previous language.

This work was supported by JSPS KAKENHI #JP22K00516.

References:

Ohashi, Jun-ichi. 1997. Toohoku hoogen-ni okeru /ki/-no chiriteki nendaiteki shosoo to tenkai [Geographic and generational aspects and perspectives of /ki/ in Tohoku diarects]. *Gengokagaku ronshuu.* 1.15–26.

Tanaka, Yu. 2023. Acoustic Properties of Palatalized Consonants in Japanese. *ICPhS* 2023.

Zygis, Marzena. 2003. Phonetic and Phonological Aspects of Slavic Sibilant fricatives. *ZAS Papers in Linguistics* 32.175–213.

Figure 1: CoG Values by Participant

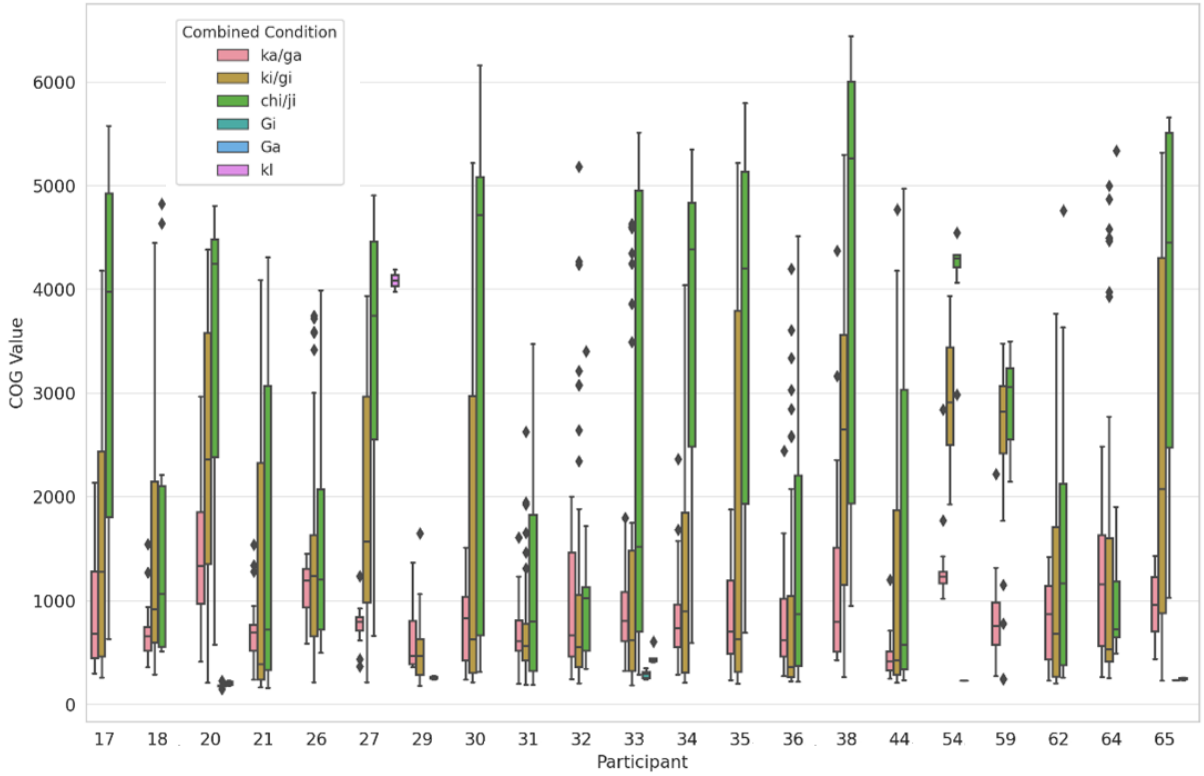

Figure 2: CoG Values by Age Group
(young: younger than 50 years old; senior: the others)