

## Regional Differences in Voicing Patterns during the Closure of Japanese Voiced Geminate

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Japanese word-initial plosives show clear differences by the speaker's generation and area of origin (Takada 2011). Are such areal and generational differences found in other sound environments as well? This study is the first step toward answering this question.

This study provides an acoustic analysis of the sounds, especially voicing, made during the closure of voiced geminates (also called *sokuon*) and the following voiced plosives. Although voiced geminates are not allowed in the native vocabulary of many Japanese dialects, including standard Japanese, they are increasingly seen in loanwords. Therefore, this study asks the following two questions. (1) How are voiced geminates pronounced? (2) Are there any areal or generational differences in their pronunciation?

To answer these questions, this presentation analyzes speech by 13 speakers from Tohoku and 12 speakers from Kinki. The speakers range in age from 16 to 80, and were all born and raised in the relevant area (i.e., Tohoku or Kinki).

The acoustic analysis identified five voicing patterns: (1) no voicing, (2) voicing only in the first half of the closure (continuous voicing from a preceding vowel), (3) voicing only in the latter half of the closure (prevoicing of a following voiced segment), (4) voicing in both the first and second halves of the closure but discontinuously, and (5) full voicing. The possibility of two subordinate patterns of voicing in the first half of the closure can also be pointed out: the voicing duration is (a) shorter than 40 ms or (b) 40 ms or longer.

The analysis showed that speakers from both areas exhibited every pattern except for (3). However, the proportional use of the patterns differed by area (Fig. 1), as did the duration of continuous voicing from a preceding vowel (Fig. 2). On the whole, voicing tends to appear more frequently and become longer in the Kinki speech data.

### Reference

Takada, Mieko. 2011. *Nihongo no Gotô-heisaon no Kenkyû: VOT no Kyôziteki Bunpu to Tûziteki Henka* (Research on the Word-initial Stops of Japanese: Synchronic Distribution and Diachronic Change in VOT). Tokyo: Kuroshio. (in Japanese)

