

# Where lexical distribution meets phonetic realization: Closure voicing of voiced obstruent geminates in two Amakusa Japanese dialects

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**INTRODUCTION:** This study documents and analyzes voiced obstruent geminates in two dialects of Amakusa Japanese, an endangered language less studied in laboratory phonological approach. We argue that languages which have voiced obstruent geminates in non-Foreign lexicon are phonetically full-voiced in closure but not vice versa. It is well-known that the Yamato- (or native) and Sino-Japanese lexicon does not allow voiced obstruent geminates (cf., Itô and Mester 1995 and among others). Although we can find voiced geminates in the Foreign stratum of the Japanese lexicon, they tend to be devoiced (e.g., /baggu/→[bakku] ‘bag’). Kawahara (2006) attributes this devoicing to perceptual saliency based on acoustic evidence. He argues that voiced obstruent geminates in Tokyo Japanese (TJ) are half devoiced; glottal vibration is stopped at middle of closure (left of Figure 1). There is, however, regional variation regarding the distribution of voiced obstruent geminates. Some Japanese dialects, mostly in the western area, have voiced obstruent geminates not only in the Foreign but also in the Yamato- and Sino-Japanese lexicon (Takayama 2012). This raises the question: Are voiced obstruent geminates in these dialects not only phonologically but also phonetically different from that in Tokyo Japanese? There are few acoustic investigations on voicing of geminates in Japanese dialects. In order to answer the question, we conducted a fieldwork experiment investigating the level of phonetic voicing of phonologically voiced obstruent geminates in the Hondo (HAJ) and Ushibuka (UAJ) dialect in Amakusa Japanese. While HAJ is reported to have voiced geminates in Yamato- and Sino-Japanese lexicon, there is no report on voicing in UAJ.

**EXPERIMENTS:** We interviewed two native speakers of HAJ and one native speaker of UAJ who were about 70 years old, and were elicited 73 Yamato- and Sino-Japanese tokens containing voiced obstruent geminates from the two HAJ speakers. As for the UAJ speaker, no such tokens were found. For example, [dare-ga] ‘who-NOM.’ in TJ corresponds to [dag-ga] in HAJ but [dai-ga] in UAJ.

Are phonological differences between these two dialects reflected in their phonetics? We recorded and analyzed 12 tokens of foreign words containing voiced obstruent geminates. In our recordings, voiced obstruent geminates in HAJ and UAJ are full-voiced unlike in Tokyo Japanese. Figure 1 illustrates the difference in the three dialects. Moreover, the VOTs of word-initial stops are negative values in both HAJ and UAJ, as well as in Kansai Japanese spoken by older generations (Takada 2011).

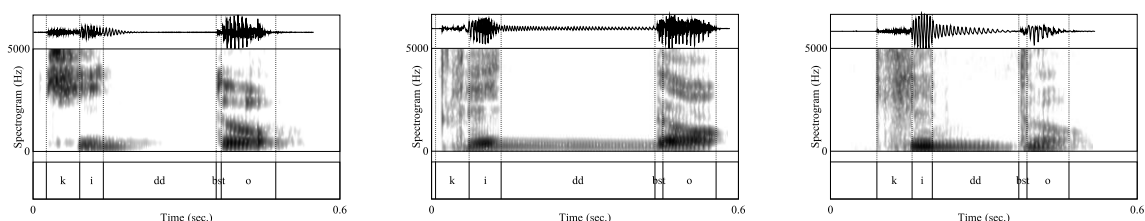


Figure 1: Phonetic difference between TJ (left), HAJ (middle), and UAJ (right) on geminate [dd]

**DISCUSSION:** Our findings regarding the phonetic aspects of voiced geminates in three Japanese dialects can be summarized in three points. First, there is a regional variation on closure voicing of voiced obstruent geminates in Japanese. This is the first report on the existence of a dialect which features full-voiced obstruent geminates in Japanese. Second, comparison between HAJ and UAJ reveals the relation between lexical distribution and closure voicing. If a dialect has non-Foreign lexical items with voiced obstruent geminates, the closure voicing in the dialect is full-voiced but not vice versa. HAJ has non-Foreign lexical items with voiced obstruent geminates but not in UAJ. In contrast, both HAJ and UAJ are full-voiced at closure in voiced obstruent geminates. Closure voicing is expected to be different if lexical distribution would establish a one-to-one correspondence to phonetic realization on voicing. The results, however, do not support this hypothesis at all. Third, the closure voicing of voiced obstruent geminates is independent of VOT. VOT values for word-initial voiced stops are negative in both HAJ and UAJ dialects-- similar to

Kansai Japanese. Since Kansai Japanese does not have voiced obstruent geminates in non-Foreign stratum (Takayama 2012), the hypothesis that the dialects with negative VOTs have full-voiced geminates has to be rejected.

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