

Articulatory manifestation for voiced geminates and initial geminates in Ikema Ryukuan

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This paper shows the validity of Real time MRI (rt-MRI) for dialectology. In Miyakojima dialects of Southern Ryukyu, initial geminates and voiced geminates occur in words used in daily life (eg, *zza* ‘father’ and *badda* ‘side’). This contrasts with standard Japanese in which voiced geminates are limited to loanwords and no initial geminates occur. The speech signal clearly reflects the differences between these dialects, showing that the voiced geminates are voiced throughout the consonants in Miyakojima dialects, while they tend to devoice in standard Japanese.

In order to maintain the voicing for a certain period in the voiced geminates, the articulatory manifestations are probably different for the speakers of Miyakojima compared to those of standard Japanese. We verify the hypothesis by using rt-MRI movies of two speakers of Ikema, one of the dialects in Miyakojima. The result showed that the pharynx is greatly expanded during voiced geminates but not during voiceless ones. Also, voiced geminate fricatives are preceded by oral closure, especially word-initially. That is, they are essentially affricates. We speculate that the oral closure helps to enlarge the pharynx which, in turn, helps to initiate the vocal fold’s vibration for these consonants. We discuss the differences and similarities of voiced obstruents in the Ikema dialect and standard Japanese.

We also evaluate the special vowel in Miyakojima dialects which has been controversial whether it is an apical or central vowel. While the previous claims are mostly based on introspection or auditory impressions, analysis of the rt-MRI data sheds light on the understanding of tongue shape during the vowel.