

論文の英文要旨	
論文題目	VOT Variations in Japanese Initial Stops and the Diachronic Change
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This research studies variations of Voice Onset Time (VOT) in Japanese word initial stops. The aims of this research are (1) to describe variations and factors for them, and (2) to interpret the synchronic distribution as well as diachronic change from sociolinguistic, linguistic-geographical, and phonological point of views.

Japanese is known to phonologically distinguish between voiced stops (/b, d, g/) and voiceless stops (/p, t, k/). As in many languages that have a voicing contrast in stops (Lisker & Abramson 1964), Japanese voiced stops basically take negative VOT values and voiceless stops take positive VOT values (Shimizu 1996, etc.) Some researchers have additionally shown that Japanese voiced stops perform a wide range of VOT values, including positive ones (Homma 1980, etc.) Although such variations may be due to sociolinguistic rather than phonetic factors, the factors have yet to be studied. It is one of the aims of this study.

The data was taken from two Japanese speech corpora, the High school corpus (abbrev. HS-corpus), collected throughout Japan in the years 1986-1988, and the Indexical region corpus (abbrev. IR-corpus), which was taken from 5 main regions in 2006-2007. They are designed as a set of “real time” corpora. In both corpora approximately 450 speakers are analyzed.

Results of this study can be summarized as follows:

- (1) regional and generational factors are found to be the most important factors of VOT variation.
- (2) Describing the regional distribution of VOT, finding the 2 regional varieties, that is, *Tohoku* and *Kanto and areas west*, and the geographical pattern of *East-West distribution*.
- (3) Describing the generational distribution, finding the diachronic change, and suggesting S-curve model approximated by logistic model.
- (4) Describing the VOT ranges and the relation between voiced and voiceless, and suggesting some ideas under mapping model.
- (5) Additionally, demonstration of 2 phonetic categories, that is, *fully-voiced* and *half-voiced* in phonological voiced stops.

Chapter outline

Chapter 1 describes the background, the aims, and the importance of this study. In section 1.1, concepts and frameworks of this study are explained through the three scientific fields: sociolinguistics, linguistic geography, and phonology. Section 1.2 presents findings and problems pointed out in the existing literature, which mainly concerns socio-phonetic and acoustic-phonetic studies. Section 1.3 sets up the three research questions of this study: (1) to describe the synchronic distributions of VOT variations, (2) to clarify the factors for them, and (3) to interpret the synchronic distribution from sociolinguistic, linguistic-geographical, and phonological point of views. Section 1.4 provides an overview of the organization of this study.

Chapter 2 describes a method used for the analysis. Section 2.1 presents information about the two corpora, HS-corpus and IR-corpus, which are designated as a set of real-time corpus. This description includes information about the research method, the speakers, the words analyzed, and the advantage as well as limitations of each corpus. Section 2.2 describes the instrumental techniques and the software used for acoustic and statistical analysis.

Chapter 3 shows the results of the above analysis. Firstly, in section 3.1 and 3.2 the

synchronic aspects of VOT distributions of voiced stops are clarified with HS-corpus. Secondly, in section 3.3 the diachronic aspect of VOT distributions of voiced stops is clarified with the combined corpus that includes HS-corpus and IR-corpus. And finally, in section 3.4 VOT distribution of voiceless stops are analyzed, and the relation of VOT range between voiced and voiceless stops are examined with the combined corpus. The details of each subsection are as followed:

In section 3.1, factor synthesized analysis are made, and the following five factors are analyzed: place of articulations, following vowels (as linguistic factors), region, generation, and gender (as non-linguistic (sociolinguistic) factors). As a result, (1) it is shown that there are 2 phonetic categories, namely *fully-voiced* and *half-voiced*, in Japanese initial voiced stops, and the two show clear-cut distribution on VOT axis. And (2) the two factors, that is region and generation, indicate to be most influential to VOT variation.

In section 3.2, details of the synchronic distributions of VOT under regional and generational factors are shown, and the results reveal the following: (1) regional difference is clear in case older generations, while it is ambiguous in case of younger generations. (2) from the point of geographical distribution in the older generation, three regional varieties can be identified: *Tohoku* variety, *Kanto and areas west of Kanto* variety (abbrev. *West variety*), and *Intermediate* variety. *Tohoku* shows that voiced stops are dominated by positive VOT values, while on the other hand *West variety* shows that voiced stops are dominated by negative values. (3) from the point of generational distribution, the idea of diachronic change in VOT of voiced stops is suggested only for *West variety*.

Section 3.3 focuses on the aspect of diachronic change of voiced stops. Firstly, the examination of real time corpora (HS-corpus and IR-corpus) shows that (1) the cohorts in each corpora have similar VOT distribution. It is demonstrated that generational difference found in one synchronic corpus (HS-corpus) indicate the apparent time of diachronic change in Japanese initial voiced stops. Further, the change in *West variety* is treated as a categorical change, ranging from fully-voiced to half-voiced, which suggests (2) the higher limit of personal percentage of half-voiced rise with generation, and (3) the averages of the half-voiced percentage of generations have the forms of earlier stage of “S-curve”. This can be approximated by the logistic model.

In section 3.4, VOT ranges of voiced and voiceless stops are analyzed following the results of voiced stops. Analysis reveals that (1) in older generations, VOT values of Japanese initial stops are clearly regionally differentiated for voiced and voiceless stops, and (2) VOT ranges between voiced and voiceless stops show relative distinction in each region. However, (3) in younger generations, regional differences become ambiguous, and the VOT ranges of voiced and voiceless stops overlap.

Chapter 4 discusses the synchronic distribution and diachronic change from sociolinguistic, linguistic-geographical, and phonological point of views.

Section 4.1 suggests the *East-West distribution* pattern. Connected to that, the relation among the distributional areas of the following phonetic phenomena is examined: half-voiced in word initial position (abbrev. initial half-voiced), nasalization of voiced plosives (abbrev. medial nasalization), and voicing of voiceless plosives in word medial position (abbrev. medial voicing). These medial phenomena have similar geographical pattern to VOT. From the analysis, the inclusive relation is shown: medial nasalization \supset medial voicing \supset initial half-voiced.

Section 4.2 suggests the expression of Japanese initial stops that point to mapping between phonological categories and phonetic categories with the framework suggested by Keating (1984) and extended in this study. In that way, phonetic categories in Japanese initial stops are redefined with categories {voiced}, {vl. unasp.} and {vl. asp.}, and the differences and the similarities among geographical varieties and the diachronic changes are indicated with the mappings. Additionally, focusing on the aspect of diachronic change, the following hypotheses are suggested: (1) the delinking between a phonological feature and a phonetic category relates to weakening of VOT function of voicing distinction. (2) the new mappings of both [+/- voice] to {vl. unasp.} relate with markedness of the phonetic category. And (3) the maintaining of distinctiveness of voicing contrast for Japanese speakers may indicate a phonologization of the other phonetic features.

Finally, Chapter 5 summarizes main conclusions of this study, and suggests topics for the future research.