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John Kevin Varden

On High Vowel Devoicing in Standard Modern Japanese:
Implications for Current Phonological Theory

by

John Kevin Varden

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Abstract

On High Vowel Devoicing In Standard Modern Japanese:
Implications For Current Phonological Theory

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This dissertation examines the phonological rule of High Vowel Devoicing (HVD) in Standard Modern Japanese, the dialect of the Kanto plane region. The data herein support the analysis of loss of high vowel voicing as both phonological and phonetic processes (Maekawa 1990; Kondo 1997; Tsuchida 1997). Phonological devoicing involves spread of the feature [+spread glottis] from the preceding obstruent, although it was noted in this dissertation that oral closure may also be playing a role. Phonetically, gestural overlap (as per Browman & Goldstein 1990; 1992) of the vowel's voicing gesture by the preceding glottal spread is also supported by the data (Tsuchida 1997 and references therein). However, while the data of Tsuchida (1997) limited gestural loss of voicing of high vowels to the environment of between voiceless fricatives, the data here suggests that this overlap occurs with high vowels in all devoicing environments.

Characterization of the various stages of vowel reduction within in a Feature Geometry framework are presented. It is also noted that the typical 'devoiced' vowel is actually fricativized (that is, becomes a vowel-colored fricative), with the frication produced by airflow through a narrowed oral tract providing the energy for vocal resonance. The presence of fricativized voiced vowels in the current data set suggests independent manipulation of the features controlling glottal spread and oral closure; i.e. [spread glottis] and [continuant].

The data presented here also uphold the contention that the rule of HVD is losing its dependence on Speech Rate (SR); especially for words containing only one devoicable vowel (the single devoicing environment of Kondo 1994, 1997), high vowels are being devoiced even at very slow SRs. For the current data, the variable having the largest effect on whether or not a vowel will devoice is the mora (1st or 2nd) containing the vowel. This supports a finding of Kuriyagawa & Sawashima (1991). In addition, the gender of the participant had a large effect on the frequency of devoicing, although much individual variation was noted as well. SR had a lesser influence, while the token containing the vowel had less influence still.

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LIST OF ABBREVIATIONS

#DEV	number of devoiced vowels
α	prosodic accentual phrase
ANCOVA	.....	Analysis of Covariance
ANOVA	.....	Analysis of Variance
C	.....	consonant
Cor	.....	Coronal Node
Dors	.....	Dorsal Node
EMG	.....	electromyograph, electromyography, electromyographical
H	.....	High tone
H%	.....	High boundary tone
H-L	.....	High-Low complex tone
HVD	.....	High Vowel Devoicing
ι	.....	prosodic intermediate phrase
IPA	.....	International Phonetic Association
L%	.....	Low boundary tone
Lab	.....	Labial Node
μ	.....	mora
ms	.....	millisecond
MTD(s)	.....	mean token duration(s)
MVD(s)	.....	mean voicing duration(s)
<i>n</i>	.....	number (of samples)
NHK	.....	Nippon Hoosoo Kyoukai (Japanese Broadcasting Co.)
P&B	.....	Pierrehumbert & Beckman (1988)
PCA	.....	Posterior Crycoarytnoid (muscle)
Place	.....	Place Node
Rt	.....	Root Node
s	.....	second(s)
σ	.....	syllable
SD	.....	standard deviation
SE	.....	standard error
SL	Supralaryngeal Node
SR	speech rate

V.....vowel
υ.....prosodic utterance
ω.....prosodic word

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DEDICATION

To:

Kenny,

Marina,

Alisa,

and

Takako...

I only pray that the disruption
to our lives this project has caused
is balanced by the improvement
its completion affords us.

Kevin