Vowel Lengthening for Tonal Distinction in the Segami Dialect of Japanese*

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Abstract

In this paper I clarify that Segami, a dialect of Japanese, lengthens the vowels of the penultimate syllables of words in order to distinguish between two types of word-tone. Segami is a highly endangered dialect of Japanese spoken in a northwestern hamlet on Kami-koshiki Island, an island located about 40 kilometers west of the mainland of Kagoshima Prefecture. In this dialect, as in the other dialects of Modern Japanese, long vowels are phonologically opposed to short ones; on the other hand, they are not only in the penultimate syllables of words ending with the light syllable [CV[+high]]. The indistinctively long vowels are special phonetic realizations of vowel phonemes through the vowel lengthening which occurs only in the phoneme sequence {(C1)V1C2V[+high]2}. This vowel lengthening makes a clear tonal distinction by forming the phoneme sequence into the heavy-light syllable sequence [(C1)V:1.C2V2], suitable to show changes in pitch.

本論文では、上甑島瀬上方言における次末尾輕音節の長母音化が、2 種類の語聲調を辨別する爲に行なはれることを明らかにする。瀬上方言は、鹿兒島縣本土の西方約 40km に位置する、上甑島の北西に形成された小集落で話されてゐる危機方言である。同方言においては、他の現代日本語諸變種に同じく、長母音が短母音と音韻的に對立する。たゞし、兩者の對立は、輕音節 [CV[+high]] で終はる語の次末尾音節においてのみ失はれる。この非辨別的長母音は、音素連續 {(C1)V1C2V[+high]2} においてのみ生じる長母音化により特別に實現したものである。この長母音化は、音高の變化を實現させるに向いた重・輕音節連續 [(C1)V:1.C2V2] を作ることで、語聲調の別を明瞭にしてゐるのである。

Key Words: phonology, word-tone, pitch, syllable, mora

1. Introduction

In this paper I clarify that the Segami dialect of Japanese (hereafter "Segami") lengthens the vowels of the penultimate syllables of words[1] in order to distinguish between two types of word-tone.

Segami is a highly endangered Japanese dialect spoken in a northwestern hamlet on Kami-koshiki Island, located about 40 kilometers west of the mainland of Kagoshima Prefecture (see § 2). In this dialect, as in the other dialects of Modern Japanese, long vowels are phonologically opposed to short ones as follows:

(1) Long vowels opposed to short ones in Segami[2]

　　a. Data from Kamimura (1965: 35–36)

　　　　"[toːgiː]" 'time.TOP/DAT'　　"[karaː]" 'shoulder.TOP'
　　　　"[toːgi]" 'time'　　　　　　　"[kara]" 'shoulder'

　　b. Author's data

　　　　[t͡ɕi↓ː.ne][3] 'to pour.ATT'　　[te↓ːꜜne] 'to sharpen.ATT'
　　　　[t͡ɕiꜜne] 'blood.INST'　　　　[teꜛne] 'hand.INST'

Words in the same column in (1b) are considered to share the same word-tone and to differ from one other only in vowel length, considering Segami's word-tone system, which limits the number of pitch patterns (concretely: the positions of rises and falls in pitch).

Segami has two types of word-tone, analyzed into Type A { ... LHL#} and Type B { ... LH#} at the underlying level. The word-tones are combined with all of the morphemes which then can become the first constituents of words. Segami adjusts the pitch pattern of every word to either word-tone on the basis of the word-tone given to the first constituent of the word in question (see (5) below); similarly, in Japanese dialects spoken in Southwestern Kyūshū (specifically: Saga, Nagasaki, Kumamoto, and Kagoshima Prefecture; Kamimura 1941, Kibe 2000, Kubozono 2006; 2012, Matsuura 2014).

Both of the word-tones are applied to words backward from the end. The pitch patterns of words sharing the same word-tone, therefore, are identical with each other when their ends are justified in a column, as in (1b).

Long vowels, however, are not opposed to short ones only in the penultimate syllables of words ending with the light syllable $[CV_{[+high]}]$ (C: consonant; V: vowel)[4] as in (2) below. Hereafter I will clarify why the indistinctively long vowels appear only there.

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[1]In this paper, both terms "syllable" and "mora" refer to that of a word, unless otherwise noted. However, I cannot decide how (concretely: syntactically, morphologically, and/or phonologically) the term "word" should be defined in Segami's phonology. For this reason, I provisionally and ordinarily use this term in order to express syntactic words.

[2]See the end of this paper for the meanings of symbols and abbreviations used.

[3]More precisely, [ke↓ẽnẽ]. However, nasals regularly nasalize segments adjacent to them in Segami as in the other dialects of Modern Japanese, therefore, the positions in which nasalization occurs can be easily understood. For this reason, the diacritic for nasalization will be omitted in this paper.

[4]I define Segami's syllable structure as [(Onset) Nucleus (Coda)] ((◯): optional) at the surface level because we cannot generalize the syllable structure only by the well-known distinction between vowels and consonants. The light syllable [(O)N] has 1-mora length and places a short vowel or what it is weakened as its nucleus; on the other hand, the heavy syllable [(O)NX] (X: coda) is one mora heavier than light one by an obstruent, a nasal, or the latter part of a long vowel or descending diphthong, each of which functions as a coda. (incidentally, onset slots are filled with consonants.) Both the syllables differ from each other also in sonority. The sonority of the light and heavy syllables respectively peak at their back and middle sections.
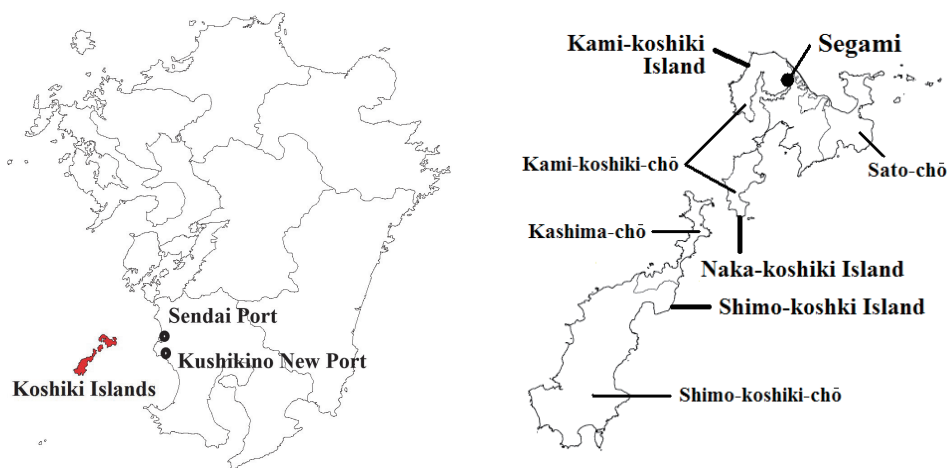
Figure 1: Locations of Koshiki Islands and Segami

(2)   Long vowels not opposed to short ones in Segami

    [kɐ↓ː↑gu̥] 'to write.NPST'   [mʲiˑ↓ː.ɲu̥] 'water'
    *[kɐ↑gu̥] (nonesense)   *[mʲiˑ↓ɲu̥] (nonesense)

2.   Geographical and social situation of Segami

As previously mentioned, Segami (瀬上; locally pronounced as [s⁽ʲ⁾eˑŋɐːˑmʲi]) is a highly endangered dialect of Japanese spoken in a northwestern hamlet on Kami-koshiki Island (上甑島). As seen in Figure 1, this isolated island lies about 40 kilometers west of the mainland of Kagoshima Prefecture and forms Koshiki Islands together with Naka- and Shimo-koshiki Island. Access to the Koshiki Islands is available only by ferries from Satsuma-sendai and Ichiki-kushikino City.

The hamlet of Segami belonged to the former village of Kami-koshiki and was incorporated into Satsuma-sendai City on October 12, 2004, when the city was established. According to statistic data, as of April 1, 2016, the population of this hamlet is only 160 (98 households) despite it being 970 in 1960 (a decrease of over 80 % during the past fifty-five years); and furthermore, the rate of population aging is over 57 %. As high percentage in the population decrease and aging suggests, the hamlet is a marginally viable community, and hence, the residents have to go to Naka-koshiki, the center of Kami-koshiki-chō, or the center of Sato-chō, the largest village in Kami-koshiki Island.

Native speakers of Segami live also out of the hamlet, especially in Hanshin Area, which was popular among them for employment. The number of the native speakers outside of the hamlet is higher than that on the inside. However, the total number would be less than 1,000; and therefore, the dialect is considerable as extremely endangered.

Similar to the other dialects spoken on Koshiki Islands, Segami is a member of Satsuma dialect family and is also close to Hichiku dialect family. Segami is regarded as being characteristic even by the people on the islands because it has a unique (morpho)phonology as follows (Kamimura 1965, Minami 1967, Ogata 1987a;b; 1988a;b):

(3)   Segmental correspondence between Segami and Modern Japanese dialects (see Figure 1 for the locations of Sato and Kushikino)

	pillar	house-sitter	to write. CONT.NPST	road.TOP	throat. DAT	tip.NOM
Japanese:	pa.si.ra	ru.su.baN	kai.tjo.ru	mi.ti.wa	no.do.ni	sa.ki.ga
Segami:	[hɐi.jɐ	d͡zṳi.bɐŋ˺	keː.ʑoː.ju̜	mʲiː.ʑɐː	no.neː	sɐː.gʲi.ŋɐ]
Sato:	[hɐ.ɕi.rɐ	d͡zṳi.bɐŋ˺	kʲɐː.toi	mʲiː.t͡ɕɐː	no.deː	sɐː.kʲi.gɐ]
Kushikino:	[hɐç.tɐ	d͡zṳç.bɐŋ˺	ke.t͡ɕoʔ˺	mʲi.t͡ɕɐ	no.de	sɐg˺.gɐ]
Standard:	[hɐ.ɕi.rɐ	ru̜.si̜.bɐN˺	kɐi.to.ru̜	mʲi.t͡ɕi.wɐ	no.do.ɲi	sɐ.kʲi.g/ŋɐ]

3.   Linguistic data

In this paper I am mainly based on linguistic data which I obtained from the following native speakers of Segami through surveys in the field during 2010–14:

(4)   Native speakers of Segami who gave the author its linguistic data

ID	Sex	Born	Dwelling history (Y/O: Place)	Interviewed in
01	M	1940's	30–45: Kobe City	2010–11
02	F	1920's	15–22: Ōsaka, Fukuoka, and Nagasaki Pref.	2010
03	F	1920's	N/A	2011–14
04	F	1920's	9–15: Shimabara City	2011–14

4.   Phonological interpretation of indistinctively long vowels

As previously mentioned, indistinctively long vowels as in (2) are seen only in the penultimate syllables of words ending with $[CV_{[+high]}]$ and can be regarded as both long and short at the underlying level. For this reason and the following data, I interpret the indistinctively long vowels to be lengthened ones and then define vowel phonemes realized both long and short as in the bottom rows of List (5).

(5)   Phonetic realizations of the same root shared by several words

	a. Type A		b. Type B	
A 1.	[to↓ː.bṳ]	'to fly.NPST'	[to↓ːˑꜛju̜]	'to take.NPST'
2.	[toꜛbɐ↓ŋ˺]	'to fly.NEG.NPST'	[to↓jɐꜛŋ]	'to take.NEG.NPST'
3.	[tod˺ꜛde↓ː]	'to fly.NPST.RAT'	[to↓n̩.neꜛː]	'to take.NPST.RAT'
4.	{tob-}	'to fly'	{toj-}	'to take'
B 1.	[mʲi↓ː.ɲu̜]	'water'	[jɐ↓ːꜛmʲi]	'dark'
2.	[mʲiːꜛɲu̜↓mo]	'water.also'	[jɐ↓ː.mʲi↓ꜛmo]	'dark.also'
3.	[mʲi↓ː.ɲu.tɐꜛme↓i]	'puddle'	[jɐn̩˺.noꜛi]	'dark night'
	[mʲit͡ɕ˺꜓tɐꜛme↓i]			
4.	{mizu}	'water'	{jami}	'dark'

5.   Vowel lengthening and deletion

Based on the above interpretation, indistinctively long vowels as in (2) and (5: A1, B1) are special phonetic realizations of vowel phonemes through the vowel lengthening which occurs only in the phoneme sequence $\{(C_1)V_1C_2V_{[+high]2}\}$.

Besides this vowel lengthening, Segami also has the tendency to syllabify $\{(C_1)V_1C_2V_{[+high]2}\}$ to the single heavy syllable $[(C_1)V_1C_2]$ through the deletion of $\{V_{[+high]2}\}$ as in (5: A3, B3) and as follows:

(6)   Deletion of $\{V_{[+high]2}\}$ in $\{(C_1)V_1C_2V_{[+high]2}\}$

    a.   Author's data

	A.	B.	C.
i.	[u̱ꜜː.mu̱]	[kɐꜜːꜛgu̱]	[moꜜː.zi]
	{um-ʲ**u**}	{kak-ʲ**u**}	{mo**ci**}
	'to bear-NPST'	'to write-NPST'	'rice cake'
ii.	[u̱ꜜn̚ꜛneꜜː]	[kɐꜜd̚.deꜛː]	[mot̚ꜛt͡si̱ꜜːg͡ʲi]
	{um-ʲ**u**=dee}	{kak-ʲ**u**=dee}	{mo**ci**=cuk-ⁱ Ø}
	'to bear-NPST=RAT'	'to write-NPST=RAT'	'rice cake=to pound-NMLZ'

    b.   Data from Kamimura (1965) and Kibe (2001)

	A.	B.	C.
i.	"[aːꜛm**i**]"	"[waꜜːꜛgi]"	"[aꜜːꜛʃi]"
	{am**i**}	{wak**i**}	{as**i**}
	'net'	'armpit'	'leg; foot'
ii.	"[an_çiꜛgi]"	"[waꜜd_do ʃiꜛta]"	"[ai̱_ꜛno haꜛja]"[5]
	{am**i**=pik-ⁱ Ø}	{wak**i**=do##sita}	{as**i**=do##haja}
	'net=to draw-NMLZ'	'armpit=GEN	'leg=GEN##belly
		##lower part'	→ the sole of a foot'

$\{V_2\}$ in $\{(C_1)V_1C_2V_{[+high]2}\}$ is deleted only when this phoneme sequence is followed by a morpheme and is separated from a syntactic word boundary.[6]

Although $\{(C_1)V_1C_2V_{[+high]2}\}$ is realized also as $[(C_1)Vː_1.C_2V_{[+high]2}]$ under the same conditions as in (5a: B3), the vowel lengthening and deletion, which make the difference between the two phonetic realizations, are carried out almost complementarily. When the vowel lengthening is present, the vowel deletion is absent, and vice versa.

However, why does the vowel deletion never occur at the ends of words? For understanding the reason for it, Segami's word-tone system should be explained.

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[5][aino] is considered to be phonoligically /as.do/, derived from {asi=do} through the deletion of {i}. It should not be regarded as /ai.do/ by the deletion of {s} because [i] in [aino] can precede voiceless occlusives differently from the other vowels. This phonological interpretation is supported also by the fact that non-initial {su} is often realized not as [u̱] but as [i] (e.g. {ja**su**-ka} 'cheap-NPST' → [jɐi.kɐ], *[jɐu̱.kɐ]; Kamimura 1965, Ogata 1987a).

[6]When $\{(C_1)V_1C_2V_{[+high]2}\}$ is adjacent to this boundary, its $\{V_1\}$ is always lengthened as mentioned above. I do not know for the present whether this conditional distinction between the vowel lengthening and deletion makes the phonotactic constraint which prevents the phonemes for oral occlusives, such as [p], [d], [ʔ], from standing at the ends of words or arises from this constraint.

6.   Word-tone system of Segami

As shown in § 1, Segami is a word-tone language which adjusts the pitch pattern of every word to either Type A { ... LHL#} or Type B { ... LH#} as follows:

(7)   Pitch patterns of words composed of several types of syllable

		a. Type A			b. Type B		
A 1.	[hɐ˩nɐ]	[H̲.L]	'nose'		[t͡sṳ˥jɐ]	[L.H]	'face'
2.	[ɸ̣ː.te˩ː]	[L.H̲ʟ]	'forehead'		[kṳ˩sṳ˥i]	[h.LH]	'medicine'
3.	[t͡ɕi˩ː.to]	[H̲ʟ.L]	'bit'		[bʲi˩n˥tɐ]	[hʟ.H]	'head'
4.	[çi˩n˥nʲi˩ŋ]	[hʟ.H̲ʟ]	'elbow'		[meːˀ˩ŋeˀ˥ː]	[hʜ.LH]	'eyebrow'
B 1.	[kṳˀ˩ː.bʲi]	[H̲ʟ.L]	'neck'		[mʲi˩ˀ˥mʲi]	[hʟ.H]	'ear'
2.	[ɐ˥ŋṳˀ˩ː.jṳ]	[L.H̲ʟ.L]	'to raise.NPST'		[s⁽ʲ⁾e˩ŋɐː˥mʲi]	[h.Lʟ.H]	'Segami'

The center columns in List (7) show pitch patterns at the surface level. In these columns, the capital letters *H* and *L* respectively denote high and low pitch given to the back parts of words. The small letter *h* means there is a high pitch given to the front parts in contrast to *H*. All the letters are simultaneously the symbols for 1-mora length. In addition, underlines indicate penultimate morae, and the difference between large- and small-sized letters correspond to that between the bodies and the codas of syllables.

Type B gives a high pitch to final morae for the phonetic realization [... L,H]; on the other hand, Type A gives it to either the penultimate or ante-penultimate mora. In Type A, the position of high pitch does not seem to be fixed because there is the possibility of both [... L,H,L] and [... L,H,L,L] at the surface level. Type A, however, gives a high pitch to ante-penultimate morae only when the word concerned ends with the heavy-light syllable sequence [(C)VX.CV] as in (7a: A3, B1, B2) (see Footnote 4 for syllable weight in Segami). The unit to which Type A gives a high pitch is not the penultimate mora (underlined in (7)) but the body of the syllable in which it is included. Under this interpretation, the underlying pitch pattern of Type A remains { ... LHL}.

7.   Strength of the constraint on vowel lengthening and deletion

In the word-tone system above, words composed of {(C₁)V₁C₂V_{[+high]2}} are realized as the following (8: i) through the lengthening of {V₁} and as (8: ii) through the deletion of {V_{[+high]2}}:

In the word-tone system above, words composed of $\{(C_1)V_1C_2V_{[+high]2}\}$ are realized as the following (8: i) through the lengthening of $\{V_1\}$ and as (8: ii) through the deletion of $\{V_{[+high]2}\}$:

(8)   Phonetic realizations by vowel lengthening and deletion

   a.   Type A

	A.		B.		C.		D.	
i.	[i̥˩ː.gṳ]	[H̲ʟ.L]	[kɐ˩ː.sṳ]	[H̲ʟ.L]	[sṳ˩ːjṳ]	[H̲ʟ.L]	[kɐ˩ːmʲi]	[H̲ʟ.L]
ii.	[ig̊˩_]	[?]	[kɐ˩i_]	[H̲ʟ]	[sṳ˩i_]	[H̲ʟ]	[kɐ˩ŋ_]	[H̲ʟ]
	{ik-ʲu}		{kas-ʲu}		{su-ʲu}		{kami}	
	'to go-NPST'		'to lend-NPST'		'to do-NPST'		'paper'	

   b.   Type B

	A.		B.		C.		D.	
i.	[kɐ˩ː˥gṳ]	[hʟ.H]	[ho˩ː˥sṳ]	[hʟ.H]	[to˩ː˥jṳ]	[hʟ.H]	[mʲi˩ː˥mʲi]	[hʟ.H]
ii.	[keg̊˩_]	[?]	[ho˥i_]	[Lʜ]	[to˥i_]	[Lʜ]	[mʲi˥ŋ_]	[Lʜ]
	{kak-ʲu}		{hos-ʲu}		{toj-ʲu}		{mimi}	
	'to write-NPST'		'to dry-NPST'		'to take-NPST'		'ear'	

As seen in (8), most of the words are able to keep 2-mora length and their tonal distinction between Tyep A and B even after the vowel deletion; whereas words with $\{C_2\}$ realized as an oral occlusive are difficult or unable as in (8: A). The heavy-light syllable sequence $[(C_1)V:_1.C_2V_2]$ by the vowel lengthening is more suitable than the single heavy syllable $[(C_1)V_1C_2]$ by the vowel deletion to make the clear tonal distinction between Type A and B. For this reason, the phoneme sequence $\{(C_1)V_1C_2V_{[+high]2}\}$ prefers the vowel lengthening instead of the vowel deletion.

8.   Conclusion

In this paper I clarified that Segami lengthened the vowels of the penultimate syllables in order to distinguish between two types of word-tone.

In Segami, long vowels are not opposed to short ones only in the penultimate syllables of words ending with the light syllable $[CV_{[+high]}]$. The indistinctively long vowels can be regarded as special phonetic realizations of vowel phonemes through the vowel lengthening which occurs only in the phoneme sequence $\{(C_1)V_1C_2V_{[+high]2}\}$.

Why does Segami lengthen the vowels of penultimate syllables without distinctiveness? This would be because the vowel lengthening above make the clear tonal distinction between Type A and B by forming $\{(C_1)V_1C_2V_{[+high]2}\}$ into the heavy-light syllable sequence $[(C_1)V:_1.C_2V_2]$. This syllable sequence is more suitable than the single heavy syllable $[(C_1)V_1C_2]$ by the deletion of $\{V_{[+high]2}\}$ to show changes in pitch.

Symbols

↑: rise in pitch   ↓: fall in pitch   {○}: underlying representation   "○": quoted from previous studies   (○): optional   ,: mora boundary   .: syllable boundary   -: affix boundary   =: morphological word boundary #: phonological word boundary   ##: syntactic word boundary

Abbreviations

ATT: aspectually attained   CONT: continuous/perfect   DAT: dative/allative/locative/essive   GEN: genitive/nominative   INST: instrumental/locative   NEG: negative   NMLZ: nominalizer   NOM: nominative/genitive   NPST: non-past/aspectually inattained   RAT: rational   TOP: topic

References

Kamimura, Takaji. (1941). Koshiki-shima hōgen no akusento [The accent of the Koshiki dialect of Japanese]. *Onseigaku Kyōkai kaihō*. Vol. 65–66. pp. 12–15. Onseigaku Kyōkai.

——— (1965). Kami-koshiki-shima Segami hōgen no kenkyū [A study of the Segami dialect of Japanese spoken on Kami-koshiki Island]. *Kagoshima Daigaku hōbungakubu kiyō bungakuka ronshū*. Vol. 1. pp. 21–49. Faculty of Letter and Law, Kagoshima University.

Kibe, Nobuko. (2000). *Seinanbu Kyūshū nikei akusento no kenkyū [A study of the binary accent system of southwestern Kyūshū]*. Bensei Shuppan.

——— (2001). Koshiki-shima hōgen no onsei no tokuchō ni tsuite [The phonological characteristics of the Koshiki dialect of Japanese]. In Sanada, Shinji (ed.). *Nihongo no shōmetsu ni hinshita hōgen ni kansuru chōsa hōkoku*. pp. 125–79. Ōsaka: Faculty of Infomatics, Ōsaka Gakuin University.

Kubozono, Haruo. (2006). *Akusento no hōsoku [The law of accent]*. Vol. 118 (Iwanami kagaku raiburarī). Tōkyō: Iwanami Shoten.

——— (2012). Kagoshima-ken Koshiki-shima hōgen no akusento [The accent of the Koshiki dialect of Japanese]. *Onsei kenkyū*. Vol. 16 (1). pp. 93–104. The Phonetic Society of Japan.

Matsuura, Toshio. (2014). *Nagasaki hōgen kara mita goonchō no kōzō [Word prosodic structure from the perspective of Nagasaki Japanese]*. Tōkyō: Hitsuji Shobō.

Minami, Fujio. (1967). Kagoshima-ken Koshiki-shima Segami hōgen no on'in taikei [The phonogical system of the Segami dialect of Japanese spoken on Koshiki Islands, Kagoshima Prefecture]. *Hōgen kenkyū nenpō*. Vol. 10. pp. 1–17. Hiroshima: Hōgen kenkyūkai at Hiroshima University.

Ogata, Keisuke. (1987a). Kami-koshiki-shima Segami hōgen no keitai on'inron [The morphophonology of the Segami dialect of Japanese spoken on Kami-koshiki Island]. Master's thesis, Graduate School of Humanities, Kyūshū University.

——— (1987b). Kami-koshiki-shima Segami hōgen no shiin taikei [The consonant system of the Segami dialect of Japanese spoken on Kami-koshiki Island]. *Kyūshū Daigaku gengogaku kenkyūshitsu hōkoku*. Vol. 8. pp. 53–82. Faculty of Letter, Kyūshū University.

——— (1988a). Kami-koshiki-shima Segami hōgen no ninshō daimeishi [Personal pronouns in Segami dialect of Japanese spoken on Kami-koshiki Island]. *Kyūshū Daigaku gengogaku kenkyūshitsu hōkoku*. Vol. 8. pp. 29–59. Faculty of Letter, Kyūshū University.

——— (1988b). Kami-koshiki-shima Segami hōgen no on'in no kijutsu [Description of the phonology of Segami dialect of Japanese spoken on Kami-koshiki Island]. *Proceedings of Nihon Hōgen Kenkyūkai*. Vol. 46. pp. 46–54.