

34. Variability of phrasal tone in Fukuoka Japanese

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1. Introduction

The aim of this paper is to investigate the variability of phrasal tone observed in Fukuoka Japanese (FJ) from a variationist perspective. The topic of our discussion is a flat plateau of tone which extends over some (prosodic) words, deletes all lexical accents (i.e. pitch-falls) and, as a result, combines them into a new tonal unit. This tonal feature has often been a topic of arguments on the prosody of FJ, such as in Hayata (1985), Kubo (2001), etc., telling that this tone is frequently observed in utterances with *wh*-words¹ or with the formal noun '*to*' at the end of the tonal phrase. However, these studies are rather description-oriented and do not mention its variability.

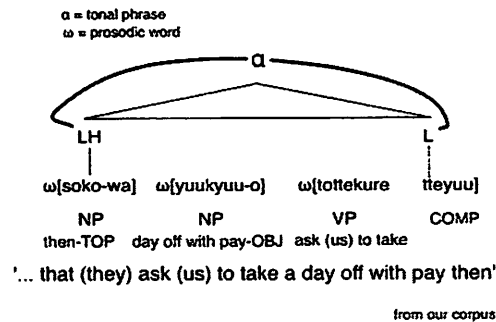


Figure 1. Flat tone without *wh*-words or the formal noun *-to*

On the other hand, other authors such as Kibe (2007) or Okano (1983) point out that this tonal plateau can occur in other constructions. Figure 1 shows an example of the flat tone, despite the fact that neither a *wh*-word nor the formal noun '*to*' is in the construction. What happens here is a tone spanning, a phenomenon in which a single tonal pattern spans more than two prosodic words. This is due to dephrasing, a prosodic process which deletes tonal boundaries and

recomposes some tonal units into a larger one (cf. Igarashi 2007), and we suppose that this process is conditioned by some linguistic and/or extra-linguistic factors.

In this paper, we will show from the results of our preliminary quantitative analysis how variable the tone of FJ is and what factors can be involved in this tonal variation. Tonal phenomena should be a highly phonetic issue in that they will be closely connected with the movement of pitch, for example, the up and/or down of pitch occurring at the phrase boundary. However, we have not yet done any elaborated phonetic analysis. What we can present here is the results of categorical analyses based on auditory perceptions in which whether the pitch of prosodic phrase falls or stays flat was judged. Therefore, we will not refer to phonetic factors, but confine our discussion only to grammatical, discourse, and social factors. Then, we will conclude this paper by suggesting the possibility of language change in terms of an interactive reason.

2. Sociolinguistic situation of FJ

The city of Fukuoka is a metropolitan area in Japan and the political, economic, and cultural centre of Kyushu area, especially since the 1970s. The present population is more than 1,400,000, and still increasing. The influx of population from surrounding areas and other regions of Japan may have caused a huge amount of dialect contact. However, it is often said that some dialectal features are still well preserved under the strong influence of standard or Tokyo Japanese (TJ). Even younger speakers seem to use distinctive dialectal forms as their identity marker. This could be supported by the fact that they have a positive attitude toward their own dialect (cf. Jin-nouchi 1996). Many linguistic works have been done on word-level phonology, lexical items, and grammar, but not on the tonal prosody.

3. Analyses of Tonal Variation

3.1. The aim

The tonal variation of FJ is an issue of dephrasing. What we should do is try to specify linguistic and/or extra-linguistic constraining conditions for dephrasing. For this aim, we analysed two cases of tone spanning. One was the case with dephrasing occurring in the tone phrase with *wh*-words. The other dealt with all other tokens of the tone phrase except for *wh*-word tone phrases. In addition, we tried to see whether the informants used flat lexical accent for prosodic words. The reason will be given in 3.4.3.

3.2. Possible constraints for this variation

The constraints considered in this study are the following three factor groups:

(1) Linguistic factors (grammatical factors):

Lexical and syntactic categories of tonal phrase: NP, VP, AP, *wh*-words, etc.

Grammatical forms: aspectual forms, case markers, complementizers

Sentence types: declarative or interrogative

Restrictive modification (including genitive)

(2) Social factors:

Generation of speakers

(3) Discourse factors:

Who the utterance is oriented to? The addressee or not?

3.3. Data and informants

Our corpus consists of two one-hour-long spontaneous conversations between peers of two age groups. One is between two college students and the other between two middle aged speakers, working as college officers. All are females. Other personal details are shown in Table 1. The conversations were digitally recorded with two MD recorders, one for each speaker. Both conversations were recorded in one of the authors' offices.

	Conversation 1 Between young speakers Recorded in August 2003	Conversation 2 Between middle age speakers Recorded in February 2004
Speaker A	Gender: female, Age: 21 Born and raised in Fukuoka city	Gender: female, Age: 49 Born and raised in Fukuoka city
Speaker B	Gender: female, Age: 21 Raised in Fukuoka city from 6 to 16, moved to a neighbouring town	Gender: female, Age: 51 Born and raised in Fukuoka city

Table 1. Information about the recordings and the informants

3.4. Multivariate Analyses

Since this variability of tone fits well in the variationist framework, three multivariate statistical analyses were done by Goldvarb X (Bailey & Preston 1996, Paolillo 2002, Tagliamonte 2006, Matsuda 2006). The results are shown in the tables below.

3.4.1. Analysis 1: Tone spanning in tone phrases containing *wh*-words

The number of tokens is 114. They are all the tokens with *wh*-words in our whole data. The domain in which the flat tone occurs is usually a tone phrase with *wh*-words, and in some cases a whole utterance. The boundary of tone usually has quite a clear pitch movement, such as a sharp fall, a rise and fall, etc. This analysis could not be done together with other two analyses, because with a *wh*-word in tone phrase, a 'knock-out' happened in some factors. 'Knock-out' is

a fatal result for Goldvarb analysis, which prevented us from stepping into the multivariate analysis. Thus, we carried out a separate examination for *wh*-phrases.

The division of phrases for the analyses was made basically by auditory judgement. When the judgement was not confident enough, the digital pitch analysis was done with Praat 5.0. However, the audio quality of some tokens was not appropriate for digital processing (e.g. due to the poor volume of voice). Those tokens were excluded from the data.

The conceivable constraining factors and the result of the statistical analysis are shown in Table 2. When the factor weight is higher than 0.50, the factor is likely to promote the occurrence of the target variant, in our case, a flat tone. If lower than 0.50, the factor is likely to disfavour it.

Tokens: 114	Input: 0.904		weight	%	N
(1) phrase final forms	presence		[.57]	89.3	50
complementaizer (- <i>ka</i> , - <i>kaina</i> , - <i>mo</i> , - <i>tokorode</i>)	absence		[.47]	80.7	46
quotative '- <i>to</i> ' (not the formal noun)	range		0.10		
copula (tentative form): - <i>yaroo</i>					
(2) case markers '- <i>ga</i> ', '- <i>ni</i> ', '- <i>o</i> ', etc.	presence		0.15	62.5	10
Ex. <i>Doko ni modoruu</i>	absence		0.57	88.7	86
'Where shall we go back?'	range		0.42		
(3) restrictive modification	presence		0.16	60	6
Ex. <i>Nan no hanashi suru</i> (genitive)	absence		0.57	87.4	90
'What story are we going to talk about?'	range		0.41		
(4) utterance orientation	yes		0.64	85.7	60
'yes': utterance is oriented to addressee	no		0.28	83.7	36
'no': utterance is clearly not oriented to addressee	range		0.36		
(5) generation (young, middle age)	young		0.63	90.4	75
	middle age		0.19	70	21
	range		0.44		

Total Chi-square = 12.0956 Chi-square/cell = 0.6366 Log likelihood = -37.384 Significance = 0.049

Table 2. The result of the multivariate analysis of tone spanning in *wh*-phrases

The result of the statistical analysis tells us that the presence of case markers (0.15), restrictive modification (0.16), speakers generation (middle age) (0.19) tend to block tone spanning. And the utterance orientation in (4) seems a relevant factor; if the utterance is clearly oriented to the addressee (0.64), tone spanning is likely to occur, while if not (0.28) it may be blocked. In addition, phrase final forms are not relevant to this variation. Note that the formal noun

'-to' is not included as a factor of this analysis, because it seemed to interact with other factors and the outcome of the preliminary analysis did not show a statistical significance for '-to'.

3.4.2. Analysis 2: Tone spanning in ordinary tone phrases

About the first 6 minutes from the beginning of the transcripts from both conversations were analysed. The number of tokens is 407, excluding tone phrases with *wh*-words. The result in Table 3 shows that the presence of the formal noun '-to' whose weight score is 0.94 works as the strongest factor for tone spanning. The utterance orientation and the speaker's generation are also effective factors again. Other factors (aspectual forms, sentence type, syntactic categories) are not statistically significant.

Tokens: 407 Input: 0.139		weight	%	N	
(1) aspectual forms (presence, absence)	presence	[.40]	17.4	8	
	absence	[.51]	16.8	60	
	range	0.11			
(2) formal noun '-to' (presence, absence)	presence	0.94	13.2	50	
	absence	0.46	75	18	
	range	0.48			
(3) sentence type (declarative, interrogative)	declarative	[.49]	25	14	
	interrogative	[.50]	15.6	54	
	range	0.01			
(4) syntactic categories (NP, VP, AP, others)	VP	[.58]	21.8	36	
	AP	[.54]	16.9	12	
	others	[.42]	13	7	
	range	0.16			
(5) utterance orientation	yes	0.57	20	62	
	'yes': utterance is oriented to addressee	no	0.28	6.5	6
	'no': utterance is clearly not oriented to addressee	range	0.29		
(6) generation (young, middle age)	young	0.41	15.8	32	
	middle age	0.59	18	36	
	range	0.18			

Total Chi-square = 35.1284 Chi-square/cell = 0.7318 Log likelihood = -153.820 Significance = 0.048

Table 3. The result of the multivariate analysis of tone spanning in ordinary tone phrases

3.4.3 Analysis 3: The occurrence of flat tone in prosodic words

The two analyses are concerned with the occurrence of tone spanning. In Analysis 3, we saw whether the lexical tone is realised with or without a pitch fall (i.e. accented or unaccented = flat). We used 396 tokens, 3.5 minutes extracted from the beginning of the conversations. The domain of variation in this case is the lexical tone of a prosodic word.

This analysis was done in order to see what kind of elements tend to be involved in producing the flat tone at the lexical accent level. The tonal plateau consists of successive flat tones of prosodic words. It has been said by some linguists that FJ does not have flat lexical accent. However, Kibe (2007) and Jinouchi (1996) suggest the involvement of VP in producing tonal plateau, and we can speculate that certain linguistic elements at the prosodic word level may be related to build up a flat tone phrase. Thus, it is worth considering what factors contribute to the word-level tone formation.

Tokens: 396 Input: 0.596		weight	%	N	
(1) similarity to the tone of TJ (accented, unaccented)	accented	0.71	74.7	121	
	Accented = with a pitch fall	unaccented	0.35	44.9	105
	unaccented = flat	range	0.36		
(2) aspectual forms (presence, absence)	presence	0.78	86.5	32	
	absence	0.47	54	149	
	range	0.31			
(3) syntactic categories (NP, VP, AP, others)	VP	0.67	74.5	108	
	others	0.51	54.8	17	
	AP	0.44	51.2	21	
	NP	0.37	44.7	80	
	range	0.3			
(4) utterance orientation	yes	0.54	58.8	200	
	'yes': utterance is oriented to addressee	no	0.28	46.4	26
	'no': utterance is clearly not oriented to addressee	range	0.26		
(5) generation (young, middle age)	young	[.44]	55.9	109	
	middle age	[.56]	58.2	117	
	range	0.12			
Total Chi-square = 33.5783 Chi-square/cell = 0.9594 Log likelihood = -228.387		Significance = 0.007			

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Table 4. The result of the multivariate analysis of the occurrence of a flat tone in words

From the result of the Goldvarb analysis in Table 4, three linguistic factors, tonal similarity to TJ (or the standard variety), aspectual forms, syntactic categories are statistically significant. This means that their presence could

contribute to making the tone of a prosodic word flat (or unaccented), and might well offer a phonetic condition for tone spanning. In addition, the utterance orientation (4), which is also statistically significant, tends to be a blocking factor for the production of flat tone. The generation may not be an effective factor for the tone of prosodic words.

3.5. Summary of the results

These results confirm the claims in previous studies that the variability of tone in FJ is affected by certain linguistic factors such as *wh*-words, the formal noun '-to', aspectual forms, and some syntactic categories like VP, and suggest that social and discourse factors may also be relevant. With these linguistic conditions, tone spanning is likely to occur more frequently than with others.

Furthermore, speculation can be made from the outcome of this research. The differences between generations were observed in Analysis 1 and 2. This seems to indicate that language change is in progress at the tonal prosody level of FJ.

4. Interactive use of tone and language change

Generation & chi-square test			Accent types in TJ		
			Accented	Flat	Sum
Middle age Chi square 4.716 df. = 1 p. <.030	Realised accent in data	Accented	frequency 58	26	84
			69.0%	31.0%	100%
		Flat	frequency 63	54	117
			53.8%	46.2%	100%
Young Chi square 38.237 df. = 1 p. <.000	Realised accent in data	Sum	frequency 121	80	201
			60.2%	39.8%	100%
		Accented	frequency 71	15	86
			82.6%	17.4%	100%
		Flat	frequency 42	67	109
			38.5%	61.5%	100%
		Sum	frequency 113	82	195
			57.9%	42.1%	100%

Table 5. Distribution of lexical accent types in Analysis 3 (N = 396)

There are two points suggesting that the variability of FJ tone reflects language change. The first is the increase of the TJ type lexical accent. As is mentioned above, it is said that traditional FJ did not have flat (i.e. unaccented) lexical accent. However, Table 5 demonstrates that the distribution of lexical accent of the young informants is rather similar to that of TJ, which is statistically

confirmed by the outcome of the chi-square tests. On the other hand, the middle age informants tend to pronounce unaccented words of TJ with the accented tone, and vice versa. Thus, it is possible to say that the systematic use of the TJ type lexical accent is now spreading among younger speakers.

The second and more intriguing point is the discrepancy between the result of Analysis 1 for *wh*-phrases and that of Analysis 2 for non-*wh*-phrases. In the theoretical model of Analysis 1, the statistical result tells us that youth is a promoting factor, but middle age is a blocking factor. On the other hand, Analysis 2 shows the opposite result; middle age promotes and youth blocks tone spanning. What does this discrepancy mean?

We could surmise that this indicates that the flat tonal plateau is gradually acquiring a specific interactive function. In other words, it seems that this tone does not have interactive meaning and appears in a less regular manner in spontaneous speech of the older generation, while it can be an interactive device among young speakers to signal the addresser's attention toward the addressee, and accordingly to induce his/her involvement in discourse.

Table 6 demonstrates one piece of evidence for this argument. The correlation between tone spanning and speakers' generation is statistically confirmed by the chi-square test (p. <.05), exhibiting the frequent use of tone spanning by the younger speakers in *wh*-phrases, that is, at *more interactive moments*.

Chi square df. = 1 p. <.003		Generation		
		Middle	Young	Sum
Tone spanning	No	frequency 10	8	18
		55.6%	44.4%	100%
	Yes	frequency 21	75	96
		21.9%	78.1%	100%
Sum		frequency 31	83	114
		27.2%	72.8%	100%

Table 6. Correlation between speakers' generation and tone spanning in Analysis 1

In less interactive situations like Analysis 2, the result of the chi-square test is not significant in Table 7. From these two facts, we could claim that, even with ongoing change in lexical accent, people still preserve the dialectal feature, the tonal plateau, although it may be changing its function from a regional marker to an interactive device. As far as we know, there has been no study dealing with language change in terms of the interactive function of prosodic tone of

Japanese. This may be a worthwhile topic to be explored in order to know how tonal variation contributes to our language activity.

Chi square 0.10 df. = 1 n.s.			Generation		
			Middle	Young	Sum
Tone spanning	No	Frequency	88	86	147
		%	50.6 %	49.4%	100%
	Yes	Frequency	119	114	233
		%	51.1%	48.9%	100%
	Sum	Frequency	31	83	407
			27.2%	72.8%	100%

Table 7. Correlation between speakers' generation and tone spanning in Analysis 2

Notes

¹ We use 'wh-words' here to refer only to Japanese interrogative words, such as 'doko', 'dare', 'nani', etc. These words are employed in interrogative sentences and never used as relatives in Japanese. Needless to say, all the wh-word tokens of our data have the interrogative meaning.

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