

Utterance Final Forms in Dialogues by Young Japanese: A Syntactic and Prosodic Analysis

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Abstract

This work reports findings on the relationship between speaker-sex and linguistic behavior among young Japanese in explanation-giving dialogues. The relationship between speaker-sex and (1) the choice of utterance final forms; (2) the prosodic characteristics on these forms, has thus been examined. Data obtained from 110 students of the Tokyo area revealed no statistically significant effect of the sex factor in the syntactic forms used. However utterance final syllables had a statistically significant effect both on rhythm and intonation.

1. Introduction

In some languages like Japanese, sex-related differences have been incorporated into the linguistic system at both the lexical and lexico-syntactic levels. However some changes seem to have occurred to such a rigid representation which wouldn't correspond to the use of modern Japanese.

One of those changes concerns the choice of utterance final forms. Some studies, conducted when linguistic research turned from text based material to natural discourse, have shown that utterance final *male* and *female speech* characteristics were diverging from the norm [2], [4], and [6]. Ozaki in an analysis of speech in the informants' place of work, found that the final particle "-wa" was no longer the exclusive use of women, and that the segment "-dawa" was disappearing or becoming a marker of older female speech [9]. Most recently, Yabe noted that other final forms such as "-da" and "-nda", which are characteristic of male speech, are no longer the marks of that gender whereas "-no" remains a female form even if hardly used by women in informal conversation [15].

Another important issue concerns intonation and particularly the women's use of a rising intonation pattern on the final particle "-wa" where men prefer a falling pattern [7]. This may imply that a rising pattern communicates certain femininity. We know however that a falling pattern on "-wa", a form commonly used by young people of both sexes, is situation-dependant. In relation to this, an interesting auditory analysis has been conducted by Suzuki who extracted the final segments "-yo", "-no", "-noyo", "-nda/-noda" from a wide range of words recorded from television broadcasted dramas. She determined the existence of 5 tone patterns, i.e. low-level, rise, high rise, fall, and rise-fall [13]. Unfortunately these studies are based on impressionistic auditory analyses and contain no fundamental frequency data to support the arguments presented.

The present growing tendency among young Japanese speakers to neutralize gender-related differences in utterance final forms and the presence of prosodic variations on these syntactic segments raise the following questions:

- Do male and female speakers have preferences in their use of utterance final forms in normal conversation?
- Do such selected final segments contain prosodic differences, specifically in intonation and rhythm?

To provide an answer to the first question, we will examine the importance of the neutralization of sex-related characteristics. For the second issue, we will investigate whether compensation phenomena, particularly the use of prosodic patterns, differentiate the speech of both genders. A linguistic and a phonetic experiments were designed to that effect. These experiments should ultimately provide a synthetic view, albeit limited, on the use of utterance final forms in relationship to gender differences among young Japanese adults.

2. Experimental Investigation

2.1. Written mode: the making up of dialogues

A total of 110 college students of the Tokyo area took part to the experiments. Subjects' ages ranged from 19 to 29 years old. Forty six of these participants were male and 64 female. In the linguistic experiment, subjects were asked to make up short dialogue sets containing the final segment "-nda" and its equivalents in two different contexts, i.e. justification and explanation. Dialogues were to feature two people of the same gender with a close relationship, like friendship. Actual examples taken from a survey [15] were provided to participants as patterns for their dialogues. The following instructions were given:

* Justification context:

The objective of the script was to refuse an invitation and provide a reason for it. The four line dialogues had to contain 4 parts, one for each line.

- 1 On campus, you are invited to have a drink with a friend.
- 2 You decline the offer and provide a reason for it.
- 3 Your friend shows understanding.
- 4 You leave and greet each other.

Example:

Ima hima? Koohi nomini ikanai? (Do you have a moment right now? Let's go and have a coffee.)
Gomen, Ima repootode taihennanda. (I am sorry, I'm busy preparing a dissertation.)

A, sokka. (Ok that's fine.)
Un, gomen, ja. (Yah. Too bad. Bye.)

* **Explanation context:**

The objective here was to provide an explanation in answer to your friend's remark on your health condition. Dialogues had to be developed as follows:

- 1 A remark has been made on your physical condition
- 2 You provide an explanation
- 3 Your friend advises you to go home and rest
- 4 You agree and depart

Example:

Tsukaretenai? (Aren't you tired?)
Un, saikin netenakute. (Yah, I don't sleep well these days.)
Moo uchikaette netara? (Well, what if you went home to sleep?)
Sosuruwa, arigaato. (Ok. I'll do that. Thanks.)

2.2. Spoken mode: recording of dialogue sets

For the phonetic experiment, dialogues containing the final segment "-nda" and its equivalents were recorded by speakers of both sexes. Two separate recordings were made for the reading and the free production of dialogues. Each pair of participants read two sample scripts in two different settings (justification and explanation) then repeated these same dialogues by switching roles. The forms and contents of the samples were free of gender marks and of signs such as question marks or vocal lengthening, which could have facilitated phonetic production. Following each reading, participants engaged into free conversations in the two settings and here again switched roles. One pair of speakers, who totaled about 15 minutes of the recordings, produced eight versions for reading aloud and eight versions for free conversation. Recordings were made in two different locations: a fully equipped sound-proof room, and a quiet room with a head-set. Forty six subjects (26 women and 20 men) who took part to the written experiment also served as speakers. The free dialogues were transcribed prior to analysis.

3. Results

3. 1. Written mode

This section focuses on the use of utterance final linguistic forms in the justification and explanation contexts both in the written scripts of the 110 subjects and the transcribed dialogues of the 46 students. Data according to production mode (spoken/written), context (justification/explanation), and sex (male/female) are summarized in Table 1 for six recurrent forms, i.e. "-nda", "-no", "-kara", "-te/de", "-shi" and "-kamo".

A test battery (Chi-Square, Kruskal-Wallis, and Friedman tests) was performed on the frequency data of these forms. No significant difference according to production (written/spoken), context (justification/explanation) or sex (male/female) was revealed. Chi-square values for the three final forms used in the sample recorded dialogues "-nda", "-kara" and "-te" were below the probability levels of 5% and of 10% thus demonstrating that the male/female difference is null.

Our data provide evidence that "-nda", a traditionally male final form, is presently used by subjects of both sexes in the writing of dialogues and in the phonetic production of spontaneous dialogues. Actually over half of our female subjects (52%) used "-nda" in the context of justification. Concomitantly, the frequency data for the feminine form "-no" reveal that it is rarely used by women. These

observations would indicate that the "-nda"/"-no" opposition is no longer a marker of the difference between young male and female styles.

Table 1: Frequency of use of final forms.

	Written : Justification		Written: Explanation	
	Male	Female	Male	Female
"-nda"	11	34	18	33
"-no"	0	9	0	1
"-kara"	7	3	6	1
"-ta/de"	1	3	12	27
"-shi"	3	0	1	3
"-kamo"	0	0	2	6
	Spoken: Justification		Spoken: Explanation	
	Male	Female	Male	Female
"-nda"	20	18	17	20
"-no"	0	4	1	0
"-kara"	7	4	4	2
"-ta/de"	2	7	10	17
"-shi"	2	0	1	0
"-kamo"	0	2	0	3

We contend that dialogue writing allows to probe into the linguistic consciousness of subjects while dialogue production assess the ongoing linguistic status within the community considered here. In that prospect, the transition from "-no" to "-nda" would take place at a subconscious level.

3. 2. Spoken mode

3. 2. 1. Preprocessing of data

This section considers utterance final segments which are hypothesized to capture important prosodic characteristics. Four syllable groups from the read dialogues have been examined here, i.e. ka-ra, "ku-te", "nan-da", and "in-da". More precisely, they are excerpts from the following phrases: jugyodakara, netenakute, taihenanda, and netenainda. The Fundamental Frequency (henceforth F0) and the duration of the last two syllables of utterance final segments have been measured. The objective was to collect information for rhythm and intonation, which could be used in further extensive studies.

As far as intonation, two F0 contours have been observed: successive falls over 2 syllables, or a fall on the penultimate syllable followed by a rise on the final syllable. F0 values have been taken at the beginning (about 20 msec. from onset) and ending (20 msec. before offset) points of vowels, which is the band considered as the stable portion of vowels.

In order to determine whether a F0 change was actually perceived, results from Rossi's analysis of pitch glissando have been considered [11]. According to his experiment, the perception threshold is approximately of 18% for a duration of 100 msec. and of 14% for a duration above 200 msec. For more accuracy, a Gompertz curve fit (1) was applied to Rossi's experimental points in order to interpolate the perception threshold of glissando G for a duration of x msec.

$$\log_e G(x) = \log_e 13.35 + 0.67^{0.04x-1} \log_e 3.13 \quad (1)$$

When the ratio between the initial and final frequency points of a rising/falling glissando is higher than the estimated threshold for a segment duration, the rise/fall may actually be

perceived. However glissandos are only perceived in part because the auditory system does not integrate rises beyond a point at two-thirds of a frequency variation [12]. Pitch variations smaller than that threshold are perceived as level tones at the pitch level at two-thirds.

3. 2. 2. Statistical analysis of acoustic data

Analyses of variance (henceforth ANOVA) have been performed on the reading data. F0 and duration are the dependant variables, and sex and context the experimental two-level factors. Differential F0 values in Hz between the last two syllables were converted into 'signed cent'. In order to illustrate the effect of such a conversion, let us consider pitch falls from 100 Hz to 90Hz for a male voice and from 200 Hz to 180 Hz for a female voice. Although differences in Hz are respectively of 10 and 20 Hz, we get -182 cents in both cases.

In this study pitch differences have been computed by taking the starting point of the penultimate vowel and the perceptible pitch level of the final vowel after processing by the glissando function.

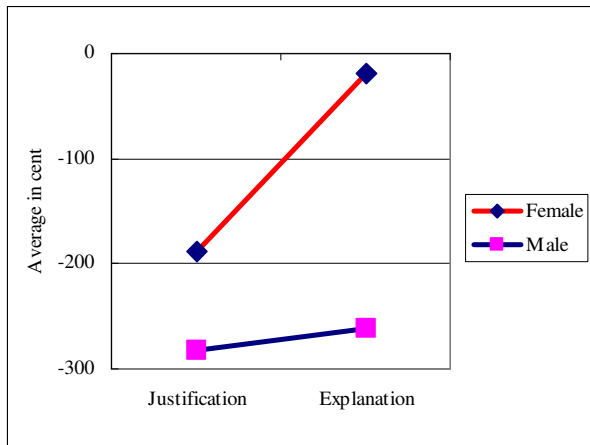


Figure 1: Interaction of factors for F0.

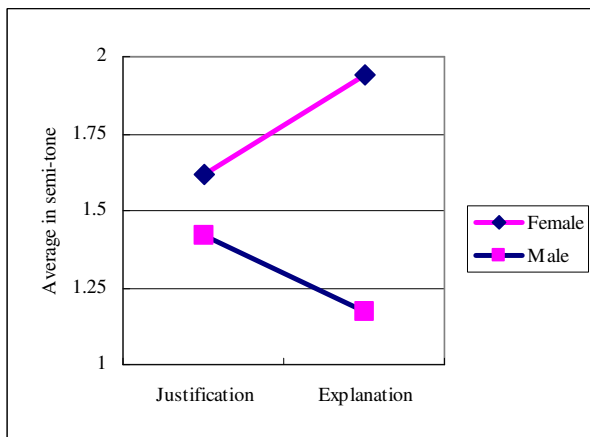


Figure 2: Interaction of factors for duration.

A. Results for the ANOVA : F0

Results show the sex and context factors are highly significant: $F_{(1,148)} = 19.825$, $P < 0.00001$ for the sex factor, and $F_{(1,148)} = 7.864$, $P < 0.01$ for the context factor. Interaction between these two factors is close to significance as illustrated in Figure 1.

B. Results for the ANOVA : duration

A second ANOVA was performed using the duration ratio between the last two syllables as the dependant variable. The experimental factors remained identical to the first analysis. Results indicate high significance for the sex factor ($F_{(1,148)} = 20.003$, $P < 0.00001$) while the context factor is not significant. Surprisingly the interaction between those two factors yields statistically significant results ($F_{(3,148)} = 6.615$, $P < 0.05$) as shown in Figure 2.

3. 2. 3. Phonetic Interpretation

Statistical results for F0 and duration together indicate women produce important variations on those acoustic parameters while men use a single intonation pattern and little variation of tempo. This is well illustrated in the following figures.

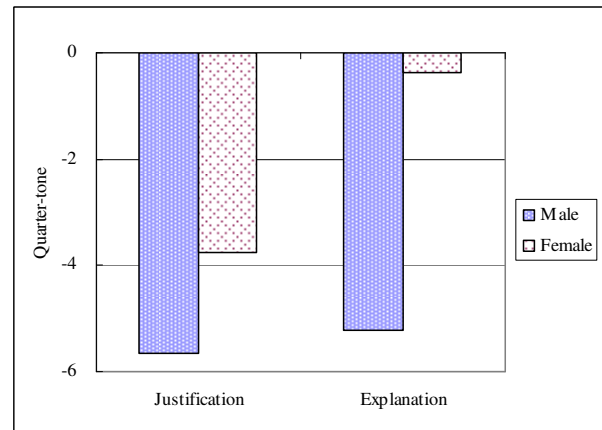


Figure 3: Pitch fall over 2 syllables on utterance end.

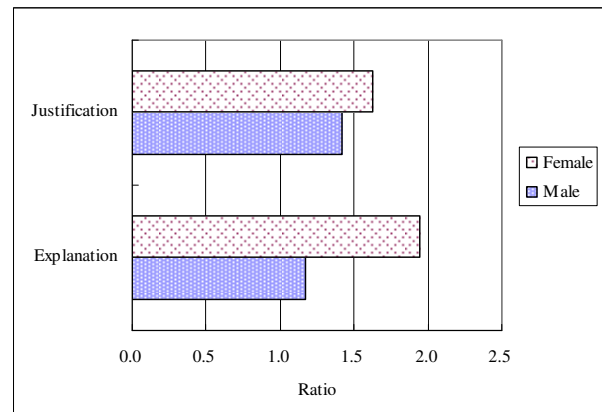


Figure 4: Durational ratio between the last 2 syllables on utterance end.

Figure 3 shows pitch intervals for men's falls correspond to a musical note (average of 5.4 quarter-tones) and Figure 4 reveals their duration lengthening approximates 30% (average ratio of 1.29) on final syllables. In contrast, female subjects use short falls with pitch intervals lower than a tone (average of 2.1 quarter-tones) and average 80% of final syllable lengthening (average ratio of 1.79).

This large difference between men and women over final syllable lengthening harks back to studies on the differential duration threshold. Research on the subject has pointed out

that a 30% lengthening roughly corresponds to the differential threshold between two sounds [1], and [5], while duration doubles in case of phonemic class opposition, i.e. a simple vs. a long vowel, a simple vs. a geminated consonant or vs. a consonant cluster for example [8].

Variability in the speech of Japanese women is not an exceptional phenomenon and similar observations as been reported for other languages [3], and [14].

4. Analysis of writing

Some scripts displayed personal characteristics of subjects who seem to use orthographic symbols to express their feelings. Suspension points conveyed hesitation while the use of double vowels often followed by a dash indicated vowel lengthening on utterance final syllables. Such an orthographic representation not conforming to conventional usage could reflect the linguistic consciousness of an inner (underlying) phonetic production of texts. Differences related to personality and sex need to be taken into account.

Figure 5 displays three classes of specification, i.e. hesitation, lengthening, and no use of symbol. Regardless of context, nearly 50% of female subjects use this device to highlight their expressions in communication. On the other hand, symbols appear 19 times in the 103 scripts of men.

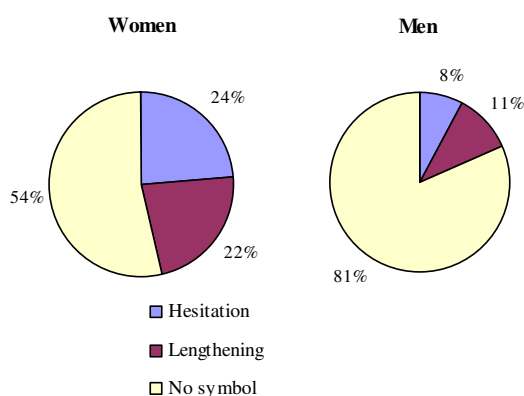


Figure 5: Frequency of use of special symbols.

Chi-Square tests revealed a significant difference between male and female subjects for each setting, i.e. justification: $\chi^2 = 8.4246$, $\chi_{0.01}^2$ (df = 2) = 6.6349 ; explanation: $\chi^2 = 12.9954$, $\chi_{0.01}^2$ (df = 2) = 10.8. As expected, when both contexts were considered together, the male/female difference was highly significant: $\chi^2 = 21.014$; $\chi_{0.01}^2$ (df = 2) = 10.8. No statistical significance between the two classes of symbols was observed.

Although no instruction concerning a possible oral production of the dialogue scripts was given, female subjects show an awareness of the phonetic production of their writings thus assessing our conclusions for the analysis of prosodic characteristics.

5. Concluding Remarks

A series of experiments has been carried out on sex-related linguistic differences in informal dialogues between friends in two settings: justification and explanation. Results show no significant difference in the use of utterance final syntactic forms but reveal greater variability in intonation and rhythm

for women. Moreover their dialogue scripts seem to reflect their mental representation of possible oral productions.

6. References

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