

# How to Pronounce a World Famous Passage in J. F. Kennedy's Inaugural Address

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## J. F. Kennedy の名演説（一節）の発音要領

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### 要 旨

J. F. Kennedy の大統領就任演説には、“*And so, my fellow Americans:*” で始まる有名な一節があるが、大統領・10名の英米人・10名の日本人大学生の3者の発話を分析することで、韻律特性とそこに含まれる句読記号（コンマ、コロン、ダッシュ）との関係を明らかにした。J. F. K.は、呼びかけの直後や核音節の直後の句読点の無い位置で長いポーズを挿入したり、核音節のある意味語群では発話の速さを落としたりして意味語群毎に速さを巧みに変化させた。また発話冒頭のピッチ変動を最大に、次第にピッチ変動域は小さくなったものの、発話全体を通じては、英米人の平均変動域の2倍近くになった。英米人はコンマの位置では必ずしもポーズを用いず、呼びかけ以降は発話の速さは一定した。日本人学生は、コロンとダッシュが現れる直前項では下降調に、核音節では平板調になり、発話の進行と共にピッチ変動域は次第に大きくなる傾向が見られた。

### 1. Introduction

The present paper is a revised version, with ten Japanese college students as new subjects, of “Prosodic traits of a world famous passage in J. F. Kennedy’s inaugural address” which is now being printed by the English Phonetic Society of Japan. The author has been studying prosodic features of punctuation marks appearing in written materials to show learners of English how they should be treated when they read them out. *Shaw (1983)* points out that all punctuation serves one of four general purposes: to terminate, to introduce, to separate, and to enclose. Among these four purposes it is introduction that utilizes the smallest number of marks to express the purpose. Only three of the marks are regularly used to introduce words or statements: commas, colons, and dashes. These three marks

were made the target of an earlier study conducted by the author, *Ichizaki (2007)*, using three isolated sentences:

- (1) *Only one way is left, to succeed.*
- (2) *She had only one pleasure: drinking.*
- (3) *The only thing he cannot eat — carrots.*

and the following results were obtained.

On the whole, concerning pitch and sound pressure level, just a little difference was found in the pitch before the mark and no other difference was found at all in any other analysis. The only significant difference was noticed in the higher pitch at that position in the sentence having a dash than in the sentence having a colon. Regarding the sound pressure level, nonsignificant difference both between the context condition and between the subjects indicated that any speaker seemed to have a fixed maximum intensity in any sentence irrespective of which mark was used. For tones at the syllable preceding the mark, falling was most preferred for any mark. As for duration of the mark, the shortest duration was given to the comma, which produced a significant difference between the comma and the colon and between the comma and the dash, while there was no significant difference between the colon and the dash. Conversely, the longest duration was given to the syllables which appeared in the sentence having the comma, which resulted in a significant difference between the sentence having the comma and that having the colon and between that having the comma and that having the dash, while no significant difference was noticed between the syllables in the sentence having the colon and those in the sentence having the dash. The two opposite results found between the duration of the comma and the syllables in the sentence having the comma might suggest that there is a temporal compensation at sentence level. The least attention to the comma might have produced the shortest duration at the mark and have given the longest duration to the syllables making up the sentence so as to keep a fixed duration for the whole sentence irrespective of the mark used.

The same three punctuation marks were set to be the objects to study in the present research, which this time used another speech item, that must be one of the most famous passage delivered by a politician in the 20th century, “*And so, my fellow Americans: Ask not what your country can do for you — ask what you can do for your country.*” Needless to say it is a passage spoken by the 35th President of the United States, John F. Kennedy, in his inaugural address in 1961. Public speaking is said to be the most polished utterance and the inaugural address was delivered to people from all over the United States and other nations in a specially excited atmosphere. The ten subjects in *Ichizaki (2007)* were adopted again and besides them ten Japanese college students learning English were added as the objects to compare with in the present research. The purposes of this research were to show if the three punctuation marks were accompanied with different prosodic features depending on speech materials and what prosodic features were recognized in the address of J. F. Kennedy, in the speeches of the native speakers of English (nsoE, henceforth) and in the speeches of the Japanese college students (Jcs, henceforth).

## 2. Investigation and Analysis

### 2.1 subjects

A total of ten nsoE and ten Jcs learning English served as subjects. All of the former taught English conversation mainly at Japanese colleges and the latter consisted of female freshmen and the second grade students. Their details were as follows:

Table 1 Details of Subjects

	subject	sex	age	home region	register (Hz)
native speakers of English	J.F.K.	m	43	Massachusetts, USA	175—313
	J.C.	f	30	California, USA	160—242
	D.S.	f	30	California, USA	177—307
	E.O.	f	35	Indiana, USA	128—285
	C.S.	f	38	New York, USA	103—190
	L.S.	f	48	Connecticut, USA	183—216
	J.A.	m	28	Hawaii, USA	90—144
	S.B.	m	34	Oregon, USA	89—142
	S.S.	m	44	Colorado, USA	94—142
	S.V.	m	53	New Mexico, USA	84—192
	R.B.	m	50	Somerset, England	50—130
Japanese college students	K.I.	f	20	Nobeoka-shi, Miyazaki	110—235
	N.I.	f	20	Kawaminami-cho, Miyazaki	161—275
	N.K.	f	20	Nobeoka-shi, Miyazaki	121—290
	Y.K.	f	19	Miyazaki-shi, Miyazaki	161—290
	K.M.	f	20	Miyakonojyo-shi, Miyazaki	142—275
	M.M.	f	19	Miyazaki-shi, Miyazaki	106—271
	A.A.	f	19	Miyazaki-shi, Miyazaki	190—296
	M.K.	f	19	Miyazaki-shi, Miyazaki	150—242
	Y.T.	f	18	Aya-cho, Miyazaki	175—271
	E.N.	f	18	Shibushi-shi, Kagoshima	156—275

The register of the female subjects ranged from 103Hz up to 307Hz while that of the male subjects ranged from 50Hz up to 192Hz among the nsoE, while that of the female Jcs was 106Hz up to 296Hz. As J. F. Kennedy's speech was given through a different source, which is mentioned below, the values might not be strictly precise. What is conspicuous, however, is his much higher range, which seems to be a female speaker's speech judged from only the values.

### 2.2 procedure

The subjects were shown the speech material and were asked to pronounce them three times for each

sentence with the speed and natural manner of their daily speech. Their utterances were recorded onto mini-disk. After the recording their utterances were played and they were asked to choose the one utterance out of three that sounded most natural to their ears, and then the chosen utterance was adopted for the analysis using sound analyzing software called *SUGI Speech Analyzer* (Sugitō, 2000). The speech material of J. F. Kennedy, on the other hand, was extracted from a site named ‘American Rhetoric: Top 100 Speeches<sup>1)</sup>’ on the internet. The material was recorded onto mini-disk from a multiple-track flash MP3 player on the site and was processed with the software above.

When analyzing the speech material, it was divided, according to the context and the position of the punctuation marks, into four parts: (1)*And so*, (2)*my fellow Americans*, (3)*Ask not what your country can do for you*, and (4)*ask what you can do for your country*. The items measured and identified were: the duration of (1), (2), (3) and (4); the duration of pause at the punctuation mark; the duration after “*Ask not*” and “*ask*”; the pitch difference in (1)-(2), (3), (4), and the whole material; the item with the highest pitch in (1)-(2), (3), (4), and the whole material; the tone at “*Americans*,” “*not*,” and “*you*”; the greatest sound pressure level at “*so*,” “*Americans*,” “*not*,” “*you*,” “*ask*,” and “*you*.”

Analysis of variance concerning mixed factors and a multiple comparison test were carried out to check if there was a significant main effect between the group of native speakers of English and the group of Japanese college students. A t-test was also done to check the relation between the tone preceding the dash and the duration at the dash in the speeches of the nsoE as five nsoE used level tone at the item preceding the dash and the other five nsoE used falling tone there.

### 3. Results and Remarks

The results of the measurement were shown in Table 2, 3, 4, and Figure 1 and 2 respectively, in the appendix at the end of this paper. The results of the items identified and measured will be discussed here.

#### 3.1 duration

Table 2 shows the duration of (1), (2), (3), (4) and the duration of pause at the three punctuation marks, and some pause after “*Ask not*” in (3) and “*ask*” in (4) if any. Excluding the values of J. F. K., the averaged values of the two groups of subjects were shown at the bottom line of each group in the table. The great duration of (3) of J. F. K., which was partly because of a long pause (919 ms) after “*Ask not*,” is conspicuous. Even if the pause is excluded from his great duration for (3), the remaining duration was 1,150 ms larger than, or 1.5 times the averaged value of the nsoE for (3). The averaged value for each part of the target material of the Jcs was a little larger than that of the nsoE, which seems to have been caused by somewhat poor fluency of the Jcs. J. F. K.’s great pause after “*Ask not*” seems to suggest that he intentionally gave his audience enough silence to let them listen to him carefully and to emphasize his message.

As for the duration at the punctuation marks, only three subjects among the nsoE put a pause at the comma after “*And so*” while J. F. K. and the other nsoE did not use any pause. On the other hand,

six subjects out of ten Jcs put a pause at the comma. Japanese learners of English might think or might have been taught at school that they should halt their speech at any punctuation mark or halting at any punctuation mark, especially in a long speech item, might be an aid for them to read aloud the whole material with their poor fluency. J. F. K.'s largest pause was at the colon after "*my fellow Americans*" but his pause at the dash after "*Ask not what your country can do for you*" showed little difference compared with the averaged value of the nsoE. As the result of statistical analysis of the two groups of subjects concerning the duration of pause, a significant main effect was not recognized between the groups by the analysis of variance but was recognized among the three punctuation marks ( $F=78.18$ ,  $df=2/59$ ,  $p<.001$ ). Multiple comparison resulted in a significant difference at the 0.1 % level between pause at the comma and pause at the colon, and pause at the comma and pause at the dash while there was no significant difference between pause at the colon and pause at the dash.

### 3.2 rate of speech

Figure 1 shows the rate of speech of J. F. K. and the averaged values of that of the two groups at (1), (2), (3), and (4). All pauses at the punctuation marks and the pauses after "*Ask not*" were excluded and the number of syllables of (1), (2), (3), (4) were counted as follows: 3 for (1), 8 for (2), 14.5 for (3), and 12.5 for (4). Long vowels, including gliding vowels, are generally longer than short vowels, which was reported in earlier studies and it was illustrated that the value was 1.2-1.3 times longer in *Ichizaki (1997)*. Moreover, they reported that word stress made the duration of vowels about twice as long as than that of the vowels at unstressed position. Thus, the speech material in the present paper could be shown as follows:

*"And so, my fellow Americans: **Ask not** what your country can **do** for you — **ask** what you can **do** for your country."*

The underlined syllables are originally long vowels or gliding vowels, and the syllables shown in bold type are stressed syllables in this speech; the former was counted as one and a half syllables and the latter was counted as two syllables in the present paper. Although both J. F. K. and the nsoE began "*And so*" with a low rate and speeded up at "*my fellow Americans*," the rates differed thereafter between them. The speech rate of J. F. K. fell at (3) as low as at the beginning (1) and somewhat rose up at (4) while that of the nsoE changed little thereafter. The rate of the Jcs, on the other hand, was smaller at every part compared with the rate of the nsoE, which seems to imply their poor fluency. Although the rate of the Jcs decreased at (3) just like the rate of J. F. K. did, the extent of the decrease was much smaller and there was not much difference from (2) to (4), as with the nsoE. Just after the vocative with a high rate of speech in the inaugural address, the sentence having the nucleus was uttered with a much lower rate accompanied with a great pause immediately after the nucleus, and the last sentence was speeded up — such a neat modulation of speech rate and the dexterity of pause or silence insertion seem to be the true worth of J. F. K.'s speech and might have made this passage unforgettable in history. As the result of statistical analysis concerning their rate of speech, a significant main effect was recognized between the two groups of subjects, with the nsoE's significant larger value

( $F=18.02$ ,  $df=1/79$ ,  $p<.001$ ), and a significant main effect was recognized among the four parts ( $F=21.67$ ,  $df=3/79$ ,  $p<.001$ ). Multiple comparison resulted in a significant difference at the 0.1 % level between the rate of speech at (1) and at (2), the rate at (1) and at (3), and the rate at (1) and at (4), while there was no significant difference between any pair of (2), (3), and (4). No significant interaction was recognized between the two groups.

### 3.3 pitch

Since many subjects of the nsoE, seven out of ten, did not insert any pause at the comma after “And so” and uttered (1) and (2) as one breath group, the speech material was divided into three parts; (1) through (2), (3), and (4), when discussing on pitch and tone here. Table 3 shows pitch difference in each part and in the whole material and the item with highest pitch in each part and in the whole material. J. F. K.’s relatively larger pitch differences are remarkable compared with those of the nsoE. His values were about twice as large as the averaged values of the nsoE in any part of the speech material. Although it would be hard to compare the values of females with those of males as the former had a generally wider register throughout the speech material, J. F. K.’s values were outstandingly the largest among the male subjects and the largest, with the subject E. O., among the female subjects. It is noticed that the values of J. F. K. had gradually decreased in the course of his speech, while E. O. had the largest difference in the last part of her speech. Vocative at the beginning with the largest pitch difference might command a great attention from the audience and be effective in such a political speech. Since the subjects of Jcs consisted of females, the averaged values were naturally larger than those of the nsoE. The averaged value of the Jcs increased in the course of speech while that of J. F. K. decreased. Taking an arithmetic mean of the pitch at three parts, the rate of change was 10% in the case of the Jcs, 5% in the case of the nsoE, while it was 23% in the case of J. F. K.

As for the item with highest pitch, it was only J. F. K. that made “country” the highest in (3). The Jcs had three subjects who made the first item “And” the highest in (1) while no nsoE did it. And the Jcs had none that made “you” the highest, while half of the nsoE did it, in (4), where there were five Jcs who made “what” the highest while no nsoE did it.

### 3.4 tone

Table 4 shows tone at the item preceding the three punctuation marks and at “not” in (2) which was a nucleus of the speech material. After “so,” there were six level, three falling, and one rising among the nsoE. Concerning three subjects, E. O., S. B., S. S., who inserted a pause after “so,” two of them used falling tone and the other used level tone, which seems to mean there is no relation between pause and tone. Level tone was preferred at “Americans”; there were seven level tones and three falling. At the nucleus “not,” five subjects used falling, four used rising, and the other used level tone. Part (3) does not finish with “not”; the item “not” is an element, followed within part (3) by an objective clause. Falling tone, which is generally recognized as an irregular tone in a sentence, was adopted for

“not” by as many as half of the nsoE. The falling tone rather than level tone in a sentence might increase the audience’s interest in what the speaker will say thereafter. At “you” preceding the dash, there were five falling tones and five level among the nsoE. From a viewpoint that part (3) can be a completed sentence having a subject (although “you” is omitted) + a verb + an object, it could be finished with falling tone. Meanwhile there is another viewpoint that part (3), as the name suggests, is just a part of the whole sentence consisting of four parts. In that sense the last item “you” of part (3) should be accompanied with level tone.

There was much difference in tone between the nsoE and the Jcs. The latter had only one subject that used level tone for “Americans” while seven nsoE used it, and had as many as nine subjects who used level for “not” while only one nsoE used it, and all of the Jcs used falling tone for “you” while half of the nsoE used it. The use of level tone for “not” and falling tone for “Americans” and “you,” as shown by the majority of the Jcs, might suggest that they understand they should not halt at any place without a punctuation mark and they could stop at any punctuation mark except the comma with falling tone.

Does the tone preceding the dash have something to do with duration of the dash in the speeches of the nsoE? The averaged duration of the dash after “you” with falling tone was 573 ms, while that after “you” with level tone was 470 ms. A t-test failed to show any relation between the two factors ( $t=1.08$ ,  $df=8$ , ns).

### 3.5 sound pressure

The sound pressure level analyzed with *SUGI Speech Analyzer* was represented in the range of  $-60\text{dB}$  to  $0\text{dB}$  on the display. Since there was always some noise made by the personal computer when analyzing, the range of  $10\text{dB}$  was reckoned for the noise. Therefore, not  $-60\text{dB}$  but  $-50\text{dB}$  was recognized as the minimum value of sound pressure level of every subject and the negative value was converted to the positive value by adding the displayed negative value to the tentative maximum value  $50\text{dB}$  for convenience. Although the recording was carried out in the same condition, there was a difference of loudness of each subject. The intensity of voice input was adjusted to a good level to analyze, so the figures shown in Figure 2 were not for comparison between subjects but for seeing the transition at prominent syllables for J. F. K. and each group.

The greatest sound pressure level at “so” in (1), “Americans” in (2), “ask,” “not,” and “you” in (3), “ask” and “you” in (4) was measured and the transition of them for each speaker was shown in Figure 2. In the case of J. F. K. the transition began with a slightly greater pressure at “so” in (1) and thereafter the values changed little from “Americans” in (2) to “ask” in (4). Tracing the transition of the nsoE, ups and downs were noticeable with a general decrease in the course of the speech. In the transition of Jcs, on the other hand, the values, having a great decrease at the last item in (3) “you,” kept almost unchanged from “so” in (1) to “ask” in (4). The decline in sound pressure of the Jcs at the last item in (3) seemed to have born an auditory impression that part (3) had been finished for itself and did not link to part (4).

Although the item “not” in (3) had the greatest prominence and was recognized as the nucleus of the speech material, the prominence seems to have little to do with sound pressure. Another feature that majority of all the speakers showed was a decrease from “ask” to “you” in (4). Moreover, a comparatively smaller dispersion in pressure was noticed in the speeches of the nsoE at “ask” in (3) and “ask” in (4), both of which was the first item of imperative sentences.

#### 4. Conclusion

Finally it should be remarked here that the recording of the two groups of subjects who volunteered for the present paper was done in a totally different atmosphere from the speech of J. F. K. The speech material given to the nsoE were consisted of more than fifty sentences or passages and the target material in this paper was just one of them while the Jcs were given the target material only. Although they were asked to read aloud the material as they speak in their daily lives as if they had been the very person that had originally uttered the sentences or passages, it was impossible to realize the same atmosphere in which the very person had been and some subjects might have been losing their concentration in the course of utterance of many speech items. No subjects had a large audience in front of them nor the atmosphere of tension that J. F. K. must have had. Therefore the following conclusion about the nsoE should be recognized as a standard reading when native speakers of English read aloud the target passage.

From the data of the nsoE the following usage of prosodic features seems to be general when the passage is read out. A pause is not necessary at the comma; the duration at the comma is shorter than the duration at the colon or the dash; the smaller rate of speech is adopted at “And so” and the greater rate of speech is given thereafter; pitch change within each part depends on the individual speaker; level tone is preferred at “Americans” and falling is more or less popular at “not” and “you” in (3); the greatest sound pressure throughout the speech tends to be given to “so,” at the first stressed syllable at the beginning of the target material.

The speech of J. F. K., on the other hand, showed the following features, all of which seem to have yielded great emphasis in his speech and have made it impressive. High pitch throughout the whole speech; a long pause after the vocative “my fellow Americans” and after the nucleus “(Ask) not”; alternating change in the rate of speech for each sense group; a greater pitch change in any part of the speech with greatest change in the vocative — skillful usages of such prosodic features seem to be John F. Kennedy at his best.

The Jcs who volunteered in the present research showed some points in common with the nsoE: pause at the comma was shorter than that at the colon or the dash; the rate of speech at (1) was smaller than that at the following parts of the speech material. On the other hand, they showed some peculiarities which seemed to be unique features to Japanese students: not halting in a sentence without any punctuation marks but halting at the comma regardless of tones, and they could stop their speeches with falling tone at the other punctuation marks, the colon and the dash.

“How should the target passage be read aloud?” — the purpose of this paper was to show



objective answers to this question to learners of English. They should first know the prosodic differences between native speakers of English and themselves shown here. The prosodic features J. F. K. showed could be a standard usage and those the nsoE showed could also be another standard. It will be the reader that decides which to take. Hopefully the results shown in the present paper will be utilized by more people.

#### **Note**

- 1) The speech material was extracted from  
<http://www.americanrhetoric.com/speeches/jfkinaugural.htm>

#### **References**

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**Table 2 Duration of Each Part of the Speech Material, and Pause at Three Punctuation Marks and after “Ask not” in (3) and “ask” in (4)**

(ms)

	subject	(1)	(2)	(3)	(4)	whole sentence	,	:	—	<i>Ask not</i>	<i>ask</i>
	J.F.K.	696	1,304	4,359	2,329	10,219	0	967	564	919	0
native speakers of English	J.C.	624	1,321	2,220	1,857	6,998	0	329	647	0	0
	D.S.	433	1,370	2,403	2,206	7,655	0	683	560	0	0
	E.O.	713	1,152	2,263	1,741	6,732	118	372	373	0	0
	C.S.	626	1,195	1,887	1,803	6,750	0	744	495	0	0
	L.S.	407	1,191	1,961	1,532	5,773	0	394	288	0	0
	J.A.	538	1,191	2,548	2,022	7,410	0	538	573	166	0
	S.B.	726	1,275	2,171	2,136	7,265	126	437	394	0	0
	S.S.	609	1,355	2,580	2,162	8,729	372	903	748	87	0
	S.V.	777	1,419	2,306	1,849	7,527	0	572	604	0	0
	R.B.	646	1,324	2,558	2,490	7,915	0	362	535	0	0
	Av.	610	1,279	2,290	1,980	7,275	62	533	522	25	0
Japanese female college students	K.I.	709	1,497	3,063	2,595	10,137	189	908	956	220	0
	N.I.	521	1,234	2,543	2,119	7,218	0	280	521	0	0
	N.K.	718	1,322	2,722	2,088	8,643	271	424	722	293	83
	Y.K.	574	1,348	2,632	2,241	8,139	0	486	858	0	0
	K.M.	696	1,515	2,801	2,609	9,197	0	788	788	0	0
	M.M.	698	1,398	2,915	2,248	8,875	299	409	908	0	0
	A.A.	836	1,515	2,875	2,679	8,939	0	579	455	0	0
	M.K.	739	1,446	2,946	2,320	8,736	262	459	564	0	0
	Y.T.	669	1,353	2,920	2,565	8,500	232	324	437	0	0
	E.N.	744	1,529	2,946	2,657	9,048	135	398	639	0	0
	Av.	690	1,416	2,836	2,412	8,743	139	506	685	51	8

**Table 3 Pitch Difference in (1) — (2), (3), (4), the Whole Speech Material and Item with the Highest Pitch in Each Part**

subject	pitch difference (Hz)				item with highest pitch			
	(1)—(2)	(3)	(4)	whole material	(1) — (2)	(3)	(4)	whole material
J.F.K.	138	104	94	157	so	country	you	so
J.C.	32	71	16	82	so	what, your	you	so
D.S.	82	66	61	130	so	not	you	so
E.O.	125	125	137	157	so	ask, not	you	you
C.S.	85	84	62	87	Americans	not	you	Americans
L.S.	30	39	33	44	fellow	not	ask	not
J.A.	25	57	40	62	so, fellow	ask	ask	ask — (2)
S.B.	38	66	55	76	so	ask	ask	ask — (2)
S.S.	45	37	30	48	my	not	ask	my
S.V.	105	48	69	108	so	ask	you	so
R.B.	60	79	76	80	fellow	not	ask	not
Av.	63	66	58	87				
K.I.	70	125	66	125	so	Ask	ask	Ask
N.I.	92	92	89	114	And	not	what	And
N.K.	113	98	154	169	fellow	Ask, what	ask, what	fellow
Y.K.	80	97	98	129	And	Ask, not	ask	And
K.M.	75	120	114	133	And, so, fellow	Ask	what	And, so, fellow
M.M.	115	98	140	165	fellow	Ask	ask	fellow
A.A.	96	100	101	111	so	Ask	ask	ask
M.K.	54	61	81	92	so, fellow	what	what	so,fellow,what(3)
Y.T.	88	78	85	96	fellow	can	ask	fellow
E.N.	66	71	119	119	And, fellow	what	what	what (4)
Av.	85	94	105	125				

Table 4 Tone at “so” in (1), “Americans” in (2), “not” and “you” in (3)

subject	<i>so</i>	<i>Americans</i>	<i>not</i>	<i>you</i>
J.F.K.	level	falling	falling	falling
J.C.	level	level	rising	falling
D.S.	rising	level	rising	level
E.O.	falling	falling	falling	falling
C.S.	level	level	rising	falling
L.S.	level	level	level	level
J.A.	level	level	falling	level
S.B.	level	level	falling	level
S.S.	falling	falling	falling	falling
S.V.	falling	falling	falling	falling
R.B.	level	level	rising	level
K.I.	falling	falling	level	falling
N.I.	level	falling	level	falling
N.K.	falling	fall-rise	level	falling
Y.K.	falling	falling	level	falling
K.M.	level	falling	level	falling
M.M.	fall-rise	falling	level	falling
A.A.	fall-rise	falling	level	falling
M.K.	falling	level	level	falling
Y.T.	falling	falling	level	falling
E.N.	rising	fall-rise	rising	falling

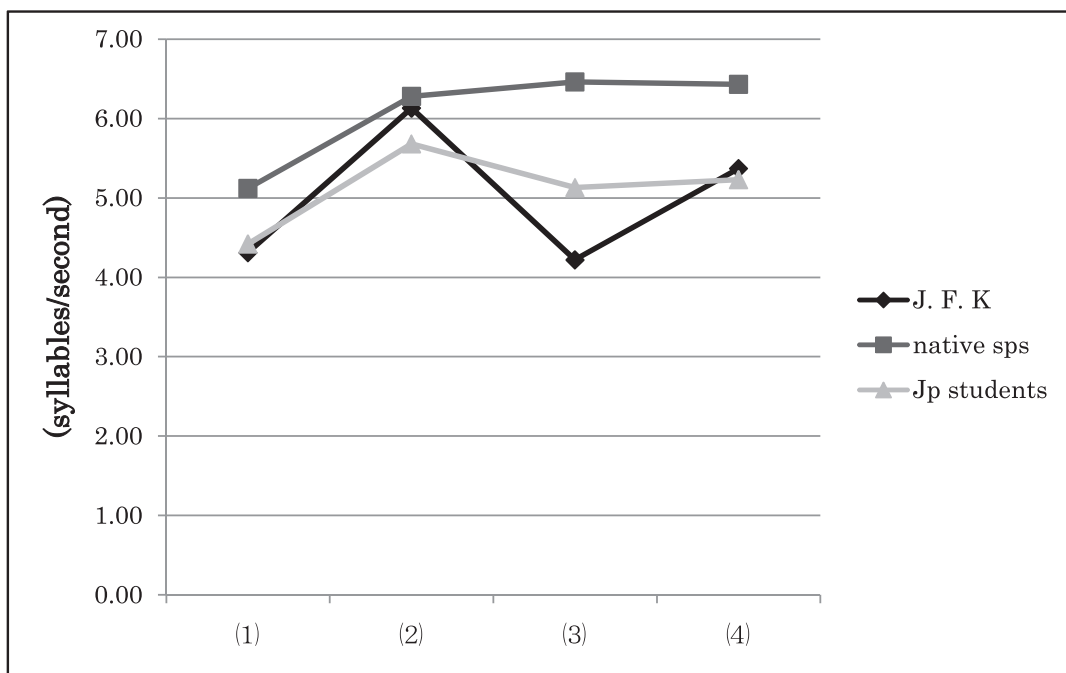


Figure 1 Rate of Speech at Each Part of the Speech Material

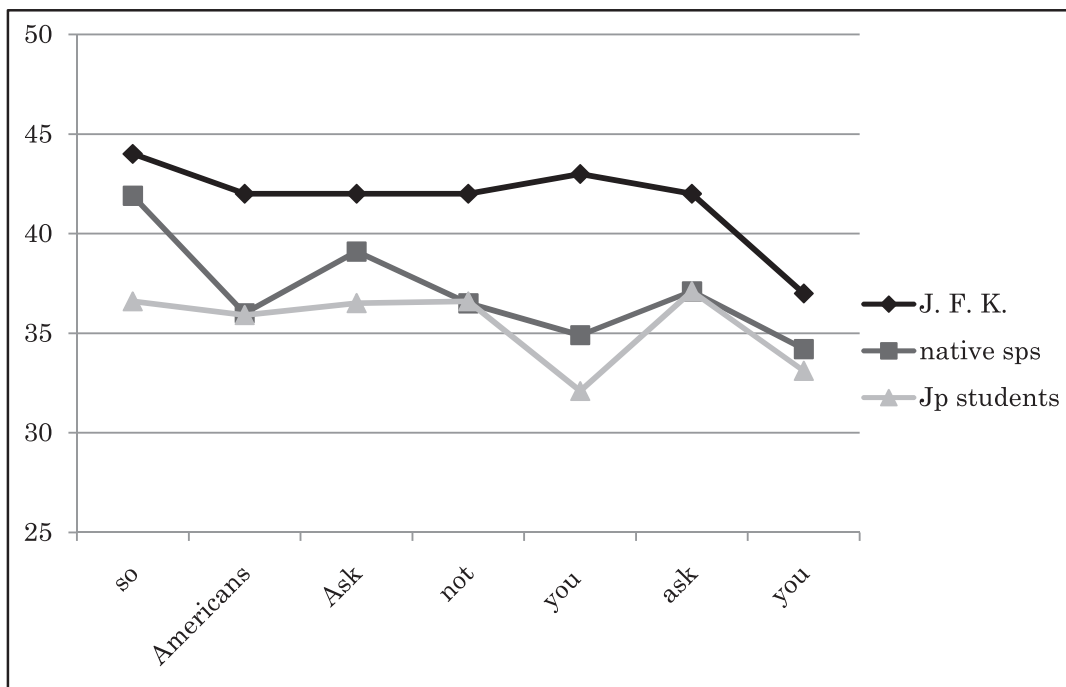


Figure 2 Transition of Maximum Sound Pressure at Selected Items