

# Japanese learners' listening to English connected speech

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## Abstract

The present study examined the effect of connected speech on second language learners' listening comprehension, improving some aspects recognized as limitations in an earlier study (Ito, 2006). Although the presence of connected speech was found to negatively influence learners' listening comprehension in Ito (2006), the participants' first language (L1) was not controlled. Furthermore, the participants in the study were all studying English in an ESL context, where they are exposed to connected speech on a daily basis. In the present study, participants' L1 was controlled and limited to Japanese, and their learning context was also limited to an EFL context. The participants took a dictation test which asked them to write down the sentences read with and without connected speech. The results indicated that the presence of connected speech imposes a challenge upon listening comprehension by the Japanese learners of English, regardless of their proficiency levels. The difference in types of connected speech forms was also found to influence their listening comprehension, though its effect differed across the proficiency levels.

Listening to English, especially when it is spoken at a natural speed, is one of the big challenges that learners of English often face to. There are many factors that make it challenging for them to catch what is said, one of which is their unfamiliarity with the English sound system. In addition to the differences in segmental phonemes, namely consonants and vowels, between their first language (L1) and English, there are also differences in suprasegmental phonemes.

Suprasegmental phonemes include pitch, stress or juncture pattern (Crystal, 1997). Japanese learners of English are no exception in that countless effort is needed to improve their listening skills in English.

The current study aims to examine how the presence of connected speech can affect Japanese learners' listening comprehension. Connected speech, also referred to as *reduced forms*, *sandhi-variation*, or *weak forms* by other researchers, is defined by Crystal (1997) as follows: "A term used in linguistics to refer to spoken language when analyzed as a continuous sequence, as in normal utterances and conversations" (p. 81). Connected speech includes such phenomena as assimilation and elision (Crystal, 1997), and Brown and Kondo-Brown (2006) use the term to include more phenomena such as liaison and contraction. Henrichsen (1984) examined the influence of connected speech on second language (L2) learners' listening comprehension. He found a statistically significant interaction between listeners' proficiency level and their test scores for the presence and absence of connected speech. This finding confirmed that the presence of connected speech adds difficulties to the learners' listening comprehension of English. Motivated by Henrichsen's study, Ito (2006) examined the influence of connected speech on the L2 learners' input-intake process, with modifications on two aspects of Henrichsen (1984): (1) sentence complexity in the test, and (2) different types of connected speech. The results supported Henrichsen's claim that connected speech affects the input-intake process.

Although Ito (2006) aimed to provide some hints on the effect of the presence of connected speech on L2 listening comprehension, it carried some limitations. One of them is that the L1 of the participants was not controlled. Participants' L1 varied in the study: eight Japanese speakers, four Korean speakers,

three Chinese speakers, two Vietnamese speakers, and one Thai speaker. Controlling L1 is crucial in many L2 studies, especially when a study deals with sounds, as Ito (2006) does. Thus participants' L1 should be controlled if one seeks to examine the influence of connected speech on listening comprehension more precisely. Another limitation is that the participants were all ESL learners, who were continuously exposed to authentic English. Connected speech constantly appears in authentic English and therefore the ESL learners have advantages in that they can more easily get used to connected speech. This poses a question of what is the case with learners of English as a foreign language, who have limited access to authentic English. To remedy these two aspects of Ito (2006), the current study recruited participants all of whom have Japanese as their L1, and they are also studying English in Japan, where English is a foreign language, not a second language.

There have been several studies that investigated issues on connected speech in the English teaching contexts in Japan. Shibata, Yokoyama, and Tara (2006) administered a questionnaire to secondary school English teachers in Kochi prefecture in Japan to examine the current situation of pronunciation teaching. Among five items on pronunciation, suprasegmental phonemes received the highest mean score on instruction, which indicates that the teachers spent more time on suprasegmental phonemes than on the other pronunciation areas such as segmental phonemes. A similar trend was also found on the score of importance, namely suprasegmental phonemes were considered to be more important than other aspects on pronunciation examined. These results suggest that the teachers are beginning to recognize the significance of teaching suprasegmental phonemes to learners of English in Japan. However, the effectiveness of instruction still

appears to be questionable. For instance, Shibata and Taniguchi (2011) conducted a study in which Japanese university students, who were prospective English teachers, received a fifteen-week instruction on English prosody. The results revealed that the instruction was not effective enough to improve the students' prosodic features. The researchers attributed this finding to the lack of time, that is, the total number of hours, 22.5 hours, might not have been enough for them to improve the prosodic features.

Ueda and Otsuka (2010) analyzed English textbooks for junior high school students in Japan, focusing on the aspects on pronunciation, and found that some textbooks dealt with connected speech. However, the extent to which it is dealt with varied across textbooks. Kodera (2012) also insists upon the significance of teaching connected speech at senior high schools in Japan.

What these studies suggest is that although pronunciation and connected speech are regarded important by teachers as well as textbook writers in Japan, the effectiveness of instruction is still not conclusive. To further capture an accurate picture of Japanese learners' listening comprehension patterns, it may become crucial to examine the influence of connected speech on Japanese learners' listening comprehension.

The present study, therefore, addressed the following three research questions:

1. Does the presence of connected speech affect Japanese learners' listening comprehension?
2. Does the effect of connected speech on the Japanese learners' listening comprehension vary according to their proficiency levels of English?
3. Is the Japanese learners' listening comprehension affected by the type of

connected speech?

In Ito (2006), it was found that the presence of connected speech affected L2 learners' listening comprehension. Thus, the first hypothesis in the present study is as follows:

*Hypothesis 1:* The presence of connected speech will affect Japanese learners' listening comprehension: The Japanese learners will score higher in the absence of connected speech than in the presence of connected speech.

With respect to the interaction effect of the presence of connected speech and learners' language proficiency, Ito (2006) found a statistically nonsignificant effect. Therefore, the present study takes the finding into consideration and the following hypothesis is formed:

*Hypothesis 2:* The effect of connected speech on Japanese learners' listening comprehension will not vary according to their language proficiency: The difference between the test scores for the absence of connected speech and those for the presence of connected speech will be the same regardless of their language proficiency.

Regarding the type of connected speech, the following hypothesis is formed, based on the result in Ito (2006) which found a significant effect of types of connected speech as well as a significant interaction effect of types and learners' proficiency, with a significant effect on the lower proficiency group and a nonsignificant effect on the higher proficiency group:

*Hypothesis 3:* Japanese learners' listening comprehension will be affected by the type of connected speech when their English proficiency is lower: Those more salient to learners—lexical forms—will be less difficult for them to comprehend than those less salient to learners—phonological forms—when

their English proficiency is lower.

## Method

### *Participants*

Participants were 41 students enrolled in an English course for freshmen at Kanda University of International Studies, located in Chiba prefecture in Japan. The researcher was the instructor of the course. Of 41 students, three were discarded from the data for the following reasons: One student has Filipino as his L1, another has Tagalog as her L1, and the other student fell asleep during the test and did not answer most of the questions. Of the remaining 38 students, 16 were enrolled in a class with higher proficiency in English (4 males and 12 females), and 22 were in a class with lower proficiency in English (4 males and 18 females). The information on their English proficiency was collected using a questionnaire which asked them to report their scores on TOEIC, TOEFL (PBT), or any other English proficiency tests. Many of them, not all of them unfortunately, reported one of the scores. Most of the 16 students in the higher proficiency class reported their TOEFL scores, while most of the 22 students in the lower proficiency class reported their TOEIC scores. Table 1 shows the average scores of the tests in each class, with the number of students who reported the score.

Table 1  
*Participants' Average Scores on TOEIC and TOEFL (PBT)*

	TOEIC (the number of students who reported the score)	TOEFL (PBT) (the number of students who reported the score)
Higher class	637.00 (10)	472.64 (14)
Lower class	478.61 (18)	386.67 (3)

One student in the higher proficiency class reported his iBT TOEFL score, so the score was converted into a PBT TOEFL score using a conversion table when calculating the class average score. The students' ages in the higher proficiency class ranged from 18 to 20, with a mean of 19.06. The ages in the lower proficiency class ranged from 18 to 21, with a mean of 18.95.

### *Materials*

Dictation test materials, such as the test sheet and the audio recording, used in the present study, were taken from Ito (2006). The dictation test consists of two versions, A and B, each of which contains the same 20 sentences that are presented in a different order. As was in Ito (2006), two types of connected speech were examined in the present study, namely lexical forms and phonological forms. Phonological forms are the ones that were derived as a result of the application of phonological rules, such as *I have* → *I've* and *he is* → *he's*. Lexical forms, on the other hand, are the ones which are not the result of the phonological rule application, but are likely to be memorized as one lexical item, such as *do not* → *don't* and *will not* → *won't*. Lexical forms used in the sentences were as follows: *isn't*, *wasn't*, *weren't*, *don't*, *doesn't*, *won't*, *hasn't*, and *haven't*. Phonological forms were as follows: *he's* (derived from *he is*), *she's* (derived from *she is*), *they're*, *I've*, *he's* (derived from *he has*), *she's* (derived from *she has*), and *they've*. In order to avoid the phonological forms appearing at the beginning of the sentences, phrases such as *I think that* and *I know that* were added to the test sentences with the phonological forms. This ensures that the participants would not miss the words merely because they were not ready for listening. One half of the 20 sentences had lexical forms and the other half had phonological forms (see Appendix for a

complete list of the test sentences). The answer sheet and the audio recording of the test instruction as well as the test sentences were directly taken from Ito (2006). A consent form was prepared in Japanese in the present study.

In Ito (2006), data were also collected from native speakers, which were used as baseline data. The native speakers scored nearly 100% correct on the tests, and therefore the test materials can be considered to be valid.

When the test scores were calculated, only the target connected speech was taken into consideration. If the target connected speech forms were written down correctly, one point was given to the item. The score given to each participant was a total score for both Version A and B. In sum, four types of score were calculated for each individual: an absence score when connected speech was absent, a presence score when connected speech was present, a phonological score when phonological connected speech was present, and a lexical score when lexical connected speech was present.

### *Procedure*

The data were collected in two separate classes taught in different years: in January 2013 from a lower proficiency class, and in January 2014 from a higher proficiency class. Although they took place in different years, the participants were all freshmen at the time of the data collection, about to complete their first year after they entered the university. Thus, the amount of the English instruction they have received is estimated relatively similar across the two classes.

Before they took the dictation test, they first completed a consent form and a questionnaire which asked for such information as their age, scores on English proficiency tests (e.g., TOEIC, TOEFL), as well as the length of stay in other



countries if any. Then they took Version A of the dictation test. In Ito (2006), some participants took Version A first and Version B second, while the others took Version B first and Version A second so that the order of the test administration was counterbalanced. However, due to the test administration condition, the order was not counterbalanced in the present study and all the participants took Version A first and Version B second. Unlike in Ito (2006) in which a cross-word puzzle was provided between the two versions as a distractor, a regular class instruction that lasted for about one hour was given in the present study between the Version A and Version B administration.

In the dictation test, the participants first listened to the audio recording of the test instruction, while reading the same script. Then the test sentences were presented one by one, and the participants had to write down each sentence. Fifteen seconds were given between each sentence so that they could write down the sentences.

### *Analysis*

The dependent variable and the independent variables were the same as those in Ito (2006) because there was no additional variables in the present study. Therefore, the dependent variable in the present study was the total score on the two dictation test versions, while the independent variables were the presence of connected speech with two levels (absence or presence), the type of connected speech with two levels (lexical or phonological), and the students' English proficiency with two levels (higher and lower). The overall alpha level of this study was set at .05. For Research Questions 1 and 2, which investigate the effect of the presence of connected speech and the proficiency level on test scores, a two-way

repeated measures ANOVA, using a 2 x 2 design, was run with the alpha level set at .025. For Research Question 3, which investigates the effect of connected speech type on test scores using only the presence score, a two-way repeated measures ANOVA, using 2 x 2 design, was run with an alpha level of .025. The alpha level was set at .025 according to the Bonferroni adjustment. Table 2 and 3 show the descriptive statistics of the test scores.

Table 2  
*Descriptive Statistics of Dictation Test Scores According to the Absence and the Presence of Connected Speech*

	Absence		Presence	
	Higher	Lower	Higher	Lower
<i>n</i>	16.00	22.00	16.00	22.00
<i>M</i>	12.13	9.32	10.25	7.82
<i>SD</i>	3.03	2.87	2.91	1.76

*Note.* Maximum score = 20

Table 3  
*Descriptive Statistics of Dictation Test Scores According to Types of Connected Speech within Presence of Connected Speech*

	Phonological		Lexical	
	Higher	Lower	Higher	Lower
<i>n</i>	16.00	22.00	16.00	22.00
<i>M</i>	3.50	1.23	6.75	6.59
<i>SD</i>	1.90	1.23	1.34	1.18

*Note.* Maximum score = 10

## Results

The results will be discussed according to hypotheses. The results of the ANOVA shown in Table 4 reveal that the effect of presence of connected speech on learners' dictation test scores was statistically significant. Figure 1 shows that

the mean absence score is higher than the mean presence score, and therefore the first hypothesis, “the Japanese learners will score higher in the absence of connected speech than in the presence of connected speech” was confirmed.

Table 4  
ANOVA on Test Scores of Absence/Presence of Connected Speech

Source	SS	df	MS	F	$\eta^2$	power
Between subjects						
Proficiency	127.11	1	127.11	11.58*	.24	.85
Error	395.17	36	10.98			
Within subjects						
Connected Speech	52.76	1	52.76	17.65*	.33	.97
Connected Speech x Proficiency	.65	1	.65	.22	.01	.04
Error	107.63	36	2.99			

Note. \* $p < .025$

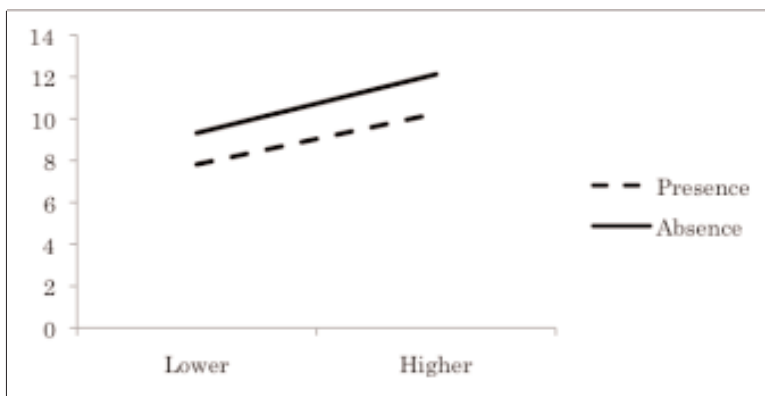


Figure 1. Dictation test scores for the absence and presence of connected speech

As shown in Table 4, the interaction effect of language proficiency and presence of connected speech was not found statistically significant, which confirmed the second hypothesis, “the difference between the test scores for the absence of connected speech and those for the presence of connected speech will be the same

regardless of their language proficiency.”

Table 5 shows the ANOVA results examining the effect of types of connected speech. Both the main effect of types and the interaction effect of types and language proficiency were statistically significant. This means that the effect of types differs according to the language proficiency. Therefore, the third hypothesis, “Lexical forms will be less difficult for them to comprehend than phonological forms when their English proficiency is lower” was confirmed in that the discrepancy of the scores between the two types was bigger with the lower

Table 5  
ANOVA on Test Scores of Phonological and Lexical Forms

Source	SS	df	MS	F	$\eta^2$	power
Between subjects						
Proficiency	27.39	1	27.39	10.26*	.22	.80
Error	96.14	36	2.67			
Within subjects						
Type	343.64	1	343.64	268.67*	.88	1.00
Types x Proficiency	20.69	1	20.69	16.18*	.31	.95
Error	46.05	36	1.28			

Note. \* $p < .025$

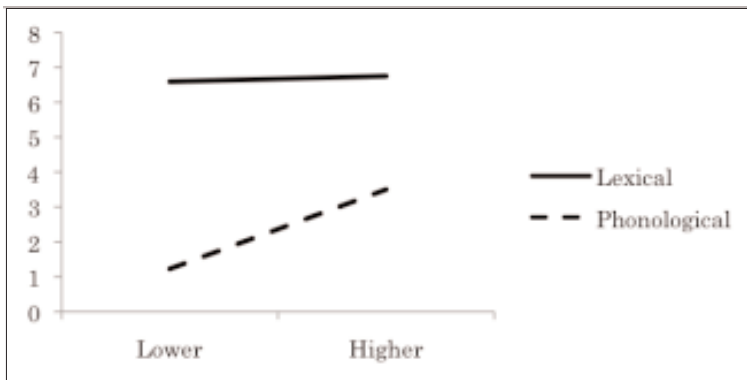


Figure 2. Dictation test scores for lexical and phonological forms

proficiency learners than with the higher proficiency learners. Figure 2 illustrates the difference of the effect of types.

## **Discussion**

The present study recruited participants with the same L1 studying in an EFL situation. The overall results of the present study were similar to those obtained in Ito (2006). The first hypothesis was confirmed, which suggests that when a sentence is pronounced with connected speech present, learners, to be more precise, Japanese learners in this study, had more difficulties in listening comprehension than when it is pronounced without connected speech. This finding provides a further support to the claim that the presence of connected speech has a negative influence on learners' listening comprehension.

The second hypothesis was also confirmed. This proposes that regardless of learners' proficiency levels, the presence of connected speech imposes difficulties on their listening comprehension of English. However, because native speakers' listening comprehension is not affected by the presence of connected speech as shown in the baseline data, performance by learners with native-like level of proficiency may be worth investigating. Examining whether they perform like native speakers or nonnative speakers would help us figure out some characteristics of L2 learners.

The third hypothesis was also confirmed in that the difference of scores between the two types of connected speech was bigger with the lower proficiency group than with the higher proficiency group. The rationale behind the third hypothesis was that the lexical forms were more salient to learners than the phonological forms because the lexical forms were likely to be memorized as one

lexical item. However, a more plausible explanation why lexical forms would be more salient may be that all the lexical forms in the present study were in a negative form and therefore they receive a sentence stress and are read with a strong form. It makes the lexical forms more salient than the phonological forms. This may better explain why the learners had less difficulty in listening to lexical forms than in listening to phonological forms.

## **Conclusion**

The present study supports the claim that the presence of connected speech imposes a challenge on listening comprehension by L2 learners. This negative influence was observed in both groups of different proficiency levels. It was also found that there was a difference in the learners' performance between two types of connected speech. However, this difference due to the types of connected speech needs further investigation because the two types did not differ only in their derivation. They also inherently differed in that the lexical forms were always pronounced with sentence stress, while the phonological forms were not. Categorization of connected speech may need further investigation in future research.

## **Acknowledgement**

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## Appendix

<Sentences with lexical connected speech>

- 1) He **does not** work very hard at home.
- 2) We **will not** go out to dinner with our friends.
- 3) They **do not** have dictionaries on their desks.
- 4) She **has not** taught biology at the school.
- 5) I **have not** spoken to my teacher.
- 6) She **is not** writing a letter to her parents.
- 7) They **were not** attending the conference at the school.
- 8) I **was not** working in the office.
- 9) We **do not** eat breakfast in the cafeteria.
- 10) I **will not** call my sister in New York.

<Sentences with phonological connected speech>

- 1) I think that I **have** never lived in a small town.
- 2) I know that **he has** never worked at an automobile factory.
- 3) I think that **she has** been a good friend of mine.
- 4) I think that **they have** stayed at a hotel in this city.
- 5) I know that **they have** been to the zoo in Hawaii.
- 6) I think that **he is** working at a wonderful restaurant.
- 7) I think that **she is** teaching English class at the school.
- 8) I think that **he is** playing soccer with his friends.
- 9) I know that **they are** having a secret dinner at a Hawaiian restaurant.
- 10) I think that **they are** buying tickets at the theater.