

Contribution of phonetic information to the formation of chunks for Japanese learners of English

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Abstract

According to recent theories of cognitive psycholinguistics, which assimilate the human information processing system to the computer processing system, human language processing is divided into three stages: which are encoding, storage, and accessing. Of the three stages, encoding is the process which changes the input data into the form which people can recognize and deal with. A chunk is the information processing unit for encoding (Kadota, 2002). Recent empirical studies have revealed that the information processing unit used by Japanese learners of English is a phrase-like unit which consists of more than two words and that providing learners with information appropriately split into units manageable for learners facilitates their understanding. It is suggested that chunks play an important role in second language acquisition (Ellis, 2001; Pawley and Syder, 1983; Hakuta, 1974; Filmore, 1976; Lewis, 1993). While it is in these series of words — chunks — that sound change occurs in natural speech.

In this study, I investigate the extent to which Japanese learners of English benefit from phonetic information such as assimilation, elision, consonant—vowel sequences, reduction of a vowel to a schwa, and reduction of a word to its weak form. For example, the dropping of [h] in weakly stressed syllables may make it easy for learners to pronounce them. Specifically, I test the hypothesis that “Giving phonetic information to Japanese learners of English contributes to the formation of chunks in their target language”, by making an empirical study with 66 high school students of English as subjects.

By analyzing the results of some tests and questionnaires, I discuss ways in which phonetic information may be given to Japanese English learners to their profit.

1. Introduction

Considering the significance of sound in language acquisition, little attention seems to have been paid to teaching phonetic information in English education in Japan, especially at primary level. Few teachers explicitly give their students phonetic information such as assimilation, elision, consonant-vowel sequences, reduction of a vowel to a schwa, and reduction of a word to its weak form.

On the other hand, in a lot of L2 research, it has been explored the possibility that chunks or formulaic language play an important role in language acquisition especially at elementary stage (Ellis, 1996; 2001; Pawley and Syder, 1983; Hakuta, 1974; Filmore, 1976; Lewis, 1993; Weinert, 1994). From the exemplar-based or item-based learning point of view, the quantity of chunks to which the learners are exposed is very significant (Dekeyser, 2001).

This study tries to explore the possibility that giving phonetic information explicitly to Japanese learners and instructing them to practice reproduction of the sounds facilitates formation of chunks and storing chunks in memory.

2. Background theories

It is claimed that Language learning is memorizing sequences of language (Nick C. Ellis, 1996) and acquiring lexical chunks play an important role for both L1 and L2 learning (Pawley and Syder, 1983; Hakuta, 1974 ; Filmore, 1976; Lewis, 1993). In addition, language acquisition involves learning the speech sounds of the target language. Seibert (1927) showed that saying words aloud result in faster learning and better retention than doing it silently. She stressed that without articulation, memorizing speech material is impossible.

From the cognitive psycholinguistic point of view, Short Term Memory (STM) for phonology determines grammar acquisition (Nick C Ellis, 1996), and it seems that chunking is the important intervening variable (Melton 1963). Chunks are the perpetual sets of associative connections in long term storage and the basis of the process to attain automaticity and fluency in language. According to Kadota(2002), the processing unit for Japanese English learners are series of words which are basically phrases, namely chunks.

As native speakers use the series of words -chunks- in natural situations, we can observe sound change such as assimilation, elision, consonant-vowel sequences, reduction of a vowel to a schwa, and reduction of a word to its weak form (Brown, 1977 ; Gimson, 1980; Roach, 1983; Matsusaka, 1986). As learners practice listening and producing words, they automatically and implicitly acquire knowledge about the frequencies and sequential probabilities of the phonotactics of the language. Learners' input and output modules for language processing begin to abstract knowledge of the language regularities, with the result that they become more proficient at short-term repetition of new words and phrases. This is the process of chunking and in this process, the sound change occurs on the series of words.

3. Research questions and hypotheses

Teachers and researchers have argued on the importance of chunks or the relation between learning and Long Term Memory or Short Term memory; however, no empirical study concerning the influence of phonological information on chunking seems to have been conducted. The research question in this study is whether phonetic information contributes to the formation of chunks in English as L2 and, if so, how. While the sound change occurs as a result of mastering the language, giving the phonetic information concerning the sound change to learners beforehand may have some effect. In order to answer the research question, the hypothesis "Giving phonetic information to Japanese learners of English contributes to the formation of chunks in their target language" is to be discussed.

4. Method

4.1. Participants

The participants were 66 public high school students in Tokyo, whose level of English proficiency is quite low despite the fact that they finished the three-year English education in junior high school. Not more than 10% of the students who can give the 26 letters in the English alphabet correctly. The questionnaire I conducted showed that most of the students' learning styles were item based and few of the students used grammatical strategies.

4.2 Procedures

The study was conducted in the second and third semesters of the 2004-2005 academic year. Participants were divided into two groups of 33, the one being the experimental group and the other being the control group. Firstly all the subjects took a pre-test where the subjects chose the correct forms of verbs and auxiliary verbs in sentences in English. The time was limited to 90 seconds and the subjects were instructed to cover as many sentences as possible. After the pre-test, the subjects were instructed to read as many sentences as possible in 60 seconds at sight without any explanation. Then, all the subjects took a 45-minute lesson about the sentences in which the instructor explained the grammatical structure of the sentences. After a few days, in the next lesson, the subjects were instructed to read the sentences aloud repeating after the instructor. At this stage, the instructor explained the sound change such as assimilation, elision, consonant-vowel sequences, reduction of a vowel to a schwa to the students in the experimental group and the model pronunciation of target sentences contained these sound change, while the subjects in the control group did not get any phonetic information and the model pronunciation of the sentences did not contain the sound change. After reading aloud all the target sentences, the subjects repeated the work from the beginning to the end three times. In order to motivate the subjects the instructor told the subjects that they would be given a pronunciation test concerning the sentences. Following this announcement, the subjects took the pronunciation test about the sentences which were all the same as the test the subjects did after pre-test. Finally, they took the post test which was the same as the pretest in type and difficulty. In addition to the post test, all the participants took a delayed test 4 months after the post test. The delayed test was the same as the post test.

5. Results

The test scores in the experimental group and the control group were compared. Table 1 shows that there was no significant difference between the scores in the experimental group and control group.

Table 1 Scores from pretest

	Experiment group	Control group
<i>N</i>	33	33
<i>M</i>	5.42	6.51
<i>SD</i>	5.84	5.81
<i>t-test</i>	$t = 0.759$	

df = 64

On the other hand the result of the T-test presented in table 2 shows significant difference between the two groups ($t = 2.3, p < 0.05$).

Table 2 Scores from posttest

	Experiment group	Control group
<i>N</i>	33	33
<i>M</i>	12.93	8.42
<i>SD</i>	9.56	5.67
<i>t-test</i>	$t = 2.3^*$	

df = 64 **p* < 0.05

Moreover, the scores from the delayed test presented in table 3 still show significant difference ($t=2.46, p < 0.05$).

Table3 Scores of delayed test

	Experiment group	Control group
<i>N</i>	33	33
<i>M</i>	9.39	6.15
<i>SD</i>	5.58	5.1
<i>t-test</i>	$t=2.46^*$	

df = 64 **p* < 0.05

The above result seems to support the hypothesis “Giving phonetic information to Japanese learners of English contributes to the formation of chunks in their target language”.

6. Discussion and Conclusion

The result of this study can present some pedagogical implications for English education in Japan. It can be said that giving students phonetic information facilitates learning English in classrooms.

At least, for students who are poor at English, this kind of oral approach seems very effective. Though most of the students are not good at grammatical strategy and do not accept analytical explanations, they seem not to feel it a burden to listen to and reproduce English sounds.

This study suggests that teachers should realize the importance of teaching natural sounds of spoken English especially to beginners and that this kind of oral approach can be an effective method of English education in Japan.

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Appendix A. Target Sentences

1. **Do you study every day?**
[djustʌdievrɪdeɪ]
2. **Yes, I do.**
[jesaɪduː]
3. **No, I don't**
[nouaɪraʊnt]
4. **I don't study.**
[aɪraʊnstʌdi]
5. **Does he study every day?**
[dəzɪstʌdievrɪdeɪ]
6. **Yes, he does.**
[jesɪdʌz]
7. **No, he doesn't.**
[nouɪdʌznt]
8. **He does not study.**
[hɪdəʊnɒtstʌdi]
9. **He helps his mother.**
[hɪhelpsɪzmʌðər]
10. **He does not help his mother.**
[hɪdəʊnɒthelpɪzmʌðər]
11. **He doesn't help his mother.**
[hɪdʌznhelpɪzmʌðər]
12. **He studies every day.**
[hɪstʌdɪzevrɪdeɪ]
13. **Does he drive a car?**
[dəzɪdraɪvəkɑː]
14. **I don't like celery.**
[aɪraʊntlɪkseləri]
15. **Does Carl run fast?**
[dəzkaːrʌnfæst]
16. **Do you have many records?**
[dʒuhævmenɪrekoːrdz]
17. **Yuri doesn't cook well.**
[jʊrɪdʌzntˈkʊkwel]
18. **My little bird doesn't sing.**
[maɪlɪtlɪbɜːrdˈdʌzntsɪŋ]
19. **Keisuke makes nice songs?**
[keɪsʊkemeɪksnaɪsɔŋs]
20. **Does he make nice songs?**
[dəzɪːmeɪksnaɪsɔŋs]
21. **You like rock music.**
[jʊlaɪkrɒkmjuːzɪk]
22. **Do you like rock music?**
[dʒʊlaɪkrɒkmjuːzɪk]
23. **Ken studies very hard.**

- [kenˈstʌdɪzveriːhɑːrd]
24. **Ken doesn't study very hard?**
[kɛndʌznˈstʌdɪveriːhɑːrd]
25. **Jack has a nice jacket.**
[dʒækhəzənəɪsdʒækɪt]
26. **Jack doesn't have a nice jacket?**
[dʒækdʌznævənəɪsdʒækɪt]
27. **We eat lunch at home.**
[wiːtlʌntʃəθoʊm]
28. **We don't eat lunch at home.**
[wiːrouniːtlʌntʃəθoʊm]
29. **Does Ken like rice balls?**
[dəzkenlaɪkraɪsbɔːlz]
30. **Yes, he does.**
[jɛshɪdʌz]
31. **Does a koala eat fish?**
[dəzəkouɑːləɪːtɪʃ]
32. **No, it doesn't.**
[noʊɪtˈdʌznt]
33. **Do you have many friends?**
[dʒuhævmenɪfrendz]
34. **Yes, we do.**
[jɛswɪduː]
35. **Does the Concord fly fast?**
[dəzðɛkɒkɔːrdflaɪfæst]
36. **Yes, it does.**
[jɛsɪtˈdʌz]
37. **Does Yuri live in Italy?**
[dəzjʊrɪlɪvɪnɪtəli]
38. **No, she doesn't.**
[noʊʃiːdʌznt]
39. **Do Americans eat sushi?**
[dwəmerɪkənziːtsʊʃi]
40. **Yes, they do.**
[jɛsðeɪduː]
41. **Mother washes the dishes.**
[mʌðərwɔʃɪzðɛdɪʃɪz]
42. **Does mother wash the dishes?**
[dəzmʌðərwɔʃɪz]
43. **Mother doesn't wash the dishes.**
[mʌðərdʌznwɔʃɪz]
44. **His house have five rooms.**
[hɪzhaʊshæzfaɪvrʊmz]
45. **Does his house have five rooms?**
[dəzɪzhaʊshævfaɪvrʊmz]

Appendix B. Pre test

Comprehension Test 1

()内の適語をえらび、○をつけなさい。

CLASS NO. NAME

- 1 She (don't doesn't) (help helps) her father.
- 2 They (don't doesn't) (help helps) their father.
- 3 (Do Does) Carl (run runs) fast?
- 4 You (don't doesn't) (have has) many books.
- 5 He (doesn't don't) (eat eats) lunch at home.
- 6 (Does Do) he (drives drive) a car?
- 7 (Does Do) they (drives drive) their cars?
- 8 (Does Do) you (like likes) tomato?
- 9 No, she (don't doesn't).
- 1 0 (Does Do) the bird (speak speaks) Japanese?
- 1 1 (Do Does) they (studies study) every day?
- 1 2 Yes, they (does do).
- 1 3 (Do Does) he (studies study) every day?
- 1 4 (Do Does) it (sing sings) a song?
- 1 5 (Does Do) they (changes change) their hair style?
- 1 6 (Does Do) Mother (wash washes) the dishes?
- 1 7 Yuri and Maki (don't doesn't) (cooks cook) well.
- 1 8 (Does Do) she (like likes) juice?
- 1 9 They (doesn't don't) (go goes) to school by bus.
- 2 0 (Do Does) you (sing sings) a song?
- 2 1 Keisuke (doesn't don't) (makes make) nice songs.
- 2 2 I (doesn't don't) (speaks speak) English at home.
- 2 3 (Does Do) she (likes like) rice balls?
- 2 4 (Do Does) they (plays play) the piano?
- 2 5 (Do Does) she (gets get) up early in the morning?
- 2 6 (Does Do) you and your brother (wash washes) the dishes?
- 2 7 Yes, he (do does).
- 2 8 He (don't doesn't) (have has) many books.
- 2 9 (Do Does) she (plays play) the piano?
- 3 0 No, we (don't doesn't).
- 3 1 She (don't doesn't) (take takes) a walk every day.
- 3 2 It (doesn't don't) (speaks speak) Japanese.
- 3 3 I (don't doesn't) (plays play) baseball every day.
- 3 4 No, it (doesn't don't).
- 3 5 (Do Does) you (go goes) to school by bus?
- 3 6 She (don't doesn't) (plays play) badminton every day.
- 3 7 (Does Do) it (eats eat) some bananas every day?
- 3 8 (Does Do) you (speak speaks) English at home?
- 3 9 (Does Do) he (like likes) music?
- 4 0 (Do Does) you (play plays) baseball every day ?
- 4 1 No, I (doesn't don't).
- 4 2 She (doesn't don't) (go goes) to school by bus.
- 4 3 They (doesn't don't) (eat eats) lunch at home.

- 4 4 (Does Do) Tom (changes change) his hair style?
4 5 No, she (don't doesn't).
4 6 (Do Does) she (play plays) badminton every day?
4 7 Koji and I (doesn't don't) (makes make) nice songs.
4 8 (Do Does) you (gets get) up early in the morning?
4 9 (Does Do) he (likes like) rice balls?
5 0 He (don't doesn't) (take takes) a walk every day.

Appendix C. Post test

Comprehension Test 2

()内の適語をえらび、○をつけなさい。

	CLASS	NO.	NAME
1	(Does Do)	they	(likes like) rice balls?
2	She	(don't doesn't)	(have has) many books.
3	Father and I	(don't doesn't)	(cooks cook) well.
4	(Does Do)	you	(drives drive) a car?
5	No, I	(doesn't don't)	.
6	He	(don't doesn't)	(plays play) tennis every day.
7	They	(don't doesn't)	(plays play) soccer every day.
8	(Does Do)	he	(speak speaks) English at home?
9	They	(doesn't don't)	(speaks speak) English at home.
1 0	You	(don't doesn't)	(help helps) your mother.
1 1	(Does Do)	they	(speak speaks) English at home?
1 2	Yes, she	(does do)	.
1 3	It	(doesn't don't)	(eat eats) bananas every day.
1 4	(Does Do)	she	(drives drive) a car?
1 5	(Does Do)	they	(like likes) music?
1 6	He	(don't doesn't)	(help helps) his mother.
1 7	(Do Does)	she	(sing sings) a song?
1 8	(Do Does)	she	(studies study) every day?
1 9	Mariko	(doesn't don't)	(makes make) nice songs.
2 0	We	(doesn't don't)	(eat eats) lunch at home.
2 1	Yuri	(don't doesn't)	(cooks cook) well.
2 2	(Do Does)	she	(go goes) to school by bus?
2 3	(Does Do)	Father	(wash washes) the dishes?
2 4	(Do Does)	they	(gets get) up early in the morning?
2 5	I	(don't doesn't)	(have has) many books.
2 6	I	(doesn't don't)	(go goes) to school by bus.
2 7	(Do Does)	he	(plays play) the guitar?
2 8	(Does Do)	you	(changes change) your hair style?
2 9	(Do Does)	they	(play plays) soccer every day?
3 0	You	(don't doesn't)	(take takes) a walk every day.
3 1	Keisuke and Mariko	(doesn't don't)	(makes make) nice songs.
3 2	(Do Does)	he	(play plays) tennis every day?
3 3	No, they	(doesn't don't)	.
3 4	She	(doesn't don't)	(eat eats) lunch at home.
3 5	It	(don't doesn't)	(cooks cook) well
3 6	(Do Does)	they	(go goes) to school by bus?
3 7	Yes, I	(do does)	.
3 8	He	(doesn't don't)	(go goes) to school by bus.
3 9	(Does Do)	the children	(wash washes) the dishes?
4 0	He	(doesn't don't)	(speaks speak) English at home.
4 1	(Do Does)	they	(sing sings) songs?
4 2	(Do Does)	you	(studies study) every day?
4 3	No, he	(don't doesn't)	.
4 4	(Do Does)	he	(gets get) up early in the morning?

- 4 5 They (don't doesn't) (take takes) a walk every day.
4 6 No, he (don't doesn't).
4 7 (Does Do) Kumi (changes change) her hair style?
4 8 (Do Does) you (plays play) the guitar?
4 9 (Do Does) Emi (run runs) fast?
5 0 (Does Do) you (likes like) like rice balls?