Weak forms in shadowing: How can Japanese EFL learners perform better on shadowing tasks?

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Abstract

Shadowing is an emerging teaching technique that can be tailored in many ways. According to Kadota (2007), shadowing is a so-called online process, which requires learners to process incoming information in real time. Performing shadowing tasks is said to facilitate learners' online processing and improve their listening skill. There are a few ways to have learners perform shadowing tasks. This study investigated weak form acquisition through shadowing on a group of Japanese learners of English. It has been documented that Japanese learners, due to the many phonological differences between Japanese and English, experience difficulties when trying to acquire weak forms of function words. This study had participants perform shadowing tasks where one group did shadowing using auditory and visual sequencing input. The other group had only auditory input, but the auditory input was presented to each participant at three different speed. The results of the pre- and post-tests were analyzed, and the analysis revealed that the visual-auditory shadowing prime facilitated the production of weak forms to a greater extent than the scaffolded prime.

Shadowing, Auditory shadowing, Visual shadowing, priming effect :

Background of this study

Issues in EFL listening comprehension

It has been reported that EFL learners often have a comprehension gap between written input (visual input) and spoken input (auditory input). According to Field (2003), for example, EFL listeners often mistake auditory input such as "I

won't go to London" as "I want to go to London," although they can understand the same input if it is presented visually. In the case of Japanese EFL learners, one of the causes of the gap is considered to be the differences in phonological systems between English and Japanese. English has the so-called stress-timed rhythm, where stressed syllables fall at a regular interval. Because of that, English auditory input has unique features such as connected speech, reduced forms, weak forms of function words, assimilation, elision, resyllabification, and cliticization. In other words, even a single word has different sound qualities depending on where the word is placed in a phrase or a sentence. EFL listeners with limited English knowledge are often confused by these phonetic variations. In other words, if those learners are given sufficient instructions to match either their own phonological knowledge or visual input with phonetic variations, they can improve their listening comprehension to at least match the level of their reading comprehension. In fact, not only Field (2003) but also other researchers have observed differences in the degrees of reading and listening comprehension. For example, Mecartty (2000) investigated the correlations between vocabulary knowledge and reading and listening comprehension abilities, and concluded that visual texts have more chances of being comprehended than auditory texts; the reason is that the correlation between the size of one's vocabulary and one's listening comprehension ability is weaker than that between the size of one's vocabulary and one's reading comprehension ability.

Limited phonological knowledge also causes unbalanced use of cognitive processes. There are two kinds of cognitive processes involved in listening comprehension: top-down processing and bottom-up processing. In top-down processing, listeners try to understand the input by making the most of their prior knowledge. In bottom-up processing, listeners try to understand the input from scratch by decoding it from phonemes to words, to phrases, and to sentences. These two processes are balanced and take place automatically in comprehension of one's native language. However, in the case of L2, even advanced learners are found to over-rely on top-down processing (Tyler, 2001). Goh (2002) further mentions that effective methods or approaches that facilitate each kind of processing are needed to help learners effectively use these cognitive processes.

The role of working memory for language comprehension

According to Baddeley (1986), working memory plays crucial roles for language

comprehension. Human memory consists of three kinds of memory: sensory register, working memory, and long-term memory (Mori, 2005). Among those, working memory performs two important functions for retention: phonological coding and rehearsal for retention (Baddeley, 1986; Baddeley & Logie, 1999). Phonological coding is the process that allows orthographical information (visual input) or phonological information (auditory input) to be internally vocalized for the later process of retention. Furthermore, coded information will be rehearsed internally in working memory to elaborate it or make it a long-term memory (Atkinson & Shiffrin, 1971; Baddeley, 1986; Baddeley, 2000). In short, both visual input and auditory input are internally changed into learners' own voice before further analysis for comprehension.

Thus, what can be safely stated here is that if the incoming auditory input is successfully matched with learners' internal voice, further analysis for comprehension is also facilitated. We can think of two ways of doing so. One is to match visual input, which can be encoded by learners' internal voice, with auditory input at a natural speed. The other is to match enunciated clear auditory input, which is considered to be close to learners' internal voice, with auditory input at a natural speed.

Matching visual input with auditory input at natural speed

Shadowing is a technique that facilitates the process of encoding input in working memory (Tamai, 2005). Shadowing requires learners to repeat what they hear as soon as possible. It is considered as voiced version of encoding processes in working memory. It has been popular as one of EFL listening instruction techniques in Japan. Prior to this study, Nakayama (2011) coined the term *visual-auditory shadowing* and investigated whether matching visual input with auditory input at natural speeds facilitates phonological learning by the visual-auditory shadowing technique and found that it facilitates phonological learning better than auditory shadowing alone. *Visual shadowing* is a shadowing task using visual input, whereas *auditory shadowing* is a shadowing task using auditory input. Auditory shadowing requires learners to process the auditory input almost simultaneously; visual shadowing requires learners to process the visual input almost simultaneously as well. Visual-auditory shadowing is alternation of visual shadowing and auditory shadowing.

Matching enunciated clear auditory input with auditory input at natural speed

Even though Nakayama (2011) indicated that matching visual input and auditory input at a natural speed facilitates phonological learning, Nakayama (2011) did not investigate whether it facilitates phonological learning better than matching enunciated clear auditory input, which is considered to be close to learners' internal voice, with auditory input at a natural speed. Thus, this study's main purpose was to investigate it by utilizing the priming effect.

Priming Effect

If we have heard a word or a phrase very recently, or more often than another, we recall it more quickly. For example, if asked to name an American city that starts with the letters "Ch," you would most likely say "Chicago," unless you have a close personal connection to or recent experience with another city that starts with the letters "Ch," such as Charlotte, Cheyenne, or Charleston. This effect is called the *priming effect*. The priming effect can be evoked by how far the prime is from the target. Since the letters "Ch" are more closely related to Chicago (since we hear it more often) than to Charlotte, we would most likely answer "Chicago." In the example above, the letters, "Ch" are the *prime*, which is a stimulus to recall, and "Chicago" is the *target*, which is the result evoked by the prime. In this research, utilizing two different kinds of primes (visual input and scaffolded auditory input), we investigated the effects of priming on auditory shadowing performance.

Primes

This study compares two primes, visual input and scaffolded auditory input. Visual input can be a good prime because learners have a great amount of prior learning experiences. However, auditory input with phonological variations such as weak forms of function words is more difficult to be phonologically coded because of learners' limited prior phonological knowledge. Most learners are unaware of phonological variations. Thus, in this study, following a scaffolded procedure, learners started with a very slow auditory input of one phonological variation, increasing the speed of auditory input until it matched the natural phonological variation. Learners started with very enunciated input as the first step of the scaffolding, moving on to careful pronunciation as the second step, ending with relaxed pronunciation as the final scaffolded step. Each step in the scaffolding process was a prime. Each prime was moving the learners to the target.

Weak forms of function words

This study focuses on retention of weak forms of function words. According to Koike (1993), weak forms of function words are one of the most affective factors for Japanese EFL learners when they engage in listening comprehension. Koike (1993) also suggested that by demonstrating differences between clear speech and weak forms of function words, phonological learning of function words is more facilitated. Based on the framework of Koike (1993), this study demonstrates a possibility to facilitate phonological learning of function words by integrating learners' phonological knowledge that already exists and new variations with priming.

The objective of this study

In this research, we utilized the priming effect to answer the question which prime (visual input or scaffolded auditory input) facilitates learners better being able to emulate relaxed speech. This study was conducted to answer the following question: which of the two types of primes (visual input or scaffolded auditory input) facilitates learners shadowing weak forms of function words?

Experiment

Participants and design

The participants in this study were 95 first-year university students who were enrolled in the first author's English language course. All the participants were native speakers of Japanese. None had any experience of living in a country in which English is the first or second language. They had been participating in the English course for 90 minutes once a week for about two months with the purpose of improving their TOEIC test-taking techniques.

The students were assigned to one of two groups. Forty-eight participants were placed in the visual-auditory shadowing group (VA group). The other 47 students were placed in the scaffolded auditory-shadowing group (SA group). The result of the listening comprehension test administered prior to this experiment revealed no significant differences in listening comprehension between the two groups ($t(93) = 0.03$, $p > .05$).

The material

A speech about American universities was used. It consisted of 274 words (83 function words and 191 content words)

Pre-test and Post-test

For the pre-test and post-test, all the participants were asked to shadow the same speech used for the training and to record their shadowed voice into IC recorders.

Procedure

Training for each group took place from the beginning of June 2011 to the middle of July 2011. These lessons were given on different days, but in the same classroom, which was capable of holding 156 students and was outfitted with a PA system. Each lesson took 60 minutes. The first author conducted all the lessons for both groups, and the procedures discussed in the next subsection were undertaken for each of the two groups.

Analysis

The first and the second author listened to each participant's recording on an IC recorder and counted the words successfully shadowed. In the case of differences in marking, we listened to the recording and checked the word again. If we still had different opinions, we left the word unmarked. Then we analyzed differences between the pre-test and post-test productions by considering the increased amount of shadowed words between the pre- and post-tests. The result was analyzed by a two-way analysis of variance (MANOVA) procedure.

Results

The analysis revealed that the main effect for the groups was not significant ($F(1, 93) = 2.66$, $p > .05$). The main effect for the tests was also not significant ($F(1, 93) = 0.69$, $p > .05$). However, the interaction between the groups and tests was significant ($F(1, 93) = 4.35$, $p < .05$). The simple main effect for the groups was significant for function words only ($F(1, 186) = 6.49$, $p < .05$). The VA group ($M = 0.24$, $SD = 0.09$) outperformed the SA group ($M = 0.19$, $SD = 0.12$) in the post-test ($t(94) = 3.60$, $p < .01$). The simple main effect for the tests was significant for the VA group. The

Table 1　The increases

	VA	SA
Function		
M	0.24	0.19
SD	0.09	0.12
Content		
M	0.21	0.20
SD	0.09	0.10

increased amount of function words (M = 0.24, SD = 0.09) was significantly larger than that of content words (M = 0.21, SD = 0.09) in the VA group. The mean scores and standard deviations of increases between the pre-test and post-test are shown in Table 1.

Conclusions

This study investigated whether either of the two types of prime settings–visual or scaffolded audio–facilitates phonological learning of function words. The analysis revealed that the visual-auditory shadowing prime facilitated the production of weak forms in a greater quantity than the scaffolded prime. Koike (1993) suggested that by demonstrating differences between clear speech and weak forms of function words, phonological learning of function words is more facilitated. Since visual-auditory shadowing training facilitated phonological learning of function words, it can be said to be one of effective ways to demonstrate differences between clear speech and weak forms of function words.

Based on the findings of this study, there are three plausible explanations why visual-auditory shadowing has more advantages. One is that repeated exposure to the same prime in the visual-auditory shadowing group has more advantages since the learners could easily expect what word comes next once they matched that word with the auditory input. However, in the scaffolded group, since the phonological quality of the words changed every time, even if the learners were able to match the word in one sound quality (non-weak forms) with the auditory input at a natural speed, there was no guarantee that they could match the same word in another quality (weak forms) with the auditory input at a natural speed. The second explanation is that in the scaffolded group, the learners' phonological knowledge

might not have matched even the enunciated auditory input. In other words, if the learners have the wrong phonological knowledge of a word, it does not match even the enunciated auditory input. In that case, the input is really confusing and difficult to process for the learners in the scaffolded group since the sound qualities in function words change according to the speed of the auditory input. However, the learners in the visual-auditory group had three chances to adjust their phonological knowledge with the auditory input at a natural speed because they repeated the same visual input three times. The third is that because of the stability in the speed of the material presented, the visual-auditory group could easily control their cognitive attentional resources to focus. However, in the scaffolded group, since the speed of the auditory input changed, it was more difficult for the learners to control their attentional resources to focus on the shadowing.

Limitations of this study

This study investigated whether visual-auditory shadowing or scaffolded auditory shadowing facilitates phonological learning over a short period of time. Though the findings of this study suggest that visual-auditory shadowing facilitates phonological learning of function words better than scaffolded shadowing, the efficacy should be further examined. The study should be extended to longer periods of time and different materials presented in different voices and accents. Furthermore, whether visual-auditory shadowing training brings about improvement of listening comprehension should be further investigated.

Furthermore, the factors of the participants have to be further determined. The participants in this study were from a limited group. They were university students who had at least six years of learning experience in English. The learners who have less learning experience, such as junior high school or high school students, might have different outcomes.

Another limitation is that, in this study, the participants' psychological factors were not determined. Recently, learners' motivation or self-efficacy in relation to the task has been reported to affect the results of shadowing tasks (Hamada, 2011). How learners change their motivation or self-efficacy through visual-auditory or scaffolded shadowing training should be examined to support the outcomes of this study.

References

Atkinson, R, C., & Shiffrin, R, M. (1971). The control of short-term memory. *Scientific American*, 224, 82-89.

Baddeley, A. D. (1986). *Working memory*. Oxford: Clarendon Press.

Baddeley, A. D. (2000). The episodic buffer: a new component of working memory? *Trends in Cognitive Sciences*, 4, 417-423.

Baddeley, A. D., & Logie, R. H. (1999). Working memory: The multiple-component model. In A. Miyake & P. Shah (Eds.), *Models of working memory* (pp. 28-61). New York: Cambridge University Press.

Field, J. (2003). Promoting perception: lexical segmentation in L2 listening. *ELT Journal* 57, 325-334

Goh, C. M. (2002). Exploring listening comprehension tactics and their interaction patterns. *System*, 30, 185-206.

Hamada, Y. (2011). Psychological aspects of shadowing training. *Journal of the Japan Association for Developmental Education*, 6(2), 60-71.

Kadota, S. (2007). Shadowing to ondoku no kaagaku [Science of shadowing and oral reading]. Tokyo: Cosmopier.

Koike, I. (1993). *Eigo no hiaringu to shido*. Tokyo: Taishukan shoten.

Mecartty, F. (2000). Lexical and grammatical knowledge in reading and listening comprehension by foreign language learners of Spanish. *Applied Language Learning*, 11, 323-348.

Mori, T., & Chujo, K. (2005). Ninchi shinrigaku kiwado [Keywords in cognitive psychology]. Tokyo: Yuhikaku.

Nakayama, T. (2011). Effectiveness of visual shadowing. *Journal of the Japan Association for Developmental Education*, 6, 51-59.

Nakayama, T., & Iwata, A. (2012). Differences in comprehension: visual stimulus vs. auditory stimulus.

Tamai, K (2005). *Shadoingu no koka ni kansuru kenkyu*, Tokyo: Kazama shobo. A research on effectiveness of shadowing (written in Japanese)

Tyler, M. (2001). Resource consumption as a function of topic knowledge in nonnative and native comprehension. *Language Learning*, 51, 257-280.