The Effectiveness of Shadowing
for Improving Listening in English Learners
and Negative Impact on Interpreters

Katsumasa Shinozuka

1. Introduction

1.1. Topic of Investigation

English is an international language which is used as a means of cross-cultural communication and so is learnt by many here in Japan as well as around the world. It is obvious that listening skills are indispensable for succeeding in spoken communication; and so effective development of listening skills is worth discussing as an important topic for research.

Nishimura (1998) reports that over half (52%) of the students at her university would like to improve their listening skills: in other words, half of them are dissatisfied with their listening skills. Shinzaki (2005), who works for an interpreting school, claims that listening skills are lacking even among a relatively high-level group of interpreting students, which include even some who had graduated from American universities.

Since 1987, assistant language teachers (ALT) have been allocated by the Ministry of Education, Culture, Sports and Science and Technology at junior and high schools in the JET scheme (The Japan Exchange and Teacher's Programme). Despite such opportunities for exposure to native English, Torikai (2004) claims from

her teaching experiences at a university that the students' communication skills have not reached satisfactory levels even for everyday conversation.

Tamai (2005) reports, based on questionnaire data from 206 Japanese junior high school English teachers themselves, that among the four skills they are least confident about listening skills (with only 16.5% expressing confidence).

1.2. Background

Shadowing practice has been implemented at some high schools and universities recently in the hope of improving learners' listening skills. I will describe what shadowing is and what kinds of cognitive process take place while shadowing is being preformed.

2. Literature Survey

2.1. Shadowing

2.1.1. Definition

Tamai (2005:34) defines shadowing as "a listening act or task in which the learner tracks the heard speech and repeats it as exactly as possible while listening attentively to the incoming information". Shadowing is divided mainly into two types, one focusing on form [prosodic shadowing] and one on meaning [contents shadowing].

2.1.2. Important Characteristics

When doing prosodic shadowing, listeners use both their audi-

tory and oral organs at the same time for very attentive and careful reproduction, which means that listeners must concentrate on the details of the speech sounds. In particular, they are required to listen carefully to function words, which are sometimes missed in normal listening. Function words, which include particles, modals, personal pronouns, prepositions, demonstrative pronouns, interrogative pronouns and conjunctions, are usually pronounced with less stress. At the same time listeners also have to concentrate on content words such as nouns, adjectives, verbs and adverbs which are pronounced with stress. While doing contents shadowing, students are expected to pay attention to meaning; but there seems little way of confirming that this happens. Tamai (2005) claims that learners become able to acquire the techniques of contents shadowing, resulting in switching from prosodic shadowing to contents shadowing in a natural way by focusing on incoming sounds.

2.1.3. Evidence of Positive Effects

Shadowing practice has been widely introduced as one means to improve English learners' skills at Japanese high schools and universities over the last several years. Several English teachers or researchers have identified certain advantages of shadowing practice.

Nishimura (2000) suggests that shadowing is the exercise in which students come to be able to process the largest amount of information as possible in a given time. In addition, input and output proceed at almost the same time, with the result that the prosodic elements can be more closely copied from the original English speech, resulting in an increased ability to acquire correct

English pronunciation.

Someya (2004) notes that shadowing practice can serve to promote the recognition and reproduction of English sounds, including stress and intonation, since shadowing practice forces learners to use their ears and mouth at the same time. As a result, shadowing is a very effective means of training to develop and reinforce a sense of prosody, which is obligatory for acquiring listening skills.

Yanagihara (1995) notes that in shadowing tasks listeners can learn the phenomena of liaison (linking of sounds, particularly between words) and reduced sounds in running speech without conscious attention, resulting in acquisition of rhythm and intonation.

Research by Tamai (2005) and Onaha (2004) shows that shadowing practice is also effective both the rates and accuracy of articulation as well as fluency of speech. Tamai (2005) claims that noticeable effects of intensive shadowing practice can appear in a relatively short time based on the evidence of his experiments administering shadowing practice to his participants. However, he also claims shadowing does not work as well for higher levels of learners.

It seems from the various previous studies that shadowing practice has a primarily positive impact on improving the learner's prosodic aspects.

2.1.4. Possible Negative Effects for Interpreters

Kondo (2004) reported on the level of understanding and retention skills of French native speakers receiving training in interpreting at Ottawa University in Canada. They were divided

into three groups, who were given a certain amount of meaningful French narrative and asked about the contents in detail. Group (1) just listened in French; group (2) did shadowing in French; while group (3) carried out simultaneous interpreting into English. The results show that the participants who did shadowing had the lowest scores for understanding and retention among the three groups, while those who had only listened had the highest scores. The participants who had simultaneously interpreted might be expected to have obtained the highest grades, since they translated French into English while comprehending the context of given paragraphs. However, they obtained the middle grade among the three groups. Kondo's report indicates that just listening to what is said in a target language could result in better comprehension than doing shadowing in the target language.

Regarding the effect of shadowing on simultaneous interpreting, shadowing administered at various interpreting schools in order to improve performance has not seemed to work well. Someya (2004) denies any effectiveness, because shadowing does not involve translating into a target language at all. He also notes that the act of shadowing appears to be superficially similar to simultaneous interpreting in view of involving listening and speaking almost at the same time, but the processing involved is totally different in the two activities. Shinozuka (2006) points out that too much shadowing practice leads interpreting students to insert a source language phrase inadvertently instead of the required target language translation.

2.2. Cognitive Models of Language Processing

2.2.1. Memory Use in Cognitive Models

We are normally engaged in listening as a cognitive activity in daily life. When we are involved in listening activity, speech sounds go through our auditory organ (the part of the brain processing sounds) as an input; then just after the input, we pay close attention to the incoming phonetic sounds and we try to temporarily retain the sounds consciously for a sufficiently long time to comprehend what is said. Researchers in cognitive psychology currently utilize the model of the system of working memory, in order to explain the procedures of short-term memory (STM) in more detailed ways, since STM is nowadays considered to involve more cognitive acts. The act of shadowing is regarded as being related to cognitive activities (Tamai, 2005).

2.2.2. Working Memory

Baddeley (1984:34) defines working memory as "a system for the temporary holding and manipulating of information during the performance of a range of cognitive tasks such as comprehension, learning and reasoning". Researchers in cognitive psychology consider that working memory is used to retain incoming information temporarily in daily cognitive acts such as perception, conversation, reading comprehension, mental calculation, judgment, reasoning and thinking (Osaka, 2000). Working memory, the so-called mental "memorandum" or "blackboard" (Oishi, 2006:87) is considered to consist of two slave systems. One is the phonological loop and the other is the visuo-spatial sketchpad. A system called the central executive controls the two slave systems. The

phonological loop specifically relates to the understanding of sounds. There is a phonological short-term store on the phonological loop. Miyake (1995) notes that after listening to incoming information, the phonetic memory is said to be deleted in 1.5–2.0 seconds from the phonological store unless there is attention to and rehearsal of incoming phonetic sounds. For example, when totally unfamiliar information such as a new phone number or a new address is given as auditory input, the phonetic memory will disappear in a moment if there is no vocalizing or subvocalizing rehearsal. The process of mentally vocalizing forms is called "subvocalization". In case of visual input (looking at words), the words are vocalized and rehearsed on the phonological loop, with the effect of preserving incoming information. As long as the incoming information with phonetic sounds is rehearsed on the phonological loop, phonetic memory can be retained indefinitely (Miyake, 1995). The central executive in working memory plays an important role in controlling the allocation of cognitive resources for various cognitive procedures. The central executive has the function of assigning the two slave systems to their respective tasks and it also plays a crucial role in retrieving information from long-term memory.

Oishi (2006) notes that capacity of working memory is limited. Whether in reading or listening activities, if the capacity is utilized only for the retention of words, understanding the meaning of contents may be eliminated from STM, resulting in no retained comprehension. She claims that this can occur with low level learners.

2.2.3. Mental Lexicon

The importance of vocabulary size for other skills is considered in this section. Knowledge of a word may include its individual pronunciation, spelling, meaning, and grammatical usage and collocation patterns. Speakers of a language generally have some knowledge of this type for considerably more items than they actively use. Cognitive psychology assumes that vocabulary knowledge is held in a 'mental lexicon'.

Aitchison (2003:ix) is typical in noting that the large vocabulary size and efficiency of retrieval "suggest that these words are carefully organized, not just stacked in random heaps, in the nature of a human word-store, or mental lexicon".

Retrieval of information of vocabulary from the mental lexicon for better and smoother understanding is needed not only by first language learners but also in a second language (Kadota, 2003). The long-term stored mental lexicon, much like a paper dictionary, includes language information such as spelling, phonemes, meanings and syntax. Then vocabulary knowledge is retrieved from the mental lexicon and final understanding of contents can be achieved (Kadota). For example, if some information is given, but is spoken in a totally unfamiliar language, the language itself can not be identified, let alone the contents of the information understood, because there is no information about the language in your mental lexicon (Abe, 1995).

It is considered that listeners should have a sufficient vocabulary size in order to understand what speakers say. For English learners, some critical minimal quantity of vocabulary is necessary to enhance language performance.

There is another interesting result from Shimamoto's research (1998). The targeted participants were divided into two groups by vocabulary size: one group of participants with vocabulary sizes over 3,000 word families (5,000 words including derivatives) and on with vocabulary sizes under 3,000 word families. Then research investigated the correlation between two groups in contrast with total TOEFL test score. The result reveals that there is high correlation (0.72) between vocabulary size and overall TOEFL score. Shimamoto also claims that when the comprehensive English ability is below 3,000 word families, a person is highly likely to be can understand only 62% in a given paragraph. She suggests the learners at this level need to increase the vocabulary size as well as acquiring bottom-up strategies.

Nations & Coady (1998) claim that it is essential for second language learners to know 98% of the meanings of vocabulary in a given context. In order to meet this requirement, the learner's vocabulary should include about 5,000 word families (7,500–10,000 words including derivatives), which is equivalent to a level just below *Eiken* pre-first grade or between 750–850 on TOEIC. Many interpreting schools require their students to be at this level as a minimum entry criterion.

2.2.4. Implications of Cognitive Models for Shadowing

Tamai (2005) suggests that shadowing is an act through which subvocalization is transformed into vocalization in a conscious way. He claims that subvocalization is an indispensable act in working memory when people read incoming information in written form. Shadowing is also an act of retaining incoming sound in

the mind.

Onaha (2004) and Tamai (2005) concluded in their previous research that their respective participants had improved their articulation speed and repeating skill as a result of intensive shadowing practice. They improved in the accuracy of recognizing incoming sounds. Furthermore, a larger amount of incoming information was retained on the phonological loop in working memory due to an increase in articulation speed.

Tamai concluded (2005) from his results that the improvement of articulation speed enables increased incoming information to be repeated for a shorter time, contributing to the fact that learners have become able to utilize functions of the phonological loop in working memory more effectively while listening (own translation from Japanese).

The previous research of both Onaha and Tamai indicates that shadowing practice enables the phonological loop in working memory to operate more effectively, which contributes to improvement of articulation speed and repeating skill.

3. Discussion

3.1. The Effect of Articulatory Suppression

During shadowing, it is mandatory both to listen carefully to heard speech and repeat it as exactly as possible at almost the same time. Shadowing practice involves articulatory suppression. Articulatory suppression is a kind of disturbance or hindrance to your ears while listening to something. For instance, while you are careful in listening to something, it might not be impossible to lis-

ten to and attend to doing a different thing and comprehending it at the same time. Apparently it is possible to do this. Because the evidence from Tamai, Ohnaha, Shinozuka and so forth prove that shadowing practice can be performed without the effect of articulatory suppression, since the subjects utilized by them who are middle-level learners could improve their listening skills. If the articulatory suppression harmed their listening skills in their pre and post listening tests to prove the improvement in their experiments, they could not have improved the skills in the post tests. It can be assumed that shadowing practice may contribute to overwhelming the articulatory suppression effect for up to middle-level learners. From this viewpoint, shadowing practice has positive effects to improve not only the technical skills but also the cognitive aspects which are included in listening comprehension. In order to explain why there is no articulatory suppression, it can be assumed that the subjects come not only to acquire the aspects of English prosody but also to obtain the skills of chunking. Pawley and Synder (1983) suggest that memorized chunking is very important for native speakers for the process of acquiring a first language. They stated the importance of the role of collocation in native speaker fluency (essentially also storage of larger units than single words). Cowan (2005) also implies that chunking can lead to memorizing heard speech and easily retrieving information from long term memory in working memory, which are obligatory for the process of comprehensions. So shadowing might result in enhancing the acquisition of the ability of chunking, which can contribute to reducing the cognitive loads in working memory.

3.2. Logical Thinking

Tamai (2005) indicates that the effectiveness of shadowing disappears as overall skills of learners improve. Of course, the higher the learners' skills become the more difficult or complicated will be the contents of materials which the learners work with. In particular, higher level learners have more exposure to more specific topics and vocabulary.

Taking as an example the listening section of the first grade of *Eiken*, the materials are usually related to economics, politics, medicine, education and science, which use relatively technical terms. In order to obtain correct answers, examinees need high level listening skills as well as background knowledge in various fields. Moreover, some questions require examinees to listen for 3 to 5 minutes to reach answers. Without understanding causes and effects logically, let alone phonetic recognition, it is most likely that they will face difficulty in obtaining the correct answers.

Working memory functions as a self-monitoring system. The self-monitoring system itself is a series of limited processes while conscious attention is limited and so if it is occupied by form, less attention is paid to meaning. The capacity of working memory can be overloaded, which makes it difficult for learners to think logically and critically, which is a mandatory skill for higher level learners to reach an understanding of speech. Thus there is a 'trade-off effect', whereby if listeners face difficulty in understanding incoming information, their concentration to understand it fades away and vice versa (Tamai).

Miyake (1995) also notes the 'trade-off effect'; if the learner's vocabulary size is not sufficient while listening and trying to con-

centrate on keeping up with the contents, the capacity of working memory is overloaded and the ability of understanding completely lost. If low level learners face new cognitive acts with higher workloads, they can not concentrate on meaning as well (Oishi), with the effect that they can utilize only a bottom-up strategy without being able to use a top-down strategy, since they overuse resources of attention at the stage of bottom-up strategy processing. On the other hand, high level learners can utilize bottom-up strategy (e.g. recognition of meanings of words or grammar rules) automatically and they are able to make use of language processing for the contents (top-down strategy), leading to more efficient use of working memory. In order to lessen the trade-off effect, Oishi (2006) suggests practice in utilizing both top-down strategies and bottom-up strategies in a balanced way is very important so as to reduce the burden on limited capacity of working memory.

3.3. Alternative Implementation of Shadowing

There is a method of intensive listening practice called "Dictogloss" in second language acquisition (Rost, 2002:138). This is similar to memory training, which is one method for interpreting students in order to improve their listening skills as well as enhance logical thinking.

Dictogloss was established by Merrill Swain in 1995 in order for learners to improve their listening skills on an experimental basis in a study of comprehensible output. Since then this method has been employed by researchers and teachers. This method consists of listening to a speech about two minutes long, including deliberately difficult logical relationships, vocabulary and gram-

matical structures. The speech includes more information than listeners can retain in memory without taking notes. Soon after listening to the speech, listeners are required to reproduce the contents as accurately as possible from the target language into the target language. This includes quite a high cognitive load; however, high level learners and interpreting students must overcome this barrier for further improvement in listening skills. Rost (2002) suggests that this method is based on the principle that comprehensible input should contribute to comprehensible output and the contents of reproduction must be understandable for other persons for smoother interactive communication. Krashen (1985) introduced the idea of importance of comprehension. The rules can be acquired through processing a suitable quantity of comprehensible input. The importance of Dictogloss is that learners should recognize the parts they could not understand and they should relearn the parts. This can motivate learners to avoid the same mistakes in subsequent practice. This Dictogloss can therefore contribute to high level learners' development of logical and critical thinking.

It can not be identified at this moment whether Dictogloss or memory training is applicable and attainable for middle level learners due to its high cognitive workloads. It may be worthwhile to experiment with this method.

4. Conclusion

The results of comparing listening comprehension test scores before and after a series of shadowing exercise suggest that shadowing practice contributed to an improvement in listening skills

for university students. It seems that shadowing is effective for intermediate level learners (Tamai, 2005; Onaha, 2004; Shinozuka, 2006). However, it does not seem apply to higher level ones (Tamai, 2005). In addition, shadowing may not be suitable for advanced level second language learners and interpreting students, although shadowing has been introduced at many interpreting schools. This can be supported by Shinzaki's statement (2005) that the current students of interpreting schools are not at a sufficiently high level to be able to interpret particularly with reference to their listening skills. For this reason interpreting schools have been administering shadowing practice as a means of enhancing the skills of a second language so that students can interpret in a proper and accurate manner.

It is assumed that shadowing practice can be beneficial in enhancing the ability of chunking for middle level learners to improve listening skills. As a result, not only prosodic aspects, articulation speed on phonological loop in working memory (Tamai, 2005; Onaha, 2004) but also the ability of chunking by doing shadowing might be one of the factors to improve listening skills.

For high level learners and interpreters who have already acquired a certain amount of a sense of prosody, they need to switch their listening practice to Dictogloss or memory training which can enhance logical and critical thinking. Someya (2004) notes that shadowing practice is far removed from interpreting work because it just pays an attention to surface features of speech in terms of pronunciation rather than concentrating on the detailed contents of speech. Hence shadowing as a means of

improving interpreting skills does not seem to be associated with interpreting performance, since in order to interpret and render the contents of speech accurately, an interpreter is obliged to comprehend the contents thoroughly and then construct a sentence in the target language rather than focusing on superficial or verbatim features of speech.

Not only shadowing practice but also proper grammar and vocabulary knowledge are necessary for improving comprehensive English skills as noted by King (2000), who states that effective and comprehensive communication is not established without grammar knowledge.

Recent trends in English education seem to pay much more attention to communicative aspects of native speakers, by emphasizing fluency over accuracy in English, and downplaying grammar knowledge. However, grammatical structures in Japanese and English are totally different from each other. In order to acquire grammar knowledge, there is a certain limit to what can be done through communicative English learning.

Results by Hirai suggest that vocabulary knowledge is important to overall English skills so learners should acquire a larger vocabulary size. By putting an emphasis on learning grammar and vocabulary, learners can improve not only listening skills but also acquire other English skills and appropriate communication skills (King, 2000).

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