

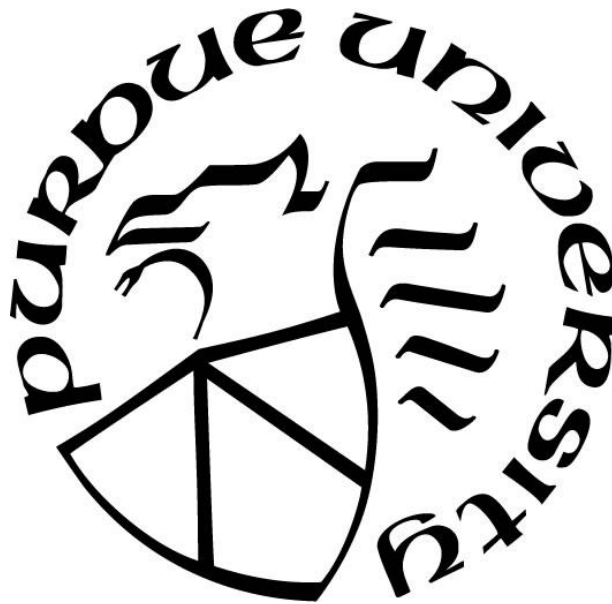
**EFFECTS OF AUTONOMOUS SHADOWING PRACTICE ON ORAL
FLUENCY DEVELOPMENT**

by
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I would like to dedicate my thesis work to my family and friends in Japan who have supported me throughout the process.

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ABSTRACT

This study empirically investigated the effect of semester-long shadowing practice with in-class pronunciation training on L2 Japanese learners' oral fluency and oral proficiency. The participants were 30 intermediate JFL university students at a U.S. university and participated in the experiment as a part of their coursework. This study deployed a pre-post research design and analyzed students' improvement of oral fluency and oral proficiency quantitatively.

Based on the previous finding that there is a lack of pronunciation teaching in current Japanese language education and the effectiveness of shadowing for various L2 skills including fluency, the present research conducted in-class pronunciation training along with shadowing practice as assignments. Then, the researcher examined if shadowing practice improves learners' fluency and oral proficiency. The experiment was conducted with a control group and experimental group (shadowing and in-class pronunciation training). A read aloud task and a storytelling task were employed as pretest and posttest.

The results found that there were no significant improvements in speed fluency or repair fluency in either the read aloud task or storytelling task. However, in the storytelling task, one breakdown fluency measure, silent pause ratio within AS-unit showed significant improvement. This indicates the learners acquired a more native-like pausing pattern by shadowing practice. The difference between the groups in oral proficiency was close to significant, and it suggests the two treatments may be effective for overall skills.

Along with the quantitative analysis of students' improvement, this study reports students' perceptions toward the shadowing practice and in-class pronunciation training. The results showed that more than 83% of the students found the two treatments effective, and approximately 83% of the students would like to continue the shadowing practice if they had another opportunity.

CHAPTER 1. INTRODUCTION

This thesis project investigated the effect of a training method called shadowing and in-class pronunciation training on learners' fluency and oral proficiency. This chapter will present the background and motivation for the present research.

Pronunciation in Language Education

In the field of second language (L2) instruction, the paradigm shift from the Audiolingual Method (ALM) to the Communicative Approach (CA) was seen around 1960s (Sasaki, 1994). With the paradigm shift, the position of pronunciation has changed. ALM was widely employed in the 1950s and 1960s, with the emphasis on acquiring structures and patterns in dialogues rather than understanding the meanings of words. When ALM was the mainstream method for language instruction, teaching pronunciation was one of the main features of ALM. However, with the rise of CA, which aims at developing the learner's competence to communicate in the target language with a focus on real-life situations, pronunciation has not been given much weight in classroom instruction (Elliot, 1997)

In Japanese language education, although there are demands from learners for pronunciation instruction, there is no consensus among instructors on the importance of pronunciation instruction, and teaching pronunciation is left to individual teachers (Okubo, 2008; Taniguchi, 1991; Toda, 2006). Taniguchi (1991) conducted a survey with Japanese language teachers and found that no special time was set aside for teaching pronunciation and not many curricula for pronunciation training were developed. The reason for not conducting pronunciation training was mainly because there was not enough time to allocate for pronunciation training. Okubo (2008) also found that many instructors were not familiar with how to teach pronunciation.

However, pronunciation is important to some extent in language learning. It is also important in Japanese; depending on where the pitch accent falls in a word, for example, the meaning may change.

Shadowing and Fluency

In the field of L2 acquisition, shadowing has been recognized as an effective practice method for developing various L2 skills (e.g., Mochizuki 2006; Onaha, 2004; Rongna and Hayashi, 2012; Sumiyoshi 2019; Tamai, 1992). It was originally developed for a training method for simultaneous translators. Shadowing refers to “an act or a task of listening in which the learner tracks the heard speech and repeats it as exactly as possible while listening attentively to the incoming information” (Tamai, 2002, p. 181). Studies on shadowing have been mainly conducted in the field of English education. Takizawa (1998) lists five advantages of shadowing: (1) acquisition of prosody, (2) improvement on listening skills, (3) improvement on speaking skills, (4) improvement on memory, and (5) deeper understanding of phonological rules of English. The simplicity of shadowing is another trait; learners can practice anytime and anywhere as long as they have access to audio materials.

In the settings of Japanese language teaching, shadowing has also been utilized, and a great deal of research has found shadowing is effective for improving various skills of Japanese, such as listening, reading, and speaking skills (e.g., Iwashita, 2008; Onaha, 2004; Sakoda and Matsumi, 2004; Tamai, 1992; Wang, 2018). For example, Sakoda and Matsumi (2004) investigated the effect of shadowing on listening and speaking in Japanese as second language (JSL) setting and found improvement in vocabulary use, fluency, and length of a sentence. Sakoda and Matsumi (2005) also found in another study that shadowing training improved not only grammar and reading comprehension but also vocabulary on the Japanese Language Proficiency Test (JPLT).

Shadowing has also been found to enhance learners' fluency (Iwashita; 2008; Kurata, 2007; Sakoda & Matsumi, 2004; Wang, 2018). In an L2 context, the term fluency usually refers to fluidity or ease of speech (Guillot, 1999; Kormos, 2006; Riggenbach, 2000; Schmidt, 1992; Segalowitz, 2010). In its broader sense, the term fluency is used as synonymous with overall oral proficiency while in a narrow sense, it refers to language that is produced smoothly in speech. In this narrow view, fluency is one of the three key elements of proficiency in most L2 studies, alongside accuracy (i.e., error-free language) and complexity (i.e., language spoken with multiple clauses) (Towell, 2012). This study focused on the latter fluency, as a key element of proficiency, and sought to understand its relationship with shadowing activity.

While much research has contributed significantly to understanding the effects of shadowing on various types of L2 skills, there have not been many studies on fluency. Although some studies examined the development of fluency, the measures are not consistent across the studies (Iwashita, 2008; Kurata, 2007; Sakoda & Matsumi, 2004; Wang, 2018).

Motivation for the Study

Seeing that despite its obvious importance, pronunciation training was not in common practice in the teaching of Japanese, Shibata (2021) designed a pronunciation training program centering on shadowing. Her goal was to develop learners' self-monitoring skill for their pronunciation. In the shadowing assignment, Shibata provided the opportunity for learners to listen to their own recording of shadowing and write a self-reflection report on their pronunciation aiming to develop an ability to self-monitor their pronunciation. Learners were also able to choose materials on their own for the shadowing practice. Overall feedback on the implementation of the program was positive, and learners commented that they started to notice when they make mistakes on pronunciation.

While Shibata's program was a well-designed pronunciation training program, and its perceived effectiveness by the students was high, there is no empirical evidence that the program improves students' skills. Seeing this as a research gap, the current study adopts Shibata's program of autonomous shadowing activity and investigates the effects of autonomous shadowing practice and in-class pronunciation training on developments of oral fluency and proficiency. In order to measure these developments, the current study will employ well-established objective measures such as speech rate, the mean length of run, to measure changes in fluency.

Research Questions

This study is designed to answer the following four research questions.

- RQ1. Does shadowing significantly improve learners' fluency? If so, what aspects of fluency does it improve?
- RQ2. If there is improvement, is there any difference in fluency between reading aloud and free speech tasks?
- RQ3. Does shadowing enhance learners' proficiency?
- RQ4. How do learners perceive the shadowing practice and in-class pronunciation training?

CHAPTER 2. LITERATURE REVIEW

Overview

In this chapter, first the position of pronunciation teaching in language education will be discussed. Then, the definition of shadowing and its mechanisms will be introduced. Next, previous studies that showed various effects of shadowing activity on language learning will be reviewed. Third, since this study focuses on the shadowing's effects on fluency, definitions of fluency and studies on L2 Japanese fluency development will be presented. Lastly, discussion on the tasks and fluency measures that were used in the present study will be given.

Pronunciation in Language Education

Audiolingual Method to Communicative Approach

In the field of second language (L2) instruction, the paradigm shift from the Audiolingual Method (ALM) to the Communicative Approach (CA) occurred around 1960s (Sasaki, 1994). This paradigm shift changed the position of pronunciation teaching. ALM was a mainstream in the 1950s and 1960s, and it is based on behaviorism, which claims that language learning should become automatic habit through drill and practice. Some characteristics of ALM include memorizing dialogues, practicing pattern drills, and prioritizing spoken forms of language over written ones. Since, its focus was heavily on speaking, teaching pronunciation was also one of the main features of ALM. However, with the rise of CA, which aims at developing the learner's communicative competence in the target language with a focus on real-life situations, pronunciation has not been given much attention in language instruction (Elliot, 1997)

The Intelligibility and Nativeness Principles

In addition to the rise of CA, there are two different approaches to pronunciation teaching, the Nativeness Principle and the Intelligibility Principle (Levis, 2005). The Nativeness Principle was dominant before 1960. It claims that a native speaker is the desired model and goal of pronunciation training for L2 learners. However, research shows that pronunciation is highly conditioned in childhood by the learner's first language. After the critical period (Lennenburg, 1967), though some learners have proven to be exceptions, it is difficult to achieve native-like pronunciation in a foreign language.

In the context of these issues surrounding the Nativeness Principle, Levis (2005) suggested the idea of Intelligibility Principle. Munro and Derwing (1999) found that “even heavily accented speech is sometimes perfectly intelligible and that prosodic errors appear to be a more potent force in the loss of intelligibility than phonetic errors” (p. 285) and defined intelligibility as “the extent to which a speaker's message is actually understood” (p.289). With this principle, privileging nativeness or near nativeness has been widely criticized in current L2 teaching, and nativeness has very little value as an ultimate goal of L2 learning (Agudo, 2017). Since the Intelligibility Principle advocates that communicative success is the goal, it is widely acknowledged, and the diversity of accents is accommodated.

Pronunciation Teaching in Japanese Education

Along with this trend of CA and the Ineligibility Principle, Japanese language education also pays little attention to pronunciation training. Taniguchi (1991) conducted a survey with Japanese language teachers in Japan and found that pronunciation teaching was not included in the curricula and left to individual teachers in most institutions. When pronunciation is taught, it is usually about sounds such as long vowels, double consonants, and voiced/devoiced sounds, and

not much about prosody like accent, intonation, rhythm, and pause is taught. Another survey study by Ogawara and Kouno (2002) also found similar responses eleven years after Taniguchi's study. Main reasons for not having pronunciation training were because "they do not have enough time to spend on pronunciation teaching," "lack of knowledge on Japanese pronunciation," and "lack of experience in teaching pronunciation" (Okubo, 2008; Taniguchi, 1991). There are some who think teaching pronunciation is not crucial as long as the meaning comes across (Toki, 2010).

Having accented pronunciation does not usually affect their grade, but pronunciation is the easiest element for native speakers to evaluate L2 learners, and poor pronunciation, even if grammatically correct, could be misunderstood (Toki, 1980), perceived as offensive, or rated as less competent by native speakers (Ensz, 1982; Nelson et al., 2016). Touma (1991) conducted a perception study where native speakers of Japanese rated L2 speech using a five-point scale in terms of 1) discomfortable level, 2) naturalness level, 3) comprehensibility, 4) acceptability, and 5) overall rating of the speech. As a result, the study found that native speakers rated harshly when phoneme confusion obscured the meaning of the word and caused misunderstanding.

Although the Intelligibility Principle has lowered the bar for desirable pronunciation, pronunciation training is still necessary, as it is unreasonable to think that one can reach that level without any instruction and training. Further research is needed to determine how much and what kind of training is necessary.

Shadowing

What is Shadowing?

Lambert (1992) defines shadowing as "a paced, auditory tracking task which involves the immediate vocalization of auditorily presented stimuli, that is, word-for-word repetition, in the same language, parrot-style, of a message presented through headphones" (p. 266). Shadowing

was originally used to train simultaneous interpreters. Since the learner is required to listen and speak at the same time, this simultaneous listening and speaking task has been suggested as an effective means of improving listening skills in L2 learning (Kadota, 2007). However, since the act of simultaneous listening and speaking require much more brain work than simply “parroting,” Tamai (1997), a pioneer in shadowing research in the English as a foreign language (EFL) context in Japan, re-defined shadowing as “an act or a task of listening in which the learner tracks the heard speech and repeats it as exactly as possible while listening attentively to the incoming information” (pp. 105–106). This new conceptualization of shadowing emphasized the importance of active attention to incoming sound in terms of linguistic processing in the human brain because without the active attention, the speech becomes only background noise. Therefore, shadowing is often considered as a cognitively high-load task.

Mechanisms of Shadowing

When trying to memorize something, people often keep repeating it in their minds silently or verbally. In cognitive term, this process of memorizing occurs by storing the information temporarily in the working memory (Mochizuki, 2006). The term “working memory” (WM) was proposed by Baddeley (1992) to refer to information processing of incoming visual and sound stimuli in the human brain. According to Baddeley, the WM consists of three components: the central executive; the visuospatial sketchpad; and the phonological loop. The central executive oversees the phonological loop and the visuospatial sketchpad and is the system that exchanges information with long-term memory. The visuospatial sketchpad is a system for manipulating and storing visual and spatial images. The phonological loop, on the other hand, is a system that stores phonetic information for language comprehension and inference, and it retains information by repeating inner voice, which is a voice repeating in your mind what the other person has said. In

the phonological loop, there is a sub-vocal rehearsal function that stores phonetic information by repeating it. The heard phonetic information will quickly disappear if nothing is done with it, but by repetition of inner voice, the memory is retained. Shadowing involves oral repetition of the newly heard audio information, not as inner voice. This oral repetition helps to store the audio information longer in the phonological loop. In other words, the sound is retained in the brain, making it easier to understand the meaning. This sub-vocalization occurs to process the linguistic information inside the brain such as when remembering a phone number, repeating the interlocutor's speech in mind, or reading a book. Therefore, shadowing is a form of oral rehearsal in which you repeat what you hear with a slight delay, consciously processing the new information (Mochizuki 2006; Sumiyoshi 2019).

Shadowing and Listening Skills

As for the relationship between shadowing and listening skills, there are many studies in the English as Foreign Language (EFL) context. In a study of 94 high school students studying English in Japan, Tamai (1992) examined the differences between shadowing and dictation. Once a week, he gave a 50-minute listening lesson for 13 weeks. One session included five parts: 1) listening, 2) parallel reading (reading while listening), 3) vocabulary check, 4) shadowing (for the experimental group) or dictation (for the control group), and 5) self-correction of errors. During the 50-minute lesson, the same process was repeated for different reading passages. In terms of listening comprehension, pre-post test results showed that shadowing was significantly more effective than dictation.

Onaha (2004) also studied the effect of shadowing on listening comprehension, dictation, and phonological memory. In the study, 62 Japanese university students studying English were recruited and practiced shadowing over the course of one semester. One teacher who is a native

speaker of Japanese and another who is a native speaker of English rated the students' shadowing recordings five times for reproducibility, stress, and intonation. The course met once a week. The participants had the shadowing training in class and were allowed to take their tapes home for additional practice. Dictation exercises were given as homework. They examined the correlation between shadowing/dictation activity and listening comprehension scores. The findings showed that post-test listening comprehension scores were strongly correlated to shadowing scores and moderately related to dictation. This study suggests that shadowing is more effective than dictation with regard to improving listening skills, but since Onaha did not include a control group, it is difficult to conclude the shadowing training was solely responsible for the positive impact on their listening comprehension.

In the context of Japanese as a second language (JSL), Sakoda and Matsumi (2004) investigated the effect of shadowing on listening and speaking in JSL. Four learners of Japanese living in Japan participated in shadowing training for the study. For nine months, fifteen-minute training sessions were held three times a week. The study collected four shadowing recordings and measured listening, speaking, and working memory with Simple Performance Oriented Test (SPOT), oral proficiency interview (OPI), and Reading Span Test (RST). The result showed that all participants scored higher than their pretest scores in all tests, and improvements in vocabulary use, fluency, and length of a sentence were found. Although this study shows improvements in all tests, it was not clear whether it was the result of the shadowing training for the following reasons: the study did not have a control group, and it did not control for their improvement gained from their daily lives.

Shadowing and Other Linguistic Abilities

Another study by Sakoda and Matsumi (2005) also found that shadowing training improved not only grammar and reading comprehension but also vocabulary in the Japanese Language Proficiency Test (JLPT). The participants in this study were 29 Japanese students from Korea, 14 of whom received shadowing training and 15 of whom received chorus reading training. The training was conducted every day for a month. Both the shadowing and chorus reading groups used the same reading text materials during the 15-minute training sessions. The participants took the following exams and tasks as pre- and post-tests to have their Japanese proficiency assessed: Simple Performance-Oriented Test (SPOT), JLPT, dictation, Digit Span Test (DGS), and Listening Span Test (LST). In SPOT, dictation, and DST, both shadowing and chorus reading groups had a significant gain respectively. In the case of JLPT, however, only the shadowing group showed a significant improvement. Because the JLPT assesses the examinees' vocabulary, grammar, and reading ability, Sakoda and Matsumi concluded that shadowing was an effective booster for language processing ability.

Iwashita (2008) investigated the effect of shadowing training on advanced JSL learners. Five graduate students whose first language (L1) was Chinese were recruited for this study. The participants practiced shadowing for 15 minutes five days a week and used the same material for the week. The repeated it for four weeks, and the shadowing material was changed weekly. Iwashita investigated what kind of learner changes could be seen in linguistic and cognitive areas and in their shadowing performance. In order to measure linguistic improvements, Iwashita employed tests such as a dictation test, a listening test, SPOT, and a grammar test. For the measurement for cognitive improvement, listening span test (LST), conceptual span test (CST), and digit span test (DST) were employed. LST asked learners to judge if the heard speech is correct or not. Then, they were asked to recall a specific word from a list in serial order. The maximum

number of items that a person can recall represents his or her capacity of working memory through listening (Imhof, 2017). CST measures semantic short-term memory capacity. In CST, learners hear three words that belong to the same semantic category. They repeat the session three times, and after hearing the ninth word, they were asked to categorize the nine words into three groups. DST measures phonetic short-term memory capacity. Participants hear random numbers, and they are asked to repeat them orally.

The results showed that the language evaluation indicated improvement in dictation and repetition test, while the cognitive evaluation showed changes in the Listening Span Test. In addition, changes in the subjects' shadowing performance were seen in the average utterance rate value and reproduction rate. Iwashita concludes that the shadowing resulted in (1) improved written and oral production abilities, as well as the expansion of working memory capacity through the auditory presentation; and (2) improved fluency and accuracy in the subjects' shadowing performance. Iwashita suggests that advanced learners of Japanese could benefit from continuous shadowing for a certain period of time to improve their linguistic skills. Although improvements were seen as mentioned above, only variables that resulted in significant improvements were dictation test and LST. The shadowing performance in terms of fluency had significant improvement in the first week, while accuracy of shadowing showed significant improvement in the first and fourth weeks. These findings support the effectiveness of shadowing, especially since this study was conducted in a non-instructional experimental setting with shadowing as the sole treatment. However, further studies with a control group will be ideal.

Wang (2018) looked into the effect of shadowing and repetition on pre-intermediate Japanese learners' speaking abilities, as well as their cognitive mechanisms involved. In addition to the shadowing/repetition task, a self-referenced utterance task where learners talk about their

culture or lives was included in the training to encourage the improvement of speaking ability. The training was conducted for 30 minutes for 15 days. In order to assess the effectiveness of the 3-week program, a pretest and posttest were conducted. The pretest measured their listening comprehension, and the posttest measured listening ability, speaking ability in terms of fluency, accuracy, and complexity, and conducted LST. Wang looked at how the change in speaking performance (fluency, accuracy, and complexity) differed depending on working memory capacity to investigate the cognitive mechanism. The findings were as follows: (a) for both shadowing and repeating, fluency and complexity of speaking increased from the post-test to the pre-test, (b) the speaking fluency gain was larger for learners with larger working memory capacity compared with those with smaller. When paired with a self-referenced utterance task, the results showed that both shadowing and repetition had an impact on speaking ability, and fluency is more dependent on working memory capacity than complexity and accuracy. Although this study did not find the effectiveness of shadowing itself, it suggests the possibility of shadowing and repetition as effective ways to improve speaking ability. However, in order to see the effectiveness of the shadowing and repetition, having a control group to compare the result is necessary.

Shadowing and Pronunciation

In addition to the effects of shadowing discussed above, pronunciation is often discussed as another area that shadowing affects positively. Ogiwara (2006) investigated how shadowing affects the pronunciation of Japanese elements such as accent, long vowels, double consonants, and voiced/voiceless consonants. In the study, eight university students, seven Chinese and one Iranian engaged in 20 shadowing training sessions, 10 recording sessions, and 10 instruction sessions. Every 90-minute class included 45-60 minutes of shadowing training. The subjects were provided with the following training: (1) silently read a script while listening to a model speech;

(2) shadow the script more than twice; (3) mark words they don't understand; (4) shadow the text more than twice; (5) go to the instructor's computer and record both their shadowing and chorus-reading performances while looking at the text; (6) listen to the recorded speech with the instructor and receive feedback. The instructor counted the number of accent errors on 47 target words in the first-day script and 42 target accentuations in the tenth-day script, then compared the results. Except for one participant, the number of errors detected in the first-day script decreased when compared to the 10th-day script. All of the subjects outperformed their first-day score. As a result, Ogiwara concluded that both shadowing and chorus reading training were effective. Furthermore, because most of the subjects improved their accent after the training, he hypothesized that shadowing could be useful for obtaining native-like natural rhythm. However, "natural rhythm" is not only defined by accents, but also includes many variables such as pause, speech rate, intonation, and so on. Moreover, since the instructor corrected their accent errors, the gain could have resulted from the correction. Thus, it is unclear whether or not the gain in accentuation scores is attributable to the shadowing activity itself. A control group is needed to see the effectiveness of shadowing.

Okubo et. al. (2013) proposed an effective method of shadowing practice by clarifying the relationship between accent acquisition and shadowing practice. The relationship between shadowing practice and accent acquisition was investigated in this study by conducting five in-class shadowing practice sessions over five weeks. The study was conducted for learners with different levels of Japanese language proficiency. Pre- and post- tests consisting of a read- aloud task were administered before and after the practice period. The findings of the study revealed significant improvements in each proficiency level. That is, even without explicitly teaching the accent of each word, 10 minutes of shadowing practice can help with accent acquisition. Since the results showed that the accent improved at all levels, indicating that it is possible to start shadowing

practice at the beginner level. They also mentioned that lecturing on the basics of Japanese pitch accent might have helped their improvements. However, this finding is not entirely conclusive because this study recruited learners with various L1 background and did not include a control group. Therefore, an L1- controlled study with a control group will be ideal to find out if this method of shadowing training is effective.

Rongna and Hayashi (2012) studied the effect of shadowing training on Chinese and Mongolian learners of Japanese over time. The goal of this study was to investigate (1) the effect of long-term shadowing training on pitch accent realization and (2) whether the difference in effectiveness is dependent on the learners' proficiency level and first language. This study included 15 Japanese as foreign language (JFL) students. They are separated into two groups based on their Japanese proficiency. For three sessions over a seven-week period, each group was directed to shadow a dialog 10 times without looking at the script. The results of this study led to a number of key conclusions. First, regardless of proficiency, shadowing training increased the learners' speech rate. Second, in order to gain accuracy in accentuation, it is necessary to participate in shadowing training regularly. Third, through shadowing, pitch accent pattern is corrected, but the effects vary as a function of the learners' L1 and proficiency and the pitch accent pattern. They found that Chinese students showed higher accuracy in recognizing pitch accents than Mongolians. Mongolian speakers had a tendency to pronounce unknown words with a middle-high pitch pattern, which was similar to their own language's pitch accent. Mongolian phonetic interference may have influenced the realization and accuracy of their pitch accent in Japanese. From this study, we can say that learners become able to compare their own pronunciation with the model pronunciation and correct their errors while shadowing.

Shadowing and Cognitive Mechanism

With an advanced class of Japanese learners as subjects, Kurata (2007) looked into the cognitive mechanism of shadowing in Japanese as a second language. The specific goal of this research is to look at the relationship between sentence structure (i.e., SOV and OSV) and learners' memory span (including working memory capacity and phonological memory span). Advanced level learners whose L1 is Chinese, Korean, Tagalog, and Dutch were recruited. The experiment used two shadowing conditions and one repeating condition. One shadowing condition was simultaneous shadowing in which learners repeat the heard speech as soon as they hear the audio input. The other one was delayed shadowing where they repeat the heard speech after they heard the second word. Subjects' performances were evaluated using three dependent variables: oral reproduction fluency, sentence recognition accuracy, and reaction time (only in shadowing conditions). The following were the key findings: (a) The higher-span group demonstrated more fluency than the lower-span group; (b) higher fluency was observed in OSV sentences under the repeating condition; (c) recognition accuracy rates were higher for the higher-span group under the delayed shadowing condition and for the lower-span group under the repeating condition. Kurata concludes that learners' memory span and the sentence structure play a major role in the reproduction tasks. However, this study did not consider the participants' L1 in discussion of the sentence structure. A Further study to see to what extent their L1 affects their performance in terms of the sentence structure is needed.

Learners' Perception of Shadowing

Since there has been relatively little research on the psychological aspects of shadowing practice implementation, Sumiyoshi and Svetanant (2017) investigated second language learners' psychological factors in relation to shadowing practice in a Japanese as a foreign language

environment, using a motivation framework. This study looked into the following topics: (1) perceived effectiveness of shadowing; (2) differences in perception based on shadowing performance skills; (3) factors that encourage learners to continue shadowing; and (4) perceived positive and negative characteristics of shadowing. A total of 36 university students enrolled in an advanced Japanese language course at an Australian university took part in the study. To analyze the results and findings from the perceptual survey, the study used a combination of quantitative and qualitative methods. The findings show that the majority of participants believe that shadowing is beneficial to both listening and speaking skills, and that feedback is useful. Individual differences were found in their preferred speed of shadowing model audio. They offered the following possible improvements in shadowing administration in class: (1) to establish a checking system that allows participants to review the degree of comprehension of the content. (2) to create two or three versions at different speeds to cater to the needs of participants of varying shadowing proficiency.

Shadowing and Fluency

As seen above, much research has been done on different benefits of shadowing, and fluency is one of them (Iwashita; 2008; Kurata, 2007; Sakoda & Matsumi, 2004; Wang, 2018). However, each study used different measures to measure fluency. For example, Iwashita (2008) adopted subjective rating using a five-point scale where two native Japanese speakers grade in terms of prosody, comprehensibility, and smoothness. Kurata (2007) adopted a demerit method. He gave participants five points initially and depending on the comprehensibility and errors, the graders deducted points. Therefore, the current study will employ well-established objective measures such as speech rate, the mean length of run, to measure changes in fluency. In the next section, the definition of fluency and its measurements are discussed.

Fluency

Definition of Fluency

In general, in an L2 context, the term fluency has several definitions and most of which refer to fluidity or ease of speech (Guillot, 1999; Kormos, 2006; Riggensbach, 2000; Schmidt, 1992; Segalowitz, 2010). In its broad sense, the term fluency has extended its meaning as synonymous with overall oral proficiency. In this sense, when people use the word fluency (e.g., “he speaks Japanese fluently”), they often mean the L2 speaker’s ability to use an L2 orally with ease. On the other hand, in its narrow sense, fluency refers to language that is produced smoothly as one combines words and sentences in speech. In this view, fluency is one of the three key elements of proficiency in most L2 studies, alongside accuracy (grammatical accuracy) and complexity (syntactic complexity) (Towell, 2012). Segalowitz (2010) further categorized this narrow sense of fluency into three subcategories: cognitive fluency, which refers to a speaker’s ability to plan and execute L2 speech smoothly and easily; perceived fluency, which refers to a native speaker’s subjective impression of a nonnative speaker’s ease of producing speech; and utterance fluency, also known as temporal fluency, which refers to the measurable features for the ease and smoothness of L2 speech, such as the speech rate, number of hesitations, and number and length of pauses. This study focused on utterance fluency and sought to understand its relationship with shadowing activity.

According to Tavakoli and Skehan (2005), utterance fluency has three aspects: speed fluency, which refers to the rate at which speech is delivered; breakdown fluency, which refers to interruptions in the ongoing flow of speech; and repair fluency, which refers to how frequently speakers make repairs, corrections, or false starts. Specific acoustic aspects of speech, such as speech rate and repetitions, are used to measure each of these aspects of L2 utterance fluency. Although there are many measures of L2 utterance fluency, here are some of the typical measures

that are frequently taken into account: for speed fluency, syllables per second (Hilton, 2009), pruned syllables per second (i.e., the number of syllables minus hesitations or other disfluencies) (Rossiter, 2009), the number of runs or turns (Ginther et al., 2010), and mean length of run in syllables (Ginther et al., 2010). For breakdown fluency, the number of pauses (Trenchs-Parera, 2009) and length of pauses (Rossiter, 2009) are examined. For repair fluency, the number of hesitations, false starts, and filled pauses (Borges de Almeida, 2009) are the most common measurements (Smemoe et.al., 2014).

Fluency Studies in L2 Japanese

There has been a lot of research on L2 learners' fluency. However, these studies focused on ESL and EFL learners, and there are not many studies of Japanese as a foreign language (JFL) learners. Iwashita (2006) compared the complexity features of EFL and JFL students' spoken language and found that EFL and JFL students took different developmental pathways. This finding suggests that JFL learners' fluency should be investigated separately from EFL to find characteristics specific to each group.

Some studies have looked at the differences between native speaker (NS) and non-native speaker (NNS) of Japanese in previous literature on L2 Japanese fluency. Ishizaki (2005) looked at differences in pausing patterns between NS of Japanese and beginner level L2 Japanese learners whose L1 were Chinese, English, French, or Korean. She claimed that Japanese and English are very different in terms of accent, rhythm, syntax, so these differences could affect speech patterns of their L2, Japanese. Ten native Japanese teachers and 36 L2 Japanese speakers completed read-aloud tasks, and a 60-second segment was extracted from each sample for data analysis. No preparation time was given before the tasks and no explicit instruction on pausing patterns were given to the learners. The mean length of run (i.e., the average length of speech between two

pauses), frequency, length and positioning of pauses were analyzed. The result showed significant differences between NS speech and NNS speech in the following features: 1) L2 learners' mean length of run was shorter than NS, 2) L2 speech has pauses at unusual locations compared to NS, such as within a clause, and 3) L2 speech lacks or has too short pauses at the end of sentences. Surprisingly, Ishizaki discovered no significant differences among the different L1 groups, suggesting that the characteristics of L2 speech are similar regardless of L1. The findings suggested that listeners' perceptions are influenced by the position and length of pause.

A number of studies have found that some utterance fluency variables (e.g., speech rate and mean length of run) may be strong predictors of L2 learners' speaking skill in the search for objective and quantifiable variables that are highly correlated with overall oral proficiency (e.g., Ginther et al., 2010; Hirotani et al., 2017). Miyamoto (2019) examined the possibility of developing a (semi-) automated scoring system that mitigates the resource intensive nature of speaking tests (i.e., time, cost, and manpower). Miyamoto examined spontaneous speech samples collected from 170 Japanese learners at a wide range of proficiency levels determined by the American Council on the Teaching of Foreign Languages' (ACTFL) Oral Proficiency Interview (OPI). Forty-eight complexity, Accuracy, Fluency (CAF) measures (with a focus on fluency variables) were calculated from the speech samples. First, Miyamoto analyzed the relationships between the CAF measures and learners' oral proficiency assessed by the ACTFL OPI. Then, she investigated a feasibility of using a composite measure to predict L2 oral proficiency. The findings showed that speech speed and complexity variables had strong correlation to the OPI levels, and moderately strong correlations were seen for the variables in the following categories: speech quantity, pause, pause location (i.e., silent pause ratio within AS-unit), dysfluency (i.e., repeat ratio), and accuracy. Moreover, multiple regression analyses demonstrated that a combination of

five CAF measures (i.e., effective articulation rate, silent pause ratio, repeat ratio, syntactic complexity, and error-free AS-unit ratio) can predict 72.3% of the variance of the OPI levels. The findings provide insight into the future development of a (semi-)automated scoring system for speaking tests. Since the predictor model can reduce time and cost for grading speaking tests, it can offer a great benefit to language classrooms and high-stake tests. Miyamoto points out that the small number of measures were used for representing complexity and accuracy in this study as her limitation for this study. However, since her main focus of her study was on fluency-related variables, the present study will adopt her predictor model and see to what extent shadowing activity will affect their proficiency.

Houston (2016) employed fluency variables to analyze speech samples to see how L2 Japanese fluency develops over the course of a university language course. Speech samples were collected from 30 novice level L2 Japanese students at the beginning and end of the school semester. Two monologue tasks were used to elicit speech samples: a self-introduction task and a typical school day task. They were given 120 seconds to deliver a short monologue on the given topic. Data was collected as part of the students' regular achievement tests in the course. Speech samples were evaluated using 27 fluency-related variables divided into five categories: speech quantity, speed, pause, AS-unit related measures, and repair fluency. The 27 variables are listed in Table 1. The result showed, speech quantity and speed related measures showed improvements out of the 27 measures. T-tests revealed that on the typical school day task, speech rate ($t = - 2.65$, $p < .05$) and mean length of run ($t = - 24.87$, $p < .05$) showed significant improvement. Houston also claims that although pause related measures did not show significant improvements, more location appropriate pauses (i.e., in between clauses) were observed at the second data collection compared to the first collection. In addition, Houston found that the two monologue tasks with

different topics had very different results, and it is not clear which task was better to access to the learners' true fluency.

Table 1. Objective Measures

Category	Measures	Explanation/Calculations
Speech Quantity	Total response time	The time in seconds from the beginning of an audio response to the end
	Total number of syllables	All syllables in the file
	Effective syllable count	(Total number of syllables) – (syllables in repeat, stutter, and self-correction intervals)
	Number of Sentences	
Speed	Speech rate	(Total number of syllables) / (Total response time) * 60
	Articulation rate	(Total number of syllables) / (Speech time + Filled pause time) * 60
	Mean length run	(Total number of syllables) / (Number of runs) where a run is a sounding interval
	AS-Unit speech rate	Effective syllable count / AS-Unit time * 60
Pause	Silent pause ratio	Silent pause time as a ratio of total response time
	Silent pause count	The number of all silent pauses longer than 250ms
	Silent pause time	The sum of time in seconds of the duration of all silent pauses
	Filled pause count	The number of all filled pauses
	Filled pause time	The sum of time in seconds of the duration of all filled pauses
	Silent pause count within AS	The number of silent pauses within AS-Unit intervals
	Silent pause time within AS	The sum of time in seconds of the duration of silent pauses falling within AS-Units
	Silent pause count between AS	The number of silent pauses between AS-Unit intervals
	Silent pause time between AS	The sum of time in seconds of the duration of silent pauses falling outside AS-Units

Table 1 continued

	Filled pause count within AS	The number of filled pauses within AS-Unit intervals
	Filled pause time within AS	The sum of time in seconds of the duration of filled pauses falling within AS-Units
	Filled pause count between AS	The number of filled pauses between AS-Unit intervals
	Filled pause time between AS	The sum of time in seconds of the duration of filled pauses falling outside AS-Units
AS-unit related measures	Number of AS-Units	
	Number of error-free AS-Units	
	AS-Unit time	The sum of time in seconds of the duration of all AS-Unit
Repair fluency	Repeat count	The number of repeats
	Stutter count	The number of stutters
	Self-correction count	The number of self-corrections tiers

Research Gaps and Motivation for the Present Study

While previous studies have contributed significantly to understanding the effects of shadowing on various types of L2 skills, there are not many studies that are focused on fluency. There are some studies that looked into the development of fluency, but the measures are not consistent across the studies (Iwashita, 2008; Kurata, 2007; Sakoda & Matsumi, 2004; Wang, 2018).

Moreover, the tasks that were used to collect speech samples differed from study to study. For example, Miyamoto (2019) used the speech samples that were approximately one-minute-long excerpts from 30-minute interview sessions. She mentions that since such a short speech sample length could yield a regression model that can explain 72.3% of the OPI rating variability, it is likely that a longer length of speech has more predictive potential. Some studies employed semi-structured interviews as a data source. For instance, Houston (2016) gave tasks for self-introduction and description of a typical school day, and Wang (2018) gave a self-referenced

utterance task where learners talk about their culture or lives. When investigating the effect of shadowing on fluency, most studies measured the fluency of shadowing itself or a read-aloud performance (Iwashita, 2008; Kurata, 2007; Sakoda & Matsumi, 2004). Therefore, this study will examine fluency for both read-aloud and semi-structured speech. For the semi-structured speech, in order to avoid the possibility that a speech topic might affect learners' performance, this study will employ a storytelling task where learners will look at a comic strip and tell a story.

In addition, there are some interesting reports of implementing shadowing activity in L2 instruction, but they did not collect data to see the effects. For example, Toda and Okubo (2011), along with in-class pronunciation training, had learners work on shadowing activity for their assignment. Once a week, learners completed a self-reflection sheet on which learners recorded their progress, the materials they shadowed, changes in their pronunciation, and things they realized in terms of pronunciation. Shibata (2021) implemented a similar autonomous shadowing assignment and provided the opportunity for learners to listen to their own recording of shadowing. For the shadowing assignment, learners write a self-reflection report on their pronunciation, and the instructor gave feedback aiming to develop the self-monitoring skill on their pronunciation.

Although overall feedback on these implementations of shadowing with self-reflection was positive, they did not collect statistical data that shows learners' specific improvements. Therefore, taking these research gaps into consideration, the current study incorporates Shibata's (2021) method of autonomous shadowing activity and investigates the effects of autonomous shadowing practice on oral fluency development. For the measurement of fluency development, this study employs Miyamoto's fluency-related variables which capture the three different aspects of fluency: speed, breakdown, and repair fluency. Using her fluency-related variables, this research will look into the effects of shadowing activity on intermediate-level learners. In addition, since in

its broad sense, fluency is often associated with overall oral proficiency, this research will look into the effects of shadowing on proficiency level using the proficiency measurements suggested by Miyamoto (2019).

CHAPTER 3. METHODOLOGY

Overview

This section describes the methodology used in the current study. Specifically, this section elaborates on the participants, the shadowing and pronunciation training, the data analysis, and statistical analyses. Participants were 30 third-year Japanese learners at a public university in the Midwestern United States, and they participated in a semester-long pre-post design experiment in the Fall 2021 semester. There were two sections of the course, and one was designated as a control group, and the other as an experimental group. In other words, subjects were not assigned randomly to the two groups. Because the present researcher was to be the one to give experimental treatment, her section had to be the experimental group despite the fact that it had a smaller number of subjects in it. The experimental group participated in shadowing training and in-class pronunciation training throughout the semester. The control group did not have either. The identical pre and post tests were conducted, and the results were compared. Figure 1 gives an overview of the design of this quasi-experimental study.

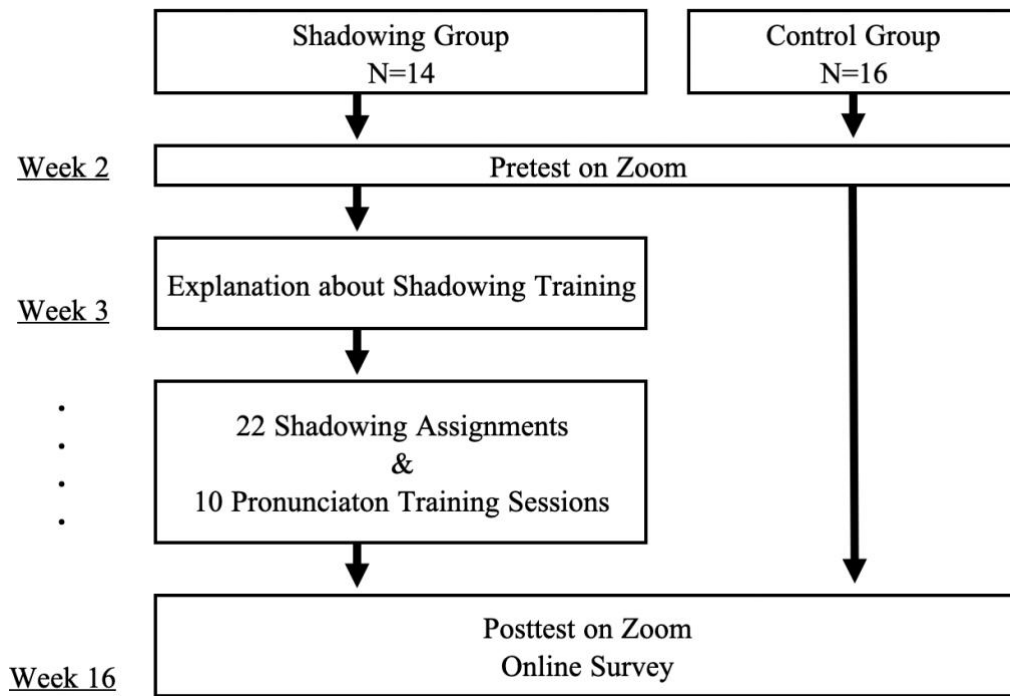


Figure 1. Overview of the present study

Japanese Course (JPNS 30100)

The experiment was conducted in a third year first-semester Japanese course at a public university in Indiana, which is a fifth-semester course at the current institution. The course had two sections that were taught by the researcher and the other instructor. The course covered the first three chapters of the course textbook *QUARTET: Intermediate Japanese Across the Four Language Skills I* (Sakamoto et al., 2019).

The class met in person three times a week for 50 minutes each session. Each chapter was covered in approximately 12 class sessions, with two types of instruction: teacher-led lectures aimed at teaching new grammar and deepening students' understanding of textbook readings, and student-led classes in which students discussed the readings and practiced conversation in small groups or pairs. Overall, the course was designed with a strong emphasis on communication skills.

There were several opportunities for students to practice speaking. For example, activities such as two individual interview tests with the instructor, two video-making projects, an animated voice-over group project, three individual oral presentations, and reading aloud homework were incorporated in the curriculum. Every other week, as an extra credit activity, "Japanese Corner" was offered, in which students had an hour of free Japanese conversation with the other students and the instructor.

Participants

The participants in the current study totaled 30 students (20 male and 10 female): 14 for the experimental group (9 male and 5 female) and 16 for the control group (11 male and 5 female). The age range was from 18 to 22 years old. They were all enrolled in the fifth-semester Japanese course, Japanese 301 at a U.S. university. Since there were 2 sections for the course, one section was designated as the experimental group, and the other as the control group. Their native languages were various: English, Chinese, Spanish, and Korean. There were five heritage speakers who have lived in Japan from three years to twelve years and who speak Japanese with their family. Four were in the experiment group and one was in the control group.

Experimental Group (Shadowing Group)

Fourteen learners participated in shadowing and pronunciation training in addition to regular class content: 9 male and 5 female. The subjects in this group practiced shadowing on Speak Everywhere, an online oral practice platform for foreign language teaching, twice a week and had a short pronunciation training session (10-15 min) in class once a week. They also reflected on their own shadowing performances once per week. In the reflection, they tried to

detect their own errors, such as pitch and double consonants errors. Table 2 shows the details of the participants' backgrounds.

Table 2. Backgrounds of participants (Experiment Group)

	Sex	Native Language	Major
1	Male	Korean	Supply Chain and Sales Engineering Technology
2	Male	English	Asian Studies and Japanese
3	Male	English	English and Japanese
4	Female	English	Biochemistry
5	Male	English	Information Technology
6	Female	English	Electrical Engineering
7	Male	English	Aerospace engineering
8	Male	Spanish	Mechanical engineering
9	Male	English	Mechanical engineering
10	Male	English	Applied Statistics and Data Science
11	Female	English (heritage)	Kinesiology
12	Female	English (heritage)	Kinesiology
13	Female	Chinese (heritage)	Marketing
14	Male	Korean (heritage)	Industrial Engineering

Control Group

Sixteen learners participated as a control group with no shadowing treatment: 11 male and 5 female. The subjects in the control group only received the regular JPNS30100 instruction. Table 3 shows the details of the participants' backgrounds.

Table 3. Backgrounds of participants (Control Group)

	Sex	Native Language	Major
1	Female	English (heritage)	Retail Management
2	Male	Chinese	Computer Science
3	Female	English	English and Asian Studies
4	Male	English	Materials Science and Engineering
5	Male	Chinese	Electrical Engineering
6	Female	English	Electrical Engineering
7	Male	English	Math and Computer Science
8	Female	English	Visual Design Engineering
9	Male	English	Aerospace Engineering

Table 3 continued

10	Male	English	Japanese and General Management
11	Male	English	Computer Science
12	Female	English and Korean	Medical Laboratory Sciences
13	Male	English	Computer Science
14	Male	English	Material Science Engineering
15	Male	English	chemical engineering
16	Male	Mandarin Chinese	Pharmaceutical science

Materials

Pre- and Post-test

The participants in both groups took a pretest and a posttest, which were identical. The test consisted of three oral tasks. They had two storytelling tasks, in which they made up a story by looking at four/five-frame comic strips, and one read-aloud task.

The comic strips for the storytelling task (see Appendix A) were from the I-JAS (International Corpus of Japanese as a Second Language), which contains cross-sectional research data from Japanese language learners with different native languages. The names of the characters were given, and the names of the objects were also provided along with their translations. For the pretest and posttest, the same material was used. For the reading aloud task, they read aloud one reading passage from chapter 9 of *NAKAMA 2: Japanese Communication, Culture, Context* (Makino et al., 2017). (See Appendix B). Students had been exposed to the material in the fourth-semester Japanese course, Japanese 202. In the passage, the kanji were glossed with furigana ruby so that the participants could pronounce them. As they learned the system of furigana ruby at the rudimentary stages of learning Japanese, all the participants were already familiar with how to read furigana at the time of the experiment.

Shadowing Training

The shadowing materials for the assignments were mainly collected from books on shadowing such as *Shadowing Let's Speak Japanese Beginner to Intermediate* (Saito et al., 2020), *Shadowing Let's Speak Japanese Intermediate to Advanced* (Saito et al., 2020), and *Japanese Pronunciation Practice through Shadowing* (Toda et al., 2012). Audio files were included in these books. In addition, there were some audio materials from radio shows (Learn Japanese online, 2021). The instructor uploaded the audio files to Speak Everywhere. The length of each shadowing passage was one to two minutes.

In-class Pronunciation Training

For the in-class pronunciation training, the website *Japanese Pronunciation Tutorial*, which was made by University of British Columbia was used to learn about the basics of Japanese pronunciation and prosody. The instructor introduced concepts of pronunciation such as accent patterns and had practice sessions using the website *Introduction to Japanese Pronunciation* (Takahashi et. al, 2021).

Post-experimental Perception Survey

At the end of the semester, a survey was administered to collect demographic information and elicit participants' overall reactions to the assignments. Multiple-choice, a five-point Likert scale, and text entry items were used. The survey contained 7 demographic items, and 16 reaction-related items. The survey is listed in appendix C. An online platform called Qualtrics was used to design and administer the survey anonymously.

Data Processing

This section describes how the data was processed to obtain the CAF (complexity, accuracy, and fluency) measures. To maximize audio quality, each sample was first normalized, and the noise was reduced. To precisely measure speech time, silent portions before and after a speech sample was removed. This was done with Audacity® version 3.1.2, a free audio editor. The speech samples were then annotated with Syllable Nuclei v2 (De Jong & Wempe, 2008) and Praat (Boesma & Weenink, 2021). Praat is a free computer program that converts sound files into a sound wave and a spectrogram, allowing researchers to evaluate audio data. It also allows researchers to add custom annotations to audio files for further analysis. Syllable Nuclei v2 is a free Praat software script that can detect syllables in running speech and annotate sounding and silent parts. The syllable counts and boundary locations were manually checked and corrected, if necessary, after the automated annotation completed. The researcher then manually provided additional annotations such as filled pause boundaries, AS-unit boundaries with and without grammatical errors, clause counts within AS-unit, sound boundaries with dysfluency factors (such as repetitions, stutters, and self-corrections), and sentence boundaries. The following section goes over the specific definitions of each annotation and coding criteria. Finally, all annotated data were saved in .TextGrid format and submitted to CAF Calculator (Fukada, et al. 2019) for CAF

The syllable markers were used to annotate the location and number of syllables produced for syllable count, as illustrated in Figure 2. Since Japanese is a moraic language, most Japanese alphabet symbols correlate to moras rather than syllables. Therefore, Japanese mora unit is referred to as a syllable in this study. The boundaries of categories 2, 3, 4, 7, and 8 were marked to obtain intervals. Unique symbols were used to annotate all coding categories except syllable count. Table 4 summarizes the meaning of each symbol.

Table 4. Coding Symbols

Coding Category	Annotation Symbol	Definition
2	sounding	Sounding interval
2	silent	Silent pause interval
3	fp	Filled pause interval
4, 5	E+ / E-	AS-unit with / without errors
6	numbers	Number of clauses in an AS-unit
7	RP	Repeating interval
7	SC	Self-correction interval
7	ST	Stuttering interval
8	S	Sentence interval

Term Definitions

Without explicit definitions of key terms, a consistent and reliable coding procedure is impossible to achieve. Table 5 summarizes essential concepts, together with explanations of how each term is defined in the context of the current study.

Table 5. Summary of the Key Terms

Term	Definitions
syllable	The Japanese <i>mora</i> unit is referred to as a <i>syllable</i> in this study. It is a smaller unit than a syllable (Tamaoka & Terao, 2004). Because Japanese is a moraic language, most Japanese alphabets correlate to moras rather than syllables. For the sake of comparison with prior studies, the term <i>syllable</i> is not converted to <i>morae</i> in this study.
silent pause	The term ‘silent pause’ is defined in this study as the silent portion of a speech that has no utterance. Because it is the most widely utilized detection criterion in previous studies, a silence of 0.25 seconds or longer is considered one silent pause in this study. (Ginther et al., 2010; Houston, 2016; Park, 2016; Préfontaine et al., 2016;).
filled pause	In this study, a ‘filled pause’ is defined as a portion of an utterance that contains voiced fillers such as the Japanese equivalents of hmm, er, or um. The following are some Japanese filler instances.: あー, ああ, えー, えっと, うーん, なんか, なんだろう, まあ. In addition to the instances given above, some utterances in which the speaker says ‘うん (=yeah)’ or ‘はい (=yes)’ to confirm what he or she has just said are also called fillers.
AS-unit	Foster et al. (2000) invented the term Analysis of Speech Unit (AS-unit), which is defined as “An AS-unit is a single speaker's utterance consisting of an independent clause, or sub-clausal unit, together with any subordinate clause(s) associated with either” (p.365). The definitions and guidelines for detecting AS-units are strictly followed in this study; nevertheless, some adjustments are made to account for the inherent differences between English and Japanese. When two or more sentences linked by the TE-form of verbs (roughly equivalent to ‘and’) have different subjects, the clauses are counted as two discrete AS-units rather than one (Sakuragi, 2011).
error	In this study, ‘error’ refers only to grammatical and evident vocabulary faults. Grammatical errors commonly occur in the areas of tense, conjugation, particles, conjunctions, and so on. The following is an example of a lexical error: E.g., 仕事が終わりましたの後で
clause	In this study, Hirotani’s definition for clause was used (2009). A clause, according to Hirotani (2009), is "an utterance with a predicate" (p. 422), and "an utterance including coordinate conjunctions such as te-, tari-, and shiforms ‘and’, is considered a clause because such expressions contain predicates" (p.422).
repetition	This study followed the definition of Foster et al. (2000), "a repetition is where the speaker repeats previously produced speech" (p. 368).
self-correction	As defined by Foster et al. (2000), this study followed the definition, "A self-correction occurs when the speaker identifies an error either during or immediately following production and stops and formulates the speech"(p.368). Only the corrected portion of the speech is coded in this study.
stutter	A stutter is a form of speech in which the speaker produces unintentional repetitions of sounds, especially the first sound of a word.

Table 5 continued

sentence	A complete string of words, usually having a subject and predicate and consisting of a main clause and sometimes one or more subordinate clauses. Normally, polite predicate suffixes (i.e., -desu and -masu) are used to indicate the conclusion of a sentence in Japanese sentences; however, in spontaneous speech, those ending indicators are occasionally discarded in favor of a falling tone on the concluding predicate. This type of falling tone is also taken into account in this study as a signal for the sentence's end.
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Complexity, Accuracy, and Fluency-Related variables

Once all of the speech samples have been coded, the data is submitted to the CAF Calculator. Although the CAF Calculator automatically computes 50 measures in its output, for this study, the researcher chose five variables based on previous research done by Miyamoto (2019). Miyamoto (2019) found that the following five CAF variables can best predict Japanese examinees' L2 oral proficiency levels: Effective Articulation rate, Silent Pause ratio, Repeat Ratio, Syntactic Complexity, and Error-Free AS-Unit Ratio. Assuming that these five variables reflect learners' proficiency level, the researcher chose to use these variables to see the effect of the shadowing activity on their proficiency/fluency. According to Miyamoto (2019), the relationship among the variables is explained by the following multiple regression equation:

The OPI levels = 0.73 + 0.01 (EFFECTIVE ARTICULATION RATE) - 0.04 (SILENT PAUSE RATIO) - 0.25 (REPEAT RATIO) + 0.36 (SYNTACTIC COMPLEXITY) + 0.01 (ERROR-FREE AS-UNIT RATIO).

These five factors account for approximately 72.3 % in OPI levels. Table 6 shows a summary of the 5 measures and their explanation and calculations. In addition to the 5 measures for calculations, the present study will examine with two breakdown fluency measures: silent pause ratio within AS-unit and silent pause ratio between AS-unit referring to Houston's study's outcome (2016).

Table 6. CAF Variables to Be Examined

Category	Measures	Explanation/Calculations
Speed	Effective articulation rate	$(\text{Total number of effective syllable}) / (\text{Speech time} - \text{DYSF time}) * 60$
Pause	Silent pause ratio	Silent pause time as a percentage of Total response time
Repair (dysfluency)	Repeat ratio	$(\text{Repeat time}) / (\text{Total Response Time}) * 60$
Complexity	Syntactic complexity	Clause count / Number of AS-Units
Accuracy	Error-free AS-unit ratio	$(\text{Number of error-free AS-Units}) / (\text{Number of error-free AS-Units} + \text{Number of AS-Units with errors}) * 100$
Pause	Silent pause ratio within AS-unit	$(\text{The sum of time in seconds of the duration of silent pauses falling within AS-Units}) / (\text{Total Response Time})$
Pause	Silent pause ratio within AS-unit	$(\text{The sum of time in seconds of the duration of silent pauses falling between AS-Units}) / (\text{Total Response Time})$

Procedure

Pretest

During the pretest, the participants were given the first comic strip for storytelling. They were given one minute to prepare for the recording. After one minute, each participant started recording. The storytelling task was repeated in the same manner with another comic strip. After the storytelling task, participants were given a reading passage for a read-aloud task. Then, they were given two minutes to read through the script to become familiar with the contexts and lines. After two minutes, each participant started recording. The whole task approximately took 20 minutes for each participant.

Training

In this study, between the pre-and post-test, there were 22 shadowing assignments and 10 pronunciation training sessions for the experimental group. The shadowing training was assigned as their homework and participants recorded their shadowing on Speak Everywhere every Sunday and Thursday. In order to develop self-monitoring skills for their pronunciation, for Sunday's shadowing, they reflected on their own shadowing by comparing their recording and the model.

For the shadowing process, learners were instructed to (1) check the meaning of the passage, (2) read the script while listening to the audio, (3) mumble along the audio and script, (4) shadow the audio with the script, (5) shadow without the script and focus on prosody. For the first 4 weeks, the instructor assigned the shadowing materials for both Sunday and Thursday in order to have learners adapt to the shadowing assignment. After the fifth week, for Sunday's shadowing and reflection, participants were free to choose any shadowing materials such as a podcast, a clip of anime, or a part of a song. The instructor collected some audio materials such as anime clips, radio recordings, and audio files of the three shadowing books for the free recording assignment. They were advised to choose materials that last 40 to 80 seconds, the length they can manage to memorize, for the aim of shadowing without a script.

Learners submitted a Word document with the script of the shadowing, and they marked the parts they missed. For instance, if they missed double consonants, they marked it as 'DC,' and for pitch errors, they marked 'P' on the script. In addition to that, they wrote a narrative comment on what went well and which pronunciation elements they needed to improve on, and how they would improve those elements for the next shadowing. The instructor gave feedback on the word file pointing out issues that they could not detect themselves and gave audio feedback on Speak Everywhere. The participants also set their goals for the shadowing activity and planned how to

achieve them. They shared their ideas on a Google spreadsheet, and they reflected on their progress throughout the semester.

The pronunciation training was held in class once a week for about 15 minutes. First, learners were introduced to basics of Japanese pronunciation and prosody, Then, they had practice sessions where they practiced pronunciation, detected pronunciation errors by listening to a model speech and a speech with pronunciation errors. These sessions were designed to help the learners become able to monitor their own speech.

Posttest & Perception Survey

The posttest was identical to the pretest and conducted in Week 16. After the posttest, the participants were to complete the survey.

Data Analysis

This study employed the Pre-Post Design, which is to examine the same participants at two or more levels repeatedly for various fluency and oral proficiency factors. To address the research questions, first the gain scores between pretest and posttest were calculated, and the independent Sample *t*-test was used to see if there was a significant difference in gain scores between the experiment group and the control group. For statistical analysis IBM SPSS Statistics version 28 was used.

CHAPTER 4. RESULTS AND DISCUSSION

This chapter presents and discusses the results of the present study in the following order:

1) improvement in oral fluency, 2) task difference in improvement of oral fluency, and 3) improvement in oral proficiency, and 4) perceptions of students of the shadowing practice and in-person pronunciation training.

Improvement in Learners' fluency

This section will attempt to answer the following research question.

Research Question 1: Does shadowing improve learners' fluency? If so, what aspects of fluency does it improve?

Analysis of Gains on Fluency Measures

Miyamoto (2019) found a combination of the following five CAF variables can best predict examinees' L2 oral proficiency levels: effective articulation rate for speed fluency, silent pause ratio for breakdown fluency, repeat ratio for repair fluency, syntactic complexity for complexity, and error-free AS-unit ratio for accuracy. This study examined the three fluency variables to detect significant improvement. In addition, Houston (2016) found an increase in silent pause time between AS-units and a decrease in silent pause within AS-units after one semester, indicating a characteristic of more native-like speech. Therefore, in addition to the three variables, silent pause time between AS-unit and within AS-unit are to be analyzed.

Read Aloud

Table 7 presents descriptive statistics of pretest and posttest scores, and gain scores between pretest and posttest in the read-aloud task. One record was removed from the experimental group because of missing data.

Table 7. Read Aloud Group Statistics

	Group	N	Pretest Mean (SD)	Posttest Mean (SD)	Gain Mean (SD)
Repeat Ratio	Control	16	2.40 (3.11)	0.60 (.79)	-1.81 (3.23)
	Experiment	13	1.90 (2.40)	0.99 (1.09)	-.091 (2.84)
Silent Pause Ratio	Control	16	26.84 (8.31)	24.69 (8.40)	-2.15 (4.72)
	Experiment	13	26.07 (12.08)	24.76 (9.32)	-1.30 (7.94)
Effective Articulation Rate	Control	16	294.17 (50.29)	319.99 (54.29)	25.87 (19.40)
	Experiment	13	351.11 (76.45)	375.87 (67.02)	24.76 (24.21)
Silent Pause Ratio Within-AS	Control	16	0.21 (0.09)	0.19 (0.09)	-0.03 (0.05)
	Experiment	13	0.20 (0.13)	0.19 (0.11)	-0.01 (0.08)
Silent Pause Ratio Between-AS	Control	16	0.05 (0.01)	0.05 (0.02)	-0.00 (0.01)
	Experiment	13	0.06 (0.02)	0.06 (0.03)	-0.00 (0.01)

The results of the Levene's Test indicated that equal variances can be assumed, fulfilling the requirement of the *t*-test.

Table 8. Levene's Test for Equality of Variances

	F	<i>p</i>
Repeat Ratio	0.21	.65
Silent Pause Ratio	2.84	.10
Effective Articulation Rate	2.25	.15
Silent Pause Ratio within-AS	1.58	.22
Silent Pause Ratio between-AS	0.30	.60

The Independent Samples *t*-test was performed comparing the gains on each measure between the two groups. The result showed there was no significant difference, as seen in Table 9.

Table 9. Results of Independent *t*-test (Read Aloud)

				Mean	Std. Error	95% Confidence Interval of the Difference	
	<i>t</i>	<i>df</i>	<i>p</i>	Difference	Difference	Lower	Upper
Repeat Ratio	-0.78	27	.441	-0.90	1.14	-3.24	1.45
Silent Pause Ratio	-0.36	27	.724	-0.85	2.37	-5.71	4.02
Effective Articulation Rate	0.14	27	.892	1.11	8.09	-15.49	17.71
Silent Pause Ratio within AS-unit	-0.60	27	.557	-0.01	0.02	-0.06	0.04
Silent Pause Ratio between AS-unit	1.18	27	.248	0.01	0.004	-0.00	0.02

Storytelling

The same procedure was followed for storytelling. Table 10 presents descriptive statistics of the scores for pretest and posttest, and gain scores between pretest and posttest. One record was removed from the control group because of missing data.

Table 10. Storytelling Group Statistics

	Group	N	Pretest Mean (SD)	Posttest Mean (SD)	Gain Mean (SD)
Repeat Ratio	Control	15	0.33 (0.53)	0.31 (.59)	-0.02 (0.75)
	Experiment	14	0.45 (0.82)	0.18 (0.41)	-0.27 (0.63)
Silent Pause Ratio	Control	15	42.26 (7.82)	35.80 (8.08)	-6.46 (5.87)
	Experiment	14	46.38 (12.51)	37.32 (11.26)	-9.06 (6.99)
Effective Articulation Rate	Control	15	304.70 (57.09)	324.20 (50.71)	19.50 (43.86)
	Experiment	14	345.46 (101.66)	374.03 (72.17)	28.57 (50.84)
Silent Pause Ratio within AS-unit	Control	15	0.29 (0.07)	0.26 (0.09)	-0.03 (0.06)
	Experiment	14	0.31 (0.10)	0.13 (0.04)	-0.08 (0.06)
Silent Pause Ratio between-AS-unit	Control	15	0.26 (0.09)	0.10 (0.04)	-0.04 (0.05)
	Experiment	14	0.15 (0.05)	0.14 (0.05)	-0.01 (0.04)

Table 11 shows the results of the Levene's Test indicated that equal variances can be assumed, fulfilling the requirement of the *t*-test.

Table 11. Levene's Test for Equality of Variances (Storytelling)

	F	<i>p</i>
Repeat Ratio	0.01	.92
Silent Pause Ratio	0.39	.54
Effective Articulation Rate	0.01	.92
Silent Pause Ratio within-AS	0.77	.39
Silent Pause Ratio between-AS	0.01	.94

The Independent Samples *t*-test was performed comparing the gains between pretest and posttest. The result showed there was a significant difference for Silent Pause Ratio within AS-unit as seen in Table 12.

Table 12. Results of Independent *t*-test (Storytelling)

				Mean	Std. Error	95% Confidence Interval of the Difference	
	<i>t</i>	<i>df</i>	<i>p</i>	Difference	Difference	Lower	Upper
Repeat Ratio	0.99	27	.332	0.25	0.26	-0.27	0.78
Silent Pause Ratio	1.09	27	.286	2.60	2.39	-2.31	7.51
Effective Articulation Rate	-0.52	27	.610	-9.07	17.60	-45.17	27.03
Silent Pause Ratio within-AS	2.41	27	.023	0.05	0.02	0.01	0.10
Silent Pause Ratio between-AS	-1.66	27	.054	-0.03	0.02	-0.06	0.01

Figure 3 and Figure 4 visualize the decrease of silent pause ratio between the pretest and posttest. The improvement seen in the experiment group was greater than that of control group.

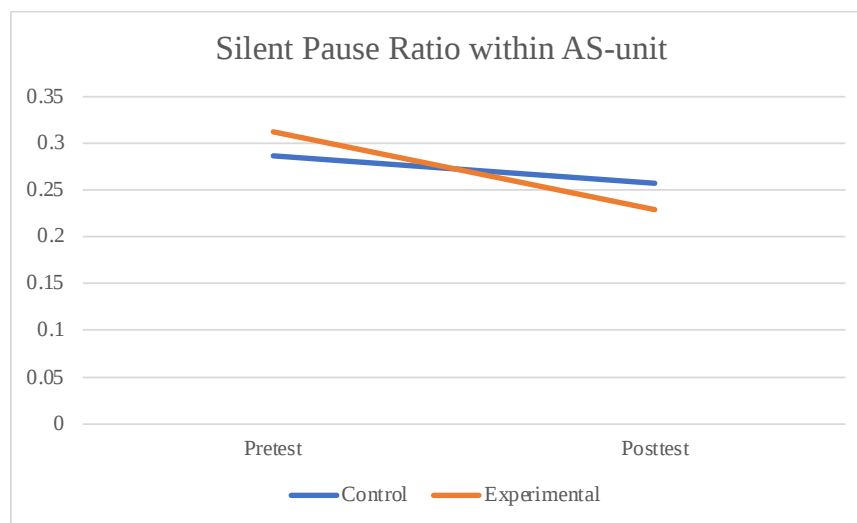


Figure 3. Silent Pause Ratio within AS-unit

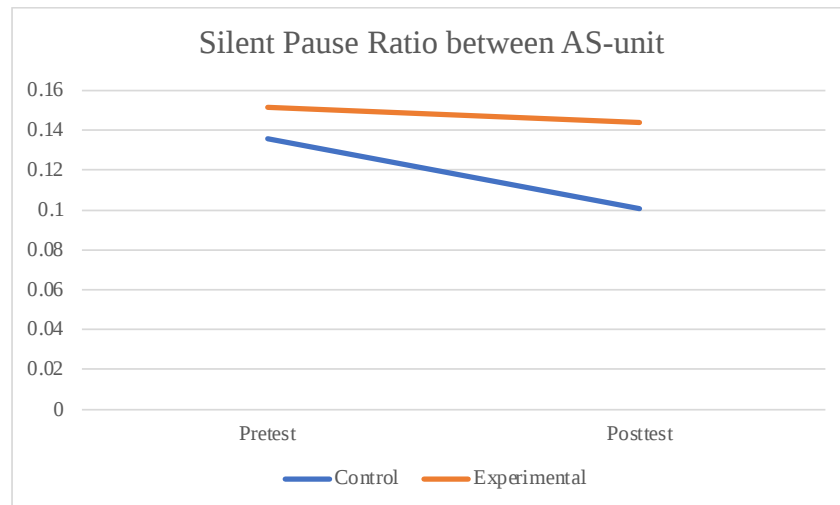


Figure 4 Silent Pause Ratio between AS-unit

The Mixed-Design ANOVA showed the decrease of silent pause time within AS-unit of the experiment group was significantly greater than that of the control group ($F(1, 27) = 5.79$, $p = .023$). The result for the silent pause time between AS-unit was not significant. ($F(1, 27) = 2.75$, $p = .109$). This result is in line with Houston's finding and suggests that learners acquired a more native-like pausing pattern by shadowing practice.

Improvements in Different Tasks

This section will attempt to answer the following research question.

Research Question 2: If there is an improvement, is there any difference in fluency between reading aloud and free speech tasks?

Yes. As seen in the section above, greater improvements were seen on silent pause time within AS-unit and silent pause time between AS-unit in the storytelling task than in the read aloud task. While learners have to come up with sentences on their own in the storytelling task, a prepared passage was given to them for the read aloud task. This difference in task requirements may have affected the result somehow.

Improvement in Oral Proficiency

This section will attempt to answer the following research question.

Research Question 3: Does shadowing improve learners' proficiency level?

In order to examine research question 3, the present study used the proficiency measure suggested by Miyamoto (2019) and compared the gain scores (posttest-pretest) between the two groups. The proficiency measurement uses the combination of the following five CAF variables: effective articulation rate, silent pause ratio, repeat ratio, syntactic complexity, and error-free AS-unit Ratio. This examination was only done for the storytelling task since syntactic complexity and error-free-AS-unit Ratio were not available for the read aloud tasks. Table 13 shows the group statistics for the scores of the pretest and posttest, and the gains cores seen between the pretest and posttest.

Table 13. OPI Group Statistics

			Pretest Mean (SD)	Posttest Mean (SD)	Gain Mean (SD)
Group		N			
OPI	Control	15	3.00 (0.84)	3.49 (0.86)	0.50 (0.06)
	Experiment	14	3.35 (1.55)	4.24 (1.47)	0.89 (0.48)

Table 14 shows the results of the Levene's Test indicated that equal variances can be assumed, fulfilling the requirement of the *t*-test.

Table 14. Levene's Test for Equality of Variances

	F	<i>p</i>
OPI	0.49	.49

As Table 15 shows, the result of Independent Samples *t*-test was close to significant. Since each fluency variable did not show significant difference, the gains on syntactic complexity and error-free-AS-unit Ratio were also examined.

Table 15. Independent Samples Test (OPI)

				Mean	Std. Error	95% Confidence Interval of the Difference	
				Difference	Difference	Lower	Upper
OPI	<i>t</i>	<i>df</i>	<i>p</i>	-0.39	0.20	-0.80	0.02
	-1.94	27	.063				

Additionally, Figure 5 demonstrated there were no outliers in each group.

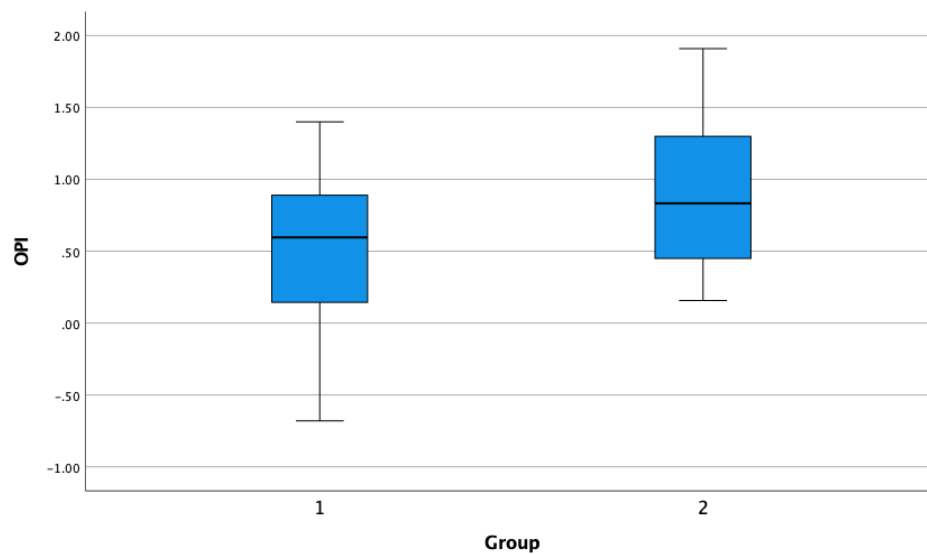


Figure 5 Box Plots of the OPI Gain Scores

Table 16 shows the result of group statistics for the error free AS-unit ratio and syntactic complexity scores.

Table 16. Group Statistics of Accuracy and Complexity

	Group	N	Pretest Mean (SD)	Posttest Mean (SD)	Gain Mean (SD)
Error Free AS-unit Ratio	Control	15	48.24 (26.06)	44.80 (33.57)	-3.45 (25.65)
	Experiment	14	56.42 (28.61)	63.89 (31.11)	7.46 (22.80)
Syntactic Complexity	Control	15	1.42 (0.29)	1.61 (0.38)	0.19 (0.33)
	Experiment	14	1.59 (0.39)	1.86 (0.59)	0.27 (0.42)

Table 17 shows the results of the Levene's Test indicated that equal variances can be assumed, fulfilling the requirement of the *t*-test.

Table 17. Levene's Test for Equality of Variances (Accuracy and Complexity)

	F	<i>p</i>
Error Free AS-unit Ratio	0.44	.52
Syntactic Complexity	0.14	.71

Table 18 shows the result of the independent Sample *t*-test.

Table 18. Independent Samples Test (Accuracy and Complexity)

	<i>t</i>	<i>df</i>	<i>p</i>	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
Error Free AS-unit Ratio	-1.21	27	.238	-10.91	9.04	Lower	Upper
Syntactic Complexity	-0.53	27	.600	-0.07	0.14	-0.36	0.21

As seen above, no significant difference was found there either in error free AS-unit ratio or syntactic complexity scores. Therefore, it must be the case that non-significant gains contributed

by each variable cumulatively amounted to an almost significant gain. This provides support for Miyamoto's selection of the five variables and multiple regression formula.

Post-experiment Perception Survey

In this section, the results of the post-experiment perception survey will be reported. The data contained 12 students' responses. Two students did not participate in the survey/ Except for demographic items, the main portion of the survey deployed a 5-point Linkert scale (strongly agree, somewhat agree, neither agree nor disagree, somewhat disagree, strongly disagree). For the reports below, "strongly agree" and "somewhat agree" are combined and labeled "positive," "neither agree nor disagree" is labeled "neutral," and "somewhat disagree" and "strongly disagree" are combined and labeled "negative."

Overall Reactions to the Shadowing Exercise and the In-class Pronunciation Training

Table 19 presents the participants' overall reactions to the shadowing practice.

Table 19. Overall reactions to the shadowing exercises and the in-class pronunciation training

Question	Positive Percentage (number)	Neutral Percentage (number)	Negative Percentage (number)
Q1: The shadowing exercise was effective in improving listening skills.	83.33% (10)	16.67% (2)	0.00% (0)
Q2: The shadowing exercise was effective in improving pronunciation.	83.33% (10)	8.33% (1)	8.33% (1)
Q3: The shadowing exercise was effective in improving speaking skills.	91.67% (11)	0.00% (0)	8.33% (1)
Q14: Overall, I am satisfied with the shadowing exercise and the in-class pronunciation training activities.	91.67% (11)	8.33% (1)	0.00% (0)
Q15: I would like to continue to practice shadowing if I have another opportunity.	83.33% (9)	16.67% (2)	0.00% (0)

Overall, the survey found that the students had positive experiences. As for their perception about their improvement (Q1-Q3), speaking was perceived as the most affected skill by the shadowing exercise (91.67%), and pronunciation was the second (83.33%). 83.33% of the learners answered they would like to continue the shadowing practice if they had another opportunity (Q15). As for the one learner who answered negatively towards the shadowing exercise, it could have been a heritage learner. It is possible that for heritage speakers the shadowing materials may have been too easy.

Table 20 presents their overall reactions to the shadowing and reflection assignments.

Table 20. Overall reactions to the shadowing and reflection assignments

Question	Positive Percentage (number)	Neutral Percentage (number)	Negative Percentage (number)
Q5: The in-class pronunciation exercise activities and reflection assignments have helped me learn to detect my pronunciation mistakes.	75.00% (9)	8.33% (1)	16.67% (2)
Q7: The total number of the shadowing assignments was too many.	25.00% (3)	33.33% (4)	41.67% (5)
Q8: The feedback for the shadowing exercise was useful to find mistakes.	83.33% (10)	16.67% (2)	0.00% (0)

Overall, the survey found that the students were positive toward the effectiveness of the assignments and given feedback. However, as seen in Q5, some students answered negatively about their improvement of monitoring skills through the in-class activities and reflection assignments. As for Q7, the amount of shadowing assignments, 23.07% of students answered it was too many; the number of assignments is something to be considered in future courses. As for the feedback on the shadowing exercise(Q8), the responses were overall positive.

The students' Comments about their Improvements

To question 4, “For the three questions above (the shadowing exercise was effective in improving listening/pronunciation/speaking skills), please explain the reason for your rating,” the students made these comments.

- S1. Listening to native audio/conversations is always good practice, so I think it certainly helped improve my listening skills. I still struggle to recognize/say the correct pronunciations properly, but I think I improved from the beginning of the semester, so I think it helped at least a little bit. Sometimes I think the speed of the audio was a little fast sometimes, but I think I gained more confidence in my speaking.
- S2. By forcing myself to listen to the audio more closely, I have been able to listen to Japanese media without subtitles in either English or Japanese. Again, by listening repeatedly, I was forced to listen closely to intonation and consequently improving my understanding and ear for intonation.
- S3. I believe I was able to improve upon all 3 criteria. I definitely felt that shadowing practice had the most impact on pronunciation as I was trying to imitate my pronunciation to those in local Japanese.
- S1. The shadowing exercise was most beneficial in improving speaking and pronunciation skills. Doing the reflections afterwards and listening to mistakes let us to observe things we needed to improve on and having to do the shadowing multiple times to be able to follow the script helped with speed and being able to pronounce phrases.
- S6. Because the audio was very fast, it was at first challenging to hear some of it without the script. It helped with my pronunciation as it spoke clearly, and we had to repeat them right after. The ones in the beginning of the semester were more helpful for daily conversation as most of them were conversations and the ones at the end of semester helped with listening because it spoke very fast.
- S7. I felt like the exercises didn't necessarily help me just because I didn't feel as though they were challenging personally. I think it kind of helped with my speaking skills when it came to speaking quickly, but I wouldn't say it helped improve my pronunciation.

Many commented that listening native speakers talk in natural speed and having to shadow their speech helped their listening skill and speaking skill, and it also led their attention to pronunciation. Up to this point of their Japanese instruction, many of the learners were not really pushed to speak faster in class or told to pay attention to pronunciation. Therefore, this exercise called their attention to the realistic speech speed and pronunciation.

Issues with Shadowing Practice and In-class Pronunciation Training

The participants responded to Question 16 “Please tell us your opinion or comments regarding the shadowing exercise and the in-class pronunciation training,” by citing some issues. For example, the amount of shadowing exercises was the main issue raised by learners. For example, comments like “the activities were very useful to improve pronunciation and understand the mistakes we do, but the workload made it sometimes hard to follow and made me sometimes do it without much focus,” and “overall, I found the shadowing helpful, but there were far too many shadowing exercises along with the regular homework assignments this semester.” were collected in the survey. This feedback will be helpful in designing future shadowing projects. Other difficulties from the learners’ responses were as follows.

S4. I think the shadowing exercises were helpful, but I would like some more in-class training in the future so there is better feedback.

S5. I think that shadowing was helpful, but to be honest, I never really enjoyed it because it felt like I was trying to achieve a perfect run of the entire passage without too many mistakes. I think it might have been more helpful and more fun if instead of one passage, we just submitted our first recording, and did multiple passages. Not only would this remove the “try to get a perfect run” mentality, but also expose us to more new phrases and words that I think would be more beneficial to us as well.

These comments also give ideas for future projects. Since there were no opportunities to correct errors after receiving feedback, it would have been beneficial to provide such opportunities. The comment by the second student (S2) also gives the idea of quantity over quality and giving them more input through the shadowing exercise. This comment also reflects the difficulty of the shadowing materials. As the semester went by, the difficulty level of shadowing materials went up gradually, and the length also increased. Some learners might have struggled and felt they were pressured to submit their “perfect” recording. Therefore, providing a larger pool of appropriate materials for the learners to choose from and giving feedback in person will be things to consider for future projects.

The Students’ Comments about the Shadowing Practice and In-class Pronunciation Training

To question 13, “Please explain which activities were effective in helping you improve your self-monitoring ability (i.e., an ability to detect your own pronunciation errors),” learners made these comments.

- S1. The self-evaluations helped the most, and then listening to pitch patterns in class helped also. A lot of my mistakes were minor and usually easy to tell the meaning of from context but practicing in class and outside of class helped me to be more attentive while speaking during exercises.
- S2. I think the most effective was when I listened to my own recordings and realized that sometimes my tone or pitch was off. I would realize when I was speaking if I stumbled or said the wrong word, but sometimes, I’d be surprised that my tone was off as well.
- S3. I think the PE exercises were the most helpful in improving my self-monitoring. In those assignments, I could listen to the original and my audio multiple times to check for any differences and then practice those parts until I was satisfied. When we activities in class, I learned about what I am not so good at, but there wasn’t really any time to try to practice/fix our mistakes.

- S5. Listening to my recording was embarrassing as hell, but it allowed me to detect problems I have with my current pronunciation.
- S7. I think what helped me was listening to my shadowing because I was able to hear that Japanese followed by my Japanese and could tell if I had mispronounced something. However, the in-class exercises with the plateau-shape and $\wedge$ shape patterns really confused me. I don't think those helped me at all and just made me unsure of my pronunciation skills.

As for shadowing practice and the reflection assignments, many commented that listening to their own recording and information given in class on pronunciation were effective. These activities also made them more aware of their pronunciation. However, as mentioned in an earlier section as well, some comments (S3) suggest the need to provide opportunities to fix their mistakes after the instructor has given them feedback.

The comments below represent learners' feedback on in-class pronunciation exercise activities. Misspellings are corrected in parentheses.

- S5. Having in-class practice help me understand what, how, and/or why the word or phrase is pronounced in certain matter (manner) as teacher taught through every step.
- S8. The in-class pitch quizzes online with sensei (was effective).
- S9. The in-person pronunciation was helpful because when we did it in class, the teacher was her (there) for us to be able to critique our mistakes.
- S10. Some activities that were effective in my self-monitoring abilities would be identifying the intonation patterns as well as evaluating "fake" student recordings. These were useful as because they were in class, any questions on why they were wrong were available from Sakaue sensei who was also able to give us examples of what a proper intonation would sound like.
- S11. I found the "fake" student recordings to be the most helpful. While they were sometimes difficult, comparing the correct and "fake" was great for training my ear. The intonation pattern exercises were difficult for me to understand and made things

more confusing at times. Personally, I think I just need more personal practice with the exercises. Selecting the correct audio was most difficult because it was hard to discern what was correct without knowing the proper pronunciation. However, it was still useful once we reviewed the correct audio with the other incorrect audios.

S12. Learning about and choosing pitch patterns was helpful because I had not been introduced to that topic before this semester. I feel like this topic allowed me to start to better distinguish some words from others that sound similar.

One clear merit of in-class pronunciation training was that the instructor was present to let the students know what was correct and what was not with explanation (S5, 8, 9, and 10). Learners listed various activities as effective, but many found the pitch training effective, and also challenging (S8, 10, 11, and 12). Pitch accent is something difficult to acquire unless it is explicitly taught. (Ayukawa, 1999). Therefore, the introduction of pronunciation rules in an earlier stage of their learning and active feedback could help learners monitor their own pronunciation.

The Students' Overall Comments

To question 16, "Please tell us your opinion or comments regarding the shadowing exercise and the in-class pronunciation training," learners made these comments.

S1. I think the shadowing exercises were helpful, but I would like some more in-class training in the future so there is better feedback.

S3. Since I don't think we have done something like this in previous Japanese courses, it was very interesting to focus on improving skills that aren't just memorizing kanji, vocab, or grammar. It might be a little more difficult to get better at, but I enjoyed it for the most part.

S6. I think it was very helpful, now I'm able to identify pitch errors.

S11. I am glad I received the pronunciation and intonation training as I was not mindful of the concept prior to this class. By doing the exercises, I became more conscious of my

speaking skills and Japanese comprehension overall. I feel as though I have improved skills this semester despite missing exercises.

These comments, along with 91.67% (11 learners) positive response rate to Question 14 (Overall, I am satisfied with the shadowing exercise and the in-class pronunciation training activities.), show that overall, the students had positive experience with the shadowing exercise and the in-class pronunciation training. S3, S6, and S11 mention that through the training they became more mindful of their pronunciation and intonation. This type of feedback was seen throughout the survey, so it suggests the need to introduce pronunciation training earlier in the course of Japanese study. S1 mentions the need for more in-class training and feedback so that it leads to better understanding of his/her weaknesses.

Summary

This chapter presented the results of the quantitative analyses of students' improvement in fluency and proficiency, and the post-experimental perception survey. The students' improvement was analyzed quantitatively, and the results indicated that there were no significant improvements on speed fluency and repair fluency. However, improvement was found in breakdown fluency: silent pause within AS-unit for the storytelling task. It suggests that through the shadowing training and in-class training, the learners acquired appropriate placement and timing for pauses. Moreover, the difference between the groups in OPI score gains was close to significant suggesting the two treatments may be effective for overall skills. The results of the post-experimental survey revealed that many of the participants perceived the shadowing practice and the in-class pronunciation training to be effective. Their comments also suggested some improvements on the design of the

activities for future implementations in terms of the amount of practice, the speed of audio, and giving opportunity to practice after feedback.

CHAPTER 5. CONCLUSION

This chapter presents a summary of the results and discusses limitations of the present study and future directions.

Summary of the Results

The present study investigated the effectiveness of shadowing exercise and in-class pronunciation training in improving L2 Japanese learners' fluency and proficiency. There were no significant gains in speed fluency or repair fluency, according to the findings in either the read aloud task or storytelling task. However, in the storytelling task, one breakdown fluency measure showed significant improvement: silent pause time within AS-unit. The reason why significant improvement was only seen in the storytelling task may have to do with the different nature of the two tasks; while learners have to come up with sentences on their own in the storytelling task, a script was given to learners in the read-aloud task. The difference between the groups in OPI score gains was close to significant, and it suggests the two treatments may be effective for overall skills. The study also examined the participants' perceptions through an online post-experimental perception survey. The results indicated that more than 83% of the students found the shadowing practice and the in-class pronunciation training effective, and approximately 83% of the students would like to continue the shadowing practice if they had another opportunity.

Limitations of the Present Study

The present author is aware that the present study has at least four limitations.

First, the number of the participants was small. Each group contained just over 10 students so that the generalizability of the results is limited. The present researcher hopes to replicate the

study with a greater number of students not only at the Japanese 301 level but also in different-level courses in the future. In addition to the size issue, since there were group differences in scores at the stage of pretest, randomization across the groups would have been ideal.

Second, this study was not able to isolate the effect of the semester-long shadowing activity very clearly because the course was designed with a focus on the speaking skill, which should have influenced students' progress on oral fluency and proficiency. The present researcher was not able to control the course design because she was not the instructor in charge of the course.

Third, the participants' Japanese levels varied to a large extent including heritage speakers; native-like heritage speakers were counted as "learners" in this study. To the best of the present author's knowledge, there were one heritage speaker in the control group and four in the experimental group. This might have affected the collected data.

Fourth, the current study only used two tasks: a read aloud task and a storytelling task. Adding another task such as an interview or conversation may have provided additional useful data on their improvement because it places learners in a more spontaneous and "close-to-real" environment than the read aloud and storytelling tasks.

Pedagogical Implications

Although this study could not find conclusive empirical evidence for the effectiveness of the shadowing practice and the in-class pronunciation training for the learners' improvement of fluency and oral proficiency, most of the students (10 students out of 12) perceived them to be effective and answered they would like to continue the shadowing practice if they had another opportunity. Some commented that it was their first time being introduced to the pronunciation system, and the pronunciation training made them aware of the pronunciation rules. Learners also commented that the shadowing practice made them aware of natural speech speed. Since there is

so much focus on communication in classroom nowadays that teaching pronunciation may have not received the amount of attention it deserves. From the feedback from learners, learners feel pronunciation is an important skill to have, and it would be beneficial for learners to be introduced to the pronunciation rules at their earlier stage of learning. For learning pronunciation and natural language use and for getting used to natural speed, shadowing practice may be an excellent method to introduce to them.

Future Directions

The present study only looked at the effects of shadowing practice and in-class pronunciation training on oral fluency and oral proficiency. However, there are more aspects that could be analyzed. For example, the improvement of their pronunciation such as the pitch accent and long vowels could be taken into account for analysis. Thus, future research should also investigate different aspects such as pronunciation in analyzing the effect of the shadowing and in-class activity.

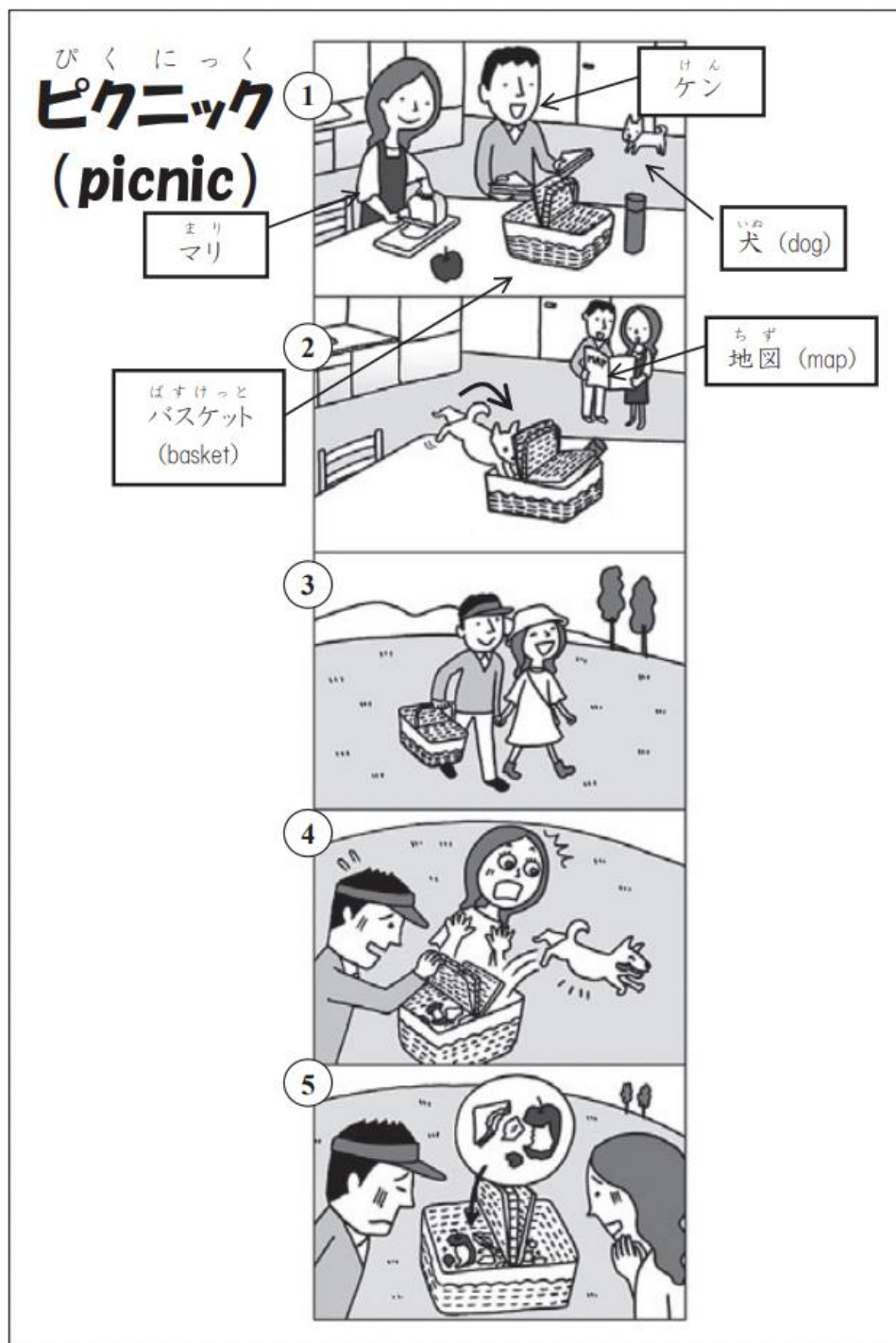
This study was conducted only with the third-year, intermediate level students. Therefore, the result for fluency, pronunciation, and OPI score may be different for beginning and advance level learners. Moreover, the learners' native language in the experimental group were various. A majority were English speakers, but there were Korean, Spanish, and Chinese speakers. Since each learner has their own difficulty with Japanese pronunciation depending on their L1, having language-specific instruction on pronunciation would be helpful for their acquisition of pronunciation.

In addition, as seen in the students' perception survey, there were several comments on the number of assignments and a need for in-person feedback on their pronunciation. As for the number of shadowing assignments, the students in the experimental group had the shadowing

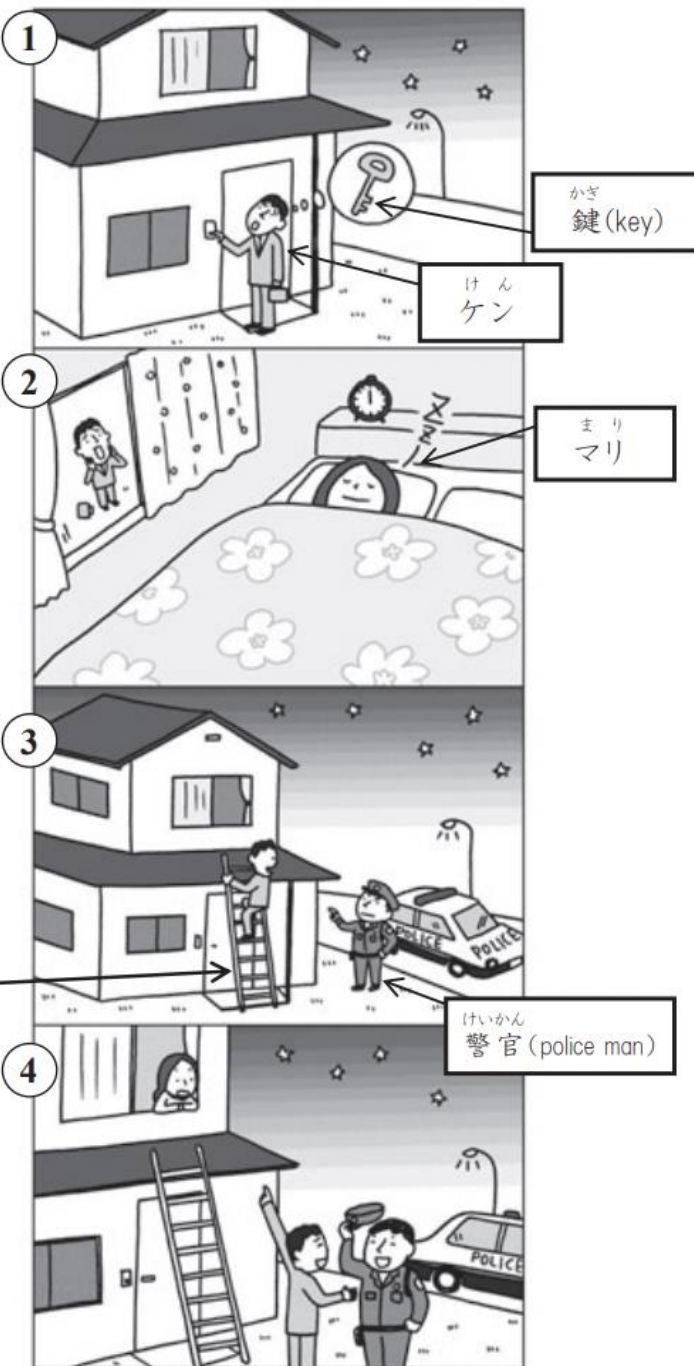
assignments on top of their regular course work, so, it is necessary to balance the amount of shadowing work with the other course assignments. As for the need for in-person feedback, it could be addressed by having regular individual meetings with the instructor outside the class.

APPENDIX A. STORY TELLING

1: 1～5の絵を見て、ストーリーを作ってください。時間のせいげん (Limit) はありません。まちがいも気にしないでください。



かぎ
鍵(Key)



APPENDIX B. READ ALOUD

日本の文化^{ぶんか}という^と、歌舞伎^{かぶき}や茶道^{さどう}、生け花^{いばな}、着物^{きもの}と思^{おも}う人も多^{おほ}いだろう。確^{たし}かに、こ

れらの伝統^{でんとう}的な文化^{ぶんか}は今^{いま}でも日本人^{にほんじん}の生活^{せいかつ}に深^{ふか}くかかわっている。例^{たと}えば、日本^{にほん}には

社会^{しゃかい}人^{じん}が趣味^{しゅみ}や教養^{きょうよう}や健康^{けんこう}のため^{ため}に色々^{いろいろ}なことを習^{なら}えるカルチャーセンター^{カルチャーセンター}と呼ば^よれ

る教室^{きょうしつ}があるが、どのカルチャーセンター^{カルチャーセンター}にもたいてい茶道^{さどう}教室^{きょうしつ}や生け花^{いばな}教室^{きょうしつ}があ

る。でも、日本^{ぶんか}の文化^{ぶんか}には伝統^{でんとう}的なもの^{もの}だけではなく、今^{いま}の日本^{しゃかい}の社会^{しゃかい}でよく見^みられる

大衆^{たいしゅう}文化^{ぶんか}もある。その中^{なか}でもよく知^しられているのはマンガである。マンガは、アメリ

カでは子供^{こども}が読^よむものというイメー^{つよ}ジが強^{つよ}かったが、日本^{日本}のアニメやマンガがアメリカ

でも見^みられるようになって少^{すこ}しいメー^かジが変^かわってきたよう^{いっぽう}だ。一方^{一方}、日本^{日本}では、マン

ガは昔^{むかし}から子供^{こども}も大人^{おとな}もみんなが楽^{たの}しめるものである。マンガは、1950年代^{せんきゅうひゃくごじゅうねんだい}

に子供^{こども}を中心^{ちゅうしん}としてよく読^よまれるようになったが、その後^ご、学生^{がくせい}、大人^{おとな}のためのマン

ガが描^{えが}かれるようになった。現在^{げんざい}ではファンタジー、コミックはもちろ^{もちろ}ん、スポーツ

もの、スパイ^{スパイ}もの、ラブストーリー^{ラブストーリー}、経済^{けいざい}、社会^{しゃかい}問題^{もんだい}をテーマ^{テーマ}にしたもの、料理^{りょうり}などの趣味^{しゅみ}

をテーマ^{テーマ}にしたものなど色々^{いろいろ}なものがある。同^{おな}じように、アニメも人^{にん}気^きが集^{あつ}まり、今^{いま}で

は世界^{せかい}中^{じゅう}にアニメクラブ^{クラブ}があるといわ^{いわ}れている。今^{いま}や日本^{にほん}は世界^{せかい}一^{いち}の「マンガ大^{たい}国^{こく}」な

のである。

APPENDIX C. POST-EXPERIMENTAL PERCEPTION SURVEYS

[] means types of answer formats. M=multiple-choice, L=Linkert-scale. And T=Text entries

7 Demographic-related Questions

1. What year in school are you? [M]
2. What is your age? [T]
3. What is your sex? [M]
4. What is your first language? [T]
5. What is your major? [T]
6. Have you ever lived in Japan? If so, how long have you lived in Japan? [M+T]
7. Have you ever studied abroad in Japan? If so, how long have you been in Japan? [M+T]

12 Reaction Related Questions

1. The shadowing exercise was effective in improving listening skills. [L]
2. The shadowing exercise was effective in improving pronunciation. [L]
3. The shadowing exercise was effective in improving speaking skills. [L]
4. For the three questions above, please explain the reason for your rating. [T]
5. The in-class pronunciation exercise activities and reflection assignments have helped me learn to detect my pronunciation/speaking mistakes. [L]
6. For the question above, please explain the reason for your rating [T]
7. The total number of the shadowing assignments was too many. [L]
8. The feedback for the shadowing exercise was useful to find mistakes. [L]
9. Which shadowing material did you find useful? [M]
Radio/anime clip/song/shadowing passages from the textbook
10. Which shadowing material did you find most engaging? [M]
Radio/anime/song/ shadowing passages from the textbook
11. How long did you usually spend on one shadowing assignment (not including the self-reflection)? [M]
0-10min/10-20min/20-30min/30-40min/more
12. How many times did you usually repeat one shadowing assignment before submitting it? [M]
1-3 times/4-6 times/7-9 times/ 10-12 times/ more
13. You conducted various kinds of PE activities. You identified your own errors using error codes and reflected on previous self-evaluations to find your weaknesses when detecting errors. During the in-class PE exercises, you practiced identifying the intonation patterns ("~shape, plateau-shape"), evaluated "fake" students' recordings, listened to recordings and chose correct pitch patterns, and so forth. Please explain which activities were effective in

helping you improve your self-monitoring ability (i.e., an ability to detect your own pronunciation errors). [T]

14. Overall, I am satisfied with the shadowing exercise and the in-class pronunciation training activities. [L]
15. I would like to continue to practice shadowing if I have another opportunity. [L]
16. Please tell us your opinion or comments regarding the shadowing exercise and the in-class pronunciation training. [T]

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