The Degree of Improvement of a Japanese Learner's Pronunciation of R-Colored Schwa (/ə./) Over a 7-Week Period of Conversation Practice and Focused Exercise

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Abstract

This paper describes a research study which focused on one specific aspect of English pronunciation for a Japanese learner of English. First it will touch on modern pronunciation teaching especially as it concerns, or has conflicted with, comprehensibility and intelligibility. Historically, emphasis has been put on pronouncing correct language sounds whereas presently there is considerable emphasis on comprehensibility and intelligibility. Then it will give a brief overview of spoken English and Japanese and the possible pronunciation pitfalls that a Japanese learner could encounter. The participant and the procedures used to collect data will be described and the results of the study will be given. The question posed by the study is will improvement of R-colored schwa (/ σ /) of a Japanese learner of English be achieved over a 7-week period of conversation practice and focused exercise. It was found that the accuracy of / σ / doubled from 18% to 36% between the initial and final diagnostic passages and that overall accurate pronunciation of / σ / in the free conversation sessions increased from 25% to 37%.

Keywords: pronunciation, second language (L2) learning, comprehensibility, intelligibility

Literature Review

Pronunciation, as important as it is in spoken communicative contexts, has been neglected in the second language (L2) classroom, often not even included in L2 learning environments, and has not been given nearly the same attention as other skills. This lack of pronunciation teaching "has resulted in limited knowledge about how to integrate appropriate pronunciation instruction into second language classrooms" (Derwing & Munro, 2005, p. 383). The neglect of pronunciation teaching is evident especially in Japan where historically, reading and writing instruction have received much more emphasis than spoken instruction. For the Japanese learner who has mainly studied written English in childhood and early adulthood, embarking on a more pronunciation-focused learning program can be a daunting challenge with the fears of a heavy foreign accent and low intelligibility as possible prohibitive factors.

In the past (before the 1960s), the achievement of native-like pronunciation was espoused as the goal of pronunciation teaching. Recently however, many language researchers maintain that improved intelligibility is the most important goal of pronunciation teaching. Instruction should be focused on features that are most helpful for comprehensibility and intelligibility and "should deemphasize features that are relatively unhelpful" (Levis, 2005, p. 371). Jenkins (2001) calls for "focusing pedagogic attention on those items which are essential in terms of intelligible pronunciation" (p. 123). Derwing and Munro (2005) say that "improved intelligibility is generally identified by pedagogical specialists as the most important outcome of pronunciation instruction" (p. 384). Achieving this goal, however, is complicated by the fact that there remains no clear and universal way of assessing increased intelligibility since there is not much agreement among researchers on what specific aspects of pronunciation are most important for intelligibility.

While it has been shown that accurate pronunciation teaching can improve L2 learners' spoken pronunciation, "it seems that a certain amount of English pronunciation cannot be learnt successfully in classrooms, no matter how much time and effort is expended on the task by teachers and their learners" (Jenkins, 2001, p. 133). Often times, TESOL teachers are inadequately prepared to assess their students' phonological backgrounds and thus are not able to determine proper pronunciation goals for their students. Inadequately prepared teachers can contribute negatively to their students' pronunciation goals by focusing too much on prominent characteristics of the accent regardless of the characteristics' influence on intelligibility. Plus, these same teachers are often using instructional materials that are elementary at best. Levis (1999), in reference to modern language teaching especially concerning the subject of intonation, states that "teaching materials ... continue to rely on outdated and inaccurate descriptions of intonational forms and functions" (p. 37). Wong (1985) says there is a "need for new instructional materials" (p. 232) adding that teachers "need textbooks that can demonstrate how stress and intonation operate in functional discourse" (p. 234). It is clear that until more accurate ways for assessing intelligibility can be established and higher quality instructional materials are made and consequently used in the classroom, L2 learners' pronunciation goals will not be achieved.

Concerning the role of foreign accent on intelligibility and comprehensibility, Munro and Derwing (1999) suggest that "accent itself does not necessarily act as a communicative barrier" (p. 285), as there has not been enough "empirical investigation of how the presence of a nonnative accent affects intelligibility" (p. 285). As comprehensibility and intelligibility have been accepted by many researchers as the most important goals of pronunciation instruction, "then the degree to which a particular speaker's speech is accented should be of minor concern" (Munro & Derwing, 1999, p. 305). Derwing and Munro (2005) say that what is needed is "more research to enhance our knowledge of the nature of foreign accents and their effects on communication" (p. 379). The fact that many L2 learners want to reduce their accent is evident when one takes into consideration the many studies that have shown that "native speaker listeners tend to downgrade nonnative speakers simply because of foreign accent" (Munro & Derwing, 1999, p. 287). Since accent can be tied to personal identity and social belonging, many times a foreign accent can serve as the focal point for "negative social evaluation and discrimination" (Derwing & Munro, 2005, p. 385). Improper use of suprasegmental features of speech, even by nonnative speakers who have daily contact with native speakers can cause nonnatives to be "misinterpreted as rude, abrupt, or disinterested" (Celce-Murcia, Brinton, & Goodwin, 1996, p. 210). It would seem that "an understanding of accent is needed, not only on the part of instructors and applied linguists, but also by the general public" (Derwing & Munro, 2005, p. 380).

Setting realistic goals that are both achievable and assessable should be the main objective for both L2 teachers and learners. Teachers should not lead learners to believe that "they will eventually achieve native pronunciation or to encourage them to expend time and energy working toward a goal that they are unlikely to achieve" (Derwing & Munro, 2005, p. 384). Teachers need to be better prepared to more adequately assess their students' pronunciation needs and desires. More communication and collaborative research between linguists and teachers are needed to make L2 teaching more responsive to communicative needs. Research such as this will be able "to offer to teachers and students in terms of helping them to set learning goals, identifying appropriate pedagogical priorities for the classroom, and determining the most effective approaches to teaching" (Derwing & Munro, 2005, p. 379). It is time to move beyond traditional teaching practices using methods other than mechanical drills and focus on the "musical aspects of pronunciation more than sounds" (Celce-Murcia et al., 1996, p. 290).

Although there have been very few studies done of pronunciation teaching (Saito, 2007), they show that explicit phonetic instruction is effective. Derwing and Munro (2005) explain that just as students learning certain grammar points benefit from recognizing their own pronunciations with those of native speakers, "so students learning L2 pronunciation benefit from being explicitly taught phonological form to help them notice the difference" (p. 388). Couper (2003), in an action research report which integrated a pronunciation sub-syllabus into an overall syllabus into a post-intermediate ESOL course, found support for the idea that "explicit systematic teaching of pronunciation can be effective at the post-intermediate level" (p. 66). The results showed that "clear gains were made, and that learners believed both that teachers should teach pronunciation" (p. 53). Bradlow, Pisoni, Akabane-Yamada, and Tohkura (1997) showed that when Japanese learners of English were taught explicitly the phonetic difference between /r/ and /l/, their pronunciation of those sounds greatly improved. As well, in a well-known study by Derwing, Munro, and Wiebe (1998), an experimental group was given explicit phonetic instruction while the control group was not. Each group was evaluated by both trained and untrained listeners before and after the experiment. The results clearly indicated that learners' pronunciation of the target language was improved by explicit phonetic instruction.

The pronunciation problems for the learner in this study have not shown themselves to be especially detrimental to overall intelligibility. However, there are certain pronunciation issues that figure prominently in the learner's speech and thus this study is an attempt to correct some of these aspects of the learner's spoken English. The goal for the learner in this study is to improve pronunciation in an area that has proved troublesome.

The main pronunciation issue for the learner in this study concerns the pronunciation of $/\sigma/$ sounds, especially when occurring in word-medial or word-final position. It should be noted that the sound /3/ will be considered the same as $/\sigma/$ for research purposes in this study. The learner is not aiming for native-like pronunciation as an outcome to this study (nor in further spoken English interaction) but is aware of the pronunciation problems in her speech and would like to take some steps to correct them and become a more accurate English speaker. The specific $/\sigma/$ sound, when it occurs in word-medial or word-final position, has thus been chosen as the primary focus for this study. The learner did not specify another sound that she wanted to improve, so $/\sigma/$ will be the only sound studied and focused on. The question then is: How much improvement in pronunciation of $/\sigma/$, if any, can a motivated Japanese learner make in a 7-week period of conversation practice and focused exercises? Recalling Derwing and Munro (2005), who state that pronunciation learners can benefit from explicitly taught phonological form and based on the previous studies cited in this paper which point to the notion that explicit pronunciation teaching is beneficial, it is hypothesized that small improvement for this particular learner will be observed.

Overview of Spoken Japanese and English

Japanese learners of English are presented with numerous pronunciation challenges, consisting of both segmental (consonants and vowels) and suprasegmental (stress, rhythm, and intonation) features. In this section, I will present a brief overview of the spoken Japanese language and how it contrasts with the spoken English language. I will also attempt to discuss the potential pronunciation problems facing Japanese learners of English.

Japanese learners of English are confronted with some major pronunciation challenges with

some very common English consonants. The consonants /s/ vs. / \int /, /b/ vs. /v/, and /l/ vs. /r/, all pose considerable potential pronunciation problems for Japanese learners. When /s/ precedes a high front vowel the native English listener may here a 'sh' sound from the Japanese speaker. Thus 'sip' and 'sea' are often pronounced 'ship' and 'she.' Though Japanese has no /v/ sound, it does have a /b/ sound and learners frequently substitute the two sounds, pronouncing 'very' instead of 'berry' and vice versa.

There is only one liquid sound in Japanese (/r/) which is pronounced somewhere between the English /l/ and /r/. Both of these consonants are notoriously difficult for Japanese learners to pronounce correctly. This may be because they are "formed with more movement of the speech organs than are most other consonant sounds" (Prator & Robinett, 1985, p. 113). Japanese learners often substitute /l/ and /r/sounds in context and often the native English listener hears the opposite of the Japanese speaker's intention. So when the Japanese speaker pronounces 'late,' the English listener might hear 'rate' and vice versa. In word-final position, /l/ and /r/ are often times deleted, therefore, an English listener might hear /ka/ when the Japanese speaker said 'car.'

Another feature of spoken English that can be problematic for Japanese learners has to do with syllable types. Japanese primarily has open syllable types whereby the syllable ends in a vowel. English has open syllables but also has many closed syllable types which frequently include consonants or consonant clusters in syllable final position. When a Japanese learner is confronted with a consonant cluster, which does not exist in Japanese, there is a tendency to break up the cluster by inserting a vowel. A word such as 'try' is pronounced as /torat/. This insertion of an extra vowel also takes place in words that have a word-final consonant making a word such as 'much' pronounced /mʌtʃi/.

Where English vowels are concerned, there exist numerous potential pronunciation problems for Japanese learners. English most likely has more vowel sounds than Japanese: Japanese has a fivevowel system whereas English has at least 15 vowel sounds (Avery & Ehrlich, 1992, pp. 33–34). In addition to the number of different vowels, Japanese does not have a distinction between tense and lax vowels, so for example the vowel 'a' is pronounced one way whereas in English it can be pronounced a number of different ways. Since English has a tense and lax distinction, the Japanese speaker's pronunciation of the vowel does not fit categorically in either distinction and thus is pronounced somewhere between the two. For example, the word 'hot,' as uttered by many Japanese speakers is not pronounced with either a distinctive '/o/' or '/a/' sound but somewhere in between the two.

The vowels /i/ vs. /1/, /e/ vs. / ϵ /, and /u/ vs. / σ / illustrate how misunderstandings can occur when a distinction is not made between two different vowels: 'Sleep' becomes 'slip,' 'late' becomes 'let,' and 'pool' becomes 'pull.' Three other vowels are particularly problematic, / α /, / Λ /, and /a/. These three vowels are all made relatively low in the mouth wherein a five-vowel system has only one low vowel (Avery & Ehrlich, 1992, p. 99). For Japanese learners, all of these vowels can be pronounced in a similar manner and often are substituted for each other: 'Hot' can sound like 'hat,' 'hut,' or 'hot.'

Suprasegmental features of English, such as stress, rhythm, and intonation are also substantially different from Japanese. Not only are these features "used to communicate meaning in the context of discourse" (Hahn, 2004, p. 202), they play a "significant role in conversational management" (Levis, 1999, p. 59). The importance of accurate suprasegmental pronunciation cannot be understated as Jenkins (2001) says, "it has been widely argued for some years now that segmental errors have a rather less serious effect on intelligibility than do suprasegmental errors" (p. 135). These aspects of speech have often been overlooked in pronunciation classrooms and "should be a part of any second language curriculum that purports to teach oral communicative competence, because they influence

communication in very real ways" (Wong, 1985, p. 228). Proper stress and intonation are vital for intelligible speech, in many ways more vital than correct pronunciation of individual sounds, as often times learners can pronounce English sounds correctly, but their speech doesn't sound like English. For students to develop fluent, natural English, proper pronunciation of these aspects is essential.

English is a stress-timed language, in which syllables occur at regular intervals. In a stress-timed language, the amount of time it takes to say a sentence depends not on the total number of syllables, but on the number of syllables that receive either major or minor stress. Japanese is a mora-timed language (Warner & Arai, 2001). In a mora-timed language, similarly to a syllable-timed language, the amount of time required to say a sentence depends on the total number of morae in the sentence, not on the number of stresses. To properly pronounce English-like sentence stress rhythm, it is necessary for the speaker to reduce vowels in the unstressed syllables. Japanese does not have a short, reduced vowel equivalent to the English schwa and thus Japanese learners of English may have difficulty comprehending this vowel reduction process and be unable to pronounce proper English rhythm. English L2 learners who speak a mora or syllable-timed language will often assign equal weight to each syllable in English sentences, regardless of whether the syllable is stressed or unstressed. This can result in a very "staccato-like rhythm" (Avery & Ehrlich, 1992, p. 74) that can both greatly and negatively affect the comprehensibility of the speakers' English.

The two languages also differ in terms of how accents and stressed elements in a sentence are marked. Japanese is a pitch accent language whereby the primary indicator of accent or stress is pitch. In English, stressed syllables are marked primarily by length and loudness. Since stress in the two languages is marked in significantly different ways, Japanese speakers may have difficulty both pronouncing and perceiving the characteristic stress patterns of English. English intonation patterns may also pose challenges for the Japanese learner as the pitch level of the learner's voice may not rise or fall far enough with final rising-falling or final rising intonation. As intonation carries a great deal of information and meaning in a sentence, this pitch discrepancy often results in misinterpretations by the listener about the intent of the learners' utterances. For example, if a learner's voice does not fall far enough in making a statement, an English listener may misinterpret the statement as a question or assume that the learner has not finished speaking. It is also possible that the native listener might misinterpret the nonnative speaker as rude, abrupt, or disinterested on the basis of the nonnative's voice not following the correct pitch.

It is clear that Japanese learners of English face considerable challenges in their desire for proper pronunciation. By no means insurmountable, accurately pronouncing the different consonant and vowel sounds of English will require new articulatory training as well as a high level of motivation. It must be accepted that some sounds may never be pronounced to the learner's satisfaction. Extensive exposure to native English speech as well as providing numerous contextual exercises will be crucial for the learner to more fully comprehend the suprasegmental aspects of stress, intonation, and rhythm and more accurately pronounce the segmental aspects of consonants and vowels.

Participant

The learner in this study is 36 years old and is a full-time homemaker and mother for her two young children. She is from Asakusa, Tokyo, Japan and currently resides in north Tokyo with her husband and two children. She studied English in junior high school and high school like many children her age and got very high marks in her English classes. She was very interested in English and hoped to continue her studies after high school. Unfortunately, she did not continue studying English after high school as she became too busy with work. However, at the age of 21 she went to study English in the United States for 3 weeks. She lived with a family in the San Francisco area and enjoyed the experience immensely. This experience opened her eyes to American English culture and motivated her to continue studying again. When she returned to Japan, she met an American a year later, then moved to the United States and married. Before returning to Japan, she lived with her husband in the United States for a little more than 5 years and during that time was intensively immersed in American English culture.

The learner feels that although her English has improved dramatically since she first started studying, there have been many situations in which she would have liked to have spoken with more confidence and have been more fully understood. She made many friends of different cultures (e.g., Mexican, Korean, Chinese, and Macedonian) in the United States and for the most part spoke English solely for the majority of her time there. She enjoyed the interactions with people of different cultures and was interested in the fact that these people had to speak English as a L2 to each other since it was the common language. She noted the differences in the way the various nonnative speakers spoke American English as well as the ways native speakers spoke American English. She used English with her husband and in-laws, at work, and when going about activities in her daily life. She worked in the restaurant industry for almost 3 years and because of the experiences in her employment, she encountered on a daily basis a variety of situations in which her blossoming English was tested.

She is very interested in determining exactly what kinds of English pronunciation problems she has, as well as what grammatical mistakes she often makes (though that is not within the scope of this paper). She is aware that her pronunciation is not always as accurate as she would like, but at the same time knows that she is comprehended with little effort in her interactions with native speakers. She holds no lofty goals with her pronunciation improvement in this study but nevertheless is very motivated in becoming a more intelligible English speaker and is looking forward to this project with an open mind and a keen interest.

Procedures of Data Collection

The data collected in this study was obtained from two different sources. The first source, a diagnostic passage excerpted from Prator and Robinett (1985), was performed in the initial treatment session to determine the learner's pronunciation problems. This diagnostic passage was transcribed and data regarding the learner's pronunciation problems were collected and analyzed by the author. The passage was administered once again, in the final treatment session, to determine the learner's pronunciation improvement for the specific phoneme that is being investigated. The second source for data collection was free conversation. Each treatment session contained free conversation between the learner and the interviewer. The conversational dialogue in each treatment session was transcribed and the resulting data were collected and analyzed by the author.

Week	What was covered	Exercises performed	Purpose
1	15-min free conversation; 5-min diagnostic passage	Diagnostic passage from Prator & Robinett (1985)	To determine learner's difficulties
2	15-min free conversation; 15-min practice	Pronunciation of vowels using mirror; pronunciation practice of words with different vowel sounds	Reassess learner difficulties; reconfirm initial assessments
3	15-min free conversation; 15-min practice	Listen & repeat practice with $/ { \ensuremath{ \sc only}} / words; cloze dictation with / { \ensuremath{ \sc only}} / words$	Raise awareness of /ə-/ sounds especially in word final position
4	15-min free conversation; 15-min practice	Practice with sentences with different vowel sounds (Prator & Robinett, Ch. 12, pp. 145–146); /a/ and /ə/ vs. /ə/ minimal pairs	Assess overall competency of vowel pronunciation; focus on difference between /a/, /ə/, and /ə/ sounds
5	15-min free conversation; 15-min practice	Reading passage excerpted from Prator & Robinett, p. 120 with questions; listen & repeat with /ə/ word list and sentences (Prator & Robinett, p. 142)	Listen and repeat exercise worked on words in isolation; reading passage worked on words in context
6	15-min free conversation; 15-min practice	Reading passage from Shepherd, 2003, pp. 26–27; listen & repeat and spelling test with /ə/ words	Assess the improvement of contextual /ə/ sounds; focus on proper pronunciation of /ə/ sounds
7	15-min free conversation; 5-min diagnostic passage	Initial diagnostic passage from Prator & Robinett	To determine how far the learner has progressed

Overview and Description of Sessions

Analysis of Diagnostic Passage and Free Conversation in Session 1

The diagnostic passage was taken from Prator and Robinett (1985, pp. x-xi). The passage consisted of 11 relatively short sentences describing the experiences of a student abroad, specifically of a student living in the United States. There was no vocabulary that could have been considered too difficult for the learner, although there were numerous examples of words featuring sounds commonly mispronounced by Japanese learners. The instructions given to the learner were the same given by Prator and Robinett: She was to read the passage at normal speed and not to focus overly on pronunciation. The aim for the reading was to sound as natural as possible.

The passage revealed that the learner has many pronunciation problems. However, these problems do not largely affect intelligibility, and none are too severe as to render her speech incomprehensible in any way. Though there were many instances of pronunciation errors, there were no clear patterns of pronunciation errors, neither with segmental features nor with suprasegmental features. Consonantal pronunciation problems included substitution, and deletion of final consonants. With these problems considered, consonants do not seem to be a major problem facing the learner.

The learner exhibited many pronunciation errors involving vowels whereby many improper vowel substitutions were made. Some of these substitutions included: /i/ and /e/ for /1/; /a/ for /o/, /æ/, and / σ /; /o/ and / Λ / for / σ /; and /a/ and /o/ for / Λ /. There was a tendency to delete the /r/ when it occurred after a vowel (e.g., /er/) and substitute it with a vowel. For example, first was pronounced /fast/. This type of vocalization substitution error occurred most frequently of all the pronunciation errors, occurring six times in the passage. Insertion of an extra schwa occurred twice; once after a final consonant in a polysyllabic word ('United') and once in word-medial position in a

polysyllabic word ('advantage').

The learner did not have many suprasegmental errors and the errors that occurred did not greatly affect intelligibility. Incorrect stress occurred but the meaning of both the word and the sentence were not affected. Intonational errors occurred but not with the frequency that would warrant special attention in this study. The learner's rhythm was slightly slow, as she was a bit tired, but overall it was at a normal speed and could be comprehended with little effort.

Free conversation with this learner revealed pronunciation errors that were consistent with the errors that occurred in the diagnostic passage. There were few consonantal errors and those that occurred had little negative impact on intelligibility. The conversation confirmed that the learner has difficulty with accurate pronunciation of vowels and has a tendency to substitute an improper vowel, e.g., $/\alpha/$ for /a/, or replace a vowel for a consonant, e.g., $/\partial/$ for /r/. This latter error occurred most often in words where /r/ follows a vowel, occurring numerous times in conversation. Though there is not a significant effect on intelligibility with these vowel errors, the learner is concerned by these pronunciation problems and is hopeful that in further sessions they can be corrected. One other error that occurred (twice) was the insertion of / ∂ / at the end of a polysyllabic word and once at the end of a monosyllabic word. Two errors occurred at the end of 'United,' the same place that the error occurred in the diagnostic passage. Again, though not too much of a hindrance on intelligibility, the learner is aware of her mispronunciation and is eager to make improvement.

The treatment proposed for the learner in this study will consist of the improvement of pronunciation involving $/ \sigma /$ sounds in word-medial and word-final positions. This sound has been chosen as it was the pronunciation error that occurred with the most frequency. Again, it should be noted that the sound $/ \sigma /$ will be considered the same as $/ \sigma /$; though they differ in stress, they are practically the same sound. From the initial assessment it has been determined that the learner recognizes the sound adequately, but it is with the specific pronunciation of the sound that needs focused instruction to achieve improvement.

A variety of different exercises and activities are proposed to aid in the learner's progress and assessment will be determined throughout the treatment sessions. Listen and repeat exercises, minimal pairs with sentences, cloze dictation, spelling tests, contextual exercises, and reading passages will be designed with the aim of improving the proper pronunciation of $/\sigma$ / sounds. The learner is by no means unintelligible with respect to these sounds, but the desire for more accurate pronunciation is quite strong. Free conversation in each treatment session will also be conducted to assess the ability of $/\sigma$ / pronunciation in natural context. Free conversation dialogues, as well as both the initial and final diagnostic passages, will be partially transcribed and analyzed by the author to determine the level of the student's improvement.

Results

In order to investigate how the learner's pronunciation of the $/\sigma$ / sound changed over the 7-week period, a diagnostic reading passage was conducted in the initial and final session to measure the change of accurate pronunciation of $/\sigma$ /. The learner's performance in free conversation was also monitored during the 7-week treatment period.

Figure 1 shows the accuracy percentage of correct $/ \frac{2}{\sqrt{2}}$ pronunciation in the diagnostic reading passages from the initial session, to the final session. A comparison of the two diagnostic passages showed that correct pronunciation of $/\frac{2}{\sqrt{2}}$ rose from 18% to 36%. While these are rather low accuracy percentages, they do represent a significant increase in accuracy over the treatment period.



Figure 1. Accuracy percentage of / »/ in initial and final diagnostic passages

As stated above, the learner's performance in free conversation in each session was monitored over the 7-week treatment period. There were six free conversation sessions during the 7-week period and one reading passage (Session 6). The reading passage will be considered as a free conversation session as its data were transcribed and analyzed the same as the data in the free conversation sessions.

Figure 2 shows the accuracy percentage in free conversation for the correct pronunciation of $/\sigma/$ during the 7-week treatment period. The chart illustrates that the learner's accurate pronunciation of $/\sigma/$ is quite erratic with a big decrease in accurate pronunciation shown in Session 4 with a corresponding rise in Session 5. Overall accurate pronunciation in free conversation was 37%, slightly higher than the 36% accurate pronunciation in the final diagnostic reading.



Figure 2. Accuracy percentage for correct /&/ pronunciation in free conversation sessions

Table 1 gives examples of the devices used to pronounce $/ \frac{\sigma}{}$ in the two diagnostic reading passages. Three types of devices were used: accurate pronunciation, vocalization, and final consonant deletion.

Table 1

Devices	Used to	Pronounce	121	in .	Diag	nostic	Passag	res
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Example	Devices
/ə.nə.ðə-/	Accurate pronunciation of / »/
/fast/	Vocalization
/mæ.nə/	Final consonant deletion

Table 2 illustrates the frequency of the devices used to pronounce $/\sigma/$ in the two diagnostic reading passages. Vocalization occurred nine times, final consonant deletion occurred seven times, while accurate pronunciation occurred six times.

Table 2

Frequency of Devices Used to Pronounce /ə/ in Diagnostic Passages

/ə/	Device frequency (# of occasions)					
Diagnostic passages	Accurate pronunciation	Vocalization	Final consonant deletion			
Initial	2	6	3			
Final	4	3	4			
All	6	9	7			

Table 3 shows the frequency percentage for each device used to pronounce $/\alpha$ / in the two diagnostic passages. Vocalization occurred with the greatest frequency at 41% while accurate pronunciation occurred with the least frequency at 27%. Final consonant deletion's frequency percentage was 32%.

Table 3

Device Frequency Percentage of />/ in Diagnostic Passages

/ə/	Device frequency percentage (%)					
Diagnostic passages	Accurate pronunciation	Vocalization	Final consonant deletion			
Initial	18	55	27			
Final	36	27	37			
All	27	41	32			

Table 4 gives the examples of the devices used to pronounce $/\sigma/$ in free conversation. The same types of devices used in the diagnostic passages were used in free conversation: accurate pronunciation, vocalization, and final consonant deletion.

Table 4

Devices Used to Pronounce / >/ in Free Conversation

Example	Devices
/pɪk.tʃə·z/	Accurate pronunciation of /&/
/ən.də.stænd/	Vocalization
/ri.mɛm.bə/	Final consonant deletion

Table 5 illustrates the frequency of the devices used to pronounce $/\sigma/$ in free conversation. The device used to pronounce $/\sigma/$ with the greatest frequency was vocalization which occurred 33 times in all sessions. Accurate pronunciation occurred 31 times and final consonant deletion occurred with the least frequency, occurring 20 times. Vocalization did not occur in Session 6.

/ə/ Device frequency (# of occa			sions)
Sessions	Accurate pronunciation	Vocalization	Final consonant deletion
1	4	9	3
2	4	4	2
3	4	4	1
4	2	9	4
5	9	6	2
6	6	0	6
7	2	1	2
All	31	33	20

Table 5Frequency of Devices Used to Pronounce />/ in Free Conversation

Table 6 shows the frequency percentage for each device used to pronounce / \Rightarrow /. Vocalization occurred with the greatest frequency at 39% while final consonant deletion occurred with the least frequency at 24%. Accurate pronunciation frequency was 37%. Vocalization did not occur in Session 6.

 Table 6

 Device Frequency Percentage of />/ in Free Conversation

/ə/	Device frequency percentage (%)					
Sessions	Accurate pronunciation	Vocalization	Final consonant deletion			
1	25	56	19			
2	40	40	20			
3	44	44	12			
4	13	60	27			
5	53	35	12			
6	50	0	50			
7	40	20	40			
All	37	39	24			

Figure 3 shows the frequency percentage of all devices used to pronounce $/ \frac{\sigma}{}$ in free conversation. There is a gap in vocalization between Sessions 5 and 7 as it did not occur in Session 6. The patterns for the devices are all somewhat erratic as there are no consistent patterns of pronunciation. The figure shows that the learner makes considerably more pronunciation errors due to vocalization processes than final consonant deletion processes.



Figure 3. Device frequency percentage of $/ \frac{3}{7}$ in free conversation

Discussion

The initial research question, whether a motivated Japanese learner could improve her pronunciation of / over a 7-week period of conversation practice and focused exercise was supported by the data. There was marked improvement with the target phoneme in the diagnostic passages over the treatment period, the results of which can be seen in Figure 1.

The pronunciation errors and lack of pronunciation improvement in free conversation over the treatment period suggest that the learner's errors were due to the phonological make-up of her native language, Japanese. R-colored schwa is a rather complex sound, a combination of two sounds, schwa and /r/, incorporating characteristics of both. It is the /r/ sound which gave the learner the most difficulty and this is understandable as it does not exist in Japanese the same way as in North American English; i.e., the Japanese pronunciation of /r/ is pronounced somewhere between the North American /r/ and /l/. This difficulty in pronunciation might result from a place of articulation error in that the tongue is not in the correct position to accurately pronounce the sound. This would seem to indicate that more articulatory training, which would focus on correct tongue positioning, is necessary and would be of great benefit.

The learner in this study began studying English at the onset of puberty and did not begin speaking English with any frequency until after puberty. This could partially explain why more improvement was not shown as this age is considered late onset (Ioup, 2008) and is right on the border of the critical period of being able to acquire native-like L2 sounds. So important is the age at which a L2 learner begins acquiring a L2 that Ioup (2008) says "the onset age of L2 remained the most important predictor of degree of foreign accent in the assessment of child and adult onset learners" (p. 46).

The difficulty for the learner trying to master the pronunciation $/\sigma/$ is visible in the overall progress of pronunciation of $/\sigma/$. Figure 1 shows that the learner improved her pronunciation in the diagnostic passages, while Figure 2 shows that the learner's improvement in free conversation was nonconclusive. As the diagnostic passages are more controlled and thus more formal in style than free conversation, Major's (1987) view that learners often achieve accurate speech in more formal styles than in running speech, was corroborated.

It should be noted that in some English dialects, British English for example, the vocalization

(in word-medial positions) or final consonant deletion (in word-final positions) processes used by the learner to pronounce /, are perfectly acceptable. Therefore, 'understand' pronounced /əndəstænd/, and 'number' pronounced /nʌmbə/, are perfectly acceptable in RP. However, the researcher's accent does not feature these elements and the focus of this study is on the pronunciation of North American English sounds. The learner has had limited exposure to non-North American English accents suggesting that the L1 was influencing her pronunciation in that Japanese syllables do not end with the consonant /r/, and always (with the exception of those ending in /n/) conclude with a vowel.

Minimal pairs listen and repeat exercises were most effective in fostering the correct pronunciation for the target phoneme for the learner in this study. The learner concentrated on these forms and was usually able (more than 50% of the time) to pronounce the correct sound. Vocalization and final consonant deletion processes were still used, but not as often as in free conversation. As the learner put these minimal pairs into sentences and spoke them more contextually, her accuracy decreased, and vocalization and final consonant deletion processes increased. This would again suggest that the learner is consistent with Major (1987) that learners tend to pronounce accurate sounds in more formal settings/styles than in running speech.

There are numerous limitations of this study but possible the greatest is the duration: Perhaps in a longer study, for example 6 months or a full year, the results would have shown greater improvement or oppositely they might have shown less gains than the gains shown in this study. The learner in the study was motivated and a fairly fluent speaker, pronouncing often troublesome (for Japanese learners) phonetic forms (such as /b/, /v/, /sh/, and /l/) with little difficulty. For learners who are not as motivated or as fluent in speaking, a different type of study, or different exercises, would have to be used. Another limitation also involves time and was the time spent in each session. Most sessions consisted of 15 min of conversation and 15 min of practice. This was mainly due to the learner being a busy mother. Doubling the amount of time to 30 min each of conversation and practice might have caused more or less favorable results. A further limitation of this study was my relative lack of experience in conducting a study such as this. As this was my first study of this type, there surely are points that were overlooked and others that were not even realized.

Further studies would provide excellent opportunities for the learner to continue to improve her pronunciation and become a more accurate speaker. The next study could focus specifically on the consonant /r/ sound. As this study was concerned / σ /, it is logical to concentrate further work specifically on /r/ as overall improvement with pronunciation of /r/ would correspond to overall pronunciation improvement with / σ /. Though the learner did not show considerable trouble accurately pronouncing /r/, it is the researcher's opinion that the sound could be pronounced more clearly, thus warranting special attention to it. Exercises in the next study would be similar to those used here, with some new exercises included as well. As the learner's fluency is quite high and because she enjoys music, songs with lyrics containing the target sound would be included to enliven some of the sessions.

In conclusion, this study was an attempt to see if pronunciation improvement could be made in a motivated Japanese learner over a 7-week period of conversation practice and focused exercise. The phoneme chosen for study was $/ \sigma /$ as it proved to be the most troublesome sound after diagnostic tests were performed and analyzed. The goal of the study was to foster more accurate and intelligible pronunciation on the part of the learner, but by no means was an attempt to achieve a native-like accent. A variety of exercises and activities were performed that focused on the target phoneme and free conversation was held in each treatment session. The results of the diagnostic tests performed

showed an improvement in accuracy of /a/ from 18% in the initial diagnostic to 36% in the final diagnostic. This illustrates that a motivated learner can make pronunciation improvement during a 7-week period of conversation practice and focused exercise. The fact that improvement was made would argue that pronunciation can and should be taught and practiced in L2 classrooms and should be considered a skill as essential as reading or writing. By becoming more aware of the phoneme and the processes involved in making pronunciation errors, the learner is on the right track in becoming a more accurate and intelligible English speaker and stands to benefit even more from continued practice and hard work.

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Appendix Obligatory Occasion Word Lists

Table A1 contains words from each device used to pronounce $/ \sigma / during$ free conversation in each of the practice sessions.

Table A1

Session	Accurate p	ronunciation	Vocalization		Final consonant deletion		
1*	another	better	answers first offered	cultural learns (2x)	manner sure	power	
1	cultures pictures (2x)	culture	natures understand (7x)	northern	remember	were (2x)	
2	accessories picture	groceries popular	curry (4x)		sure (2x)		
3	American thriller	better thrillers	first understanding	understand (2x)	sure		
4	billiard	third	American curling (2x) perfect person's	circle figure person understand	measure sure (2x)	number	
5	curling third serve	figure girl (2x) weather	curling learner understanding	first understand (2x)	after (2x)		
6	closer pearl teacher	corner tarantula Weather's	after rubber	paper (3x) silver	(nothing)		
7*	American	weather	Beverly		remember	were	
7	answers cultural	better offered	first	learns (2x)	another power	manner sure	

*Initial/final diagnostic passage