A Contrastive Analysis of English and Japanese Prosody

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Abstract

The influence of language transfer from L1 to L2 cannot be underestimated when considering the issue of how to teach speaking skills more effectively. Whereas prosodic factors as a whole can be complex, this paper focuses on the major factors of rhythm, accent, and pronunciation to clarify the differences between Japanese and English. One speech exercise was conducted with a first-year university English majors class. The classroom had CALL facilities so the students were asked to record their voices with the sentence before and after some directions and exercise activities. The results showed noticeable differences for the volume and the pitch range to underscore the importance of prosody education for speaking activities.

Key words: prosody, speaking skills, listening skills, classroom activities

1. Introduction

When we acquire a second language (L2) or foreign language (FL), the influence of the mother tongue (L1) is inevitable. Rasier and Hiligsmann (2007) stated that phonology is "perhaps the only area where the influence of the learner's L1 on his/her L2 linguistic habits has never really been called into question" (p.43). This influence can help FL acquisition, and at the same time it may have negative effect. In this paper, the elements of L1 and L2 prosodic features are examined and ideas for effective teaching are discussed with data from some class activities.

2. L1 phonological influence on L2

2.1. Positive and negative transfer

For Japanese learners of a second language, the influence of L1 is strong especially for university students who have grown up in an exclusively L1 environment. To make the situation worse, it seems to work as negative transfer resulting in little or no confidence in speaking. In terms of prosodic elements, as Tomita, Oguri & Kawauchi (2011) state, it is almost impossible for adults to acquire native-like pronunciation or prosodic features after passing the critical period from around age six to adolescence (p.12). Compared with people in other Asian countries, the Japanese still do not have the necessity to use English in daily life outside of business situations. The concept does not yet exist in Japan for there to be an identifiable variety of English that compares to "Singlish" in Singapore with its mixture of English, Chinese, and Malay. Although there are many reasons for this, one factor is that the main

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contact Japanese students have with native English prosody is from textbooks or listening exams that contain only American or British speech samples.

The L1 and L2 language distance between English and other languages within the Indo-European group is considerably different from the distance between English and Japanese. Haspelmath holds that "markedness is the typological distance between languages" (as cited in Rasier and Hiligsmann, 2007, p.46). In recent years other ways of comparing the salient features of two languages have included the analysis of interlanguage and before that, contrastive analysis. All these approaches potentially result in useful processes that can assist learners in developing better prosodic performance.

2.2. The types of prosodic influence between L1 and L2

Wennerstrom (2001) describes prosody as consisting of factors such as intonation, rhythm, stress, volume, tempo, voice quality and pauses (p.6). The structure of English prosody is quite complex, and in order to master it at a native-like level requires extensive input from various types of sources including experience speaking with L1 speakers. Tomita et al. (2011) identify the two aspects of language competency related to sounds as being perception and production (p.5). An essential aspect of L1 learning is ample input of the sounds of the mother language during the critical period which enables children to eventually produce all the core sounds of L1. In the case of FL learners, certain challenging pronunciation problems can be practiced with intensive input, e.g. the minimal pair "l" and "r" for Japanese speakers ; however, converting this knowledge into listening skills requires more than mere exposure. Thus, the order of acquisition is reversed.

L1 acquisition : perception → production

L2 acquisition : production → perception

2.3. Four major skills and the Japanese education system

In recent years English language education in Japan has come to reflect a better balance of the four major language skills—reading, writing, speaking and listening. In the past, when the purpose for learning English in Japan had been mainly to pass exams to achieve certain rankings and qualification levels, this was not the case ; today the exams themselves are also being developed to assess all four skills. As a result, students need to develop better output skills like writing and speaking, as well as input skills such as reading and listening. Tomita et al. (2011) mention the benefits of analyzing feedback from FL learners who have successfully gained high level competency in these skills and are called ETLL, meaning "exceptionally talented language learner" (p.31). One good model they have in common is that they listen to sample sound sources and mimic the prosodic elements. Furthermore, they tend to use recording devices to review their pronunciation and compare it with the sample so they can adjust their output accordingly.

Ample listening and repetition are important for three reasons : first, the student can get used to the sounds of the L2 language ; second, they nourish the perception of these sounds.

Finally, individual imitation and production of the sounds of the second language is an effective learning strategy for FL learners that lack direct exposure to the L2 language. Recording devices have been obtained with the development of technology, and Internet-related sources have dramatically improved in recent years in terms of practicing listening and speaking abilities. Teachers should be aware of how they can implement such materials for gaining input from L1 sources.

3. Comparison of prosodic elements.

In this section, Japanese and English prosodic elements are compared and analyzed with particular emphasis on rhythm, accent and pronunciation.

3.1. Rhythm

A comparison of the rhythmic structures of English and Japanese renders significant differences that need to be considered more carefully. English rhythm is created from the combination of accented and unaccented syllables of content and function words. This affects the length of each word in keeping with characteristic English rhythmic patterns. The following example shows a simple exercise with sentences. Although extra function words are included, the rhythm and the timing are not changed in English. The same beat pattern fits all four sentences, and the content words and its main vowel always gets the primary beat point.

    ●   ●   ●
  1. Dogs chase cats

      ●   ●   ●
  2. The dogs chase the cats

      ●   ●   ●
  3. The dogs will chase the cats

      ●   ●   ●
  4. The dogs will be chasing the cats

Conversely, this rule does not apply to a pitch accent language like Japanese with its system of moras consisting of a solitary vowel or one consonant plus one vowel. The influence of English words in Japanese language as Katakana loan words may be considered to have negative transfer in this respect. For example, the English word "running" [rˈʌnɪŋ] is pronounced with only two beats, and the strong beat comes on the phoneme [ʌ]. Japanese people tend to pronounce this word with five moras that include a vowel after each consonant:

    "running"   [rˈʌnɪŋ]   (3 syllables)
    ランニング   ra n ni n gu   (5 moras)

Recognition of this difference is important for Japanese learners of English in order to promote better pronunciation and keener listening skills.

Another rhythmic hurdle for Japanese learners of English is the difficulty they have in adapting to the frequent triple rhythmic groupings of English prosody. In a study conducted

with Japanese elementary school students, Morgan (2011) has noted their bias toward reinterpreting the characteristic triplets found in English prosody as duplets (p. 84). This study employed standard diagnostic measures used in the field of speech pathology to track Japanese children's improvement in English pronunciation over the period of a school year. A surprising outcome of the study was the finding that a significant number of the participants, when asked to repeat the following string of syllables "MA-ma-ma, MA-ma-ma, MA-ma-ma" would repeat it as "MA-ma, MA-ma, MA-ma, MA-ma, MA". Morgan concluded that the reason for this error was the transfer of the characteristic duple rhythmic groupings of Japanese to neutral syllables organized to resemble English prosody as found in common phrases and many names :

<div align="center">

1　2　3　1　2　(3)　　　1　2　3　1　2　3
●　·　·　●　·　　　　●　·　·　●　·　·
How are you doing?　　　Edward G. Robinson

</div>

The pattern of Japanese rhythm is basically equal for each mora. Thus English rhythm pattern needs to be practiced in a way that students can come to recognize the difference.

3.2．Accent

Rhythm and accent are strongly related to each other. English has stress accent and this rule needs to be consistent. Japanese however has pitch accent that is determined by the meaning of the words. Higher pitch gets some stress accent, but it does not have the same prosodic factor. Rasier and Hiligsmann (2007) note that "the general picture that emerges from the scientific literature is that accent is a difficult prosodic phenomenon to acquire, and this seems to hold true from quite diverse categories of L2 learners" (p.48). In addition, Japanese and English speakers use different ranges of pitch. According to Murase (1996), English uses more than 2000hz range whereas Japanese has the range between 125hz and 1500 (p.81). Japanese learners need to realize that English accent needs to be higher, longer, and with a stronger beat. Finally, based on the author's observation of Japanese FL learners, the production of English consonants needs abdominal breathing for fricative and plosive sounds, as well as wider and stronger mouth movement. Hence something akin to voice training for singing practice is needed for Japanese speakers to become truly effective when speaking English.

3.2.1．Classroom application and assessment : accent

One exercise was conducted with a first-year university English majors class (n＝22). The classroom had CALL facilities so the students were asked to record their voice with the sentence "Originally, blues was the folk music of the African American community." The concept of syllables as well as primary stress in each word was explained with the word "originally" as an example, and then the students did an exercise based on dividing words into syllables. In addition, the difference between content and function words was explained and showed the strength of the accent as in the example below. Through this exercise the students were able to see the volume of each accent more clearly.

·　●　·　·　·　　●　·　·　　·　　●　·　·　·
Originally, blues was the folk music of

·　　●　·　·　　·　●　·　·　　·　　●　·　·
the African-American community

After these explanations and short exercises, the students practiced the sentence again. Since they still had significant L1 prosodic influence from the Japanese language, the students were encouraged to exaggerate the accent and the beat that should be longer, stronger, and higher. Directly after this practice they recorded the same sentence again. A preliminary evaluation of the recording was conducted. The sound data were analyzed with Logic Pro software for volume and pitch range differences. The initial results indicate that their overall command of the prosodic elements of English improved dramatically. All of the students have louder volume for the second recording ranging from 1 to 10bd average of 3.9bd. The example below shows the wave shapes of the volume for one student.

The first recording has more influence from the Japanese mora-based accent in that it does not have drastic volume change. The second recording shows stronger accent point for each content word. Adequate speed of each accent can be heard from the sound which shows the characteristics of English stress accent and length adjustment to create an appropriate interval and rhythm. The data was analyzed about the pitch range using plug-in software "Melodyne" in Logic Pro.
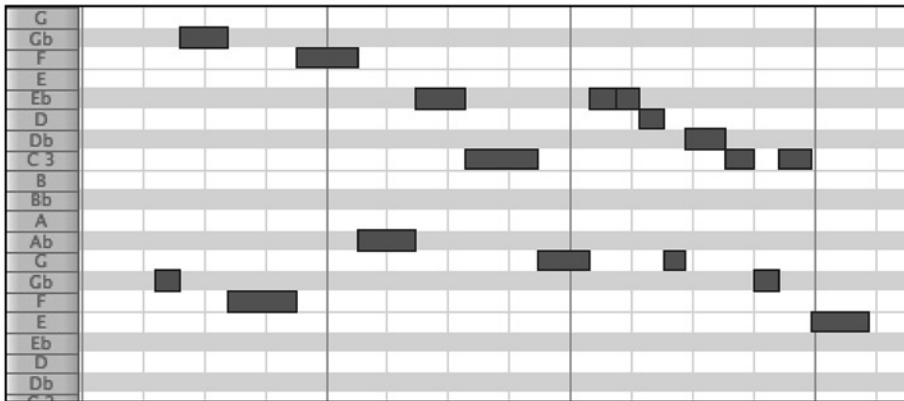
First recording
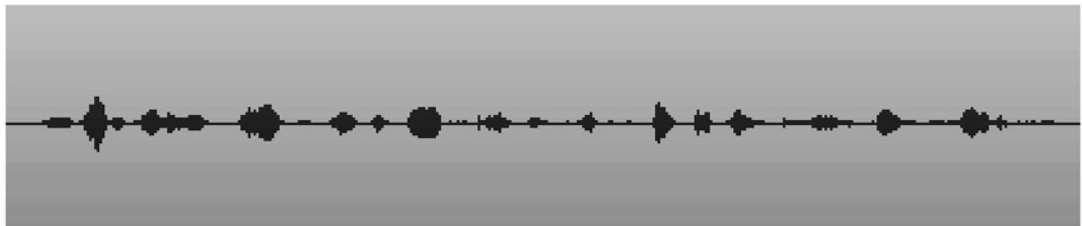
Originally,　　blues was the folk music of　　　　the African　　　American community

Second recording
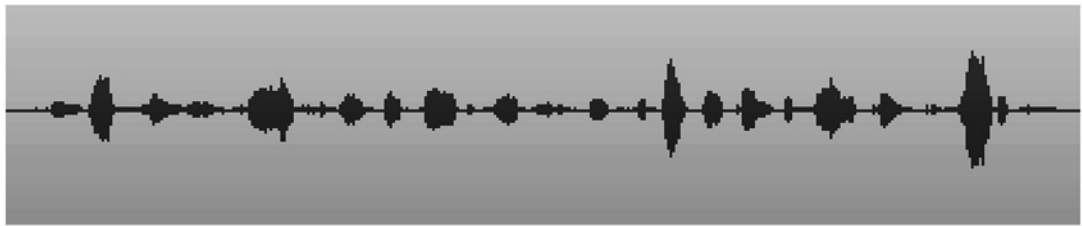
Originally,　　blues was the folk music of　　　　the African　　　American community

Figure 1　Waveforms of student speech samples

Originally,   blues was the folk music of the African American community

Figure 2　Pitch range analyzed with Melodyne

Table 1　Number of semitones

	Smallest range	Largest range	Average range
First Rec	3	13	7
Second Rec	4	17	11

The result of the pitch range was collected as shown in Table 1. The pitch range was checked by the width of the pitch. For example, one student had pitch G for the lowest and D the highest. This becomes eight semi-tone span. This way, the score of each of the student response was analyzed.

The first recording had the smallest range 3 and biggest range 13, which is the average of 7 for all the students. The second recording shows wider range for the total average 11 with the smallest range 4 and largest range 17. Most of the students had wider range for the second try which can be interpreted as indicating that their accent behavior was more like English stress accent. Some students made a big difference for the impression of the speech, e.g. many of the male students that had a lower pitch range were shifted to higher range pitch.

Comparing individual results of the first and second difference showed one case having -2 range for the difference. In other words, the second recording had smaller range. This can be explained by the fact that the student was shy to make a change through the exercise since most of them have big difference you can hear from the recordings. Another had the same range of 12 semitones for both the first and second ranges. This showed that the student already acquired a fairly good accent and it did not make a big change. The results suggest that it is important for teachers to provide some prosodic information so they can experience the difference of L1 and L2 languages and it is also important for them to mimic and practice by

producing the sounds.

3.3. Pronunciation

L1 language transfer can happen when L2 vowels and consonants have more varieties than L1 ones. The consonants [l] and [r] are typically confusing when Japanese learners first encounter them. Moreover, a number of phonemes such as [θ] do not exist in Japanese, so Japanese learners tend to substitute a similar sound like [ʃ]. New pronunciation patterns can be acquired by practice, however English vowel recognition would be more difficult since the variation is about 15 to 20 comparing Japanese five vowels. In this context, Rasier and Hiligsmann (2007) mention that, "Research results clearly indicate that segmental errors have a less detrimental effect on listeners' judgments of comprehensibility and accentedness of L2 speech than prosodic errors" (p.43). Still, Japanese learners tend to search for perfection and thus they are less confident to speak aloud. Tomita et al. (p.32) support the idea that IPA (International Phonetic Alphabet) education for FL learners can be effective since the language is learnt with intention not like L1 having a great deal of input. Phonetic knowledge should be helpful for FL learners to differentiate each sound. IPA consists of quite a few of the same phonemes as English spelling, so it should not too difficult for acquisition.

3.3.1. Classroom application and assessment : pronunciation

One class activity for speaking and listening skills used this procedure. The teacher reads aloud for vocabulary quiz. This was a good way for the students to try spelling out even they do not know the words. At the same time, this revealed their lack of phonics knowledge. The following example shows some of the common errors they made :

> L and R confusion : breading/breeding (bleeding)
> Difficult spellings : rince (rinse) ; moiced (moist)
> Phonics issue : mentenanse/meintenance (maintenance)

The concept in North American elementary schools known as *phonemic awareness* helps students distinguish individual phonemes through rhyming and alliteration as taught through picture books (Leeper, 2013). Adapting this procedure for Japanese FL learners would be an important step in helping them improve their pronunciation.

4 . Conclusion

This paper focused on some aspects of the transfer of L1 on L2 prosody. In particular it was noted that Japanese students' English speaking and listening skills are influenced by the differences in the characteristic rhythmic and intonation patterns of their mother tongue. It was found, however, that certain types of classroom activities can result in noticeable improvement in these areas. This outcome encourages the author to develop additional activities and undertake further research along these lines in the future.

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