

# On loanword pronunciation by Korean learners of Japanese: Influence on word recognition for native speakers of Japanese \*

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## 1 Introduction

Japanese and Korean loanwords are very similar in meaning and pronunciation. Nevertheless, it is hard to say that they are the same due to differences in phonology in the Japanese and Korean languages.

Until now, most studies concerning loanwords in Japanese education were focused mostly on writing and pronunciation. The majority of these were focused on writing, with far fewer studies concerning pronunciation. This lack is because most educational institutions in Japan and most language teachers fail to notice the importance of the needs of the learners of Japanese. Therefore, instruction on loanwords has not been considered important. The teaching of hiragana and kanji has primarily emphasized the written characters. This is also true of the vocabulary instruction of words of Japanese origin and Chinese origin. However, in vocabulary education, not only beginners but advanced learners as well make errors in notation and pronunciation because the pronunciation and notation do not completely agree.

Previous studies indicate that the errors in loanword notation by Korean learners of Japanese as a second language (KLs) occur because the rule of becoming loanwords from L1 to L2 is not properly carried out [2, 4, 6]. The main reason is related to speech elements such as special mora (long vowels, geminate consonants, nasal consonants), consonants (/ts/in /tsu/, /z/, etc.), and vowels. In particular, special mora and other consonants would be important when teaching pronunciation for KLs [5]. Cho [1] conducted some research in which native speakers of Japanese (JSs) correct the notation errors of KLs, however, the vowel errors were

not properly corrected. Therefore, it was verified that vowel errors affect recognition of JSs. In addition, JSs strictly evaluate the initial vowel errors [1]. Igeta [2] also reports that JSs failed to correctly recognize the words that had initial vowel errors.

Therefore, we conducted experiments in this study to clarify what speech elements affect understandability and naturalness when listening to the pronunciation of loanwords having vowel errors.

## 2 Research Method

We conducted two perception experiments with JSs in a soundproof room. All participants signed a consent form after listening to the explanation.

### 2.1 Participants

The participants were 13 Japanese undergraduate and graduate students in Japan. None of the participants had any knowledge of the Korean language, and ordinarily, they had no contact with Korean people. All participants were native speakers of the Tokyo dialect.

### 2.2 Stimuli

In this study, we used the stimuli of Igeta [3]. We only selected words that had different vowel in Japanese and Korean, although the stimuli used had the same meaning in both the Japanese and Korean languages. We used 55 loanwords pronounced by KLs. Among them, we used 84 utterances with or without errors. The number of stimuli (84) was more than that of the loanwords (55) because there were some overlaps that included errors among 10 of the speakers. The speakers were KLs whose Japanese level was intermediate through ultra-advanced. There were 10 KLs comprising both men and women. We showed pictures on a computer screen to the KLs, and we asked them to say nouns corresponding to

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words of Japanese origin, words of Chinese origin, or loanwords in order to derive the target words.

### 2.3 Experiment 1: understandability

We asked the JSs to write words they recognized on paper after listening to each stimulus. We explained to the JSs that the KJs were going to utter meaningful words in Japanese.

### 2.4 Experiment 2: naturalness

We had the JSs listen to the stimuli while showing them a list of stimulus words written in katakana. We also had them write the words they listened to in katakana. We had the JS participants mark “○” on the romanization that they felt was unnatural. Only special moras judged by our researchers after seeing characters written in katakana. We also asked the JS participants to check if the accent was unnatural.

## 3 Analysis

### 3.1 Understandability

By comparing the stimuli and the answer sheets from the JSs, we considered only words with a correct meaning as the orthography. We calculated the understandability by marking “1” for right answers, and “0” for wrong ones. We classified a “high rank group” for scores higher than 70%, and a “low rank group” for scores lower than 70%.

### 3.2 Naturalness

We calculated the naturalness by marking “1” for katakana characters that were correct, and “0” for those that were wrong. Again, we classified a “high rank group” for scores above 70%, and a “low rank group” for scores below 70%. We also verified that the elements of katakana that were recognized as being unnatural were in accord with the speech elements of vowels and consonants that were checked as unnatural based on their auditory impression. We also classified some mora into a special category, which referred to the notation of katakana that were eliminated or inserted within special mora. Furthermore, we classified a “high rank group” for scores above 70%, and a “low rank group” for those below 70%.

## 4 Results

### 4.1 Experiment on understandability

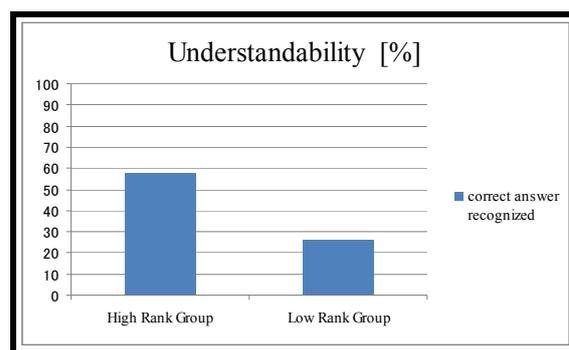


Fig.1 Results of understandability experiment

In the high rank group, 58 of 84 pronunciations had more than 70% understandability, and the proportion was 69% of all. On the contrary, in the low rank group, 26 pronunciations had less than 70% (31% of all). These results indicate that the JSs understood 70% of all stimuli, and it would be interpreted that JSs understood the intention of the words pronounced by the KJs.

### 4.2 Experiment on naturalness

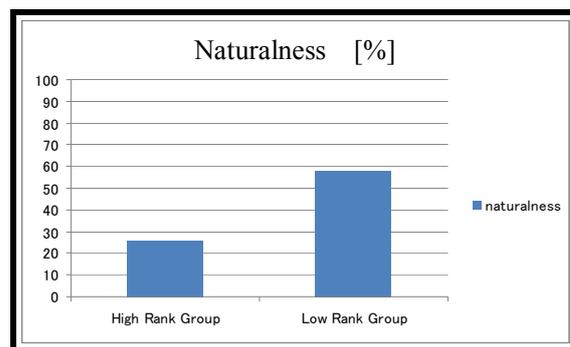


Fig. 2 Results of naturalness experiment

The number in the high rank group, which had more than 70% naturalness, was 26 of 84 pronunciations, or 31% of the total. The number in the low rank group, which was less than 70%, was 58 pronunciations (69% of all). This result indicates that JSs judged the pronunciation of the KJs as being unnatural.

## 5 Discussion

It should be no surprise that the results of naturalness were very low. The reason for this is that unnaturalness was perceived in the speech characteristics of the learners of Japanese. Thus, we should focus on aspects of the low rank group in the understandability results.

Errors were found in the long vowels in the high

understandability rank despite the low degree of naturalness. We used prerecorded Korean speech that was read out loud by a KL while looking at stimuli written in Korean. There were 3 vowel errors and 7 long vowel errors among the 26 of 84 utterances, which were pointed out as being unnatural by more than 10 out of 13 participants (77%). In the case of the three vowel errors, they appeared as /staQkiŋu/ for “stocking” (/stoQkiŋu), /rempu/ for “lamp” (/rampu/) and /bore:bo:ru/ for “volleyball” (/bare:bo:ru/). The long vowel errors can be divided into two cases. One is when a long vowel is inserted into a word, and the other is when one is dropped. In the insertion cases, they were written as /e:poroN/ for “apron” (/epuroN/), /akuse:ru/ for “accelerator” (/akuseru/), and /ko:ma:sja:ru/ for “commercial” (/koma:sjaru/). The deletions were written as /bore:bo:ru/ for “volleyball” (/bare:bo:ru/), /namba/ for “number” (/namba:/), and /komasjaru/ for “commercial” (/koma:sjaru/), including vowel errors. As a result, we clarified that a simple insertion or deletion had little effect on word recognition despite the fact that long vowel errors were influenced by naturalness. For vowels, we consider that words having many moras can be inferred despite the occurrence of errors. The word “lamp” was recognized as /rampu/, a word considered to be the closest to the number of mora and consonants not having three moras starting with /re/.

Next, we checked 26 utterances that fell into the low rank group of understandability. The utterances of the low understandability group were also low in naturalness. Then what types of errors influence the recognition of words? Table 1 lists the types of errors observed in 26 utterances of low understandability that were recognized as being unnatural by more than 10 out of 13 participants (77%), as previously mentioned.

In this way, a lot of vowel and long vowel errors can be pointed out. One of the reasons for the errors in word recognition is the complexity of the types of errors. For example, the word “cotton” (/koQtoN/) was written as /ko:tsuN/, so

Table 1 Types of errors and number of occurrences

type of error	number of occurrence (%)
vowels	15 (58)
consonants	4 (15)
long vowel	11 (42)
geminate consonants	0 (0)
nasal consonants	0 (0)

there is more than one error in one word. In addition to vowel errors, consonant errors also occur, and long vowels and geminate consonants are being replaced. We can guess that complicated speech factors result in changes in speech that make it quite different from the original word.

Simple errors such as vowel errors were limited to only eight utterances. We focused on four characteristics in eight utterances, and we clarified differences in vowels by comparing Japanese and Korean speech.

We used prerecorded speech in Korean that was read out loud by KL looking at stimuli written in Korean. Every spoken utterance in Japanese and Korean was pronounced by the same person. We conducted labeling in accordance with the actual KL’s speech in Japanese and Korean. We accepted a diphthong in Fig 4. The characteristic of the diphthong was a marked transition within a mora or syllable, and the Japanese language has no such vowel. Therefore, JSs could not recognize the diphthong /wi/. Therefore, the JSs perceived /i/ in the second half of the latter part of /wi/.

The JSs perceived the utterance of the word-final /ɔ/ as /o/, because the KL speaker pronounced /ɔ/ as /a/. Consequently, the JSs could not perceive /ɔ/ correctly. Fig 8 shows that the influence of Korean phonology appeared at the end of the word in the Japanese pronunciation. There were no errors in initial vowels, but this utterance is similar to that of other words; therefore, the understandability seems to be low. Korean words do not all have open syllables, so we assume that KLs concentrated on translation on the open syllables only(Fig 9). In consequence, the JSs recognized /kaQpu/ as /koQpu/ (grass).

## 6 Conclusion

We verified that JSs can guess the words to

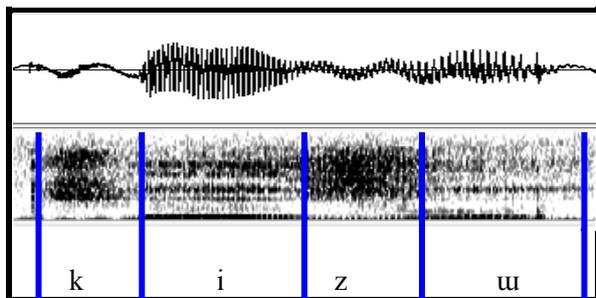


Fig. 3 Utterance of the word “quiz” in Japanese

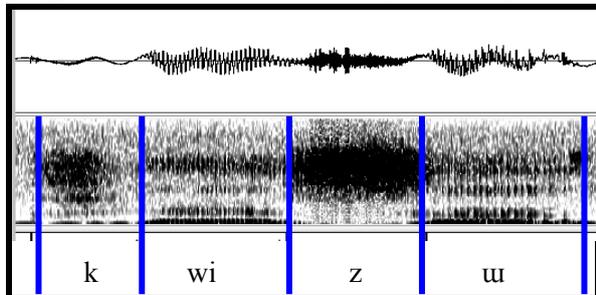


Fig. 4 Utterance of “quiz” in Korean

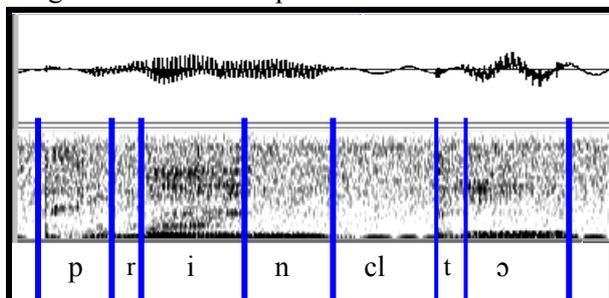


Fig. 5 Utterance of “printer” in Japanese

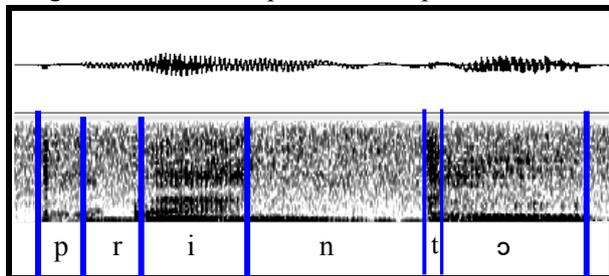


Fig 6 Utterance of “printer in Korean

some extent despite pronunciation errors by KJs. We also confirmed that some problems occur with vowel errors that have not been examined in detail until now. Although this study does not define what the most important factors are in speech, it does indicate that vowels are important in loanwords.

Furthermore, we need to clarify the priority of speech factors that affect KJs’ word recognition. We also need to identify the differences in the perception category of vowels between KJs and KJs through perception experiments.

### Acknowledgment

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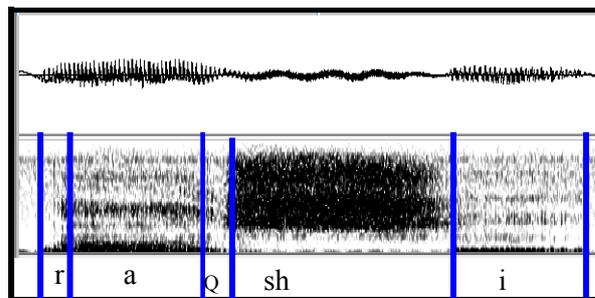


Fig 7 Utterance of “rush” in Japanese

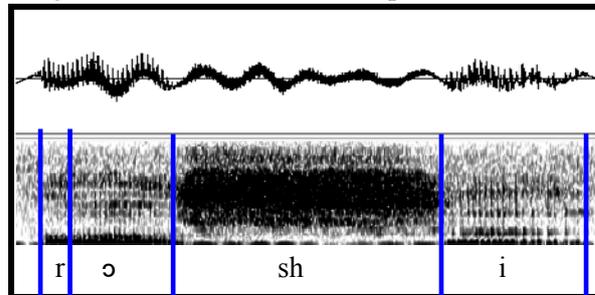


Fig 8 Utterance of “rush” in Korean

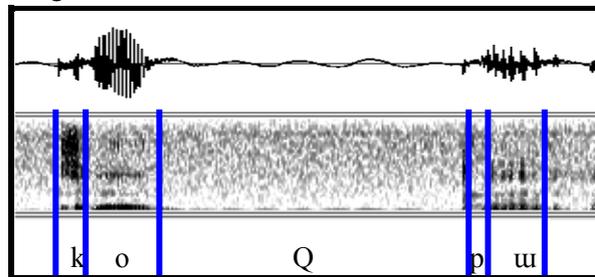


Fig 9 Utterance of “cup” in Japanese

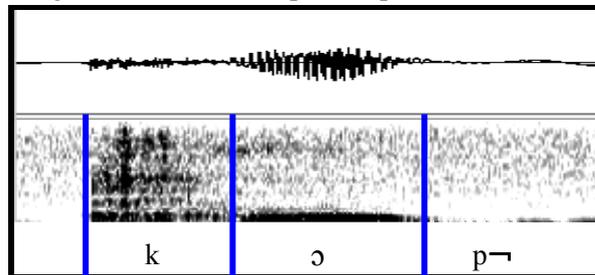


Fig 10 Utterance of “cup” in Korean

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