

## **Identification of English Consonants and Vowels in Sentence-Embedded Words by Professional Interpreters and Student Interpreters**

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*The present research examines phonetic perception (i.e., listening skills) of Japanese professional interpreters and Japanese student interpreters. The research was carried out in order to verify the results of Takahashi (2009) and Takahashi & Ooigawa (2009). In the present research, professional interpreters and student interpreters were asked to identify English consonants and vowels in words embedded in sentences. As in Takahashi & Ooigawa (2009), the results show that there is no significant difference between the two groups. However, there is a significant difference between the results of returnees (i.e., kikoku-shijo in Japanese) and non-returnees. The results suggest that the differences in phonetic perception derive not from the interpreting career, but from the early residential experience.*

### **1. Introduction**

The present research examines phonetic perception (i.e., listening skills) of Japanese professional interpreters and Japanese student interpreters. We conducted an identification test (i.e., listening test) of English consonants and vowels with the two groups. In the test, the participants (i.e., listeners) were asked to listen to recordings and identify the words embedded in sentences.

The present research aims to verify the results of Takahashi (2009) and Takahashi & Ooigawa (2009). In Takahashi (2009), nine Japanese student interpreters were asked to interpret English materials into Japanese, and their interpretations were analyzed to identify the common problems in their interpretations. This study found out that omissions were one of their common problems. In this case, omissions do not simply

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mean summarization. In case the participants did not phonetically identify a word or words, they guessed the meaning based on only the words they had heard and made up a story. Therefore, the meaning of some sentences was distorted. This type of omissions was referred to as problematic omissions in order to differentiate from summarization. In Takahashi (2009), after the participants had completed an interpreting task, they were asked the reason why the problematic omissions had occurred. Eight out of nine students answered that they had difficulties in identifying English words phonetically. They said that it was easy for them to understand the meaning of the words when they saw the words, but they could not identify the words or sentences only by listening. We wondered whether their claims were true. However, no empirical studies answered our question on the relationship between listening skills and interpreting performance (or comprehension). Therefore, we conducted the research, Takahashi & Ooigawa (2009). The purpose of the study was to examine whether the students could identify the words that included minimal pairs. In this study, seven Japanese student interpreters were asked to identify English consonants (i.e., /l/, /r/, /s/, and /θ/) included in isolated single words by listening. In order to compare the result to that of the student interpreters, five Japanese professional interpreters were asked to participate in the same experiment. The results showed that there was no significant difference between the two groups. However, there were limitations in the research. First of all, the number of the participants was small (five professional interpreters and seven student interpreters). Secondly, the identification tasks included only an isolated single word of minimal pairs. Therefore, the tasks may have been too easy. Moreover, the participants may have been able to identify the words correctly by concentrating on only a single word. Thirdly, the speaker who produced the material was only one native speaker of American English. Fourthly, the paired words were limited to a small number of minimal pairs and did not include any vowel contrasts. In order to overcome these limitations, in the current research, we increased the participants and the speakers, and we conducted a more complicated identification test including more consonant and vowel contrasts. The stimuli and procedures of the present experiment are the same as in Ooigawa & Takahashi (in press).

The research question of the present paper is: Are there any significant differences in phonetic perception (i.e., listening skills) of English consonants and vowels between professional interpreters and student interpreters?

The present paper has six sections. The first section is the introduction of the present paper, where we present the purpose of the present research, the previous research and a research question. The second section explains the experiment. The results and discussion are in the third and the fourth section respectively. In the fifth section, the paper deals with future research. The paper ends with the conclusion in the sixth section.

## **2. Experiment**

### **2.1 The Purpose of the Experiment**

The purpose of the experiment was to compare the results of the identification of English words in sentences by Japanese professional interpreters with those of Japanese student interpreters.

### **2.2 Stimuli**

The stimuli were produced by native speakers of American English. In the research, only American English was targeted because it is the most widely learned form of English in Japan.

#### **2.2.1 Speakers**

Two male and one female native speakers of American English participated in the recording. One of the male speakers was 20 years old and from the state of California. The other was 21 years old and from the state of Washington. The female speaker was 20 years old and from the state of Kentucky. They asserted that they had no difficulties in speaking and hearing.

#### **2.2.2 Words and sentences**

We used paired words, each of which included the following contrasts: /l/-/r/ (e.g. lane/rain), /s/-/θ/ (e.g., sink/think), /b/-/v/ (boat/vote), /dz/-/z/ (cards/cars), /ɑr/-/r/ (farm/firm), /o/-/ou/ (e.g., ball/bowl), and /i/-/I/ (sheep/ship). Each of the paired words was embedded in the same passage or sentence. We used passages and single sentences that make sense with either word's selection. For example, in the case of 'ball/bowl', the sentence was "Would you pass me the ball/bowl?" As the aim of the research was to examine phonetic perception, it was decided to eliminate contextual information that might possibly help the listeners identify the target words through inferring. The paired words, the passages, and the sentences are shown in Table 1. All the materials were proofread by a native speaker (i.e., a university lecturer of English language in Japan) and a Japanese university professor of English teaching.

Table 1. *List of the materials (i.e., stimuli). In order to avoid some symbol coding troubles (i.e., garbling), we use these phonemic transcriptions instead of IPA (International Phonetic Alphabet) fonts.*

### ***Contrasts of the consonants***

***/l/-r/***

#### ***lane & rain***

1. I like driving very much, but while I was driving, the **lane** got on my nerves that night.
2. I like driving very much, but while I was driving, the **rain** got on my nerves that night.

#### ***long & wrong***

3. He was anxious to know the answer very much. But as the answer was **long**, he got mad.
4. He was anxious to know the answer very much. But as the answer was **wrong**, he got mad.

#### ***flight & fright***

5. The last time I had a **flight**, I watched a movie on the plane.
6. The last time I had a **fright**, I watched a movie on the plane.

#### ***play & pray***

7. Don't study too much on Sunday. You should **play** a little bit.
8. Don't study too much on Sunday. You should **pray** a little bit.

#### ***pleasant & present***

9. My family came to visit. So they were **pleasant**.
10. My family came to visit. So they were **present**.

***/s/-/θ/***

#### ***sink & think***

11. He seemed to be very depressed. He was **sinking** in the pool while swimming.
12. He seemed to be very depressed. He was **thinking** in the pool while swimming.

#### ***pass & path***

13. The **pass** over the mountain was open again after the snow.
14. The **path** over the mountain was open again after the snow.

***/b/-/v/***

boat & vote

15. All you need is one more **boat**; otherwise you wouldn't be able to win the race.
16. All you need is one more **vote**; otherwise you wouldn't be able to win the race.

**/dz/-/z/**

cards & cars

17. When he passed by the store, he saw a lot of **cards** inside the store.
18. When he passed by the store, he saw a lot of **cars** inside the store.

*Contrasts of the vowels*

**/ar/-/r/**

farm & firm

19. I would like you to come and see what I am doing, so please visit our **farm**.
20. I would like you to come and see what I am doing, so please visit our **firm**.

**/o/-/ou/**

ball & bowl

21. Would you pass me the **ball**?
22. Would you pass me the **bowl**?

hall & hole

23. When I entered the garden, I was very surprised, because I saw a huge **hall** in the garden.
24. When I entered the garden, I was very surprised, because I saw a huge **hole** in the garden.

**/i/-/I/**

sheep & ship

25. The **sheep** I saw while traveling along the coast in Northern France was white.
26. The **ship** I saw while traveling along the coast in Northern France was white.

2.2.3 Recording

The native speakers of American English mentioned in 2.2.1 produced these stimuli in the soundproof room belonging to the Phonetics Laboratory of Sophia University. The speakers were asked to read out the materials in a random order at least five times. The utterances were recorded onto a digital recorder (Sony Linear PCM Recorder PCM-D50) through a microphone (Sony ECM-MS957) and digitized at 48 kHz with 16 bits. Two tokens per type (i.e., the passages or sentences) were selected from the recorded materials.

### **2.3 Listeners (Participants)**

The listeners were 11 Japanese professional interpreters (39-49 years old) and 11 Japanese student interpreters (20-22 years old). The language combination was English and Japanese. All the listeners were Japanese nationals. As for professional interpreters, the length of interpreting service was 5-11 years. The definition of a student interpreter in the present research is a university student who had received at least one semester of English-Japanese interpreting training. All the listeners asserted that they had no difficulties in speaking and hearing.

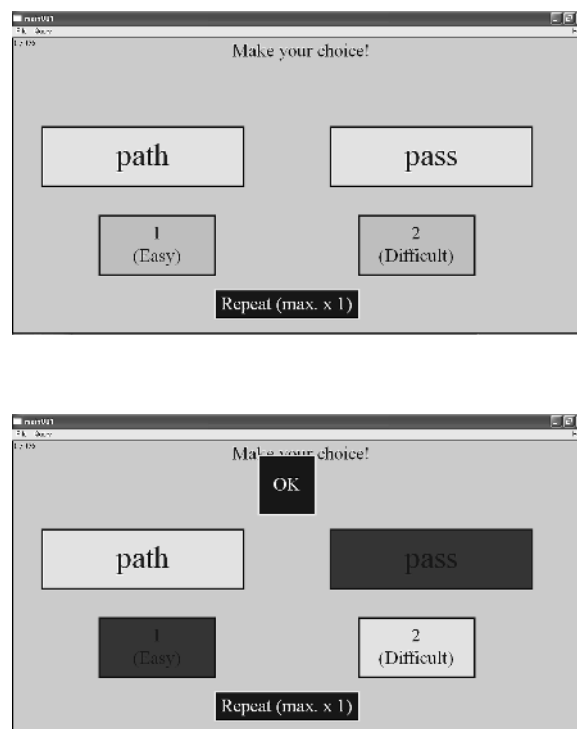
Each group included both returnees (i.e., *kikoku-shijo* in Japanese) and non-returnees. In the present research, a returnee is defined as a person who had spent at least one year outside Japan before reaching 15 years old due to his/her parents' job, and had been educated in English, and had returned to Japan before the age of 19 years old. The returnees had attended local schools in the case of English-speaking countries, or American or British or international schools in the case of non-English-speaking countries. Out of 11 professional interpreters, five were returnees. Out of 11 student interpreters, three were returnees.

### **2.4 Procedures**

The perception experiment was conducted in the same soundproof room where the stimuli had been recorded. We used a computer software program Praat Ver.5.1.17 (Boersma & Weenink, 2009) as an interface. The listeners individually participated in the experiment. First, they sat at the laptop personal computer wearing headphones. They saw two buttons on the screen that indicated the paired words (e.g., lane/rain) included in the forthcoming recording. 0.5 seconds later, they listened to the short spoken passage or the single sentence on the headphones which were connected to the computer. The listeners were asked to click the button indicating the word that they thought had been included in either a single sentence or passage. Also they were asked to click either a "Difficult" button or an "Easy" button below the words on the display. When the listeners were not able to make an instant decision, they were to click the "Difficult" button. When the listeners were able to make a choice without a moment of hesitation, they were to click the "Easy" button. The listeners repeated the same procedure in each trial. The listeners were allowed to make a correction to their responses before clicking the "OK" button to proceed to the next trial. Once they click "OK", they were not allowed to return to the previous trial. When one play was not convincing enough to make a choice, they were permitted to play the recording one more time by clicking the "Repeat" button for each trial. The experiment included 176 trials (26 words x 2 tokens x 3 speakers + 20 distracters). The listeners were asked to take a short break after finishing every 44 trials. The stimuli were presented in a random order. Prior to the experiment, the listeners were provided with a warm-up session consisting of 12 trials with a break after six trials. The contrasts used for the warm-up session were not included in the materials used for the

experiment. During the warm-up session, the volume was adjusted to a listening level that was comfortable for each listener. Examples of the displays used for the experiment are shown in Figure 1. In order to ensure the validity of the test, we asked three native speakers of American English (20-21 years old) to try the same experiment individually before the study. They answered all the questions correctly. These native speakers were different from the ones who had participated in the recordings.

Figure 1. *The displays used for the experiment in the case of path/pass. After clicking “pass” and “Easy”, the “OK” button appears.*



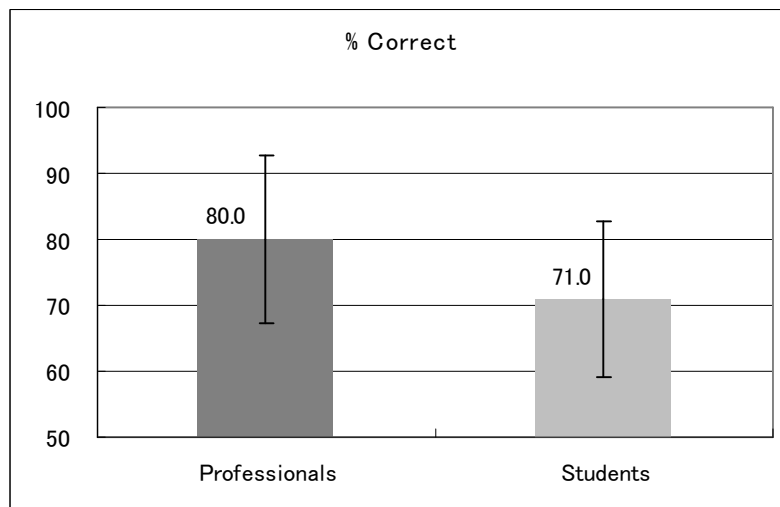
### 3. Results

We report the rates of accurate identification of the listeners. We do not report the results of the Easy/Difficult buttons because we have not finished the analyses of them yet.

#### 3.1 Comparison between the Professionals and Student Interpreters

Figure 2 shows the results of the professional interpreters and student interpreters. The mean rate of accurate identification of the professional interpreters is 80.0% and that of the student interpreters is 71.0%. The Mann-Whitney  $U$  test showed that the difference in the scores between the two groups was not significant ( $U = 35.0, p > .05$ ).

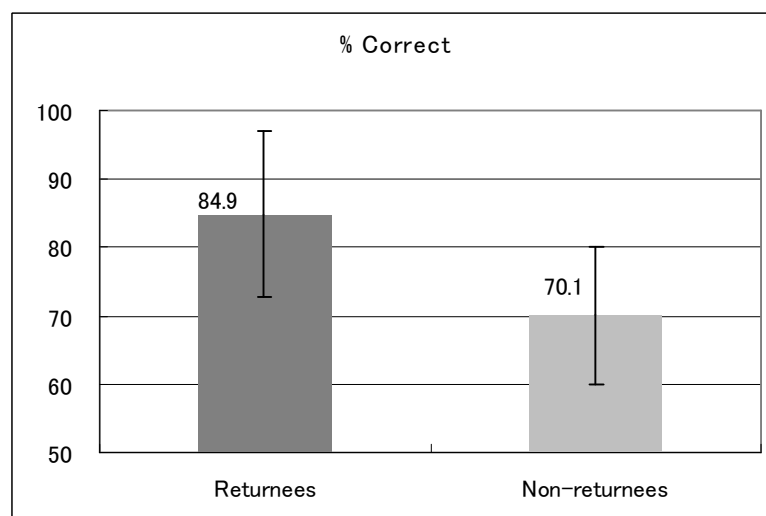
Figure 2. *The mean rates of accurate identifications of the professional interpreters and the student interpreters. The error bars indicate the standard deviations.*



### 3.2 Additional Comparison between the Returnees and Non-returnees

For further analysis, we reclassified the listeners into returnees and non-returnees. Figure 3 shows the results of the eight returnees (including five professionals and three students) and fourteen non-returnees (including six professionals and eight students). The mean rate of accurate identification of the returnees is 84.9% and that of the non-returnees is 70.1%. The Mann-Whitney  $U$  test showed that the difference between the scores of the two groups was significant ( $U = 20.0, p < .05$ ).

Figure 3. *The mean rates of accurate identifications of the returnees and the non-returnees. The error bars indicate the standard deviations.*





#### **4. Discussion**

The results show that there is no significant difference in the scores between the professional interpreters and the student interpreters. These results indicate that the student interpreters identified the English consonants and vowels in virtually the same manner as the professional interpreters. That means, there is no difference in phonetic perception (i.e., listening skills) of English consonants and vowels in short content words embedded in sentences between the professional and the student interpreters.

The results of further analysis show that the group of returnees consisting of both professionals and student interpreters identified the consonants and vowels significantly better than the group of non-returnees consisting of both professionals and student interpreters. Therefore, the results suggest that the differences in phonetic perception derive not from the interpreting career, but from the early residential experience.

However, we are still wondering why student interpreters in Takahashi (2009) claimed that they had listening problems. Where have the claims come from? The possible causes of the problematic omissions are still unknown. We intend to discuss the following points as possible causes.

First of all, there is the possibility that the phonetic problems of the students lie in other areas. The current research focused only on the identification of English consonants and vowels in short content words embedded in sentences. Content words tend to be stressed in sentences, so that they were pronounced more clearly than function words (e.g., Ladefoged, 2006), which may have helped the participants identify the words in the experiments. However, the present research did not include any research that examined the participants' ability to identify the reduced syllables represented in such function words as prepositions and conjunctions. The lack of accurate identification of such words may mislead the students and make it difficult for them to follow the story. Even in the case of content words, there are unexpected allophones. For example, 'city' sounds like 'cidy' in American and Australian English, and 'twenty' sounds like 'tweny' in American English. The students might not have such knowledge regarding phonetics and phonology.

Secondly, another possible listening problem might have been their response time. In the present experiment, we did not measure the response time, so that it is not known how fast the participants identified the consonants and vowels. Although we did not measure the time required by the participant, it was felt that the professionals might have completed the task faster than the students. Therefore, in order to verify our impression, we should carry out phonetic perception experiments considering these phonetic elements and the response time.

#### **5. Future Research**

In order to identify possible causes for the problematic omissions that we discussed above, we would like to continue our research by conducting experiments with respect to

unexpected allophones, reduced syllables, and response time in the next phase. In order to achieve our ultimate goal, that is, to establish the relationship between phonetic perception (i.e., listening skills) and interpreting performance, we would like to continue our research from a variety of aspects.

## **6. Conclusion**

We conducted an identification test with Japanese professional interpreters and Japanese student interpreters. This experiment was carried out in order to examine the differences in identification of English consonants and vowels between the two groups. The results showed that there was no significant difference in phonetic perception between the professional interpreters and the student interpreters. Although there have been changes made to the previous experiment, the results of the present research are the same as those of the previous research, Takahashi & Ooigawa (2009). According to the results of the two experiments, it can be said that there is no significant difference in phonetic perception between professional interpreters and student interpreters.

We reanalyzed the data, and found that the group of returnees consisting of both professionals and student interpreters identified the consonants and vowels significantly better than the group of non-returnees consisting of both professionals and student interpreters. It is likely that early residential experience is more striking for phonetic perception (i.e., listening skills) than interpreting careers.

Although the results indicate that there is no significant difference in phonetic perception between professional interpreters and student interpreters, it is assumed that the interpreter students may have other phonetic problems that result in problematic omissions. We would like to continue our research in order to identify the real causes of their problematic omissions.

Lastly, note that we have no intention to say that a returnee professional interpreter is more qualified than a non-returnee professional interpreter. In addition, it is still unknown from the results of the present research that a returnee has an advantage over non-returnees in interpreting. We need to continue our research from a variety of aspects.

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