

Perception of American English “can” and “can’t” by Japanese professional interpreters*¹

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In the present research, we conducted a questionnaire survey and a perception experiment on the identification of American English “can/can’t” contrast with Japanese English-Japanese interpreters. The present research was initiated by the personal comments that were made by a staff member of an interpreter agency and by professional interpreters. The results of the questionnaire indicate that almost all the professional interpreters have had difficulty identifying the contrast in their careers. According to the results of the experiment, the professional returnee interpreters identified the contrast perfectly while the professional non-returnee interpreters did not do so perfectly.

1. Introduction

1.1 Purpose of the present study

The present research explores perception of American English “can” and “can’t” by Japanese professional English-Japanese interpreters. The present research was initiated by the personal comments that were made by a staff member of an interpreter agency and by professional interpreters. According to the comments, clients of interpreters sometimes make complaints about the interpreting service to the agency. In most cases, their complaints are concerned with accuracy, among which there are cases where the meaning of interpretations was opposite to that intended. That means source speeches that had positive meanings were switched into ones with negative meanings and vice versa.

Often interpreters complain about difficulties discriminating “can” and “can’t” while interpreting, particularly at the time when they were not well informed in advance

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of the background of the conversations to be interpreted. They insisted that they had to confirm the meaning of the speech, asking whether the speaker said “can” or “can’t”, before starting to interpret, when they were allowed to do so or when they were able to do so at the time of consecutive interpretations. According to their comments, there are cases where the meaning of the source speeches can be perceived as both positive and negative because of the lack of adequate background knowledge. However, such complaints were only from personal comments, not actual data obtained from an empirical study.

In English, the contracted form of the auxiliary verb “can’t” accompanies only the phoneme /t/ while the other contracted forms of the auxiliary verbs accompany the cluster /nt/, such as “shouldn’t” and “couldn’t” (Nakayama, 2000). According to a pronunciation dictionary edited by John Wells (2008), the pronunciation of “can” is [kən] for the weak form and [kæn] for strong form and that of “can’t” is [kɑ:n(t)] in RP (i.e., Received Pronunciation, or British English)*². In American English, pronunciation of “can” is [kən] for the weak form and [kæn] for strong form, and that of “can’t” is [kæn(t)]. For the strong form, the only difference of the contrast in American English is the consonantal segment /t/. However, the alveolar consonant /t/ is not clear when “can’t” is followed by a consonant. The contrast is clearer in RP because the vowels are different for each case.

To our knowledge, two previous studies on perception of American English “can” and “can’t” by native speakers of Japanese have been done: Matsui (1998) and Nakayama (2000). The first paper indicated the difficulty of the identification by untrained Japanese listeners of “can’t” with unreleased [t] in “I can’t go.” Unfortunately, the second paper about perception did not show clear results. Moreover, the two studies did not deal with the perception of Japanese interpreters. In other words, to our knowledge, there has been no research on the perception of “can” and “can’t” by interpreters.

We conducted the present study partly because there are complaints against interpreters by clients, which may result from poor discrimination of “can” and “can’t”, and because there is no research on this theme. We used the contrast of “can” and “can’t” in American English because the contrast in American English may be more difficult to discriminate than that in RP.

1.2 Research questions

When one combines personal comments collected from the agent staff and professional interpreters, one can conclude that professional interpreters have difficulty identifying “can” and “can’t” while interpreting. However, the claims are only within the range of personal comments. In order to examine the actual phenomena regarding the identification of the contrast, we raised two research questions and intended to verify the comments by the present research.

The research questions are the following; “Have professional interpreters ever had

difficulty identifying “can” and “can’t” while interpreting?” and “How accurately do professional interpreters identify “can” and “can’t”?”

The first question is whether they have ever had difficulty identifying the two words. In order to answer the question, a survey was conducted by means of a questionnaire. In doing so, the personal comments would be verified. Also, the results of the questionnaire would tell us whether professional interpreters are aware of the closeness of the pronunciations of the two words in conversations, realizing a risk of mis-identification. In order to answer the second question, we intended to examine the identification of the two words by professional interpreters under the experimental condition, and to compare the results with the ones obtained from the questionnaire.

The aim of the study is to examine whether the two words are phonologically difficult to identify even for Japanese interpreters; if so, there is always a risk of misunderstanding in the interpretations in case the source speech includes either of the two words. The ultimate goal of the study is to examine the relationship between interpretation and perception.

2. Questionnaire

2.1 Purpose of the questionnaire

The purpose of the questionnaire was to verify the informal comments. In order to compare with the results of the professionals, we also asked student interpreters and untrained returnee students to participate in the research. We divided the participants into two groups: “returnees” and “non-returnees” because our previous studies (Ooigawa & Takahashi, 2010; Takahashi & Ooigawa, 2010) indicated that perception of English consonants and vowels is significantly different between returnee and non-returnee interpreters.

2.2 Research participants

The participants were five returnee professional interpreters (39-46 years old), six non-returnee professional interpreters (42-49 years old), two returnee student interpreters (21 and 22 years old), ten non-returnee student interpreters (20-22 years old), and ten untrained returnee students (20-24 years old). As for professional interpreters, the length of interpreting service was from 5 to 11 years. The language combination of the interpreting was English and Japanese.

All the participants were Japanese nationals. In the present research, a returnee is defined as a student who had spent at least one year outside Japan before reaching 12 years old due to his or her parents’ job, and had returned to Japan before the age of 19 years old. The returnees in the present research were educated in English either at local

schools in the case of English-speaking countries, or international schools in the case of non-English-speaking countries. The definition of a student interpreter in the present research is a university student who had received at least one semester of English-Japanese interpreter training.

2.3 Procedures

Before the perception experiment, the participants answered a question in a questionnaire form. The question was different for each group. For the professionals, the question was “Have you ever had difficulty identifying can/can’t in your interpreter assignment?” For the student interpreters, the question was “Have you ever had difficulty identifying can/can’t in your interpreter training?” For the untrained returnee students, the question was simply “Have you ever had difficulty identifying can/can’t?” Though the participants had to mark either “Yes” or “No”, some participants answered “No” for British English and “Yes” for American English. In this case, we counted it as “Yes”.

2.4 Results of the questionnaire

Figure 1 shows the rate of the answer “No” for the questionnaire. The rate given by the returnee professional interpreters is 20%, while that given by the non-returnee professional interpreters is 0%. In other words, only one professional interpreter said “No”. As for the students, the rate given by returnee student interpreters is 100% while that given by non-returnee student interpreters is 30%. All the untrained returnee students said “No”. More professionals answered “Yes” than students did, and all the returnee students replied “No”.

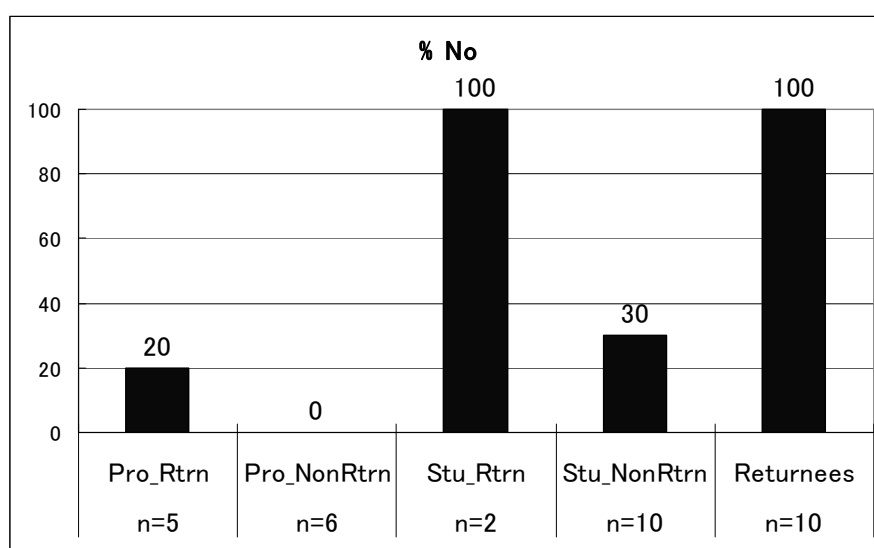


Figure 1. The results of the questionnaire. The percentages indicate each rate of the answer

“No”. The labels at the bottom of the figure, Pro_Rtrn, Pro_NonRtrn, Stu_Rtrn, Stu_NonRtrn and Returnees, indicate returnee professional interpreters, non-returnee professional interpreters, returnee student interpreters, non-returnee student interpreters, and untrained returnee students, respectively. “n” indicates the number of the participants.

3. Experiment

3.1 Purpose of the experiment

The purpose of the experiment was to compare the results of the identification test of American English “can” and “can’t” embedded in sentences among returnee/non-returnee professional interpreters, returnee/non-returnee student interpreters and untrained returnee students. The procedures of the present experiment were the same as those applied in our past studies Ooigawa & Takahashi (2010) and Takahashi & Ooigawa (2010).

3.2 Material stimuli

3.2.1 Words and sentence

We used the paired words “can” and “can’t”. Each word was embedded in the same passage: “We know that there are a great variety of systems in place in the world. In the case of Japan, however, we have a large population in such a small country. So this system can(’t) work”. This passage makes sense with either word’s selection. As the aim of the research was to examine phonological perception, it was decided to eliminate contextual information that might possibly help the listeners identify the target words through inferring. The materials were proofread by a native speaker (a university lecturer of English language in Japan) and a Japanese university professor of English education.

3.2.2 Recording

A male native speaker of American English participated in the recording. He was 20 years old from the state of Pennsylvania. He asserted that he had no difficulties in speaking and hearing.

The speaker produced these stimuli in the soundproof room belonging to the Phonetics Laboratory of Sophia University. The speaker was asked to read out the materials including distracters 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 (the passage) were selected from the recorded materials.

3.2.3 Acoustic analysis

In order to investigate the acoustic cues to identify “can” and “can’t”, we conducted acoustic analyses of the portions “can(’t) work” of each token, using a computer software program Praat Ver.5.1.17. We analyzed the spectrograms referring to Ladefoged (2003) and (2006).

According to the previous studies, in American English, “can” can be realized as [k^hæ̃n], and “can’t” can be realized as [k^hæ̃ʔ] (Ladefoged, 2006; Shockey, 2003; Wells, 1982). The spectrograms in “can work” show the clear [n] between [æ] and [w] while those in “can’t work” do not have a clear [n] (see, Figure 2). In other words, each sound of /æ̃n/ was realized as a nasalized vowel without nasal consonant: [æ̃]. In the waveforms and spectrograms in “can’t work”, we found gaps between [æ̃] and [w]. The gaps indicate that each /t/ was realized as a glottal stop: [ʔ].

In addition to the segmental differences, there are pitch and durational distinctions. The waveforms indicate that the pitch pattern of “can work” is HL (high low) and that of “can’t work” is either LH (low high) or HH (high high). As indicated by the waveform of “can work”, the number of pulse waves in “can” is larger than that in “work”. In “can’t work”, “can’t” has as many pulse waves as “work”. Unfortunately, the precise fundamental frequencies of each word token are not available because some parts of the vowels are too creaky to detect the fundamental frequencies by using Praat.

As for the duration, “can’t” is longer than “can”. The lengths of “can’t” are 324 ms and 265 ms for each token, and those of “can” are 230 ms and 212 ms.

The two tokens of the vowel in “can” were realized as [æ], not [ə]. In other words, these “can” tokens were produced as a strong form. These clearly pronounced “can” tokens and the pitch pattern distinctions between “can” and “can’t” might result from the speaker’s focus on “can”. The speaker might be pronouncing “can” clearly in order to avoid the confusion between “can” and “can’t” though we had not asked to do so in the recording.

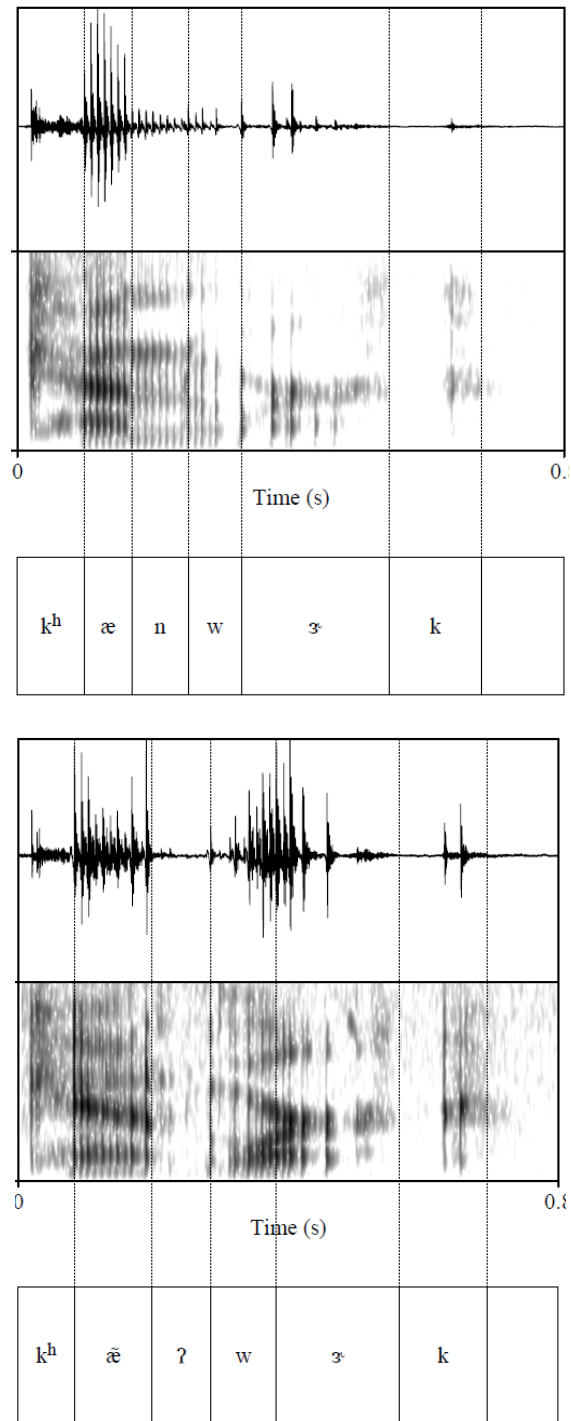


Figure 2. Examples of the waveforms and spectrograms in “can work” (upper) and “can’t work” (lower). The total duration of the each waveform is 800 ms. The settings of each spectrogram are as follows: the view range is 0.0-5000.0 Hz, the window length is 0.005 seconds, the dynamic range is 50.0 dB.

3.3 Listeners and procedures

The listeners were the research participants who had answered the questionnaire (see,

section 2.2). In order to ensure the validity of the test, we asked seven native speakers of American English (20-34 years old) who had not participated in the recordings to do the same task individually. All the listeners asserted that they had no difficulties in speaking and hearing.

The procedures of the present experiment were the same as the ones applied in our past studies (Ooigawa & Takahashi, 2010; Takahashi & Ooigawa, 2010). The perception experiment was conducted in the soundproof room where the stimuli had been recorded. We used a computer software program Praat Ver.5.1.17 as an interface. The listeners individually participated in the experiment. First, they sat at the lap top personal computer wearing headphones. They saw two buttons on the screen that indicated the paired words (i.e., can/can't), and 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 they heard. The listeners repeated the same procedure in each trial. They were allowed to make a correction to their responses before clicking the "OK" button to proceed to the next trial. Once they clicked "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. In this paper, we report the results of 4 trials (2 words x 2 tokens x 1 speaker) which included "can" and "can't". In other words, in 176 trials, the participants listened to the four tokens of the following passage: "We know that there are a great variety of systems in place in the world. In the case of Japan, however, we have a large population in such a small country. So this system can(?t) work". The listeners were asked to take a short break after finishing 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 stimuli used for the warm-up session were not included in the materials used in the experiment. During the warm-up session, the volume was adjusted to a comfortable listening level for each listener.

3.4 Results of the experiment

3.4.1 Comparisons among the listener groups

Figure 3 shows the results of each listener group. The native speakers, the returnee professional interpreters, and returnee students performed perfectly in the identification test of "can" and "can't". The mean rate of accurate identification of non-returnee professional interpreters is 75.0%, that of non-returnee student interpreters is 67.5%, and that of untrained returnee students is 95.0%. These results indicate that, except for returnee professional and student interpreters, native speakers of Japanese can confuse

“can” and “can’t” without any contextual information even in a comfortable listening environment.

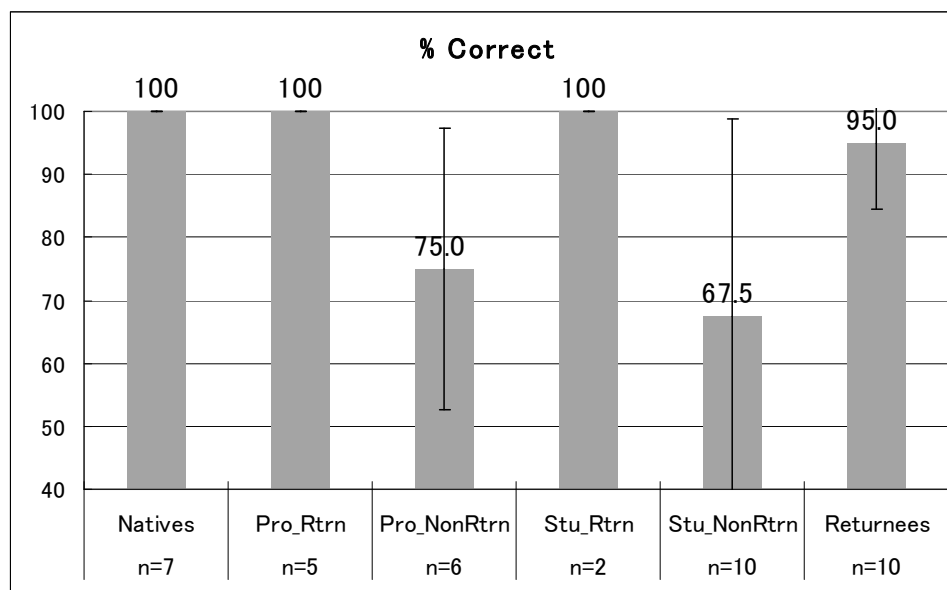


Figure 3. The results of the “can” and “can’t” identification experiment. The error bars indicate the standard deviations. The labels at the bottom of the figure, Natives, Pro_Rtrn, Pro_NonRtrn, Stu_Rtrn, Stu_NonRtrn and Returnees, refer to natives (Americans), returnee professional interpreters, non-returnee professional interpreters, returnee student interpreters, non-returnee student interpreters, and untrained returnee students, respectively. “n” indicates the number of the listeners.

3.4.2 Comparison among the stimuli

Figure 4 shows the identification results for each stimulus. The results for natives, returnee professional and student interpreters are not shown since they identified each stimulus correctly (100%).

As for the first token of “can”, the correct identification rates obtained from the non-returnee professional interpreters, the non-returnee student interpreters, and the untrained returnee students are 50% (i.e., chance level), 50%, and 100%, respectively. For the second token of “can”, the correct rates are 50%, 60%, and 90%, respectively. For the first token of “can’t”, the correct rates are 100%, 70%, and 90%, respectively. For the second token of “can’t”, the correct rates are 100%, 90%, and 100%, respectively.

The mean rates of accurate identification of “can’t” are always higher than “can” except the rate for untrained returnee students. These results suggest that to identify “can” was more difficult than “can’t” for all the non-returnees, suggesting that clearly pronounced “can” might be difficult to distinguish from “can’t”.

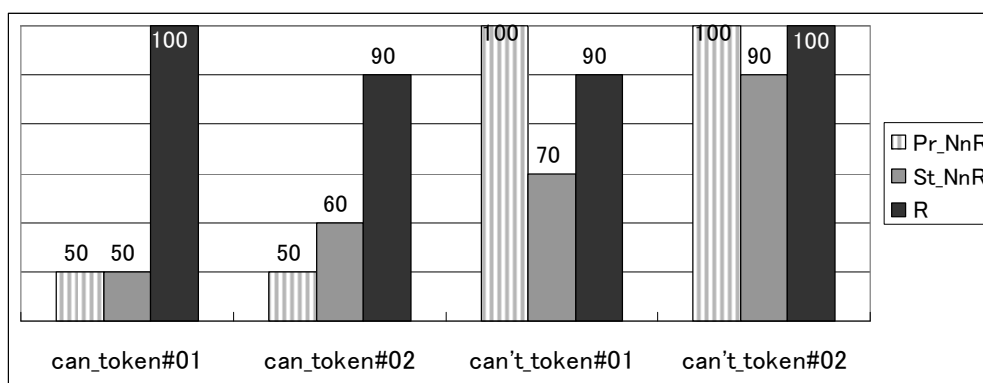


Figure 4. The correct identification rates of each stimulus. Pr_NnR, St_NnR and R indicate non-returnee professional interpreters, non-returnee student interpreters, and untrained returnee students, respectively.

4. Discussion and conclusion

4.1 The questionnaire

The results of the questionnaire indicate that almost all the professional interpreters have had difficulty identifying “can” and “can’t” in their careers (see, Figure 1). Even the returnee professionals have such difficulty. However, all the returnee student interpreters and untrained returnee students have never had such difficulty. These phenomena might result from the professional experiences, their longer exposure to English, professional responsibility and pressure as a professional interpreter. The returnee student interpreters and returnee students are much younger than the professionals (see, section 2.2), and they have no career as professional interpreters. Therefore, there is the possibility that their limited exposure did not allow mis-perceiving this pair of words. Moreover, it is possible that they did not notice their mis-perception. Since they were not professionals, they had no responsibility. The lack of professional responsibility might result in a lack of self-awareness.

The results of the questionnaire also indicate that the majority of the non-returnee student interpreters have had difficulty identifying “can” and “can’t”. It must be due to lower exposure to English during childhood.

4.2 The experiment

4.2.1 Among the listener groups

The results of the experiment indicate that all the returnee professional interpreters identified the contrast and that untrained returnee students performed almost perfectly (see, Figure 3). Perhaps this is because of their much greater exposure to English during childhood than non-returnees. The correct identification rate of the non-returnee student

interpreters was the worst. It might be because they had the least exposure to English. Overall, returnees performed better than non-returnees.

4.2.2 Among the stimuli

The results of the experiment also indicate that “can” was more difficult to identify than “can’t” for all the non-returnees. As mentioned in 3.2.3, the two tokens of “can” were pronounced as a strong form. The weak form of “can” is [k^hən]. If the speaker pronounced [k^hən] for “can”, it might be easier to discriminate from “can’t”. The contrast of [k^hən] and [k^hæŋ] seems more difficult to discriminate than that of [k^hən] and [k^hæŋʔ] for non-natives because the first contrast has more common sounds than the second contrast does.

4.3 The questionnaire and the experiment

Figure 5 is a combined graph of Figure 1 and Figure 3. We can see the gaps between the results of the questionnaire and the experiment. The biggest gap is observed in the results given by returnee professionals. The returnee student interpreters have no gap.

The two results of each non-returnee group are consistent. Both results indicate that the contrast is difficult to discriminate for non-returnees. However, as for the returnees, while the two results of each student returnee group are consistent, those of returnee professional interpreters show a big gap. This gap may be due to differences in length of exposure to English. If one can perform the identification perfectly in the experimental condition, longer life experience gives one the possibilities of mis-perception in the real world.

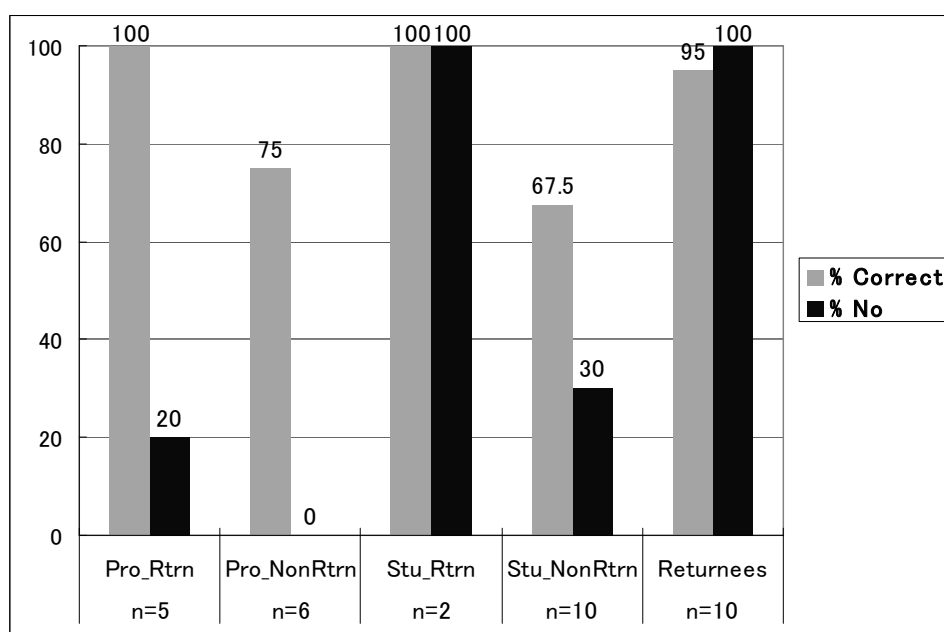


Figure 5. The combined graph of the results of the questionnaire and the experiment. Pro_Rtrn, Pro_NonRtrn, Stu_Rtrn, Stu_NonRtrn and Returnees indicate returnee professional interpreters, non-returnee professional interpreters, returnee student interpreters, non-returnee student interpreters, and untrained returnee students, respectively.

4.4 Conclusion

In the present research, we conducted a questionnaire and perception experiment on the identification of American English “can” and “can’t” with Japanese professional interpreters. The research questions were “Have professional interpreters ever had difficulty identifying “can” and “can’t” while interpreting?” and “How accurately do professional interpreters identify “can” and “can’t”?” The answer for the first question is “Yes”. Almost all the professional interpreters marked “Yes” in the questionnaire. The answer for the second question is “under the experimental condition, the returnee interpreters identified the contrast perfectly while the non-returnee interpreters did not do so perfectly. Especially, the identification of strong formed “can” seemed to be difficult for the non-returnees.” It is interesting that there was a gap between the results of the questionnaire and the experiment for the returnee professional interpreters. The phenomenon might result from their long careers as “professional” interpreters.

5. Future research

5.1 Remaining Questions

The following questions are left unanswered. The first one is “Why have the returnee professional interpreters had difficulty identifying “can” and “can’t” in their assignments despite their high performance in the experiment?” The answer for this question may guide us to the answer of the other question: “What is the relationship between ‘perception’ and ‘interpreting’?” The second question is “What is the most important acoustic cue(s) to discriminate “can” and “can’t”?” The present study showed some differences in the contrast, but the most important cue(s) that help(s) non-natives identify the contrast is/are still unknown.

5.2 What we should do in the future

In order to answer to the question as to “What is the relationship between ‘perception’ and ‘interpreting’?”, we should conduct research studies about correlation between interpretation performance scores and perception scores, segment identification tests in natural conversation, and expected effect of phonetic education in interpreter training.

In order to know the acoustic cue(s) for the identification of “can” and “can’t”, we should use more varieties of the stimuli such as including a sentence-final “can” and “can’t”, the contrast before consonant/vowel, a sentence with/without of a focus on the contrast, and the contrast in other English accents. We should also ask more varieties of listeners such as naive listeners, all kinds of English learners, and native speakers with other English accents.

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Notes

1. The present paper is the modified and developed version of our working paper: Takahashi, K., & Ooigawa, T. (2011). A pilot study on perception of American English “can” and “can’t” by Japanese professional interpreters. *Sophia University Working Papers in Phonetics 2011*, 37-52.
2. The contracted forms have no weak form (Collins & Mees, 2008).

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