報告番号	※ 第 号

主 論 文 の 要 旨

論 文 題 目　The Use of Prosody in Auditory Sentence Processing by Japanese EFL Learners

氏　　　　名　　　後藤　亜希

論 文 内 容 の 要 旨

This study investigates the differences in the use of prosodic information in listening activities between first language speakers of English and Japanese learners of English as a foreign language. Although there has been some research on the use of prosodic information during sentence processing in L2, the number is much smaller than in L1. In addition, few of these sentence-level studies have fully considered whether prosody is used differently depending on sentence structure or listeners' proficiency in the target language, or how prosodic information is used differently in L1 or L2. Furthermore, a number of studies have failed to consider bias due to sentence structure.

In this study, I formulated and examined a model that includes the factors, such as learners' proficiency, bias and sentence structures, that have not been fully considered in previous studies. The use of prosodic information during sentence processing by Japanese EFL learners and English L1 speakers will be compared considering these factors. In addition, this study attempted to find out what kind of prosodic information listeners utilize more efficiently in auditory sentence processing. To explain how prosodic information is used in auditory sentence processing, this study uses sentence structures that are influenced by listeners' preferences.

Considering the factors discussed thus far, the following research questions were set for this study:

1. Do Japanese EFL learners use prosodic information in sentence processing while listening?
2. Do Japanese EFL learners' differences in English proficiency affect their use of prosodic information?

3. Does Japanese EFL learners' preference toward verb structure affect the use of prosodic information?

4. Does the use of prosodic information differ between Japanese EFL learners and English L1 speakers?

Chapter 1 presented the research motivation and the purpose for this study. As presented above, research questions are also described along with the background.

Chapter 2 explained the listening processes in L1 and L2. It also presented major studies of the role of prosodic information during listening processing in L1 and similar major studies for L2. It provided an overview of how prosody has been used in speech processing and describe the relationship between this study and previous studies. In addition, it discussed the sentence processing theory for the sentence structures employed in this study (i.e., early closure and late closure). After reviewing studies with L1 and L2 speakers, the aim of this study is presented.

Chapter 3 reported Experiment 1. In Experiment 1, a sound judgement task was conducted on Japanese EFL learners and English L1 speakers to investigate whether they use prosodic information differently in auditory sentence processing using intact and flat pitch (flat F0) information. Experiment 1 used temporally syntactically ambiguous sentences that in addition trigger a bias in sentence processing due to verb preference (*e.g., Early closure: Because the girl studied, the word is clear now vs Late closure: Because the girl studied the word, it's clear now*). Two different types of speech with different pitch information were used to identify which prosodic information Japanese EFL learners and English L1 speakers rely on more in sentence processing. The results showed that Japanese EFL learners used pitch information to understand sentence structures in both early and late closure sentences. In late closure sentence processing, there was no significant difference in the correct ratio between the flat F0 and prosody conditions. In early closure sentence processing, listeners successfully matched the sentence structure with prosodic information when intact prosody was presented. However, when the pitch information was flattened, listeners had difficulty grasping the sentence structure during early closure. Since the study revealed a higher accuracy rate for prosodic conditions in both early and late closure sentences, this suggests that Japanese EFL learners tend to rely on pitch information when processing sentences. In addition, learners with a higher proficiency in English were able to use prosodic cues more accurately. This suggests that learners with higher proficiency can more accurately predict sentence structures using prosodic information.

The use of prosodic information by Japanese EFL learners was also compared with that of English L1 speakers. The results showed that Japanese EFL learners had a significantly

lower correct response ratio of early closure sentences in the flat F0 condition than English L1 speakers. The results suggest that English L1 speakers use information other than pitch, such as duration and pauses, to process sentence structure even in the flat F0 condition. In conclusion, when one prosody element is missing, English L1 speakers can compensate it with other information to process the sentence, whereas Japanese EFL learners have difficulty utilizing other prosodic information.

Chapter 4 reported Experiment 2. A gating method is used to reveal the incremental use of prosodic information by Japanese EFL learners and English L1 speakers. In the gating method, sentences are presented gradually from the beginning to the end of the ambiguous part. The structure of the target sentences was same as the Experiment 1. The results showed whether the fluency and accuracy of sentence processing using prosodic information differed between Japanese EFL learners and English L1 speakers. To summarize the results, learners with higher English listening proficiency were better able to correctly predict sentence structures from prosodic information than were those with lower proficiency. Japanese EFL learners and English L1 speakers are both affected by their preference for late closure when not enough prosodic information is provided to predict the sentence structure in gate sizes 1 and 2. Although both groups were affected by the late closure principle, English L1 speakers were more strongly affected by it than were Japanese EFL learners. After gate size 3, where more prosodic cues are available, the correct response ratio of English L1 speakers was higher than that of Japanese EFL learners. English L1 speakers thus use prosodic information to grasp sentence structure earlier than Japanese EFL learners do in sentence processing.

In Chapter 5, as a summary of this paper, I review and summarize the results of Experiments 1 and 2. In addition, the results of the two experiments are discussed with an eye to characterizing the use of prosody in auditory sentence processing by Japanese EFL learners and English L1 speakers. I also present the differences between the results of previous studies and the new findings of this study. Furthermore, the limitations of this study and the prospects for future research on the relationship between prosodic information and sentence processing are discussed based on the results obtained in this study. It is hoped that this dissertation will contribute to the development of future listening research.