

Different brain activity during non-speech sound processing between good and poor L2 learners of pronunciation: an fMRI study

Kaori Hoshi
Tohoku University

Satoru Yokoyama
Tohoku University

Hiroshi Hashizume
Tohoku University

Hyeonjeong Jeong
Tohoku University

Kei Takahashi
Tohoku University

Toshimune Kambara
Tohoku University

Takeshi Ogawa
Tohoku University

Ryuta Kawashima
Tohoku University

Abstract: Despite studying second language in the same situation, pronunciation skills are sometimes different among individuals. We hypothesized that the way to process non-speech sound reflects second language pronunciation performance and we examined it by using an fMRI. This experiment was approved by the ethical committee of Tohoku University.

Firstly, native speakers of English assessed the pronunciation performance of seven right-handed healthy Japanese adult learners of English. Secondly, based on the above results, we divided them into good and poor groups, and compared the brain activities during non-speech sound processing between the two.

The results supported our hypothesis, since the left inferior frontal gyrus was more active for good than poor group, while the left posterior superior temporal gyrus was more active for poor than good group. Our results suggest that different strategies for non-speech sound processing influence second language pronunciation performance.