

Contribution of the Bilateral Middle Temporal Gyri to the Processing of Lexical Categories

Toshimune Kambara

Department of Functional Brain Imaging, IDAC, Tohoku University, Japan

Satoru Yokoyama

Department of Functional Brain Imaging, IDAC, Tohoku University, Japan

Kei Tahahashi

Department of Functional Brain Imaging, IDAC, Tohoku University, Japan

Naoki Miura

Department of Functional Brain Imaging, IDAC, Tohoku University, Japan Department of Intelligent Mechanical Systems Engineering, Kochi University of Technology, Japan

Tadao Miyamoto

Graduate School of International Cultural Studies, Tohoku University, Japan

Daiko Takahashi

Graduate School of International Cultural Studies, Tohoku University, Japan

Shigeru Sato

Graduate School of International Cultural Studies, Tohoku University, Japan

Ryuta Kawashima

Department of Functional Brain Imaging, IDAC, Tohoku University, Japan

Abstract: Our previous study has reported difference of activations among four lexical categories (verbs, nouns, adjectives and adverbs). However, there is no evidence of common neural activations during the processing of them. The purpose of this fMRI study was to examine whether there are common neural substrates for processing of lexical categories. In our study, we asked 32 right-handed healthy Japanese subjects to judge whether a presented word is a real Japanese word or not. This experimental protocol was approved by the ethical committee of Tohoku University. Our results showed that the bilateral middle temporal gyri are commonly activated during processing of all four lexical categories as compared with pseudowords. This finding suggests that the bilateral middle temporal gyri play a crucial role to access to information of lexical categories.