AN ERP RESEARCH ON CHINESE JAPANESE LEARNERS' PROCESSING OF JAPANESE KANJI AND SENTENCES

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Abstract. *This paper investigates the recognition process of Japanese Kanji and sentences for Chinese Japanese learners (CJL) and native Japanese speakers (NJS), by analyzing the event-related potential (ERP) differences between the two groups while they visually recognized Japanese Kanji and sentences. The results showed that no significant differences were found between the two groups while they recognized Japanese Kanji, but significant differences were found in Japanese sentences condition, which demonstrated that the neural mechanisms of recognition process of Japanese sentences including Kana between the two groups were not identical. The N400 latency of NJS appeared earlier, reflecting that NJS recognized Japanese sentences quicker than CJL did. In contrast, the obvious longer N400 duration of CJL illuminated it was more difficult for CJL to recognize Japanese sentences. When recognizing ambiguous sentences, CJL P600 only appeared over the right prefrontal cortex and lasted longer than that of NJS, reflecting that syntactic integration and revision of ambiguous sentences for CJL was related with the right hemisphere, and the processing load was more difficult than that of NJS. The results showed that, for CJL, the difficulty of Japanese language learning was the recognition and understanding of Japanese sentences with Kana, not Japanese Kanji.*
Keywords: Event-related potential, N400, P600, Semantic processing, Syntactic processing

1. **Introduction.** From the 1980s, event-related potentials (ERP) technology has been used widely in cognition process study. The ERP technique is particularly well-suited for the study of language recognition process, as it is non-invasive, and the most important is able to track the brain's processing of information in real time (on a millisecond time scale). In addition, this technique provides information concerning the scalp distribution of peaks and troughs in the ERP waveform. Hence, we can confirm different brain generator configurations according to the electrical activity recorded at the scalp, and detect the neural mechanisms of language recognition process. N400 is one of ERP components which often is used to study the language recognition principle. We can describe the language recognition process by the latency, amplitude and scalp distributions of N400. The latency, amplitude and scalp distributions reflect the time course, difficulty degrees and brain