

Abstract

Radicals are not only constituent components in Chinese orthography, but also basic processing units in character recognition. The present study investigated the role of radical components in character recognition and the interrelationship between the processing of radicals and characters. Horizontally structured Chinese characters were used as stimulus materials, each character containing two radicals. In Experiments 1 to 4, the participants were required to identify the particular radicals in the stimulus characters that were displayed briefly. It was found that radicals in high-frequency characters were recognized faster and more accurately than radicals in low-frequency characters, and that radicals on the right side of characters were recognized better than those on the left side. The magnitude of position effect was greater for low-frequency characters. The task in Experiments 5 to 9 was character decision, in which the participants were required to judge whether a stimulus item is a real character or not. The results indicate that the speed and accuracy of character recognition can be improved in the following conditions: (1) the semantic relation between a character and its radical is close; (2) a character contains a radical that is also a character by itself; (3) the right radical in a character has high type frequency (i.e., the radical can form many characters with other radicals); (4) the frequency of the stimulus character is high. Similar

to the radical identification task, the interaction between radical level factors and character frequency has been consistently found in the character decision experiments. The effects of radical's semantic cueing function, lexicality and type frequency were greater for low-frequency characters. The results from the two sets of experiments in the present study imply that character recognition involves processing at both character level and radical level and that the activation at different levels interacts with each other. When the properties of radicals provide information relevant to character level processing, character recognition is facilitated. The processing of radicals at different positions in characters is not conducted in a completely parallel way. Furthermore, radical processing depends on character level processing. Once the processing at the higher character level is completed, the lower level units will not be processed any more. Therefore, radical level factors mainly affect the recognition of low-frequency characters. In summary, the present study specified the role of radical components in character recognition and offered an interactive activation view of lexical processing in Chinese.