

### **E33 LEARNING TO READ A LOGOGRAPHIC WRITING SYSTEM AS A SECOND LANGUAGE: AN ERP STUDY OF L2 CHINESE PROFICIENT READERS**

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For native readers of alphabetic scripts, learning to read a logographic system such as Chinese is challenging. This is not only because Chinese characters look drastically unlike from words in alphabetic scripts, but also because mappings between orthographic and phonological units in the two systems are different. In this study, we investigated two measures of orthography-phonology mapping-- phonological regularity and consistency--in relatively proficient late-acquired second language (L2) readers of Chinese in lexical decision (LD) and delayed naming (DN) tasks. Most Chinese characters are phonograms, which have a phonetic radical that carries phonological information. Regularity in these phonograms is defined by the congruence between the pronunciation of a phonogram and that of its phonetic radical. Consistency is the extent to which the pronunciation of the phonogram is shared by other phonograms with the same phonetic radical. A recent study has shown that in native Chinese readers, regularity and consistency produced divergent effects in behavioral measures as well as event-related potentials (ERPs) (Yum et al., 2014). Native readers showed regularity effects at the N170, P200, and N400 components, and consistency effects at the P200 component. These effects were only observed in DN, and were not present in LD. The current study aimed to examine the sensitivity of L2 Chinese readers to regularity and consistency effects in DN and LD. Participants were native readers of alphabetic systems who acquired L2 Chinese after age 5 with a reading level at or above grade 4 in Hong Kong. Similar to native Chinese readers of grade 4 reading level, L2 participants were faster to respond to and more accurately named regular than irregular phonograms, but did not show significant consistency effects behaviorally. ERP effects of regularity were found to begin at the P200 component, with irregular phonograms generating a greater positivity over the right hemisphere in LD compared to regular phonograms. Irregular phonograms also elicited diminished N400 in DN and enhanced late-positive component (LPC) in both tasks. In contrast, inconsistent phonograms elicited enhanced N400 in LD and attenuated LPC in both tasks relative to consistent phonograms. The regularity effects were consistent with previous reports, suggesting that L2 readers accessed the pronunciation of the phonetic radical, which created interference with the whole character pronunciation and lexico-semantics. L2 readers also processed the neighborhood characteristics of the phonetic radicals, although consistency effects emerged after regularity effects, possibly because regularity is inherent in a character's orthography, but consistency is derived from the activation of phonological forms of its orthographic neighbors. The different directions and time courses of the effects supported that even in late-acquired L2 Chinese readers, regularity and consistency were distinct mechanisms of orthography-phonology mapping. Relative to native readers, both regularity and consistency effects appeared at slightly later components, reflecting lower efficiency in character processing in L2. Moreover, unlike native readers, L2 readers showed phonological effects in lexical decision, suggesting that less skilled readers may access phonological representation of the character to support lexicality judgment.