

## Abstract

This study examined the homophone family size effect in spoken Chinese using monosyllabic and disyllabic homophones, and disyllabic words with a homophonic syllable. For each of these three types of words, the family size effect was measured in Exp. 1 to 3 using the auditory lexical decision task. In Exp. 1, participants showed slower response to monosyllabic homophones with a larger family size than those with a smaller family size. In Exp. 2, participants showed an opposite family size effect for disyllabic homophones (e.g. /mi<sup>4</sup> feng<sup>1</sup>/密封 and 蜜蜂), that is, higher accuracy to disyllabic homophones than disyllabic non-homophones. In Exp. 3, the family size effect for disyllabic words with a homophonic syllable was found to be dependent on word frequency, an inhibitory effect was present for low frequency words, regardless of whether the first or the second syllable was the homophonic syllable. Using the same three types of words and the same task, Exp. 4 to 6 examined the neural basis of the family size effect with event-related potentials (ERPs). Results showed that the family size effect mainly resulted from access to the multiple semantic meanings associated with a spoken word. In addition, there was evidence that the multiple word-forms of a homophone were activated in a relatively early state (300-500 ms) during spoken word recognition when the first syllable of a disyllabic word was homophonic.

The study provides the first systematic set of data for the homophone family size effect, demonstrating its presence in spoken Chinese word recognition.

The results indicate that such effects could be mainly attributed to activation of

multiple semantic representations, in line with the primary goal of meaning access for spoken word comprehension. However, it seems that listeners sometimes do activate orthographic information for fine discrimination when the meaning was uncertain.