Learning polysemy in a second language is a challenging task, given that it is often hard to translate the senses of polysemous words from one language to another. How similar is the representation of the polysemous senses of a word between a native speaker and a second language learner? Does learning an L2 influence one’s L1 mental lexicon? The present study addressed these questions using a forced-choice categorization task adapted from Klein & Murphy (2002). This task asked participants to decide whether the target sense of a polysemous word goes best with a polysemous sense of the word, a thematic word, or a taxonomic word. For example, for the polysemous word “paper”, the sentence *Dictionaries are usually printed on thin paper* presented the target sense of “paper”, and the response options were *The evening paper has big news today* (i.e. the polysemous sense), *The pen writes smoothly* (i.e. a thematic word), and *She bought two yards of cloth* (i.e. a taxonomic word). The assumption of this categorization task is that senses in the same category are represented together in the mental lexicon. Therefore, choosing the polysemous sense can be interpreted as being core-sense oriented in terms of the representation of polysemy.

The stimuli were composed of 3 types of polysemy: polysemes carrying a few senses with a high frequency target sense and a high frequency polysemous sense (FewHighHigh), polysemes carrying many senses with a high frequency target sense and a high frequency polysemous sense (ManyHighHigh), and polysemes carrying many senses with a high frequency target sense and a low frequency polysemous sense (ManyHighLow). Participants were 3 groups of native English speakers (monolingual group, N=18; early bilingual group, N=24; late bilingual group who learned an L2 after age 10, N=17), and three groups of native Chinese speakers who acquired English as a foreign language (advanced Taiwanese group, N=19; intermediate Taiwanese group, N=28; low-intermediate Taiwanese group, N=42). All participants performed the experiment in English, which was L1 for the English groups and L2 for the Chinese groups.

Percent choice of the polysemous sense was low, ranging from 15% to 32%, indicating that respondents were not core-sense oriented, but favored separate representation of polysemous senses. However, groups varied in how strongly they preferred separate sense representations. ANOVA revealed an interaction between types of polysemy and groups of participants (p<.05). Both the early bilingual group and the late bilingual group did not differ from the monolingual group, indicating that learning an L2 does not influence the representation of L1 polysemy. A continuum showing the different stages of second language development appeared when comparing monolinguals with the 3 Taiwanese groups. The advanced Taiwanese group's mental lexicon was similar to native speakers' mental lexicon. The intermediate Taiwanese group was more core-sense oriented than the monolingual group when responding to ManyHighLow items, but resembled monolinguals for the other 2 types of polysemy. The low frequency senses were plausibly difficult for the intermediate Taiwanese group to identify as separate senses, and they thus considered them to have the same meaning as high frequency senses. The low-intermediate group was more core-sense oriented than the monolingual group when responding to all 3 types of polysemy, indicating that the low-intermediate group perceived different senses of polysemous words less well than the other bilinguals. This study demonstrated that the representation of L2 polysemy can be native-like once the L2 proficiency achieves an advanced level.