

# Neurocognitive Approaches to Lexical Semantic Representations in First and Second Languages

*Ping Li*

*Department of Chinese and Bilingual Studies, Faculty of Humanities  
The Hong Kong Polytechnic University*

The study of lexical semantics has traditionally focused on native languages (L1) and has not paid enough attention to second language (L2). This has further been the case in neurocognitive studies of lexical semantic representations. In this talk, I propose to examine lexical semantic representations in both L1 and L2, with perspectives and approaches taken from the rapidly developing field of neuroscience of language. In particular, I present evidence on the similarities and differences between L1 and L2 with regard to the functional and structural signatures of two languages in the bilingual brain. I will discuss (1) the study of nouns and verbs in Chinese native speakers and Chinese-English bilinguals, using functional magnetic resonance imaging (fMRI) techniques and brain network analyses, (2) embodied semantic representations in Chinese and English, (3) representation of semantic networks as result of the context of learning, and (4) dynamic changes of lexical semantic representations in the competing L1 and L2 systems, and finally (5) methods in computational and corpus-based analyses of neural representations of semantic concepts in L1 and L2. Findings from our research provide insights into the understanding of conceptual representation and neuroplasticity.

## **Biosketch**

Ping Li (李平) is Chair Professor of Neurolinguistics and Bilingual Studies and Dean of the Faculty of Humanities at the Hong Kong Polytechnic University. He previously served as Professor of Psychology, Linguistics, and Information Sciences & Technology at the Pennsylvania State University, where he also serves as Director of the *Center for Brain, Behavior, and Cognition*, and Associate Director of the *Institute for CyberScience*. The goal of his research is to understand the neuro-computational bases of language learning, and its relationship with culture, brain, and technology. His recent work uses brain-based, cyber-enabled and data-intensive methods to study language learning, bilingualism, and reading comprehension. Li is Editor-in-Chief of *Brain and Language* and Associate Editor of *Frontiers in Psychology: Language Sciences*. He previously served as Editor of *Bilingualism: Language and Cognition* and *Journal of Neurolinguistics*, as President of *Society for Computers in Psychology*, and Program Director of *Cognitive Neuroscience* and of *Perception, Action and Cognition* at the US National Science Foundation. For more information about his research, visit <http://blclab.org/>.