

Seminar

The Effects of Typographic Features on the Eye Movements in the Reading of Chinese

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ERP Evidence on Verbal Semantic Detection

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Date: 8 February 2018 (Thursday)
Time: 12:00 nn – 1:30 pm (Reception with light sandwiches at 11:45am, talks start at 12nn. To facilitate the order of sandwiches, please register through email chchung33@cityu.edu.hk.)
Venue: B6605, Yeung Kin Man Academic Building, City University of Hong Kong

Two Presentations of 30 min each, followed by a 30 min discussion on collaboration activities

Linguistics and Neuroscience

1. The Effects of Typographic Features on the Eye Movements in the Reading of Chinese

Typographic features significantly impact text readability and reading behaviours. For most existing experiments on Chinese reading, however, typographic settings have rarely been empirically justified, leaving it unsure how well the data obtained from an experiment of this kind truly reflect normal reading. To ensure the validity, reliability and consistency of our eye tracking experiments on Chinese word segmentation, we have examined four major typographic features of Chinese text, namely, text-background luminance contrast, word spacing, character size and character spacing, in order to identify their optimal ranges. This talk will present our experimental results and discuss how eye movements are affected by the settings, especially how a non-optimal setting affects reading efficiency. We will focus on the following findings: (1) a too low luminance contrast slows down visual information extraction; (2) word spacing increases the reading speed on words but slows down the overall reading, due to more fixations to be spent on spaces; (3) increases in character size and character spacing both shorten fixation duration and generate more fixations; and (4) a larger character spacing causes more fixations on spaces.

Biography



Dr. Kit is a computational linguist currently teaching and researching in computational linguistics and machine translation in the Department of Linguistics and Translation. He joined the City University in September 1996. He obtained his BEng degree in computer science and technology from Tsinghua University (1985), MSc in computational linguistics from Carnegie Mellon University (1994) and PhD in computer science from the University of Sheffield (2001). He also holds an MA degree in applied linguistics from the Chinese Academy of Social Sciences (1988) and an MPhil in Linguistics from the City Polytechnic (later renamed University) of Hong Kong (1993). He was one of the youngest among those who pioneered Chinese language processing in the mid-1980s when he started his academic career in the Institute of Applied Linguistics, Ministry of Education, PRC.

Dr. ZHOU Nannan received her PhD in Psycholinguistics at City University of Hong Kong. Her research interests include eye movements in reading, the cognitive/neurocognitive basis of language processing, and Chinese word recognition.

Seminar

2. ERP Evidence on Verbal Semantic Detection

This study aims to provide behavioral and neuropsychological evidence for lexical semantic analysis of verb classes in Mandarin. It has been observed that placement (PL) verbs, such as 放, differ from cause-to-move (CM) verbs, such as 搬, in constructional variations despite their semantic relatedness as caused-motion events (Liu forthcoming). The study will further explore and verify the analytical distinctions between the two related but distinct verb classes pertaining to the semantic frame of caused-motion (Fillmore, 1982), through conducting behavioral and ERP experiments with Mandarin native speakers. Two phases of experiments are designed: The first phase is a behavioral rating test to verify the grammaticality (acceptance) of sentences embedded with the verbs. According to Mandarin VerbNet (<http://verbnet.lt.cityu.edu.hk/#/>), PL verbs may collocate with locative zài 在 'at' as well as the path marker dào 到 'to', but CM verbs can only take path markers. Questionnaires are designed for subjects to decide the acceptance through grading on a scale from 1 (unacceptable) to 5 (totally acceptable). To compile the stimuli, 25 CM verbs and 18 PL verbs are selected; 9 verbs of spatial configuration (SC verbs, as verbs of related frames) and 8 verbs of non-related classes (OV verbs) are selected as fillers. 256 sentences are rated by 140+ participants and each sentence is rated by at least 15 subjects ($n \geq 15$). For the distinctions of CM and PL verbs: CM verbs prefer dào 'to' to zài 'at' (T-test $p < 0.001$; effect size > 0.5) while PL verbs allow both, as shown below:

Verbal collocation	Test Items (Examples)	Score [1.0-5.0]
CM verb + dào	那个农民把水果背到市集	3.75 (preferred)
CM verb + zài	那个农民把水果背在市集	1.73 (non-preferred)
PL verb + dào	那个家属把医生堵到墙角	4.38 (preferred)
PL Verb + zài	那个家属把医生堵在墙角	4.4 (preferred)

The second phase is done with ERP experiments to further investigate the possible semantic and syntactic reasons for the unexpected accepted/unaccepted cases, based on results of the tests in phase one as the norming. A subset of the test items will be used to study the constructional mismatch of verb and construction in ERP settings. 5-10 participants will be recruited to view the chunked sentences with the trigger points implanted at the positions of both the verb and its differentiating markers (dào vs. zài). Both temporal and distributional patterns of ERPs will be measured, analyzed and compared to see if significant variations can be detected that implicate semantic processing (such as N400), syntactic processing (such as P600), or other functions. Linguistic accounts will then be adjusted accordingly. The possibilities of interpreting and analyzing neurophysiological data will be thoroughly examined to allow for a full scope of detection. The study offers an innovative approach to complement and strengthen linguistic analysis, which paves the way for further interdisciplinary research and applications.



Professor Meichun Liu received her PhD in Linguistics from the University of Colorado at Boulder in 1993. Before joining the Department of Linguistics and Translation, City University of Hong Kong as the Head in August 2015, she taught in the Department of Foreign Languages and Literature, National Chiao-Tung University (NCTU) since 1994 and was promoted to the rank of Professor of Linguistics in 2002. Between 2003 and 2006, she was the Chair of the Department of Foreign Languages and Literature of NCTU. In 2007-08, she was the Director of NCTU Library. In 2013-14, she was the Coordinator of the Teaching Chinese as a Foreign Language Certificate Program. She was also a Visiting Scholar at the Department of Linguistics, University of Colorado at Boulder, and a Visiting Scholar at the Department of East Asian Languages and Cultures, Stanford University.

Ms. Betie Lee is now a PhD Candidate of Linguistic and Translation Department at City University of Hong Kong. Her current research project is about mismatch effect in semantic and syntactic processing.

**** ALL ARE WELCOME ****

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