

Department of Linguistics and Translation

Distinguished Lecture series

The Neural Biological Foundation of Language

(a non-credit bearing course)

Date

29 February – 28 April 2016

Time

16:00 – 18:00

Venues

(For the lecture on 29 February)

LT-5, Yellow Zone, Floor 4, Academic 1

(For lectures from 14 March onwards)

B7603 (LT Multi-purpose Room)

Blue Zone, Level 7, Academic 1

City University of Hong Kong

Schedule

Note: Each of the lectures is of 2 hours.

Date	Speakers	Titles
29 Feb (Mon)	1. 曾志朗 Ovid Tzeng Chair Professor, Brain Research Center, National Chiao-Tung University 2. 吳嫻 Denise Wu Professor and Director, Institute of Cognitive Neuroscience, National Central University	Language Study: Neural Biological Perspective 以神經生物觀點談語言研究 <u>Subtitle:</u> 曾志朗 Cognitive Neuroscience Studies of Cross-Language Reading and Writing: From The Perspective of The Orthographic Depth Hypothesis and The Affordance Theory of Script/Speech Mapping 吳嫻 The Contribution of Statistical Learning to Language Acquisition 統計學習能力對語言習得的貢獻
14 Mar (Mon)	1. 黃緒文 Hsu-Wen Huang Research Scientist, Department of Biological Science and Technology, National Chiao Tung University 2. 黃植懋 Chih-Mao Huang Assistant Professor, Department of Biological Science and Technology, National Chiao Tung University	Neurobiology of Language and Aging 語言與老化 <u>Subtitle:</u> 黃緒文 Hemispheric Differences in Language Processing. 左右兩半腦在語言處理上的差異 黃植懋 Insights into the Healthy Aging Mind: A Cognitive Neuroscience Perspective. 健康老年的心智：認知神經科學的觀點

Date	Speakers	Titles
30 Mar (Wed)	<ol style="list-style-type: none"> 林慶波 Ching-Po Lin Professor, Institute of Neuroscience 孫家偉 Chia-Wei Sun Associate Professor , Department of Photonics, National Chiao Tung University, Hsinchu, Taiwan 	<p>Modern Brain Imaging: MRI in Brain Sciences and Disorders 現代腦影像技術：磁振影像於腦科學與腦疾病應用</p> <p><u>Subtitle:</u> 林慶波 Brain connectivity signatures for aging, mild cognitive impairment and dementia 孫家偉 Functional Near Infrared Optic Brain Imaging</p>
11 Apr (Mon)	<ol style="list-style-type: none"> 鄭谷苑 Angela K. Tzeng Associate Professor and Director, Center of Theoretical Science and Department of Psychology, Chung Yuan Christian University 陳永儀 May Chen Assistant Professor, Institute of Cognitive Neuroscience, National Central University 	<p>Language, Emotions, and Well-Being 語言、情緒、與健康</p>
18 Apr (Mon)	<ol style="list-style-type: none"> 李佳穎 Chia-Ying Lee Research Fellow, Institute of Linguistics, Academia Sinica 蔡介立 Jie-Li Tsai Associate Professor and Director, Research Center for Mind, Brain & Learning, National Chengchi University 蘇仲怡 Erica Su Postdoctoral Researcher, Institute of Neruoscience, National Yang Ming University 	<p>Language, Brain, and Eye Movements 語言，大腦，與眼動</p> <p><u>Subtitle:</u> 李佳穎 Electrophysiological evidence for how readers make use of the contextual information during language comprehension 蔡介立 Eye Movements and Chinese Reading 眼動與中文閱讀 蘇仲怡 Chinese Spoken Word Recognition and Eye Movements 中文口語字彙的辨識與眼動</p>

Date	Speakers	Titles
28 Apr (Thu)	<p>1. 郭文瑞 Nissen Wen-Jui Kuo Associate Professor and Director, Institute of Neuroscience, National Yang Ming University</p> <p>2. 李俊仁 Jun Ren Lee Associate Professor, Department of Educational Psychology and Counseling, National Taiwan Normal University</p> <p>3. 鄭仕坤 Shih-Kuen Cheng Associate Professor, Institute of Cognitive Neuroscience, National Central University</p>	<p>Chinese Reading and Memory 中文閱讀與記憶</p> <p><u>Subtitle:</u> 郭文瑞 A neural mechanism underpinning Chinese compounding processes</p> <p>李俊仁 What are the behavioral characteristics of Chinese developmental dyslexia?</p> <p>鄭仕坤 How we remember and why we forget?</p>

29 Feb (Mon)

Language Study: Neural Biological Perspective

以神經生物觀點談語言研究



曾志朗 Ovid Tzeng

*Chancellor, University System of Taiwan, Taiwan
Academician and Distinguished Research Fellow, Institute of
Linguistics, Academia Sinica, Taiwan
Chair Professor, Brain Research Center, National Chiao Tung University,
Taiwan*

Speaker

Professor Ovid J. L. Tzeng was the Minister of Education, the Minister Without Portfolio of Executive Yuan, and the Minister of Council for Cultural Affairs in Taiwan. Since 1994, he has been a fellow academician of Academia Sinica. He is an outstanding researcher in Cognitive Neuroscience and Neurolinguistics and an experienced administrator in academic institutions. He has been also the Chancellor of the University System of Taiwan for several years, which was created by him and established to oversee and integrate the research and teaching developments of Taiwan's four top research universities, namely, Central-, Chiao-Tung-, Tsing Hua- and Yang Ming University. Prior to the Chancellorship, he was the Vice President of the Academia Sinica in Taiwan, in charge of International Scholarly Exchange Program as well the developments of Taiwan's International Graduate Program (TIGP). He not only created the TIGP, but also made sure that the program should serve students from developing countries. Currently, about 500 students from more than 43 countries enrolled in the program.

Cognitive Neuroscience Studies of Cross-Language Reading and Writing: From The Perspective of The Orthographic Depth Hypothesis and The Affordance Theory of Script/Speech Mapping

Abstract

Undoubtedly, the invention of symbolic representation for writing, reading and arithmetic in order to record cognitive events in daily life is the most important achievement of humankind. These three R's transform the nature of human learning from biologically primary learning to secondary neurocognitive learning with a specific cognitive architecture which allows human to organize stored information effectively and create new information as a result from interacting with the ever increasing complexity of socio-cultural life. In this report, we will review three neuro-imaging experiments on cross-linguistic reading, writing, and arithmetic, respectively in order to portrait the neurobiological developments of the secondary learning process in human. Five basic learning principles are identified to characterize the transformation processes of the evolving human intellect. They are imitation (mirror neurons), borrowing with modifications (assimilation and accommodation), huge-size storage (cognitive architecture for efficient information processing), transformation (mutation and changes as results of critical evaluation), and finally, knowledge connections (intelligence and creativity). They are Tools of the Mind in the Vygotskian sense, and parallel to the conceptual stages of both Piagetian (sensori-motor, preoperational, concrete operational, and formal operational) and Brunner's theory (enactive representation, iconic representation, and symbolic representation) of cognitive development in children. Their meaning can be captured in the following Chinese words: 成智五步：仿、借、存、轉、聯 (Five Learning Principles of becoming intelligent). Based on these five learning principles, the three R's transform students from illiterate to literate in order to meet challenges of solving complex problems in a modern high-tech society. As scientists, we should examine more closely the neurobiological underpinnings of the secondary learning processes with respect to the success and failure of learning to read and write and in particular from the perspectives of the orthographic depth hypothesis and the affordance theory of script/speech mapping relationship across different writing systems. Better instructional programs can then be implemented to promote literacy education in order to make readers become leaders in solving complex problems cooperatively.



吳嫻 Denise H. Wu

*Institute of Cognitive Neuroscience, National Central University,
Taoyuan, Taiwan*

*Laboratories for Cognitive Neuroscience, National Yang-Ming University,
Taipei, Taiwan*

Speaker

Dr. Denise Wu received her PhD degree in Cognitive Psychology from Rice University, and conducted postdoctoral research at the University of Pennsylvania. She joined the Institute of Cognitive Neuroscience at National Central University in Taiwan in 2005, and is currently a professor and the director of this institute. Dr. Wu has acquired extensive experience and expertise in employing neuroimaging methods to address issues concerning the relationship between the brain and behaviors. Her research achievements have been recognized by the Junior Research Investigators Award from Academia Sinica (2012) and the Taiwan Outstanding Young Female Scientist Award from Wu Chien-Shiung Education Foundation (2014). She is also elected as a Young Affiliate of the Academy of Sciences for the Developing World (TWAS) in 2014, and is one of the founding members and the councilors of the Taiwan Society of Cognitive Neuroscience.

The Contribution of Statistical Learning to Language Acquisition

Abstract

Learning to read a language is to connect word forms to their meanings, which requires mastering the systematic correlations among orthographic, phonological, morphological/syntactic, and semantic properties of words. In the presentation, I first summarize our empirical research with neuroimaging tools on characteristics of Chinese orthography, and how these characteristics affect the recognition and short-term retention of Chinese characters. Based on these findings, I introduce our explorations of determinants of Chinese literacy acquisition in adult second-language learners. The findings that statistical learning and visual short-term memory contribute to learning to recognize Chinese characters highlight the importance of both universal and specific factors, respectively, to second language learning.

14 Mar (Mon)

Neurobiology of Language and Aging

語言與老化



黃緒文 Hsu-Wen Huang

*Research Scientist at Department of Biological Science and Technology,
National Chiao Tung University*

Speaker

Hsu-Wen Huang

Experiences

Research Scientist at Department of Biological Science and Technology,
National Chiao Tung University

Project Assistant Professor at National Taiwan Normal University

Postdoctoral Research Fellow at Department of Psychology,
Beckman Institute for Advanced Science and Technology,
University of Illinois at Urbana Champaign

Research focus

language comprehension across lifespan and neurobiological organization of language
in the brain

Hemispheric Differences in Language Processing.

Abstract

Language is one of the most important and uniquely human activities. To successfully comprehend a message, information acquired through different sensory modalities must be rapidly combined and integrated with long-term knowledge. Although theories of language comprehension often assume that language comprehension arises along a single processing stream, leading to a single meaning representation for an utterance or text, there is an emerging understanding that comprehension arises along multiple, parallel processing streams in which the two cerebral hemispheres play complementary roles.



黃植懋 Chih-Mao Huang

*Assistant Professor
Department of Biological Science and Technology
Institute of Biomedical engineering
National Chiao Tung University, Taiwan*

Speaker

Chih-Mao Huang

Experiences

Postdoctoral Research Fellow

Institute of Linguistics, Academia Sinica, Taiwan

Ph.D. in Psychology (Cognitive Neuroscience), 2012

Department of Psychology and Beckman Institute for Advanced Science and Technology

University of Illinois at Urbana-Champaign, IL, USA

Research focus

Cognitive aging, cognitive neuroscience, electrophysiology, medical imaging.

Event-related potentials (ERPs), functional magnetic resonance imaging (fMRI), diffusion tensor imaging (DTI), and magnetoencephalography (MEG)

Insights into the Healthy Aging Mind: A Cognitive Neuroscience Perspective.

Abstract

The future paths of population aging induce an urgent need for the guidelines for elderly individuals to achieve successful aging, to protect against accelerated cognitive decline, onset of dementia, and progression to Alzheimer's disease. It is imperative to gain deeper understanding of age-related changes in neurocognitive functions for the development of human engineer techniques. We utilizes both advanced neuroimaging techniques (MRI, EEG, and MEG) and experimental psychological measurement to investigate age-related and individual differences in neural function associated with cognitive abilities such as attention, memory, learning, and executive processing. Despite age-related declines in behavior and cognition were reported as a dominant picture of the aging mind, compelling evidence from the burgeoning fields of cognitive neuroscience of aging are stimulating new hypotheses and provide a more integrative view of the aging mind.

30 Mar (Wed)

Modern Brain Imaging: MRI in Brain Sciences and Disorders

現代腦影像技術：磁振影像於腦科學與腦疾病應用



林慶波 Ching-Po Lin

*Professor, Brain Connectivity Laboratory, Institute of Neuroscience,
National Yang-Ming University*

Speaker

Ching-Po Lin Ph.D., acquired his Ph.D. degree from Dept. of Electrical Engineering, National Taiwan University in 2002. After two years postdoctoral training in the same lab, he was recruited as an assistant professor at Institute of Neuroscience, National Yang-Ming University in 2004. He was promoted as associate professor and full professor in 2009 and 2012. During the period, he was honored by young-investigator award from NSC, outstanding paper award from AAD and MAN, and outstanding scholar award from Yang-Ming Univ. He was also served as associate editor for two prestigious journals, Brain Connectivity and Frontiers in Brain Imaging Methods. He also served as editorial board for Plos One. During 2010-2012, he was also invited to be a program committee for Organization of Human Brain Mapping.

Dr. Lin has long dedicated to study advanced MRI techniques for brain connectivity and applied for brain functions and brain disorders. He designed the first animal model and the first phantom model for diffusion MRI to serve as gold standard for evaluating the accuracy of diffusion MRI in mapping neural orientation. Accordingly, a series of technological papers were published to validate, to develop and to optimize this non-invasive neural mapping technology. Furthermore, he and his lab spent enormous efforts in applying these advanced neuroimaging technologies to study dysconnectivity syndromes such as aging, dementia and schizophrenia. Altered brain connectivity in patients were identified and linked with their cognitive deviations, genetic polymorphisms, clinical features and treatment outcomes. Brain plasticity across lifespan is as well studied to clarify the slopes of change, which are served as baseline for comparison to discover subtle changes in the early stage of these dysconnectivity syndromes. Long-term goal of his lab (Brain Connectivity Laboratory, <http://bclab.ym.edu.tw>) is to established modern imaging technologies for early diagnosis and prediction of brain dysconnectivity syndromes to promise a better treatment outcome.

Brain connectivity signatures for aging, mild cognitive impairment and dementia

Abstract

Dementia is a mental disorder accompanied by global cognitive ability loss including memory, language, and attention in older people with abnormal aging. Due to the lack of disease-modifying treatment at present, early diagnosis becomes paramount in trying to prevent subsequent disability. In practice, a diagnosis is largely based on clinical history and cognitive examination supported by neuropsychological evidence of the pattern of cognitive impairment. However, the onset of cognitive symptoms largely results from neuronal death, which has caused irreversible neurodegenerative damage. To advance the diagnosis and prevention of dementia, there is a need of more sensitive instruments specifically developed for early diagnosis of the risk factors in dementia including effects of risk genes, mild cognitive impairment (MCI), and physical frailty (an age-related syndrome described as the decreased ability of an organism to respond to stressors). A number of studies have reported that even though frailty increases the risk of future cognitive decline and dementia, it is a reversible stage if suitable care process were performed.

Plenty of evidences have suggested that the cognitive decline in dementia may arise from integrative abnormalities between functionally and/or anatomically related brain regions, namely, brain dysconnectivity. Recent advances in brain imaging technologies shed some lights on the study of neural disconnection and the large-scale brain system disruptions by using structural and functional MRI. Particularly, progression of dementia may result from compensatory changes in response to β -amyloid accumulation and consequently neurodegeneration. Such neural disconnection may occur more earlier than a clear sight of cognitive decline.

By means of modern MRI technologies, brain connectivity patterns of dementia were recently reported to fall into dissociated but dispersed brain networks, suggesting that the damage from the disease is transmitted along neuronal pathways rather than by proximity. They inferred that structural and functional connectivity patterns might serve as markers to predict the progression of dementia. Plenty of studies also showed that regional brain connectivity might also be affected by risk genes, frailty, and MCI, which might serve as early markers of dementia. Here I will discuss these modern imaging technologies and their potential applications in aging, dementia and other brain disorders.



孫家偉 Chia-Wei Sun

Associate Professor , Department of Photonics, National Chiao Tung University, Hsinchu, Taiwan

Speaker

Chia-Wei Sun was born in Taiwan, R.O.C., in 1975. He received the B.Sc. degree in Electrical Engineering from National Cheng Kung University in Tainan, Taiwan, in 1997, and the M.Sc. degree in Biomedical Engineering from National Yang-Ming University, Taipei, Taiwan, in 1999. He received the Ph.D. degree in Institute of Photonics and Optoelectronics from National Taiwan University, Taipei, Taiwan, in 2003.

From 2003 to 2008, he worked at the Medical Electronics and Device Technology Center, Industrial Technology Research Institute, on clinical applications of biomedical optical imaging. In 2005 summer, he joined the Computational Optics Group at University of Tsukuba, Ibaraki, Japan, as a Visit Scientific Scholar. From 2008-2012, he was an Assistant Research Fellow with the Biophotonics Interdisciplinary Research Center, National Yang-Ming University. Besides, he served as Vice Director of Incubation Center, National Yang-Ming University from 2010 to 2012.

He is currently an Associate Professor with the Department of Photonics, National Chiao Tung University, Hsinchu, Taiwan. He has contributed to more than 40 peer-reviewed journal papers. He obtained 9th National Innovation Award and 2012 NSC Excellent Young Scholars' Project in Taiwan. His current research foci are diffuse optical tomography (DOT), near-infrared spectroscopy (NIRS), optical coherence tomography (OCT), neurophotonics and clinical applications based on biomedical optical imaging techniques.

Functional Near Infrared Optic Brain Imaging

Abstract

Functional near-infrared spectroscopy (fNIRS) is a recently developed technology for monitoring functional brain activity based on the absorption and scattering properties of near-infrared light. fNIRS allows non-invasive measurements of the spatiotemporal characteristics of neural activity in the frontotemporal region by measuring changes in the concentrations of oxy-hemoglobin (ΔHbO_2), deoxy-hemoglobin (ΔHb), and total hemoglobin (ΔHbT). fNIRS has several advantages over existing imaging techniques, such as PET, SPECT, and fMRI, because it is noninvasive, is easy to administer, tolerates small movements, is inexpensive, and provides excellent time resolution and moderate spatial resolution. Although spatial resolution is limited, fNIRS offers more comprehensive information of brain activity than blood-oxygenation- level-dependent (BOLD) signal of fMRI. Furthermore, the optical method can provide completely patient-oriented measurement. The fNIRS is also applicable for psychological test because its temporal resolution is high enough to detect the changes of short duration such as the brain activation during cognitive task. In previous studies, fNIRS method has been shown to be sensitive enough for monitoring of physiological blood oxygenation changes during cognitive activation in neuro-degenerated diseases. To date, fNIRS has been applied in many studies to explore the functional integration among brain regions during different states, including resting and task states in normal people and patients with psychiatric disorder. In this talk, I will provide the background knowledge of fNIRS and its clinical applications.

11 Apr (Mon)

Language, Emotions, and Well-Being

語言、情緒、與健康



鄭谷苑 Angela Ku-Yuan Tzeng

*Associate Professor and Director, Center of Theoretical Science
and Department of Psychology, Chung Yuan Christian University*

Speaker

Angela Ku-Yuan Tzeng is currently an associate professor and Chair at the Department of Psychology, and the director of Center for Theoretical Science at Chung Yuan Christian University in Taiwan. Her research interest is on bilingualism including semantic processing, code switching, as well as language and emotion. She received her BS in Psychology from National Taiwan University, MA and Ph.D. in Cognitive Psychology.



陳永儀 May Chen

*Assistant Professor, Institute of Cognitive Neuroscience, National
Central University*

Speaker

May Chen is currently an assistant professor at the Institute of Cognitive Neuroscience at National Central University in Taiwan. She is also a licensed clinical psychologist practicing in New York. Prof. Chen specializes in stress, emotions, and health. Prof. Chen received her BA in Psychology from UCLA, MA in Organizational Psychology from Columbia University, and Ph.D. in Health Psychology from Rutgers University. She had previously worked at CitiGroup to enhance expatriate employee satisfaction, performance and as a professor in the Behavioral Sciences Department of the US Military Academy at West Point.

Language, Emotions, and Well-Being

Abstract

The relationship among language, emotions, and well-being is an intricate one. The words we choose to describe and understand our condition have an effect on our emotions. Conversely, our emotions often serve as lens through which we interpret the world. Both the language we use and the emotions we experience are associated with our mental and physical health, as well as our overall well-being. This lecture will explore the close associations among language, emotions, and well-being, drawing evidence and illustrations from literature, research, and real-life examples.

18 Apr (Mon)

Language, Brain, and Eye Movements

語言，大腦，與眼動



李佳穎 Chia-Ying Lee

*Research Fellow, Brain and Language Laboratory, Institute of Linguistics,
Academia Sinica*

Speaker

Prof Lee Chia-Ying is Research Fellow of Institute of Linguistics at Academia Sinica, Taiwan. She utilizes neuroimaging techniques, such as EEG/MEG and fMRI, to study neural signature of speech perception, the effects of the statistical structure of Chinese characters and compounds, and the role of sentential context on word recognition. The ultimate goal is to provide a better understanding for the cognitive and neurobiological mechanism of Chinese language processing and to foster the applications in clinical settings, such as to provide potential neural markers for risk identification and effective evaluation for clinical settings with language impairment (i.e., dyslexia and aphasia).

Electrophysiological evidence for how readers make use of the contextual information during language comprehension

Abstract

Sentence comprehension depends on continuous prediction of upcoming words. However, when and how contextual information affects the bottom-up streams of visual word recognition is largely unknown. In this talk, I will present a series of ERPs studies to examine the predictability effect on N400, which index how contextual information modulates the processing of upcoming words, in young adults, healthy elders, and aphasic patients. The young adult and healthy elderly groups exhibited the typical centro-parietal distributed effect of predictability on N400; however, healthy elders exhibited a reduced N400 effect in a delayed time window. Compared with the elderly control, the high ability aphasia group exhibited a comparable N400 effect in a more restricted time window; by contrast, the low ability aphasia group exhibited a frontal distributed N400 in a much later time window (400–700 msec). These data suggest that the severity of reading comprehension deficits affects predictability effect on a set of N400 characteristics (i.e., amplitude, time window, and topographic distribution), which may be effective as ERP signatures in the evaluation of language recovery in aphasia.



蔡介立 Jie-Li Tsai

Associate Professor and Director, Research Center for Mind, Brain & Learning, National Chengchi University

Speaker

Dr. Jie-Li Tsai serves as Director of Center for Mind, Brain, and Learning of National Chengchi University, Associate Professor at Department of Psychology of NCCU. His research interests include reading Chinese and eye movement control, psycholinguistics, and eye movements in cognitive activities. Dr. Tsai focuses on topics of eye movement control and lexical processing in reading Chinese. His research projects investigate reading processes for foveal and parafoveal processing of words, Chinese word parsing in sentence, sentential context and ambiguous word resolution, and visual-auditory word integration. In addition, he also studies individual differences of reading Chinese, e.g. learning Chinese as the second language.

Eye movements and reading Chinese

Abstract

In contrast to alphabetic scripts, the structure and function of words are less transparent when reading Chinese sentences. Chinese readers need to make use of the rich lexical information of characters and contextual constraint to correctly extract words in a sentence for reading comprehension. For alphabetic scripts, numerous studies have demonstrated that lexical properties and contextual constraint can drive the eyes to determine fixation durations and probabilities on words. Reading models have been proposed for eye movement control using words as the basic processing unit. There have not yet been studies and modeled encompassing these factors in Chinese. The lecture will give a brief review of the effects of word predictability and lexical properties of words in reading Chinese sentences. The advantage of analyzing the on-line measures of eye movements will be addressed for how eye-tracking technology can be used to study the perceptual, lexical, and contextual constraints in reading Chinese.



蘇仲怡 Chung-I Erica Su

Postdoctoral Research Fellow, Research Center for Mind, Brain, and Learning, National Chengchi University

Speaker

Chung-I Erica Su received her doctoral degree in Cognitive Psychology from the State University of New York at Buffalo in 2012. Now she is a Postdoctoral Research Fellow at the Research Center for Mind, Brain, and Learning, National Chengchi University. Her research interests focus on psycholinguistic issues, such as lexical phonological and semantic processes, and the mechanisms underlying spoken word recognition and reading comprehension.

Chinese Spoken Word Recognition and Eye Movements

Abstract

Spoken word recognition is best characterized as an activation-competition process, in which acoustic-phonetic input activates a set of representations of similar sounding words in memory that compete for recognition. We used an eye-tracking methodology to examine the time course of tonal and segmental activation-competition in Chinese spoken word recognition. Our findings suggest processing of Chinese spoken words may be segment-based rather than syllable-based, since eyes track sub-syllabic phonetic similarity.

4/28 (Mon)

Chinese Reading and Memory

中文閱讀與記憶



郭文瑞 Nissen Wen-Jui Kuo

Associate Professor, Institute of Neuroscience, National Yang Ming University.

Speaker

Wen-Jui Kuo received his PhD from Chung-Cheng University, Taiwan in 2000.

He employs various methodologies, including behavioral testing and functional neuroimaging tools (EEG/ERPs, MEG, fMRI) to examine the cognitive operations and neural mechanisms underlying Chinese language, reading, and cognitive control and its relation with emotion and motivation

A neural mechanism underpinning Chinese compounding processes

Abstract

In this study we set up an fMRI experiment to investigate the lexical control mechanism for compound processing and to examine its neural underpinnings. We found that the participants performed lexical decision better for transparent compounds than for opaque ones. More important is the finding that there was a significant interaction between semantic transparency and orthographic neighborhood size, which supported existence of the control mechanism to underpin compound processing. This behavioral interaction was mirrored in brain activities of the left inferior frontal gyrus, which was consistent with the proposal of unification function hosted in the left inferior frontal cortex for language processing.



鄭仕坤 Shih-kuen Cheng

Associate Professor, Institute of Cognitive Neuroscience, National Central University

Speaker

Shih-kuen Cheng received his PhD from University College London in 2003. He is currently an associate professor at the Institute of Cognitive Neuroscience of National Central University, Taiwan. He employs various methodologies, including behavioral testing, functional neuroimaging (EEG/ERPs, MEG, fMRI) and brain stimulation (TMS, tDCS) to examine the cognitive operations and neural mechanisms underlying the formation and retrieval of human memory. He has published peer-reviewed papers that investigated false memory, intentional forgetting, memory enhancement via brain stimulation, and tone processing in cochlear implants. He is also interested in the application of memory research in education and cognitive rehabilitation.

How we remember and why we forget?

Abstract

Memory not only defines who we are but also help us to react to the present and plan the future. Although over two centuries of behavioral studies have contributed theories and models for the functions of memory, it was not until the emergence of cognitive neuroscience that we can examine the neural mechanisms underlying memory encoding and retrieval. In this talk I will present two studies to illustrate how the cognitive operations involved in memory encoding and retrieval can be revealed by recording “brain waves” and stimulating the brain. I will also present data reading the issue of how repeated testing enhanced learning the modulation of stress on wich “testing effect”.



李俊仁 Jun Ren Lee

Associate Professor, Department of Educational Psychology and Counseling, National Taiwan Normal University

Speaker

Dr. Jun Ren Lee serves as an associate professor at the Department of Educational Psychology and Counseling, National Taiwan Normal University. He was an experimental psychologist by training and earned his Ph.D. from the Department of Psychology, National Chung-Cheng University, Taiwan. His research interests focus on reading development, dyslexia, and bilingualism.

What are the behavioral characteristics of Chinese developmental dyslexia?

Abstract

In this talk, I will briefly talk about the basic findings of developmental dyslexia in the western literature. Furthermore, what is the evidence shown by the research results from Chinese? When talking about dyslexia, what is the universality and specificity between alphabetic language and Chinese?