FROM NEURONS TO CONSCIOUSNESS: THE BRAIN BASIS FOR COGNITION
SCHEDULE

8th May 2025, MPL1405, 14th floor,
Lingnan @ West Kowloon (M+ Building), 38 Museum Drive

MORNING SESSION

1	9:00 am – 9:15 am	Registration
2	9:15 am – 9:25 am	Welcome speeches
3	9:25 am – 9:30 am	Photo of all speakers
4	9:30 am – 10:00 am	Presentation by **Prof. Xiaoqing Hu**, University of Hong Kong: *Memory editing during sleep*
5	10:00 am – 10:30 am	Presentation by **Prof. Rongjun Yu**, Hong Kong Baptist University: *The neural science of Machiavellianism*
6	10:30 am – 10:45 am	Coffee break
7	10:45 am – 11:15 am	Presentation by **Dr. Jie Hu**, East China Normal University: *Deconstructing the dynamics of altruistic decision-making*
8	11:15 am – 12:15 pm	**Short presentations (3 mins each)**
9	12:15 pm – 1:45 pm	Lunch break

AFTERNOON SESSION

10	1:45 pm – 2:45 pm	**Keynote speech** by **Prof. Isabel Gauthier**, Vanderbilt University: *Is There a Domain-General Object Recognition Ability?*
11	2:45 pm – 3:15 pm	Presentation by **Dr. Ayelet Sapir**, University of Greenwich: *3D perception and ageing*
12	3:15 pm – 3:45 pm	Coffee break
13	3:45 pm – 4:15 pm	Presentation by **Prof. Jing Samantha Pan**, Sun Yat-sen University: *Perception-action unity: Dynamics, kinematics and optical information on movement production and perception*
14	4:15 pm – 4:45 pm	Presentation by **Prof. Liqiang Huang**, Chinese University of Hong Kong: *Why I Abandoned Traditional Experimental Psychology After 20 Years?*
15	4:45 pm – 5:45 pm	**Keynote speech** by **Prof. Pascal Mamassian**, Ecole Normale Supérieure Paris: *Distinguishing serial from parallel processing in visual confidence judgments*
16	5:45 pm – 6:00 pm	Final words by **Prof. Will Hayward**

XIAOQING HU

Associate Professor

Department of Psychology
The University of Hong Kong

BIOGRAPHY

Dr. Xiaoqing Hu is an Associate Professor in the Department of Psychology at the University of Hong Kong. He obtained his Ph.D. from Northwestern University, with a focus on Brain Behavior and Cognition. He then worked as a Post-Doc Fellow at the University of Texas at Austin. Since Dr. Hu joined The University of Hong Kong (HKU) in 2016, his lab primarily examines how to modify unwanted memories during sleep and during wakefulness, and the neurocognitive mechanisms underlying voluntary forgetting.

PRESENTATION

Memory editing during sleep

Not all memories are welcome by the mind. Over-consolidation of aversive or traumatic memories poses significant threats to our emotional well-being. Can we edit aversive memories during sleep, bypassing conscious awareness? Our recent work suggests that the sleep-mediated memory reactivation can be leveraged to weaken aversive memories. Via unobtrusively delivering sensory cues during non-rapid-eye-movement sleep (targeted memory reactivation), both affect tones and memory contents of aversive memories can be modified. Cueing benefits are associated with cue-elicited EEG power, and with the coupling between EEG slow oscillations and spindles. These results suggest that sleep-mediated memory reactivations play adaptive roles in memory editing and forgetting.

RONGJUN YU
Associate Professor

Department of Education and Psychology
Life Science Imaging Center
Hong Kong Baptist University

BIOGRAPHY

Dr. Yu is an associate professor in the Department of Education and Psychology, and the founding director of the Life Science Imaging Center at Hong Kong Baptist University. His lab uses brain imaging methods (fMRI/EEG/fNIRS) to understand the neural science of economic decision-making and social cognition. He is the 2022 awardee of the Humanities and Social Sciences Prestigious Fellowship Scheme.

Personal website: www.rongjunyu.org

PRESENTATION

The neural science of Machiavellianism

Machiavellianism is a personality construct used to characterize individuals who behave in a callous and duplicitous manner. Despite the development of various Machiavellianism scales encompassing different factors, overlaps and distinctions among these factors obscure understanding of the conceptualization of Machiavellianism. To delineate the dimensionality of Machiavellianism, we first employed a psychometric approach to identity four Machiavellianism dimensions. We then used resting-state functional magnetic resonance imaging (fMRI) combined with connectome-based predictive modelling (CPM) to identify brain connectivity patterns at rest uniquely associated with the dimensions of Machiavellianism. We also used task-based fMRI to explore brain activity in response to questions that focus on each dimension of Machiavellianism. Our results support the four-dimension model of Machiavellianism and offer biological evidence supporting these dimensions.

JIE HU
Zijiang Young Scholar

School of Psychololgy and Cognitive Science
East China Normal University

BIOGRAPHY

Dr. Jie Hu is currently a junior PI, Zijiang Young Scholar at the School of Psychology and Cognitive Science, East China Normal University. He obtained his Ph.D. from the School of Psychological and Cognitive Sciences, Peking University, in 2017. From 2017 to 2023, he worked as a postdoctoral fellow at the Zurich Center for Neuroeconomics in the Department of Economics, University of Zurich, Switzerland. Dr. Hu focuses on studying the psychological and cognitive neural mechanisms of social behavior using techniques such as brain imaging (EEG, fMRI), neural modulation (TMS, tDCS/tACS), and computational modeling. His research has uncovered the computational neural mechanisms underlying individuals' resource allocation decisions, elucidated the conflict resolution processes among multiple motivations and their cognitive neural basis for guiding decision-making, and revealed the computational neural mechanisms of integrating self-interest and others' interests in altruistic decision-making.His research has been published in prestigious journals, including *PNAS, eLife, Journal of Neuroscience*, *NeuroImage*, and *Current Opinion in Psychology*.

PRESENTATION

Deconstructing the dynamics of altruistic decision-making

In the history of humanity, most conflicts within and between societies have originated from perceived inequality in resource and wealth distribution. How humans achieve and maintain distributive justice has therefore been an intensely studied issue. Among various strategies, wealth redistribution has emerged as a significant approach to address these issues. However, most research on the corresponding psychological and cognitive processes has focused on inequality aversion and has been largely agnostic of other motives that may either align or oppose this behavioral tendency. Moreover, external contextual factors, such as wealth derived from work performance or personal luck, can significantly bias people's preferences in wealth redistribution. The limitations in research paradigms and methodologies have made it challenging to clearly elucidate how various internal motives interact to govern wealth redistribution or to delineate the impact of wealth sources on redistribution and the underlying motives involved. In this presentation, I will first introduce our recent study, wherein we provide behavioral, computational, and neuroimaging evidence that redistribution decisions are guided by three distinct motives—inequality aversion, harm aversion, and rank reversal aversion—that interact with each other and can also deter individuals from pursuing equality. Then, I will discuss how wealth sources (e.g. merit-based vs. luck-based distribution) affect the dynamic decision-making process of wealth redistribution and the underlying motives. Our studies contribute to understanding of the cognitive mechanisms of wealth redistribution behavior, providing comprehensive empirical evidence for explaining, predicting, and intervening wealth redistribution in complex scenarios. Our research will also offer valuable scientific evidence for relevant authorities to optimize tax and wealth redistribution policies.

ISABEL GAUTHIER

David K. Wilson Professor of Psychology

Department of Psychology
Vanderbilt University

BIOGRAPHY

Dr. Isabel Gauthier (B.A. Université du Québec à Montréal, PhD. Yale University) is the David K. Wilson Professor of Psychology at Vanderbilt University and also holds an appointment in Radiology and Radiological Sciences.

Dr. Gauthier studies object recognition from a cognitive neuroscience perspective. In some of her early work, Dr. Gauthier showed that naïve observers trained to recognize artificial objects called 'Greebles' showed activation for these objects in the part of the brain known to be engaged by face recognition. This showed that perceptual expertise with objects, rather than face recognition per se, is responsible for recruiting this part of the brain. Dr. Gauthier's research expanded in recent years to investigate the existence of a domain-general visual ability. This ability is distinct from general intelligence and predicts how well people can learn to identify objects like birds, read musical notation or make medical diagnostic decisions.

Dr. Gauthier has been the recipient of the Young Investigator Award, Cognitive Neuroscience Society, the APA Distinguished Scientific Award for Early Career Contribution to Psychology and the Troland research award from the National Academy of Sciences, the Mid-career award from the Psychonomic Society, the Davida Teller Award from the Vision Sciences Society and two different graduate mentoring awards from Vanderbilt. She was the SEC professor of the year in 2015.

http://gauthier.psy.vanderbilt.edu/

KEYNOTE SPEECH

Is There a Domain-General Object Recognition Ability?

Research in visual object recognition has largely focused on mechanisms common to most people, but there is increased interest in individual differences. This talk will summarize recent work on domain-general object recognition, offering support for a general ability we call o, which accounts for performance in a range of visual tasks and object categories, both familiar and novel. We found this ability is highly stable based on a one month test-retest, that it is distinct from general intelligence, perceptual speed, low-level vision and personality constructs. Across several studies, we found that o accounts for object recognition not only in the visual domain, but also in haptic and auditory tasks. We have measured associations between o and a neurometrically-sensitive measure of visual sensitivity to shape and found distributed neural correlates in ventral occipital cortex. I will discuss how o can contribute to a better understanding of individual differences in specific domains, such as medical decisions or food recognition. One recent task we chose to explore and predict with o is the ability to judge if a face is real or AI generated. Still a nascent field of research, the study of domain-general object recognition opens a window into traditionally ignored differences between people. Importantly, differences in object recognition differ from many skills that society most emphasizes – this means it has a unique potential to add to our current understanding of human individual differences.

AYELET SAPIR

Senior Lecturer

School of Human Sciences
University of Greenwich

BIOGRAPHY

Dr Ayelet Sapir is a cognitive neuroscientist with a longstanding interest in visual perception, spatial attention, and ageing. She completed her PhD in 2002 at Ben-Gurion University in Israel and went on to a postdoctoral fellowship at Washington University School of Medicine in St. Louis, USA. She worked for 17 years at Bangor University in Wales before recently joining the University of Greenwich. Her professional interests lie at the intersection of neuroscience, psychology, and applied translational research, with a particular focus on developing innovative approaches to aid rehabilitation in individuals with neurological impairments. Dr Sapir's research focuses on several aspects of visual perception and spatial attention. She investigates how perceptual assumptions—such as the inferred position of a light source—shape 3D perception, and how these assumptions are influenced by age, individual, and cultural differences. She uses a wide range of methods including human psychophysics, neuroimaging, brain stimulation, and pupillometry, and works with diverse populations such as older adults, young children, and patients with focal brain lesions. Her work aims to understand how neural systems supporting perception and attention are shaped by development, ageing, and brain injury, and how this knowledge can be translated into real-world applications.

PRESENTATION

3D perception and ageing

Our perception of 3D structure is supported by various visual cues, one of which is shading. The brain uses shading to infer depth through a process known as shape from shading, which depends in part on assumptions about the direction of the light source. Younger participants tend to assume a light source from above and to the left - a well-established bias thought to reflect hemispheric lateralisation. However, when looking at older adults, this bias becomes less consistent, with some maintaining a leftward bias and others showing a rightward one. This mixed pattern appears to reflect a systematic shift associated with ageing. In this talk, I will present data supporting this idea and showing that this transition begins much earlier than previously assumed, emerging already in midlife, around the age of 45. These findings suggest that the reduction in hemispheric lateralisation may begin decades before traditional definitions of "old age." These findings open important questions about the relationship between neural organisation and perception across the lifespan. Understanding how and when these perceptual assumptions change can shed light on broader mechanisms of cognitive ageing and has implications for designing visual environments, tools, and interfaces that are age-inclusive.

JING SAMANTHA PAN

Professor
Associate Department Chairperson

Department of Psychology
Sun Yat-sen University

BIOGRAPHY

Jing Samantha Pan is a Professor and Associate Department Chairperson in the Department of Psychology at Sun Yat-sen University, where she also supervises both master's and doctoral students. She received her PhD in Psychology from Indiana University and holds a Master's degree from the University of Chicago. Her research lies in applied cognitive and ecological psychology, focusing on perception, action control, visual search, low vision rehabilitation, and human-machine collaboration. Prof. Pan has led multiple national and provincial research projects and has published in top-tier journals such as *Journal of Vision, Vision Research*, and *Journal of Experimental Psychology: Human Perception and Performance.*

PRESENTATION

Perception-action unity: Dynamics, kinematics and optical information on movement production and perception

The ecological approach to perception highlights perception-action unity. The Kinematic Specification of Dynamics hypothesis posits a one-to-one correspondence between dynamics, kinematics, and optical transformations—where object dynamics drive kinematic changes that lawfully alter optical information. This implies two things: (1) perception of events should be unaffected by viewing perspective since dynamics and kinematics are invariant; and (2) movement-related factors should be visible in the resulting kinematic patterns.

To test the first implication, participants attempted to recognize their own walking from point-light displays (Exp. 1), simulated environmental texture changes (Exp. 2), and head-mounted videos (Exp. 3), and to identify strangers from their headcam footage (Exp. 4). Despite the absence of human form in some displays, participants reliably identified themselves and others using visual-kinesthetic cues shaped by underlying dynamics and kinematics, supporting the idea that such perception is viewpoint-invariant.

For the second implication, point-light displays of walking under varying conditions (sighted/blindfolded; hard/soft floors) were shown to naïve observers (Exps. 5–6). Observers could distinguish movement conditions, especially when kinematic variability was higher. Discrimination performance correlated with differences in the velocity–position ratio ($\dot{x}/x$), suggesting that kinematic patterns shaped by dynamical constraints are indeed perceptually accessible.

LIQIANG HUANG

Professor

Department of Psychology
The Chinese University of Hong Kong

BIOGRAPHY

Liqiang Huang is a professor in the Department of Psychology at The Chinese University of Hong Kong, specializing in large-scale psychological experiments. He holds bachelor's and master's degrees in Optical Engineering from Zhejiang University, a Ph.D. in Experimental Psychology from the University of California, San Diego, and completed postdoctoral research at Princeton University.

PRESENTATION

Why I Abandoned Traditional Experimental Psychology After 20 Years?

For two decades leading up to 2020, I relied on theory-driven experimental methods to study perception and cognition. Over time, however, I began to recognize the limitations of this approach. Psychological phenomena are inherently complex, making it difficult to achieve both breadth and precision simultaneously. In response, I now advocate for a "comprehensive exploration" approach that combines the strengths of traditional experimental psychology with those of AI models. On one hand, similar to experimental psychology, this approach employs controlled experiments tailored to specific research objectives, aiming to develop conceptually interpretable models. On the other hand, akin to AI methodologies, it prioritizes constructing a high-quality, extensive benchmark dataset as the foundation for model development and iteratively refines the model to achieve optimal performance. In brief, this is a theory-oriented, data-driven approach that uses AI tools (data-driven model development) to achieve the goal of experimental psychology (theoretical insights).

PASCAL MAMASSIAN

CNRS Director of Research
Head of LSP

Département d'études cognitives
Ecole Normale Supérieure Paris

BIOGRAPHY

Pascal Mamassian received his PhD in Psychology from the University of Minnesota (USA). After working in Tübingen (Germany), New York University (USA), and the University of Glasgow (Scotland, UK), he took a CNRS researcher position in Paris (France). His research interests focus on visual perception, in particular 3D and motion perception, time perception, and meta-perception. He is using mostly behavioural and modelling techniques. He served as president of the Vision Sciences Society, is currently editor-in-chief of the journals Perception and i-Perception, and is the founding director of the Laboratoire des Systèmes Perceptifs at the Ecole Normale Supérieure Paris.

KEYNOTE SPEECH

Distinguishing serial from parallel processing in visual confidence judgments

Visual confidence refers to our ability to predict the correctness of our perceptual decisions. Knowing the limits of this ability, both in terms of biases (e.g. overconfidence) and sensitivity (e.g. blindsight), is clearly important to approach a full picture of perceptual decision making. In recent years, we have explored visual confidence using a paradigm called confidence forced-choice. In this paradigm, observers have to choose which of two perceptual decisions is more likely to be correct. I will review some behavioural results obtained with the confidence forced-choice paradigm, together with a theoretical model based on signal detection theory. In particular, I will argue that the confidence forced-choice paradigm offers the possibility to distinguish serial from parallel confidence processing. Finally, I will present an extension of the theoretical model for experiments using confidence ratings, and discuss the conditions under which serial and parallel confidence processing can be distiguished using this paradigm.
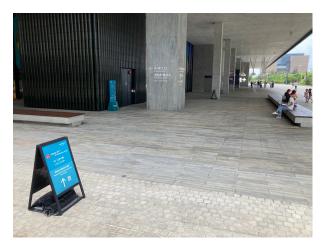
GUIDE FOR FINDING LINGNAN@WEST KOWLOON

❯ CONFERENCE LOCATION

The Lingnan University Cognitive Science Conference will be held at Lingnan@WestKowloon, in M+ Building, West Kowloon Cultural District (WKCD). WKCD is accessible by bus, MTR, taxi, or car. Once at WKCD, follow signs to M+.

Venue: MPL1405, 14th floor, M+ Building

❯ GUIDE TO VENUE

01 When you arrive at the M+ Building, look for signs to Lingnan@WestKowloon (L12-L14, M+). Do not enter the museum; access is via a separate lift lobby.

02 Follow signs to the lift lobby for the upper floors of M+ Building.

03 When you reach the lift lobby, go up to the 13th floor to reach the conference venue:

MPL1405, 14th floor, M+ Building