



【校級神經醫學研究中心 110 年 7 月份月會】 會議紀錄

時 間：110年7月14日(星期三) 12:10-13:30
地 點：視訊會議-Google Meet
主 席：蔣永孝 主任(藍亭 副主任代理)

TMU Neuroscience Research Center Monthly Meeting Record for July, 2021

Chair: Vice Director Timothy Lane

Recorded by: Professor J. Y. Wang,
Secretary C. N. Huang

Host: The Brain and Consciousness Team

Time: 2021/7/14 (Wednesday) 12:10-13:30

Place: Net meeting via Google Meet

Meeting Agenda (議程) :

1. Opening by Vice Director Timothy Lane
2. “Brain-Body Interactions in Perception and Action” presented by Dr. Hyeongdong Park

1. Opening

In the opening, Vice Director Timothy Lane (藍亭副主任) was very delighted to have Dr. Hyeongdong Park with us today. Dr. Park is not only a neuroscience scientist, he is also a philosopher. He received his Ph.D. from the Doctoral School of Brain-Cognition-Behaviour at Pierre and Marie Curie University (UPMC), France in 2014. Then he moved to the Swiss Federal Institute of Technology in Lausanne (EPFL) in Switzerland and worked as a Post-doc, with Prof. Olaf Blanke, until 2020. His major areas of interest are the relationship between, brain and the viscera. Today his emphasis would be upon, the brain and the lung.

藍亭副主任首先歡迎 Dr. Hyeongdong Park 今天來跟我們分享他的研究。Dr. Park 除了是神經科學家外，還是一位哲學家。他在法國的 Pierre and Marie Curie University 取得博士學位，然後在瑞士的 Swiss Federal Institute of Technology Lausanne 進行博士後研究。他的主要研究領域在於大腦與內臟之間的關聯。今天的演講重點為大腦與肺部。

2. Forum hosted by the Brain and Consciousness Team

1) Brain-Body Interactions in Perception and Action presented by Dr. Hyeongdong Park

Brief summary of Dr. Park's speech:

Do interactions between the brain and body (e.g., heart and lung) play a functional role in human cognition, in particular conscious experiences? This is the central question of my research career. In this talk I will introduce my previous research showing that:

- 1) neural responses to heartbeats (i.e., heartbeat-evoked brain potentials) could predict conscious visual

perception, using MEG (Park et al. Nature Neuroscience. 2014);

2) experimentally induced changes in self-consciousness are associated with heartbeat-evoked brain potentials, using virtual reality technology combined with scalp EEG (Park et al. Journal of Neuroscience. 2016);

3) primary neural sources of heartbeat-evoked potential is the insular cortex, using intracranial EEG (Park et al. Cerebral Cortex. 2018);

4) voluntary action and cortical readiness potentials are coupled with the breathing system (Park et al. Nature Communications. 2019).

Then, potential future collaborations in clinical contexts will be discussed.

HEP reflects self-consciousness

Timeline: Baseline (100 sec), Stroking (40 sec), Pause (20 sec), Questionnaire, Break (120 sec). Repeated 5 times.

EEG waveforms: Sync (blue), Async (red). Scale: 0 ms to 600 ms.

Questionnaire on self-identification: How strong was the feeling that the body you saw was yours?

Question	Sync	Async	NS
Q1: Self-identification	~6.5	~5.5	Yes
Q2: Illusory touch	~6.5	~5.5	Yes
Q3: Control	~6.5	~6.5	No

Park et al. Journal of Neuroscience. 2016

HEP reflects self-consciousness

Topographic map: Sync - Async. Amplitude (µV) scale: -0.4 to 0.4.

HEP amp (µV) vs time (ms): Sync (blue), Async (red). Scale: -1.6 to 0.8.

ECG amp (µV) vs time (ms): Sync (blue), Async (red). Scale: -5 to 15 (x10⁴).

Difference of HEP, Sync - Async (µV) across conditions: Baseline (NS), ST_early (*), ST_middle (*), ST_late (*), Pause (NS).

Spearman's rho and t-value (abs) for PCC-SMA. P = 0.005.

HEP reflects experimentally altered sensation of self-identification.

Park et al. Journal of Neuroscience. 2016

Brain-body interactions in perception and action presented by Dr. Hyeongdong Park (7/14, 2021)

2) Discussion

Prof. Lane discussed the technical issue about the measurement of the neural response with Dr. Park. Dr.

Chang-Wei Wu (吳昌衛老師) asked if Dr. Park could observe the difference from the disappearing, observing the breathing, and controlling the breathing. Dr. Park answered that they had ever done the experiment to observe the breathing, but it's very difficult because when people breathe with consciousness, their breathing pattern changed. Prof. Chaur-Jong Hu (胡朝榮教授) also discussed if Dr. Park ever measures the panic patient or patient with medication. Dr. Park said it's a very good opportunity to observe the body change during the medication, but it's hard to get the drug use permission. Dr. Hu said he has some patients in Shuang Ho hospital, perhaps they could cooperate in the future.

會議結束時間為 13:20。

聯絡人



全部設為靜音



新增成員



主辦人控制項

通話中

- Chu-Ning Julin Huang (你)
- 李宜釗
- 林建和
- 陳凱筠
- 陳燕華
- 瓊媛柯
- b8601115 (TMU)
- Changwei W. Wu
- chaurjongh TMU
- Cheng-Yu_Taipei Medical U...
- Chi-Chen Huang
- TMU kwchang
- TMU lienszuwu
- Wei-Lun Lo
- Wen-Bin Yang
- Yi-Tien Li

聯絡人



全部設為靜音



新增成員



主辦人控制項

- cisale TMU
- CZ H
- hyeongdong park
- hyeongdong park 簡報
- Jia-Yi Wang
- Jing-Huei Lai
- liling dellia
- m003089010 (TMU)
- Robert Chiang
- sichou (TMU)
- Thierry Burnouf
- timlane TMU
- Timothy Lane
- TMU ckshen