Byeol Kim Lux

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MAJOR RESEARCH INTEREST

- Investigating the neural mechanisms of self-related experiences and emotion
- Understanding the relationship between brain functions and mental and physical health
- Translating the basic neuroscience findings to clinical or educational applications

EDUCATION & TRAINING

Ph.D. student Sep 2021 - Present
Department of Psychological and Brain Sciences,
Dartmouth College, Hanover, NH, USA
Lab: **C**ognitive and **A**ffective **N**euroscience Laboratory (CANLab)
(PI: Dr. Tor Wager)

Post-Master Research Assistant Sep 2019 – Aug 2021
Center for Neuroscience Imaging Research (CNIR),
Institute of Basic Science (IBS), Suwon, South Korea
Lab: **Co**mputational **C**ognitive **A**ffective **N**euroscience Laboratory (COCOAN Lab)
(PI: Dr. Choong-Wan Woo)

M.S. in **Biomedical Engineering**, Sep 2017 – Aug 2019
Department of Biomedical Engineering,
Sungkyunkwan University, Suwon, South Korea (Advisor: Dr. Choong-Wan Woo)
Thesis: *Understanding the brain representations of endogenous affective thoughts*.

B.S. in **Astronomy**, B.A. in **Psychology**, Mar 2012 – Aug 2017
Department of Astronomy & Department of Psychology
Yonsei University, Seoul, South Korea

HONORS and AWARDS

Fulbright graduate student program award (2021 – 2023)
Bureau of Educational and Cultural Affairs, United States Department of State
KIST & AKN Outstanding research award (Nov 2022)
Association of Korean Neuroscientists, South Korea
Best presentation award (Dec 2018)
Center for Neuroscience Imaging Research, Institute for Basic Science, South Korea
Shimsan scholarship for advanced graduate students (Fall 2018)

Sungkyunkwan University, South Korea

Best presentation award (May 2018)
Korean Society for Cognitive Science, South Korea

High academic achievement scholarship (Fall 2015, Spring 2016, 2013)
Yonsei University, Seoul, South Korea

Scholarship for undergraduate students (Fall 2012)
Sinchon regional support association, Seoul, South Korea

PUBLICATIONS

Published under the name Byeol Kim (2021-2022) and Byeol Lux (2023-)

In press, Under review, Submitted.

Kim, J., Andrews-Hanna, J. R., Eisenbarth, H., ***Lux, B. K.***, Kim, H., Lee, E., Lindquist, M., Losin, E. A. R., Wager, T. D., & Woo, C.-W. A Dorsomedial Prefrontal Cortex-based Dynamic Functional Connectivity Model of Rumination. (In press)

Lee, E.*, ***Lux, B. K.****, Han, J., Lee, S.-H., Gim, S., Choi, I., & Woo, C.-W. Spontaneous thought dynamics as a signature of positive and negative affectivity. (Under review)

Kim, H. J.**, *Lux, B. K.***, Finn, E., & Woo, C. -W. Getting personal: Brain decoding of valence and self-relevance of personal thoughts using personal stories. (Submitted)

Shin, H.*, ***Lux, B. K.****, Kim, H. J. & Woo, C.-W. Bodily maps of spontaneous thought. (In preparation, mentoring project)

Han, J.*, ***Lux, B. K.****, Lee, E., Yoo, Y. S. & Woo, C.-W. (Working title) Understanding the spontaneous mind with natural language processing and network modeling. (In preparation, mentoring project)

Kim, B., Andrews-Hanna, J. R., Han, J., Lee, E., & Woo, C.-W. (2022) When self comes to a wandering mind: Brain representations and affective dynamics of spontaneous thought. *Science Advances*. DOI: 10.1126/sciadv.abn8616

Andrews-Hanna, J. R., Woo, C.-W., Wilcox, R., Eisenbarth, H., ***Kim, B.***, Han, J., Losin, E. A. R., & Wager, T. D. (2021) The conceptual building blocks of everyday thought: Tracking the emergence and dynamics of ruminative and non-ruminative thinking. *Journal of Experimental Psychology: General* pdf

*Co-first authors

CONFERENCE PRESENTATIONS (selected)

Kim, B., Kragel, P. A., Čeko, M., Theriault, J., Chen, D., Satpute, A. B., Wald, L. L., Lindquist, M. A., Barrett, L. F., & Wager, T. D. (Nov 2022).
Identification of a human parabrachial-amygdala pathway with 7T fMRI
Poster presentation at the annual meeting of the Society for Neuroscience, San Diego,

USA.

Kim, B., Andrews-Hanna, J. R., Han, J., Lee, E., & Woo, C.-W. (April 2021).
When self comes to a wandering mind: Brain representations and affective dynamics of spontaneous thought.
Poster presentation at the annual meeting of the Social & Affective Neuroscience Society, *held virtually*.

Kim, B., Andrews-Hanna, J. R., & Woo, C.-W. (Oct 2019).
Understanding the brain representations of endogenous affective thoughts.
Poster presentation at the annual meeting of the Society for Neuroscience, Chicago, USA.

Kim, B., Andrews-Hanna, J. R., & Woo, C.-W. (Oct 2019).
Understanding the brain representations of endogenous affective thoughts.
Poster presentation at the Institute of Basic Science Conference on Neuroimaging, South Korea.

Kim, B., Oh, J., Andrews-Hanna, J. R., & Woo, C.-W. (Nov 2018).
Dynamic modeling and brain decoding of internal thoughts and emotions.
Poster presentation at the annual meeting of the Society for Neuroscience, San Diego, USA.

Kim, B., Andrews-Hanna, J. R., & Woo, C.-W. (Oct 2018).
Dynamic modeling and brain decoding of internal thoughts and emotions.
Oral presentation at the monthly meeting of Center for Neuroscience Imaging Research, South Korea.

Kim, B., Jung, M., Park, J., Andrews-Hanna, J. R., & Woo, C.-W. (May 2018).
Dynamic modeling and brain decoding of internal thoughts and emotions.
Poster presentation at the annual meeting of the Korean Society for Cognitive Science, South Korea.

TEACHING EXPERIENCE & GUEST LECTURE

Teaching Assistant for Systems Neuroscience with Laboratory at Dartmouth College.

Teaching Assistant for Principles of Human Brain Mapping with fMRI at Dartmouth College.

Guest lecturer at Advanced Affective Neuroscience (Graduate course) at Sungkyunkwan University.
(Title: Research trends of self in affective neuroscience, Fall 2020)

Undergraduate student research mentor of 2020 summer coding & research project
at COCOAN Lab, Sungkyunkwan University (Title: Maps of bodily sensation for subjective feeling from free-associated concept, Summer 2020)

- *I taught programming skills in MATLAB and provided guidance on how to analyze self-reported body-map data of subjective feelings to develop predictive models.*

Undergraduate student research mentor of Web-based FAST (Free association semantic task) project
at COCOAN Lab, Sungkyunkwan University. (Fall 2019-Summer 2021)

- *As a mentor, I was responsible for guiding students through a comprehensive research process that involved experimental design, conducting experiments, programming in*

MATLAB, analyzing data, and writing papers.

Guest lecturer at Affective Neuroscience (Undergraduate course) at Sungkyunkwan University. (Title: Finding self, free association semantic task, Fall 2019)

Undergraduate student research mentor of the Summer internship program at Center for Neuroscience Imaging Research, Institute of Basic Science. (Title: Grid-like neural representation of navigating affective space: An evidence for the existence of an affective map?, Summer 2019)

Undergraduate student research mentor of the C-School undergraduate research project at Sungkyunkwan University. (Title: Neural representations of valence and self-relevance in self-generated thoughts, Fall 2017)

Mathematics instructor for middle school students at the Aporia Mathematics Education Institute, Seoul, South Korea (2015-2017)

Personal mentoring mathematics (from elementary school to high school level) and science (from middle school to high school level) for adolescents between the ages of 7 and 18, Seoul, South Korea (2011-2016)

PATENT APPLICATION

Woo, C.-W., **Kim, B**., Han, J. (2022) "Visualization and emotion-predictive modeling of the stream of thought.", South Korea patent 10-2441591-0000, filed July 09, 2020, and issued September 02, 2022.

OTHERS ACADEMIC EXPERIENCES

Prospective Ph.D. & RA Event in Psychology (PPREP), Harvard University (Oct 2020)

Member of the student council of Department of Biomedical Engineering, Sungkyunkwan University (Spring 2018)

Member of the student council of Department of Astronomy, Yonsei University (Spring 2014)

SKILLS

Programing Language	MATLAB (proficient, mainly used), Python (Intermediate), Unix (Basic), HTML (Basic)
Neuroimaging	SPM, CANlab Tools (Tor Wager's lab tools), FSL, fMRIprep, tedana, afni
Statistics	SPSS, R