Hayoung Song

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ACADEMIC APPOINTMENT

2024- (expected) Postdoctoral Research Fellow
Center for Theoretical and Computational Neuroscience
Washington University in St. Louis

EDUCATION

2019-24 Ph.D. Psychology, Integrative Neuroscience
University of Chicago
Dissertation: Brain-wide dynamics supporting human cognitive experiences
Advisor: Monica Rosenberg, Committee: Yuan Chang Leong, Edward Awh

2017-19 M.S. Biomedical Engineering
Sungkyunkwan University
Advisor: Won Mok Shim

2013-17 B.A., B.S. Psychology, Neuroaesthetics (Self-designed Transdisciplinary Studies)
Sungkyunkwan University
Advisor: Min-Suk Kang

PEER-REVIEWED PUBLICATIONS (*equal contribution)

Chamberlain, T., Corriveau, A., **Song, H.**, Kwon, Y. H., Yoo, K., Chun, M. M., Rosenberg, M. D. (2024). High performers demonstrate greater neural synchrony than low performers across behavioral domains. *Imaging Neuroscience* 2, 1-17.

Song, H., Shim, W. M.*, Rosenberg, M. D.* (2023). Large-scale neural dynamics in a shared low-dimensional state space reflect cognitive and attentional dynamics. *eLife* 12, e85487.

Song, H., Finn, E. S., Rosenberg, M. D. (2021). Neural signatures of attentional engagement during narratives and its consequences for event memory. *PNAS* 118 (33), e2021905118.

Song, H., Park, B. -Y., Park, H., Shim, W. M. (2021). Cognitive and neural state dynamics of narrative comprehension. *Journal of Neuroscience* 41 (43), 8972-8990.

Song, H., Rosenberg, M. D. (2021). Predicting attention across time and contexts with functional brain connectivity. *Current Opinion in Behavioral Sciences* 40, 33-44.

Yoo, S.*, **Song, H.***, Kim, S. -G., Shim, W. M., Lee, S. -K. (2020). Feasibility of head-tilted brain scan to reduce susceptibility-induced signal loss in the prefrontal cortex in gradient echo-based imaging. *Neuroimage* 223, 117265.

Rosenberg, M. D., **Song, H.** (2020). Predicting post-stroke aphasia from brain imaging. News & Views, *Nature Human Behavior* 4, 675-676.

MANUSCRIPTS IN PREPARATION

Song, H.*, Park, J.*, Rosenberg, M. D. (in revision). Understanding cognitive processes across spatial scales of the brain. Invited paper in *Trends in Cognitive Sciences.*

Park, J., **Song H.**, Shim, W. M. (submitted). Solving the narrative puzzle: Memory encoding and sequencing in the hippocampus during ongoing narrative comprehension.

Ke, J., **Song, H.**, Bai, Z., Rosenberg, M. D., Leong, Y. C. (2023). Dynamic functional connectivity encodes generalizable representations of emotional arousal but not valence. *bioRxiv*, 10.1101/2023.11.14.566767.

AWARDS & HONORS

Dissertation Research Award, American Psychological Association (2024)
Trainee Professional Development Award, Society for Neuroscience (2024)
Neubauer Family Foundation Distinguished Scholar, University of Chicago (2019-24)
Arts, Science, and Culture Graduate Collaboration Grant, University of Chicago and School of the Art Institute of Chicago (2023-24)
Norman H. Anderson Travel Fund, University of Chicago (2024, 22)
Norman H. Anderson Research Fund, University of Chicago (2023)
Merit Award for an exceptional abstract submission, Organization for Human Brain Mapping (2022)
Graduate Council Research & Personal Development Fund, University of Chicago (2021)
Council on Advanced Studies Graduate Student Research Grant, University of Chicago (2021)
Psychonomic Society Graduate Conference Award, Psychonomics Society (2020)
Shimsan scholarship, Sungkyunkwan University (2018)
Best poster presentation award, Korean Society for Cognitive Science (2018)
Best poster presentation award, Annual Conference of Korean Psychological Association (2018)
Fully funded 4-year Samsung scholarship, Samsung Scholarship foundation (2013-17)

INVITED TALKS

Princeton Computational Memory lab meeting, Princeton University (2023)
Computational Neuroscience Next Generation Symposium, Center for Theoretical and Computational Neuroscience, Washington University in St. Louis (2023)
Gradients of Brain Organization 2023 Workshop, Montreal, Canada (2023)
Affective and Brain Sciences lab meeting, Northeastern University (2023)
Columbia Dynamic Perception and Memory & Aly lab meeting, Columbia University (2022)
Annual Neuroscience Cluster Retreat, University of Chicago (2022)
Cognition Workshop, University of Chicago (2021)
Memory Research lab meeting, University of Chicago (2021)
Functional Imaging & Naturalistic Neuroscience lab meeting, Dartmouth College (2020)
Language Evolution, Acquisition, & Processing Workshop, University of Chicago (2020)
FMRI hands-on training workshop, Center for Neuroscience Imaging Research, IBS (2018)
Resting state fMRI pre-processing forum, Center for Neuroscience Imaging Research, IBS (2018)

CONFERENCE TALKS

Song, H., Ke, J., Leong, Y. C., Rosenberg, M. D. (2024). Comprehension of causal structure in narratives. To be delivered as a Nanosymposium talk at the Society for Neuroscience (SfN) 2024 Annual Meeting, Chicago, IL.

Song, H., Shim, W. M., Rosenberg, M. D. (2023). Neural state dynamics in a shared low-dimensional manifold reflect cognitive and attentional dynamics. Graduate Student Symposium at the Chicago Society for Neuroscience 2023 Annual Meeting, Chicago, IL.

Song, H., Shim, W. M., Rosenberg, M. D. (2022). Neural state dynamics in a shared low-dimensional manifold reflect cognitive and attentional dynamics. Nanosymposium "Emotional and Motivational Influences on Learning and Memory" at the Society for Neuroscience (SfN) 2022 Annual Meeting, San Diego, CA.

Song, H., Shim, W. M., Rosenberg, M. D. (2022). Neural dynamics in a low-dimensional state space reflect cognitive and attentional dynamics. Oral session "Connectivity in Health and Disease" at the Organization for Human Brain Mapping (OHBM) 2022 annual meeting, Glasgow, Scotland.

Song, H., Finn, E. S., Rosenberg, M. D. (2021). Neural signatures of narrative immersion. Symposium "Advancing Neuroaesthetics: Neuroimaging of Dynamic, Naturalistic Aesthetic Experiences" at the International Association of Empirical Aesthetics (IAEA) Congress on Empirical Aesthetics, Virtual Conference.

Song, H., Finn, E. S., Rosenberg, M. D. (2020). Predicting attentional engagement during narratives and its consequences for event memory. Neuromatch Conference 3.0, Virtual Conference. https://youtu.be/3nthr6k10XE.

Song, H., Park, B., Han, J., Park, H., Shim, W. M. (2018). The dynamic changes in narrative understanding represented in the regional- and network- level state of the human brain. Nanosymposium "Human Long-Term Memory: Encoding and Retrieval" at the Society for Neuroscience (SfN) 2018 Annual Meeting, San Diego, CA.

Song, H., Park, B., Park, H., Shim, W. M. (2018). Dynamic reconfiguration of global network and regional functional connectivity when comprehending visual narratives. Oral session at the Annual Conference of Korean Psychological Association, Seoul, Korea.

CONFERENCE EDUCATION SESSION

Song, H. (2022). "The scientists of today meet the scientists of tomorrow" in Multilingual Kids Review (Korean session). Diversity & Inclusivity event at the Organization for Human Brain Mapping (OHBM) 2022 annual meeting, Glasgow, Scotland. https://youtu.be/uFeBYuhPKX0.

Park, J., **Song, H.**, Shim, W. M. (2020). "Decoding natural language from functional MRI" in Analysis Methods for Naturalistic Data. Educational course at the Organization for Human Brain Mapping (OHBM) 2020 annual meeting, Virtual Conference. https://naturalistic-data.org/content/Natural_Language_Processing.html.

CONFERENCE POSTER PRESENTATIONS *(selected)*

Song, H., Ke, J., Leong, Y. C., Rosenberg, M. D. (2024). Neural mechanisms of insight during narrative comprehension. Organization for Human Brain Mapping (OHBM) 2024 annual meeting, Seoul, Korea.

Song, H., Shim, W. M., Rosenberg, M. D. (2022). Neural dynamics in a low-dimensional state space reflect cognitive and attentional dynamics. Organization for Human Brain Mapping (OHBM) 2022 annual meeting, Glasgow, Scotland.

Song, H., Shim, W. M., Rosenberg, M. D. (2021). Brain state dynamics reflect generalizable cognitive and attentional state dynamics. Society for Neuroscience (SfN) 2021 Annual Meeting, Chicago, IL.

Song, H., Shim, W. M., Rosenberg, M. D. (2021). Brain state dynamics reflect cognitive and attentional state dynamics. Context and Episodic Memory Symposium (CEMS) 2021, Philadelphia, PA.

Song, H., Finn, E. S., Rosenberg, M. D. (2020). Characterizing Engagement Dynamics during Narrative Comprehension. Object Perception, Attention, & Memory (OPAM) 28, Virtual Conference.

Song, H., Finn, E. S., Rosenberg, M. D. (2020). Changes in Attentional Engagement during Narrative Comprehension. Psychonomic Society 61th Annual Meeting, Virtual Conference.

Song, H., Ko, H., Lee, J., Shim, W. M. (2019). Decoding narratives from fMRI responses of the present and causally related past events during movie-watching. Society for Neuroscience (SfN) 2019 Annual Meeting, Chicago, IL.

Song, H., Ko, H., Lee, J., Shim, W. M. (2019). Decoding narrative contents from fMRI responses by incorporating causally related previous events. Organization for Human Brain Mapping 2019 annual meeting (OHBM), Rome, Italy.

Song, H., Ko, H., Lee, J., Shim, W. M. (2019). Context-aware decoding of the narrative contents in fMRI responses. Korean Society for Cognitive Science, Seoul, Korea.

Song, H., Park, B., Park, H., Shim, W. M. (2018). The changes in narrative understanding represented in the time-resolved large-scale network- and regional- level states of the human brain. Korean Society for Cognitive Science 2018 Annual Meeting, Seoul, Korea.

Song, H., Park, B., Park, H., Shim, W. M. (2018). Dynamic reconfiguration of global network and regional functional connectivity when comprehending visual narratives. Vision Sciences Society (VSS) 2018 Annual Meeting, St. Pete Beach, FL.

Kang, M. -S., **Song, H.** (2017). Successful movement inhibition boosts the inhibition of distractors in visual working memory. Vision Sciences Society (VSS) 2017 Annual Meeting, St. Pete Beach, FL.

TEACHING & MENTORING

Social Psychology, TA, Department of Psychology, University of Chicago (2023)

Biological Psychology, TA, Department of Psychology, University of Chicago (2023)

Mentor for an MA student in the Social Sciences (MAPSS), University of Chicago (2022-23)

Sensation and Perception, TS, Department of Neuroscience and Psychology, University of Chicago (2022)

Psychological Research Methods, TA, Department of Psychology, University of Chicago (2021)

Cognitive Psychology, TA, Department of Psychology, University of Chicago (2021)

Mind, Brain, and Computer, TA, Department of Biomedical Engineering, Sungkyunkwan University (2018)

Mentor for the Summer Internship Program, Center for Neuroscience Imaging Research (CNIR), IBS (2017-18)

SUMMER WORKSHOP

Methods in Neuroscience at Dartmouth summer course on Interacting Minds, Consortium for Interacting Minds in the Psychological & Brain Sciences Department at Dartmouth College, Hanover, NH (2023)

Brains, Minds, and Machines (BMM) summer course, funded by an NSF Science and Technology Center award to the Center for Brains, Minds, and Machines, MIT. Woods Hole, MA (2022)

AD HOC REVIEWER

Biological Psychology, Cerebral Cortex, ELife, Human Brain Mapping, Imaging Neuroscience, Nature Communications, Network Neuroscience, Neuroimage, PLOS Biology, PLOS One, Scientific Reports

UNIVERSITY/DEPARTMENTAL SERVICE

Panelist for the PhD dissertation proposal/defense panel, Department of Psychology (2024)
Organizer for the Cognition Workshop, hosted by the Department of Psychology and supported by the Council on Advanced Studies, University of Chicago (2021-23)
Host for the Neuroscience Seminar Series, Neuroscience Institute, University of Chicago (2022)
Member of the Travel and Research committee, Graduate Students Organization, Department of Psychology, University of Chicago (2019-23)