

JING ZHANG

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Education and Academic Appointment

Massachusetts General Hospital/ Harvard Medical School

Research Fellow

Boston, MA

07/2023 - present

University of California, Irvine

Ph.D. in Cognitive Science

M.S. in Cognitive Neuroscience

Irvine, CA

07/2021 - 06/2023

09/2018 - 06/2021

Furman University

B.S. in Psychology; Minor in Gender Studies

Greenville, SC

09/2012 - 05/2016

Fellowships

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| • Harvard University Mind Brain Behavior Postdoctoral Fellowship | \$164,000 | 2024 - 2026 |
| • UCI MIND WAM Women's Initiative Pilot Grant (PI: Sara Mednick) | \$100,000 | 2020 - 2023 |
| • DTEI Summer Fellowship \$5,000 | | 2021 |
| • Associate Dean Fellowship \$7,000 | | 2021 2023 |

Honors and Awards

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| • The AASM Foundation Young Investigators Research Forum | 2024 |
| • Sleep Research Society Trainee Merit Based Award | 2021 2022 |
| • 19th Annual John I. (Jack) Yellott Scholar Award | 2021 |
| • Furman University Academic Award for Excellence - Burt's Scholar in Psychology | 2016 |
| • Furman University Academic Award for Excellence in Gender Studies | 2016 |
| • Furman Advantage Fellowship | 2015 |
| • NIH INBRE Undergraduate Research Fellowship | 2014 |

Publications

- Zhang, J.**, Chen, P.-C., Mednick, S.C., Tambini, A., (Accepted). Slow Oscillations Modulate Functional Brain Changes Supporting Working Memory. *Journal of Cognitive Neuroscience*.
- Gombert-Labedens, M., Alzueta, E., Perez-Amparan, E., Yuksel, D., Kiss, O., de Zambotti, M., Simon, K., **Zhang, J.**, Shuster, A., Morehouse, A., Alessandro Pena, A., Mednick, S., Baker, F.C., (2024). Using Wearable Skin Temperature Data to Advance Tracking and Characterization of the Menstrual Cycle in a Real-World Setting. *J Biol Rhythms*, 39, 331–350. <https://doi.org/10.1177/07487304241247893>
- Zhang, J.**, Pena, A., Delano, N., Sattari, N., Shuster, A. E., Baker, F. C., Simon, K., & Mednick, S. C. (2024). Evidence of an active role of dreaming in emotional memory processing shows that we dream to forget. *Scientific Reports*, 14(1), 8722. <https://doi.org/10.1038/s41598-024-58170-z>
- Onton, J. A., Simon, K. C., Morehouse, A. B., Shuster, A. E., **Zhang, J.**, Peña, A. A., & Mednick, S. C. (2024). Validation of spectral sleep scoring with polysomnography using forehead EEG device. *Frontiers in Sleep*, 3. <https://doi.org/10.3389/frsle.2024.1349537>

- Shuster, A. E., Simon, K. C., **Zhang, J.**, Sattari, N., Pena, A., Alzueta, E., de Zambotti, M., Baker, F. C., & Mednick, S. C. (2023). Good Sleep is a Mood Buffer for Young Women During Menses. *Sleep*, zsad072. <https://doi.org/10.1093/sleep/zsad072>
- Zhang, J.**, Whitehurst, L. N., & Mednick, S. C. (2022). The Role of Sleep for Episodic Memory Consolidation: Stabilizing or Rescuing? *Neurobiology of Learning and Memory*, 107621. <https://doi.org/10.1016/j.nlm.2022.107621>
- McDevitt, E. A. †, **Zhang, J.** †, MacKenzie, K. J., Fiser, J., & Mednick, S. C. (2022). The effect of interference, offline sleep, and wake on spatial statistical learning. *Neurobiology of Learning and Memory*, 193, 107650. <https://doi.org/10.1016/j.nlm.2022.107650>
- Chen, P.-C. †, **Zhang, J.** †, Thayer, J. F., & Mednick, S. C. (2022). Understanding the roles of central and autonomic activity during sleep in the improvement of working memory and episodic memory. *Proceedings of the National Academy of Sciences*, 119(44), e2123417119. <https://doi.org/10.1073/pnas.2123417119>
- Alzueta, E., Zambotti, M. de, Javitz, H., Dulai, T., Albin, B., Simon, K. C., Sattari, N., **Zhang, J.**, Shuster, A., Mednick, S. C., & Baker, F. C. (2022). Tracking Sleep, Temperature, Heart Rate, and Daily Symptoms Across the Menstrual Cycle with the Oura Ring in Healthy Women. *International Journal of Women's Health*, 14, 491–503. <https://doi.org/10.2147/IJWH.S341917>
- Simon, K. C., Clemenson, G. D., **Zhang, J.**, Sattari, N., Shuster, A. E., Clayton, B., Alzueta, E., Dulai, T., de Zambotti, M., Stark, C., Baker, F. C., & Mednick, S. C. (2022). Sleep facilitates spatial memory but not navigation using the Minecraft Memory and Navigation task. *Proceedings of the National Academy of Sciences*, 119(43), e2202394119. <https://doi.org/10.1073/pnas.2202394119>
- Simon, K. C., Whitehurst, L. N., **Zhang, J.**, & Mednick, S. C. (2021). Zolpidem Maintains Memories for Negative Emotions Across a Night of Sleep. *Affective Science*. <https://doi.org/10.1007/s42761-021-00079-1>
- Zhang, J.** †, Yetton, B. †, Whitehurst, L. N., Naji, M., & Mednick, S. C. (2020). The Effect of Zolpidem on Memory Consolidation Over a Night of Sleep. *Sleep*. <https://doi.org/10.1093/sleep/zsaa084>
- Furman, A. J., Prokhorenko, M., Keaser, M. L., **Zhang, J.**, Chen, S., Mazaheri, A., & Seminowicz, D. A. (2020). Sensorimotor Peak Alpha Frequency Is a Reliable Biomarker of Prolonged Pain Sensitivity. *Cerebral Cortex* (New York, NY), 30(12), 6069–6082. <https://doi.org/10.1093/cercor/bhaa124>
- Seminowicz, D. A., Burrowes, S. A. B., Kearson, A., **Zhang, J.**, Krimmel, S. R., Samawi, L., Furman, A. J., Keaser, M. L., Gould, N. F., Magyari, T., White, L., Goloubeva, O., Goyal, M., Peterlin, B. L., & Haythornthwaite, J. A. (2020). Enhanced mindfulness-based stress reduction in episodic migraine: A randomized clinical trial with magnetic resonance imaging outcomes. *PAIN*, Articles in Press. <https://doi.org/10.1097/j.pain.0000000000001860>
- Zhang, J.**, & Wamsley, E. J. (2019). EEG predictors of dreaming outside of REM sleep. *Psychophysiology*, 56(7). <https://doi.org/10.1111/psyp.13368>

† indicates equal contribution

Talks and Posters

- Zhang J.**, Pena, A., ..., Mednick, S.C. (2026). Dreaming Away the Sting: Dream-dependent emotional processing across the menstrual cycle. Talk and poster presented at SLEEP 2026. Baltimore, MD.
- Zhang J.**, Baxter, B., ..., Manoach, D. S. (2026). Reshaping the Hippocampus: Spindle–SO Coupling Associated with Microstructural Changes After CLASS. Poster presented at 2026 Sleep Regulation and Function Gordon Research Conference. Galveston, TX.
- Zhang J.**, Baxter, B., ..., Manoach, D. S. (2025). Optimizing Closed-Loop Auditory Stimulation Timing to Maximize Procedural Memory Consolidation. Poster presented at SLEEP 2025. Seattle, WA.
- Zhang J.**, Sjøgård, M., ... Manoach, D. S. (2024). The Effects of Zolpidem on Sleep Physiology and Declarative Memory over a Nap in Schizophrenia. Poster presented at Society for Neuroscience Annual Meeting, Chicago, IL.
- Zhang, J.**, Simon, K., ..., Mednick, S.C. (2022). Menstrual cycle-related changes in sleep-dependent emotional memory consolidation. Talk and poster presented at SLEEP 2022. Charlotte, NC.

- Chen, P., **Zhang, J.**, Tambini, A., Mednick, S.C. (2022). How do slow oscillation and vagal activity support working memory? A Simultaneous EEG/fMRI Study. Poster presented at SLEEP 2022. Charlotte, NC.
- Delano, N., Pena, A., ..., **Zhang, J.** (2021) The Dream Affect: The role of dreaming in emotional processing. Poster presented at Society of Neuroscience Virtual Conference.
- Zhang, J.** & Mednick, S.C. (2021). A look at sex differences on sleep's impact on working memory improvement. Poster presented at SLEEP Virtual Conference.
- Shuster, A., **Zhang, J.** ... Mednick, S.C. (2021). Sleep and mood across the menstrual cycle in young women. Poster presented at SLEEP Virtual Conference.
- Zhang, J.** & Mednick, S. (2020). The effect of Zolpidem on sleep-dependent declarative memory consolidation. Poster presented at SLEEP Virtual Conference.
- Simon, K., Whitehurst, L., **Zhang, J.**, Mednick, S.C. (2020). The effect of Zolpidem on sleep-dependent emotional memory consolidation. Poster presented at SLEEP Virtual Conference.
- Zhang, J.**, Yetton, B., Whitehurst, L., Naji, M., Mednick, S.C. (2019). The effect of Zolpidem on memory consolidation and sleep features over a night of sleep. Poster presented at World Sleep Annual Meeting, Vancouver, Canada.
- Zhang, J.**, Kearson, A., Burrowes, S..., Seminowicz, D.A. (2018). Effects of sleep quality, pain catastrophizing, anxiety and depression on pain-related activation for migraine patients and healthy controls. Poster presented at Society for Neuroscience Annual Meeting, San Diego, CA.

Research Experiences

Research Fellow

Massachusetts General Hospital/ Harvard Medical School

PI: Dara Manoach, Ph.D.

07/2023 – 06/2026

Sleep-dependent memory processing in schizophrenia

National Institute of Mental Health R01MH092638-04

Collaborate closely with the PI and collaborators to design studies, acquire data, interpret findings, write papers, develop, improve, and apply data analytic techniques.

- The effects of closed loop auditory stimulation during sleep (CLASS) on offline learning and hippocampal plasticity

Harvard University Mind/Brain/Behavior Interfaculty Initiative Postdoctoral Fellowship Award

Role: Lead study conceptualization and funding application under PI's mentorship. Design study protocols, program behavioral paradigms using Python, and develop longitudinal multimodal analysis pipelines (EEG, DWI). Lead data interpretation and manuscript preparation.

Graduate Student Researcher

University of California, Irvine

PI: Sara Mednick, Ph.D.

09/2018 – 06/2023

- An investigation of how sleep-dependent memory is modulated by menstrual phase using simultaneous EEG-fMRI
UCI MIND WAM Women's Initiative Pilot Grant
Conceptualized idea, prepared grant proposal, developed cognitive tasks, set up the simultaneous EEG-fMRI equipment, mentored undergraduates, collected and analyzed data, prepared manuscript.
- The impact of sex hormones on sleep-dependent memory in young and midlife women and men
NIH R01 AG061355
Programmed cognitive tasks using MATLAB (e.g., Emotional Picture Task, Paired-Associates Task); contributed to participant recruitment, data collection and analysis; presented findings via posters and talks; involved in manuscript preparation.
- Roles of central and autonomic activity during sleep in declarative and working memory
Contributed to data analysis and manuscript preparation, focusing on associations between physiological sleep features and memory performance.
- The effect of zolpidem on memory consolidation and sleep features over a night of sleep
NIH R01 AG046646

Conducted data analysis, contributed to poster presentation and manuscript writing, examining how pharmacologically enhanced sleep impacts memory consolidation.

Clinical Study Coordinator

University of Maryland, Baltimore

PI: David Seminowicz, Ph.D.

07/2016 - 07/2018

- Electrophysiological markers for prolonged pain sensitivity
Role: set up equipment for simultaneous EEG-fMRI system, collected and analyzed data, assisted manuscript preparation
- MRI Outcomes of Mindfulness Meditation for Migraine
Funding: NCCAM 1R01AT007176-01A1
Role: coordinated the study team, ensured data compliance, prepared documents for quality checks and external reviews, collected and analyzed data, assisted manuscript preparation

Teaching and Mentoring

Adjunct Professor

Hult International Business School

Spring 2024 - 2025

- Introduction to Psychology
- Science of the Mind
- Developmental Psychology

Instructor

Department of Cognitive Sciences, University of California, Irvine

- MATLAB programming

Summer 2022

Guest Lecturer

Department of Cognitive Sciences, University of California, Irvine

- Sleep and Consciousness: Dream (11/15/2021)
Sleep in Older Adults (11/1/2021)

Mentor

UROP Research Discovery Program, University of California, Irvine

02/2022 – 06/2023

- Guide and support four undergraduate student mentees in participating in research at UCI.
- Lead workshops, group meetings and individual meetings to help mentees get involved in research, connect with faculty, and develop professional skills.

Graduate InterConnect Program, University of California, Irvine

03/2021 – 06/2023

- Provide mentorship and assistance for new international graduate students with their transition to the campus and the local communities.
- Meet with mentees to discuss professional development pathways and resources specific to their Ph.D. or Master's track.

Furman Connect Program, Furman University

03/2021 – 06/2023

- Share expertise and experience with current Furman students through informational interviews, resume and cover letter reviews, and networking
- Panelist in workshops on professional development for undergraduate students

Certification

- Mentoring Excellence Certificate 05/2021
- The CIRTL Associate level certificate 12/2020
- Certificate in Teaching Excellence 12/2020
- Certificate in Course Design Excellence 12/2020

Community Outreach

Beacon Hill Seminars, Boston MA

2/2024 – 06/2024

Volunteer Lecturer

- Delivered lectures on sleep and memory to adult learners as part of a local educational organization.

The CNLM Ambassador Program, Irvine CA

12/2021 – 06/2023

Volunteer

- Developed, executed, and assessed impactful science communication activities for both campus and community audiences.

The Loh Down on Science, Irvine, CA

Writer

09/2020 – 03/2022

- Wrote and edited scripts for a radio show dedicated to making science accessible to the public.

Ad Hoc Reviewing

- SLEEP
- Scientific Reports
- Neurobiology of Learning and Memory
- PNAS Nexus
- Nature Communications

Committee Service

- Sleep Research Society - Scientific Review Committee 06/2024 – present
- Society for Neuroscience (SfN) – Member 2023 – present
- World Sleep Society – Member 2022 – 2023

Skills

- Programming & Computational Analysis: Python, MATLAB, R, Git/GitHub
- Wearable & Physiological Data: Wearable EEG, Oura Ring physiological data, sleep staging, spindle/slow oscillation detection, spectral analysis, artifact rejection, multimodal time-series analysis, longitudinal physiological modeling
- Statistical Modeling & ML: Mixed-effects models, longitudinal modeling, supervised/unsupervised machine learning, probabilistic classification, biomarker validation, cross-validation, feature engineering, effect size and power analysis
- Neuroimaging & Signal Processing: task fMRI, DWI/tractography, SPM, FSL, CONN, EEGLAB, simultaneous EEG-fMRI acquisition and artifact correction
- Clinical & Translational Research: Clinical trial coordination, statistical analysis planning, IRB/regulatory compliance, NIH/DoD-funded research, data quality monitoring, human factors/use-related risk documentation
- Scientific Communication: Scientific presentations, data visualization, manuscript preparation