

Pin-Chun Chen, PhD

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<https://pinchunc.github.io>

Appointments

University of Oxford

Oct 2023 - present

Marie Curie Postdoctoral Fellow

Advisor: Dr Bernhard Staresina

Focus: Human iEEG, Single-Units, MEG sleep and memory reactivation

University of Pennsylvania

July 2022 - Sep 2023

Postdoctoral Fellow

Advisor: Dr Brett Foster

Focus: episodic memory, sleep, iEEG, hippocampal ripples

Education

University of California, Irvine

Sep 2017 - June 2022

PhD, Cognitive Science

Advisor: Dr Sara Mednick

Thesis: Heart-brain Interaction during Sleep Drives Sleep-dependent Memory Gains

Focus: sleep and memory, working memory, simultaneous EEG-fMRI, high-density EEG, electrical brain stimulation (tACS), pharmacology, autonomic-central coupling

University of California, Irvine

Sep 2018 - June 2020

MSc, Statistics

Focus: time series analysis, generalized linear-mixed-effects models, machine learning

National Chengchi University, Taipei, Taiwan

Sep 2013 - June 2017

BS, Psychology & BEd, Education

Advisor: Dr Chien-Ming Yang

Focus: chronic insomnia, acute insomnia, attentional biases, polysomnography

Awards, Fellowships, & Grants

2024-2026	Junior Research Fellowship (£10K), Wolfson College, University of Oxford
2024-2025	Wellcome Centre for Integrative Neuroimaging Seed Grant (£15K), University of Oxford
2023-2025	Marie Skłodowska-Curie Postdoctoral Fellowship (€221K), Horizon Europe
2019-2022	Undergraduate Research Grant Recipient Advisor (3 times, \$2,400), UCI
2022	AGS Recovery Fellowship (\$1,000), Associated Graduate Students, UCI
2022	Conference Travel Grant Award (\$250), Associated Graduate Students, UCI
2021	Grant Writing Fellowship (\$7,000), School of Social Sciences, UCI
2021	Cascade Mentoring Fellow (\$6,000), Graduate Division, UCI
2021	Jean-Claude Falmagne Research Award (\$3,000), UCI
2021	Renée Harwick Advanced Graduate Student Award (\$1,000), UCI
2021	Outstanding Scholarship Award (\$250), School of Social Sciences, UCI
2021	Grad Slam Semi-Finalist, Graduate Division, UCI (Honorary)
2020	Graduate Fellow (\$5,000), Division of Teaching Excellence and Innovation, UCI
2017	NVIDIA GPU Grant, NVIDIA Corporation (\$2,000)
2017	Government Scholarship to Study Abroad (\$32,000), Ministry of Education, Taiwan
2017	Honorary member of the Phi Tau Phi Scholastic Honor Society (Honorary)
2017	Outstanding Graduating Award (\$1,000), National Chengchi University

Publications

* co-first authors; Google Scholar: <https://scholar.google.com/citations?user=zhIGL70AAAAAJ&hl=en>

UNDER REVIEW / IN PREP

Pin-Chun Chen, Jenny Stritzelberger, Hajo Hamer, Bernhard Staresina (In Prep) Hippocampal ripples during offline periods predict motor sequence learning.

Jing Zhang*, **Pin-Chun Chen***, Sara C. Mednick, Arielle Tambini (Under Review) Slow Oscillations Modulate Functional Brain Changes Supporting Working Memory. *bioRxiv*; doi: <https://doi.org/10.1101/2024.05.14.594161>

Allison Morehouse, Katherine Simon, **Pin-Chun Chen**, Sara C. Mednick (Under Review) Heart Rate Variability During REM Sleep is Associated with Reduced Negative Memory Bias. *bioRxiv*; doi: <https://doi.org/10.1101/2024.08.30.610388>

Alessandra E. Shuster, Allison Morehouse, Elizabeth A. McDevitt, **Pin-Chun Chen**, Lauren N. Whitehurst, Jing Zhang, Negin Sattari, Tracy Uzoigwe, Ali Ekhlasi, Denise Cai, Katherine Simon, Niels Niethard, Sara C. Mednick (Under Review) REM Refines and Rescues Memory Representations: A New Theory. *Sleep Advances*.

Anjana Subramoniam, **Pin-Chun Chen**, Negin Sattari, Sara Mednick, Lauren Whitehurst (Under Review) Physiological sleep correlates of positive and negative affect in younger and older adults. *Psychophysiology*.

JOURNAL ARTICLES

Alessandra Shuster, **Pin-Chun Chen**, Hamid Niknazar, Elizabeth McDevitt, Beth Lopour, and Sara Mednick. (2024) Novel Electrophysiological Signatures of Learning and Forgetting in Human REM Sleep. *Journal of Neuroscience*.

Pin-Chun Chen*, Jing Zhang*, Julian F. Thayer, and Sara C. Mednick. (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.

Pin-Chun Chen, Katharine C. Simon, Negin Sattari, Lauren N. Whitehurst, Mohsen Naji, and Sara C. Mednick. (2022) Autonomic Central Coupling during Daytime Sleep Differs between Older and Younger People. *Neurobiology of Learning and Memory*, 107646.

Pin-Chun Chen, Hamid Niknazar, William A Alaynick, Lauren N. Whitehurst, and Sara C. Mednick. (2021) Competitive dynamics underlie cognitive improvements during sleep. *Proceedings of the National Academy of Sciences*, 118(51), e2109339118.

Pin-Chun Chen, Negin Sattari, Lauren N. Whitehurst, and Sara C. Mednick (2021) Age-related loss in cardiac autonomic activity during a daytime nap. *Psychophysiology*, 58(7), e13701.

Dong Joo Kim, Joy Makdisi, Christina Regan, **Pin-Chun Chen**, Elizabeth Chao, Adam M. Rotunda. (2021b) Reconstruction of distal nasal defects using free cartilage batten grafting with secondary intention healing: a retrospective case series of 129 patients. *Dermatologic Surgery*, 47(1), 86-93.

Dong Joo Kim, Tze-An Yuan, **Pin-Chun Chen**, Feng Liu-Smith, Natasha Atanaskova Mesinkovska, Hege Grande Sampa. (2021a) Pediatric melanoma in the Hispanic population: an analysis of institutional and national data. *Pediatric Dermatology*, 38.5 (2021): 1102-1110

Pin-Chun Chen, Lauren N. Whitehurst, Mohsen Naji, and Sara C. Mednick. (2020b) Coupling of autonomic and central events during sleep boosts working memory in healthy adults. *Neurobiology of Learning and Memory*, 173, 107267.

Pin-Chun Chen, Lauren N. Whitehurst, Mohsen Naji, and Sara C. Mednick. (2020a) Autonomic activity during a daytime nap facilitates working memory improvement. *Journal of Cognitive Neuroscience*, 32 (10), 1963-1974

Lauren N. Whitehurst, **Pin-Chun Chen**, Mohsen Naji, and Sara C. Mednick. (2020) New directions in sleep and memory research: the role of autonomic activity. *Current Opinion in Behavioral Sciences*, 33, 17-24.

Presentations

INVITED TALKS

The central-autonomic seesaw of sleep-dependent episodic memory and working memory improvements. (2023, April) Seminar Series at Project TYRA (Taiwanese Young Researcher Association)

The central-autonomic seesaw of sleep-dependent episodic memory and working memory improvements. Institute of Neuroscience Seminar, National Yang Ming Chiao Tung University, Taipei, Taiwan (2022, Oct)

Competitive dynamics underlie cognitive improvements during sleep. Cognitive Sciences Graduate Student Presentation Bonanza, UCI, Irvine (2022, May)

Autonomic-Central Interactions During Sleep Strongly Impacts Sleep-Dependent Cognitive Plasticity. Eisai Inc (Virtual; 2021, May)

Neural mechanisms of sleep and memory consolidation. Guest lecture on Sleep & Memory at UCI, Virtual (Virtual; 2021, May)

Trust your heart during sleep in the fight against cognitive aging. Speaker at UCI Grad Slam (Virtual; 2021, Jan)

Understanding sleep disorders via subjective and objective assessments. Guest lecture on Sleep & Consciousness at UCI (Virtual; 2020, Nov)

Sleep interventions to boost memory. Guest lecture on Sleep & Consciousness at UCI (Virtual; 2020, Nov)

Cued memory reactivation during sleep influences skill learning. Guest lecture on Sleep & Memory at UCI (Virtual; 2020, May)

Autonomic-central couplings during sleep drives sleep-dependent working memory gains. Cognitive Sciences Graduate Student Presentation Bonanza, UCI, Irvine (2020, Jan)

Age-related sleep and cognitive declines: sleep disorders and etiology. Guest lecture on Sleep & Consciousness at UCI (2019, Nov)

TALKS AT SCIENTIFIC CONFERENCES

Hippocampal ripples during offline periods predict motor sequence learning. Data Blitz at the Annual Meeting of Cognitive Neuroscience Society, Toronto, Canada (2024, April)

Integrating measurements of the autonomic nervous system and heart-brain interactions with sleep and memory research. Speaker at the 3rd International Sleep Replay Workshop, Huntington Beach, CA, USA (2023, April)

Working and episodic memory vie for resources during sleep. Open-paper speaker at Learning & Memory 2023, Huntington Beach, CA, USA (2023, April)

The role of the autonomic nervous system in the science of sleep. Symposium speaker at the 35th Annual Meeting of the American Associated Professional Sleep Societies (Virtual; 2021, June)

The sleeping brain switches from frontal-subcortical working memory to hippocampal episodic memory processing during NREM sleep. Speaker at the 35th Annual Meeting of the American Associated Professional Sleep Societies (Virtual; 2021, June)

Competitive dynamics underlie cognitive improvements during sleep. Speaker at the 2021 Virtual Working Memory Symposium (Virtual; 2021, June)

The sleeping brain switches between working memory and long-term memory processing. Data blitz speaker at the Spring Conference at UCI Center for the Neurobiology of Learning and Memory, Irvine, CA (2021, May)

Trust your heart in sleep to fight against cognitive aging. Speaker at UCI Center for the Neurobiology of Learning and Memory Award Ceremony, Irvine, CA (2021, May)

The sleeping brain switches between frontal-subcortical working memory to hippocampal episodic memory processing during NREM sleep. UCI Associated Graduate Student Virtual Symposium (Virtual; 2021, April)

Vagolytic effect of Zolpidem on Sleep-dependent Memory: A Trade-off between Working Memory and Long-term Memory. Speaker at the 2020 Neuromatch conference 3.0 (Virtual; 2020, Oct)

Unsupervised Learning of Sleep Stages from Polysomnography (PSG) Data. Speaker at the 2nd Annual Computational Data Neuroscience Symposium (Virtual; 2020, Oct)

Age-related Losses in Cardiac Autonomic Activity during a Daytime Nap. Speaker at the 2nd Annual Computational Data Neuroscience Symposium (Virtual; 2020, Oct)

Coupling of Autonomic and Central events during Sleep Boosts Working Memory in Healthy Young Adults. Speaker at the 2020 Virtual Working Memory Symposium (Virtual; 2020, June)

The Roles of Autonomic Activities during Sleep on Cognition. Speaker at the Spring Conference at UCI Center for the Neurobiology of Learning and Memory (2019, May)

POSTERS AT SCIENTIFIC CONFERENCES

Pin-Chun Chen and Bernhard Staresina (2024, Oct) Simultaneous EEG-MEG sleep recording and source localization reveal precise spatial temporal distribution of spindle activity during sleep. MEG-UKI Conference, Birmingham, UK

Pin-Chun Chen, Jing Zhang, Arielle Tambini, Sara C. Mednick (2022, June) How do Slow Oscillation and Vagal Activity Support Working Memory? An EEG/fMRI Study. Poster at the 35th Annual Meeting of the American Associated Professional Sleep Societies, Charlotte, NC, USA

Pin-Chun Chen, Lauren N. Whitehurst, Hamid Niknazar, William A Alaynick, Lauren N. Whitehurst, and Sara C. Mednick (2021, Aug) Competitive dynamics underlie cognitive improvements during sleep. Poster at the 41st Annual Conference of North America Taiwanese Professors' Association (Virtual)

Pin-Chun Chen, Lauren N. Whitehurst, Hamid Niknazar, William A Alaynick, Lauren N. Whitehurst, and Sara C. Mednick (2021, April) The sleeping brain switches between working memory and long-term memory processing. Poster at the Women in STEM Symposium 2021 (Virtual)

Pin-Chun Chen, Lauren N. Whitehurst, Mohsen Naji, and Sara C. Mednick (2020, Aug) Age-related changes in central autonomic couplings during sleep. Poster at the 34th Annual Meeting of the American Associated Professional Sleep Societies (Virtual)

Pin-Chun Chen, Lauren N. Whitehurst, Mohsen Naji, and Sara C. Mednick (2019, Sep) Coupling of autonomic and central events during sleep boosts working memory in healthy young adults. Poster at the Annual Meeting of the World Sleep Congress, Vancouver, BC, Canada

Pin-Chun Chen, Negin Sattari, Lauren N. Whitehurst, and Sara C. Mednick (2019, June) Parasympathetic activity during sleep, but not wake, facilitates working memory improvement: A comparison of young and older adults. Poster at the Annual Meeting of the World Sleep Congress, Vancouver, BC, Canada

Pin-Chun Chen, Lauren N. Whitehurst, Mohsen Naji, and Sara C. Mednick (2019, June) Coupling of autonomic and central events during sleep boosts working memory in healthy young adults. Poster at the 33rd Annual Meeting of the American Associated Professional Sleep Societies, San Antonio, TX, USA

Pin-Chun Chen, Lauren N. Whitehurst, Mohsen Naji, and Sara C. Mednick (2018, April) A daytime nap facilitates working memory in healthy young adults. Poster at the International Conference on Learning & Memory 2018, Huntington Beach, CA, USA

Pin-Chun Chen, Ya-Wen Jan, and Chien-Ming Yang (2016, June). Discrepancy between subjective and objective actigraphic sleep estimation for individuals with low and high sleep vulnerability. Poster at the 30th Annual Meeting of the American Associated Professional Sleep Societies, Denver, CO, USA

Mentee*Led Presentations

Alison B. Morehouse, Katharine C. Simon, Jing Zhang, **Pin-Chun Chen**, Lauren N. Whitehurst, Sara C. Mednick (2023, April) Does cardiac autonomic variation across sleep stages differentially impact emotional and neutral memory consolidation? Poster at Learning & Memory 2023, Huntington Beach, CA, USA

Alessandra Shuster, **Pin-Chun Chen**, Hamid Niknazar, Sara C. Mednick (2023, April) Identifying Novel Markers of Memory in REM Sleep. Poster at the International Conference on Learning & Memory 2023, Huntington Beach, CA, USA

Anjana Subramoniam, **Pin-Chun Chen**, Sara Mednick, Lauren N. Whitehurst (2022, June) Slow oscillation power and heart rate variability during sleep predicts next-day subjective sleepiness in healthy young adults. Poster at the 35th Annual Meeting of the American Associated Professional Sleep Societies, Charlotte, NC, USA

Ash Arumugam, Spencer Mair, Jing Zhang, **Pin-Chun Chen** (2022, May) Role of Sex Hormones and Sleep on Anxiety Levels. Poster at the 2022 UCLA Psychology Undergraduate Research Conference (PURC).

Shreya Cho, Kevin Sam, Jing Zhang, **Pin-Chun Chen** (2022, May) The Interaction Between Dream Recall, Declarative Memory, and Sex Hormones. Poster at the 2022 UCLA Psychology Undergraduate Research Conference (PURC).

Cassandra Delvey and **Pin-Chun Chen** (2018, Nov) Central Autonomic Couplings During Sleep Can Predict Sleep-Induced Working Memory Improvement. Poster at the 2018 Southern California Conferences for Undergraduate Research.

Mathew Bayati and **Pin-Chun Chen** (2018, Nov) Age Related Changes in Central Autonomic Couplings During Sleep. Poster at the 2018 Southern California Conferences for Undergraduate Research.

Teaching

Department of Cognitive Sciences, University of California Irvine

Instructor of Record

Probability and Statistics in Psychology II, Summer 2021

Lab Instructor/ Teaching Assistant

Probability and Statistics in Psychology II, Winter 2021, with Dr. Jeff Rouder

Probability and Statistics in Psychology I, Winter 2021, with Dr. Alex Etz

Advanced Experimental Psychology, Winter 2019, with Dr. Aaron Bornstein

Computer-Based Research in Social Science, Fall 2018, with Dr. Paul Shirey

Teaching Assistant

Language and the Brain, Spring 2019, with Dr. Greg Hickok

Psych Fundamentals, Summer 2019, with Dr. Alex Bower
 Sleep & Consciousness, Fall 2019, with Dr. Sara Mednick

Division in Teaching Excellence and Innovation (DTEI), University of California Irvine

Graduate Pedagogical Fellow

Psych Fundamentals, Summer 2020, with Dr. Megan Peters

Department of Statistics, University of California Irvine

Lab Instructor/ Teaching Assistant

Basic Statistics, Winter 2020, with Dr. Lee Kucera

Introduction to Biostatistics, Spring 2020, with Dr. Brigitte Baldi

Department of Psychology, National Chengchi University

Teaching Assistant

Introduction to Eye Movements and Cognition, Spring 2016, with Dr. Jie-Li Tsai

Mentoring

GRADUATE RESEARCH

- 2023- **Manqi Sha**, graduate student analyzing intracranial EEG data on sleep and memory
- 2022- **Allison Morehouse**, graduate student analyzing HRV and Autonomic-Central Events on sleep and memory, poster presentation at Learning & Memory 2023, manuscripts under review
- 2020- **Anjana Subramoniam**, graduate student analyzing large-scale heart-rate-variability and sleep EEG data, poster presentation at SLEEP 2022, manuscripts under review on Psychophysiology
- 2020- **Alessandra Shuster**, graduate student analyzing EEG activity during REM, poster presentation at Learning & Memory 2023, manuscripts published on Journal of Neuroscience

UNDERGRADUATE RESEARCH

- 2018-2022 **Ashley Chen**, undergraduate, UCI Summer Undergraduate Research Program (SURP)
- 2021-2022 **Ash Arumugam**, undergraduate, UCI Summer Undergraduate Research Program (SURP), UCLA Psychology Undergraduate Research Conference (PURC)
- 2021-2022 **Spencer Mair**, undergraduate, UCI Summer Undergraduate Research Program (SURP), UCLA Psychology Undergraduate Research Conference (PURC)
- 2020-2022 **Shreya Cho**, undergraduate, UCI Summer Undergraduate Research Program (SURP), UCLA Psychology Undergraduate Research Conference (PURC)
- 2020-2022 **Kevin Sam**, undergraduate, UCI Summer Undergraduate Research Program (SURP), UCLA Psychology Undergraduate Research Conference (PURC)
- 2018-2021 **Angelica Busciglio**, undergraduate, undergraduate thesis mentee, UCI 2020 Order of Merit Award, UCI Summer Undergraduate Research Program (SURP)
- 2018-2020 **Nancy Liu**, undergraduate
- 2018-2020 **Myca Cabuay**, undergraduate
- 2017-2020 **Mathew Bayati**, undergraduate, undergraduate thesis mentee, Southern California Conferences for Undergraduate Research
- 2017-2019 **Suyeon Hwang**, undergraduate
- 2017-2019 **Cassandra Delvey**, undergraduate, undergraduate thesis mentee, UCI 2019 Honors Thesis Award, UCI Summer Undergraduate Research Program (SURP)

Service

PROFESSIONAL ACTIVITIES

- 2021-2022 Writing Workshop Leader, Department of Cognitive Sciences, UCI
- 2020 Transitioning Online Teaching Fellow, Division in Teaching Excellence and Innovation, UCI
- 2020 CogSci Colloquium Transcriber, Department of Cognitive Sciences, UCI
- 2019-2021 Statistical Consultant, School of Medicine, UCI
- 2019-2020 First-Year Graduate Student Mentor, Department of Cognitive Sciences, UCI
- 2018-2019 Graduate Student Panel, Social Science Academic Resource Center, UCI
- 2016 Coordinator for the Annual Meeting, Taiwan Association of Clinical Psychology

REVIEWING

Ad-Hoc Reviewer.

Current Biology, PNAS, eLife, Progress in Neurobiology, Applied Psychophysiology and Biofeedback Grants.

NSF CogNeuro Proposal

Media Spotlight

Soc sci shout out: Pin-Chun Chen, cognitive sciences Ph.D. '22. UCI News. May 31, 2022.

<https://www.socsci.uci.edu/newsevents/news/2022/2022-05-31-pin-chun-chen-shout-out>

Pin-Chun Chen, UCI cognitive sciences graduate student, studies how your brain stays busy while you snooze

UCI News. November 2, 2021. <https://www.socsci.uci.edu/newsevents/news/2021/2021-11-02-pin-chun-chen-cog-sci.php>

UCI-led study is first to find that long- and short-term memory vie for brain space. UCI News. December 14, 2021.

<https://news.uci.edu/2021/12/14/uci-led-study-is-first-to-find-that-long-and-short-term-memory-vie-for-brain-space/>

Pin-Chun Chen named one of two Outstanding Scholar award recipients in social sciences. UCI News. June 1, 2021.

<https://www.socsci.uci.edu/newsevents/news/2021/2021-06-01-pin-chun-chen-outstanding-scholar.php>

Certificate Programs

07/2024	Google Business Intelligence Professional Certificate, Google
08/2021	Preparing for a Faculty Career Certificate Program, University of California, Irvine, Irvine, CA
08/2021	Mentoring Excellence Program, University of California, Irvine, Irvine, CA
06/2021	Cascading Mentorship Certificate, University of California, Irvine, Irvine, CA
03/2021	Public Speaking Certification, University of California, Irvine, Irvine, CA
01/2021	Certificate in Teaching Excellence, University of California, Irvine, Irvine, CA
08/2020	Certificate in Course Design, University of California, Irvine, Irvine, CA
08/2020	Certificate in Remote Instruction, University of California, Irvine, Irvine, CA

References

Dr. Bernhard Staesina

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Dr. Brett Foster

Associate Professor,

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Dr. Sara Mednick

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University of California, Irvine

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Dr. Arielle Tambini
Research Scientist,
Center for Biomedical Imaging & Neuromodulation
Nathan S. Kline Institute for Psychiatric Research
Email: arielle.tambini@nki.rfmh.org