CURRICULUM VITAE

Pin-Chun Chen

Ph.D. Candidate
Sleep and Cognition Lab,
Department of Cognitive Science,
University of California, Irvine, CA 92697
949-668-4769 pinchuc@uci.edu
https://sites.uci.edu/pinchunchen/

Research Interests

My research interests broadly entail the processes during sleep that are important for health and cognitive functions. My work investigates how autonomic and central nervous system are modulated by sleep and age, and how that impacts on sleep-dependent health and cognitive changes.

Education

University of California, Irvine

2017-2022 Ph.D. in Cognitive Science
Dissertation Title: Heart-brain Interaction during NREM Sleep Drives Sleep-dependent Memory Gains. (Advisor: Dr. Sara Mednick)
Committee Members: Dr. Julian Thayer, Dr. Bryce Mander, Dr. Susanne Jaeggi, Dr. Greg Hickok, Dr. Aaron Bornstein

2020 Certificate in Teaching Excellence
2020 Certificate in Course Design
2020 Certificate in Remote Instruction

2018-2020 M.Sc. in Statistics

National Chengchi University, Taipei, Taiwan

2013-2017 B.S. in Psychology (Overall GPA: 4/4; Ranking: 1/85)
Thesis Title: Subjective-Objective Mismatch in Sleep Estimation among Healthy, Acute Insomnia, and Chronic Insomnia Patients (Advisor: Dr. Chien-Ming Yang)
2013-2017 B.Ed. in Education

Skills & Languages

Experimental Methods: EEG, fMRI, Eye-tracker, Actigraphy, Sleep Scoring, BIOPAC
Programming Languages: Python, R, Matlab, SPSS, Excel, SQL, SAS
Statistical Analyses: GLM, Regression, ANOVAs, Factor analysis, Linear-Mixed Model, LASSO, HLM
Proficient Languages: Mandarin (Native), English (Fully Proficient)

Peer-Review Journal Publication

Pin-Chun Chen, Lauren N. Whitehurst, Mohsen Naji, and Sara C. Mednick *(2020)* Coupling of autonomic and central events during sleep boosts working memory in healthy adults. *Neurobiology of Learning and Memory*, Volume 173, 2020, 107267, ISSN 1074-7427, https://doi.org/10.1016/j.nlm.2020.107267.

Pin-Chun Chen, Lauren N. Whitehurst, Mohsen Naji, and Sara C. Mednick *(2020)* Autonomic activity during a daytime nap facilitates working memory improvement. *Journal of Cognitive Neuroscience*, 1-12, https://doi.org/10.1162/jocn_a_01588

Pin-Chun Chen, Negin Sattari, Lauren N. Whitehurst, and Sara C. Mednick *(2020)* Age-related loss in cardiac autonomic activity during a daytime nap but not quiet wake. *Psychophysiology*, doi: https://doi.org/10.1111/psyp.13701

Pin-Chun Chen, Katharine C. Simon, Negin Sattari, Lauren N. Whitehurst, Mohsen Naji, and Sara C. Mednick *(Under Review)* Age-related changes in autonomic-central coupling profiles during a daytime nap. *Sleep*, doi: https://doi.org/10.1101/2020.09.22.297184

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*, Volume 33, 2020, Pages 17-24, ISSN 2352-1546, https://doi.org/10.1016/j.cobeha.2019.11.001.

Dong Joo Kim, Tze-An Yuan, **Pin-Chun Chen**, Feng Liu-Smith, Natasha Atanaskova Mesinkovska, Hege Grande Sarpa, Pediatric Melanoma: An Institutional Cohort Study and National Epidemiological Data Provide Insights into a Growing Hispanic Population (2020). http://dx.doi.org/10.2139/ssrn.3526313

Dong Joo Kim, Joy Makdisi, Christina Regan, **Pin-Chun Chen**, Elizabeth Chao, Adam M. Rotunda *(2020)* Analysis of 129 nasal defects reconstructed by a free cartilage batten graft with secondary intention healing: a reliable, minimalistic repair for mid-alar wounds. *Dermatologic Surgery*

Manuscript in preparation

Pin-Chun Chen, Lauren N. Whitehurst, and Sara C. Mednick *(In Prep)* Vagolytic effect of Zolpidem on Sleep-dependent Changes in Working Memory and Long-term Memory.

Oral Presentations/ Invited Talks

Pin-Chun Chen (2020, Oct) 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)

Pin-Chun Chen (2020, Oct) Unsupervised Learning of Sleep Stages from Polysomnography (PSG) Data. 2nd Annual Computational Data Neuroscience Symposium (Virtual)

Pin-Chun Chen (2020, Oct) Age-related Losses in Cardiac Autonomic Activity during a Daytime Nap. 2nd Annual Computational Data Neuroscience Symposium (Virtual)

Pin-Chun Chen (2020, Oct) Spindles switch the sleeping brain from frontal lobe to hippocampal processing: a pharmacology study. Speaker at the CogSci Colloquium Flash Talks Series (Virtual)

Pin-Chun Chen (2020, Aug) Coupling of Autonomic and Central events during Sleep Boosts Working Memory in Healthy Young Adults. Speaker at the 2020 Virtual Working Memory Symposium (Virtual)

Pin-Chun Chen (2020, May) Cued memory reactivation during sleep influences skill learning. Guest lecture on Psych 129 Sleep & Memory at UCI, Irvine, CA, USA

Pin-Chun Chen (2020, May) Autonomic-central couplings during Sleep Drives Sleep-dependent Working Memory Gains. Cognitive Science Advancement Talk at UCI, Irvine, CA, USA

Pin-Chun Chen (2020, Jan) Autonomic-central couplings during Sleep Drives Sleep-dependent Working Memory Gains. Cognitive Science 3rd-year Talk at UCI, Irvine, CA, USA

Pin-Chun Chen (2019, Nov) Age-related Sleep and Cognitive Declines: Sleep Disorders and Etiology. Guest lecture on Psych 121S Sleep & Consciousness at UCI, Irvine, CA, USA

Pin-Chun Chen (2019, May) The Roles of Autonomic Activities during Sleep on Cognition. Speaker at the Spring Conference at UCI Center for the Neurobiology of Learning and Memory, Irvine, CA, USA

Pin-Chun Chen (2019, Feb) Enhancing Working Memory by Closed-loop tACS during NREM Sleep. Concentration Exam Talk at UCI, Irvine, CA, USA

Pin-Chun Chen (2017, Dec) Why Do We Sleep? The Impacts of Sleep on Emotion and Memory. Guest speaker at Academic Salon at Taiwanese Graduate Student Association at UCI, Irvine, CA, USA

Presentations/ Peer-reviewed Abstracts

Pin-Chun Chen (2020, Aug) Age Related Changes in Central Autonomic Couplings During Sleep. Poster presented at the 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 presented 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 presented 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 presented at the 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 presented at the 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 presented at the Annual Meeting of the American Associated Professional Sleep Societies, Denver, CO, USA

Professional Society Membership

Sleep Research Society, 2016 – present
American Academy of Sleep Medicine, 2016 – present
Society for Neuroscience, 2018 – present

Teaching Experience

Division in Teaching Excellence and Innovation (DTEI), UC Irvine
DTEI Graduate Fellow, 2020-2021
Psych Fundamentals, Summer 2020, with Dr. Megan Peters

Department of Statistics, UC Irvine
Lab Instructor/ Teaching Assistant
Basic Statistics, Winter 2020, with Dr. Lee Kucera
Introduction to Biostatistics, Spring 2020, with Dr. Brigitte Baldi

Department of Cognitive Science, UC Irvine
Guest Lecturer
Sleep & Consciousness, Fall 2019, 2020
Sleep & Memory, Spring 2020
Sleep & Consciousness, Fall 2019

Lab Instructor/ Teaching Assistant
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

Department of Psychology, National Chengchi University
Teaching Assistant
Introduction to Eye Movements and Cognition, Spring 2016, with Dr. Jie-Li Tsai

Honors and Awards

2020-2021	University of California, Irvine	Division in Teaching Excellence and Innovation (DTEI) Graduate Fellowship
2020		Undergraduate Research Opportunities Program (UROP) Grant Recipient Advisor
2017-2022		Graduate Student Researcher Award
2018-2022		Graduate Teaching Assistant Award
2018-2020		Conference Travel Grant
2017-2019	Ministry of Education, Taiwan	Government Scholarship to Study Abroad
2017	NVIDIA Corporation	NVIDIA GPU Grant
2017	Phi Tau Phi Scholastic Society	Honorary member of the Phi Tau Phi Scholastic Honor Society
2017	National Chengchi University	Outstanding Graduating Award
2014-2017		Student of Honor for Presidential Award
2015		Lung Shan Temple Scholarship
2015		Dr. Fa-Mi Chen Memorial Scholarship

Academic Service Activity

Department of Cognitive Science, UC Irvine

DTEI Transitioning Online Teaching Fellow, 2020
Help Faculty Members Transition In-person Courses to Online Teaching

First-Year Graduate Student Mentor, 2019-2020
Mentor for incoming first-year graduate students new to the school

Research Mentor, Suyeon Hwang, University of California, Irvine, 2017 – 2019
Currently a PhD student at University of Illinois Urbana-Champaign
Project: Targeted Stimulation for Enhancing Memory Replay with Active Closed-Loop Therapy

Research Mentor, Cassandra Delvey, University of California, Irvine, 2017 – 2019
Currently a PhD student at University of Massachusetts Amherst
Project: Central Autonomic Couplings During Sleep Can Predict Sleep-Induced Working Memory Improvement

Research Mentor, Mathew Bayati, University of California, Irvine, 2017 – 2020
Incoming MS student at University of Southern California
Project: Age-Related Changes in Central Autonomic Couplings During Sleep

Research Mentor, Angelica Busciglio, University of California, Irvine, 2018 – 2020
UCI 2020 Order of Merit Awards Recipients
Project: Vagolytic effect of Zolpidem on Sleep-dependent Cognitive Enhancement

School of Medicine, UC Irvine

Statistical Consultant for Dermatology Studies, 2019 – present

Social Science Academic Resource Center

Graduate Student Panel, 2018-2019

Taiwan Association of Clinical Psychology

Coordinator for the Annual Meeting of Taiwan Association of Clinical Psychology, 2016
Prepared for the facilities, program books, name badges and refreshments
Received the lecturers and over 300 attendees

Taiwan Society of Sleep Medicine (TSSM)

Coordinator, 2016-2017
Organized the Assessment and Management of Pediatric Behavioral Sleep Disorders Workshop
Received the speaker, Dr. Jodi A. Mindell

Coordinator for Taiwan Society of Sleep Medicine meeting, 2017
Received the keynote speaker, Dr. Phyllis C. Zee

Psychiatry Clinic, Taipei Medical University Hospital

Volunteer Study Coordinator, 2016-2017
Interviewed subjects and collected survey data (Doctor: Shou-Hung Huang M.D.)

Center for Teaching and Learning Development, National Chengchi University

Peer Tutor for Psychology and Statistics, 2015-2017

Research & Course Projects

Hacking Sleep for Better Memory Using Closed-loop tACS, 2019-2020, individual project

- Implement an online sleep features detection algorithm that deliver electrical stimulation
- Design and implemented memory tasks using Matlab
- Perform EEG recording, electrical stimulation protocol, and analyzed behavioral data
- Conduct sleep scoring and power spectral analysis on sleep physiological data

Comparing MANOVA Statistics Using Empirical Power Analysis, 2019, individual project

- Implement Pallai's Trace, Wilk's Lambda, Hotellings Trace, and Roys largest root in R
- Used empirical powers to assess the performances of the four tests and compared these tests using different variance-covariance matrices and sample sizes

Wine Recognition using Multivariate Classification Methods, 2018, individual project

- Implement Principal Component Analysis (PCA), Fisher's Linear Discriminant Analysis (LDA), and Quadratic discriminant analysis (QDA) in R to classify 3 types of wines with 13 constituents found in each wine.
- Classification Accuracy above 95%

Using Time-Series Methods to Capture Eye-opening Brain States, 2018, individual project

- Implemented Spectral Analysis, Cross-Correlation, and Cross-Spectra (Coherency) to detect eye-opening state by analyzing EEG data using R

Alzheimer's Disease Early Detection: Attrition Analysis and Retest Effects, 2018, individual project

- Implemented GLMs, linear mixed model, and generalized estimating equations on longitudinal Data by Using R

Unsupervised Sleep Stages Classification from PSG Data (EEG, EOG, EMG, ECG), 2017, team of 2

- Duties: Implemented Covariance Matrix, Autoencoder, Probabilistic modeling, and Clustering with Python
- Results: Won the NVIDIA GPU Grant

Neural Networks Modeling in Well-being Prediction with Wearable Sleep Data, 2017, individual project

- Duties: Predicted subjective sleep quality by implementing CNN, RNN, LSTM with R and Python.
- Results: Increased 30% explained variability in prediction after adding this model

Python Chatterbot, 2016, team of 4 students

- Duties: Implemented a chatterbot that can help people perform a variety of statistical analysis and plots
- Results: Helped more than 30 students perform statistical analysis in their projects