Alexander J Simon

SUMMARY

I am a PhD candidate in Todd Constable's lab at Yale University. My work focuses on characterizing how individualized brain network dysfunctions contribute to unique patterns of psychiatric symptomatology and cognitive dysfunction with the intention of guiding personalized treatment models.

EDUCATION

PhD in Neuroscience

In progress

Yale University School of Medicine

Thesis Committee:

R. Todd Constable (Advisor) Anna C. Nobre (Chair) John Krystal Gerard Sanacora

BS in Cell and Molecular Biology

2015

San Francisco State University

Minor: chemistry

Varsity NCAA student athlete (4 years, wrestling)

RESEARCH POSITIONS

Graduate Student Researcher

Sept 2022 - present

Constable Laboratory, Yale University Interdepartmental Neuroscience Program I develop brain network modeling tools for identifying disordered circuits at the individual level, and investigate how these methods can be useful within precision medicine frameworks.

Research Associate June 2020 - July 2022

Memory and Aging Center, University of California San Francisco Studied sleep abnormalities in patients with neurodegenerative diseases.

Data Scientist Oct 2017 - July 2022

Neuroscape Center, University of California San Francisco

Developed and managed physiological data analysis pipelines (e.g., EEG and fMRI) to validate the efficacy of meditation, videogame, and exercise-based cognitive enhancement interventions.

Clinical Research Coordinator

July 2015 - Oct 2017

Gazzaley Laboratory, University of California San Francisco Coordinated randomized clinical trials on cognitive enhancement technologies.

Intern Research Assistant

April 2014 - June 2015

Gazzaley Laboratory, University of California San Francisco Studied interactions between stress and attention.

Awards and Fellowships

National Science Foundation Graduate Research Fellowship 2024 - 2027 McDougal Fellowship, Yale's Office of Career Strategy 2023 - 2024

LEADERSHIP POSITIONS

Yale's Office of Career Strategy

2023 - 2024

Role: Career Development Fellow

Led training and career development events for Yale graduate students and postdocs.

Cognitive Neuroscience Society Trainee Association

2019 - 2022

Role: Vice President

Organized and hosted networking events and panels at the annual Cognitive Neuroscience Society Conferences.

Neuroscape Conference Organization Committee

2020

Role: Co-chair

Organized a poster session and data blitzes for the first internal Neuroscape Conference.

Cognitive Neuroscience Society Trainee Association

2018 - 2019

Role: Officer

INVITED TALKS

Dissociations in Brain Networks Mediating Cognition in Depression (2025). The Yale Wu Tsai Institute's 4th annual Sips and Science event. New Haven, CT.

Networks Underlying Cognitive vs Clinical Relationships in the RDoC Framework (2025). Whistler Scientific Workshop on Brain Functional Organization, Connectivity, and Behavior. Whistler, British Columbia, Canada.

Polysomnography from 3 Neurodegenerative Disease Populations (2021). Memory and Aging Center Sleep Seminar. San Francisco, CA (virtual).

Frontal and Parietal Neural Markers Predict a Clinical Measure of Attention (2018). Bay Area Memory Meeting. Davis, CA.

Media Coverage

CNN 10/18/2018

This is Life With Lisa Ling, How tech withdrawal affects your brain

CNN 10/10/2016

Vital Signs With Dr. Sanjay Gupta, Video games pushing the brain past its limits

OUTREACH

Student host for the Wu Tsai Institute's Inspiring Speaker Series

Mar, 2025

postdocs affiliated with Yale's Wu Tsai Institute.

Hosted an event featuring Dr. Karla Miller to discuss career development advice with students and

STARS II Panelist Nov. 2024

Participated in a panel aimed to give graduate school application advice for undergraduate STEM students coming from backgrounds with fewer resources.

Job Trek Coordination Jan - May, 2024

Organized visits to a large biotech hedge fund (Jane Street Capital) and to the Jackson Laboratory (JAX) for Yale graduate students and postdocs.

Yale Brain Education Day

Mar, 2024

Led discussions and brain dissections with elementary and middle school students from the New Haven community.

Career Paths Panels Sept, 2023 - May, 2024

Hosted various panels to provide Yale graduate students and postdocs with insights about how to navigate job markets in academia, tech, and engineering.

Career Paths Keynotes

Sept, 2023 - May, 2024

Coordinated keynote presentations from leaders in venture capital, entrepreneurship, startups, biotech, and pharmaceutical industries to discuss pathways toward becoming leaders in their respective fields.

Virtual Interview Host

Sept, 2023 - May, 2024

Hosted a series of interviews with leaders in a variety of fields to share insights on how to land a great job after completing scientific training.

Workshop on Intellectual Property Counseling in the Life Sciences

Nov, 2023

Hosted a workshop in collaboration with Yale's tech transfer office and a Managing Partner at Haug Partners LLP focused on obtaining intellectual property.

Bay Area Science Festival

2017 - 2019

Showcased neuroscience technology and hosted lab tours for the annual Bay Area Science Festival.

Neuroscape Mentorship Program

2019

Co-organized a center-wide mentorship effort aimed toward connecting junior researchers with new mentors and providing senior researchers a platform for sharing their mentorship strategies.

Neuroscape Journal Clubs and Code Reviews

2017 - 2020

Organized monthly journal clubs and code reviews for Neuroscape staff, postdocs, and faculty.

Neuroscape EEG workshop

Sept, 2018

Hosted an EEG processing and analysis workshop for UCSF staff coming from diverse academic backgrounds.

Local school tours of Neuroscape and the Memory and Aging Center

2015-2022

Conducted numerous lab tours for a diverse array of Bay Area students.

TEACHING AND MENTORSHIP

Yale Undergraduate Mentor

2024 - 2025

Department of Radiology and Biomedical Imaging, Yale University Mentored and supervised an undergraduate Hahn Fellow.

Yale Summer Student Mentor

2023 - 2025

Department of Radiology and Biomedical Imaging, Yale University Mentored 4 undergraduate students for their summer research projects.

Teaching Fellow for 'The Human Brain'

Fall, 2024

Yale University

Served as a teaching fellow for Dr. Greg McCarthy's 'The Human Brain' undergraduate course.

UCSF Research Assistant Supervisor

2015 - 2022

Departments of Neurology and Physiology, University of California San Francisco Supervised and trained 26 lab volunteers from various undergraduate and Master's programs including UC Berkeley, San Francisco State University, University of San Francisco, and UC Santa Cruz.

UC Berkeley Fung Fellowship Supervisor

2017

Department of Neurology, University of California San Francisco Supervised a Fung Fellowship recipient from UC Berkeley.

Undergraduate Thesis Supervisor

2017, 2019

Department of Neurology, University of California San Francisco
Supervised two senior thesis projects from San Francisco State University and one from UC Berkeley.

Undergraduate Capstone Project Supervisor

2019

Department of Neurology, University of California San Francisco
Supervised a team of four students working on a bioengineering Capstone Project at UC Berkeley.

High School Internship Mentor

Department of Neurology, University of California San Francisco

Fremont High School, Fremont, CA

Gilroy High School, Gilroy, CA

Lick Wilmerding High School, San Francisco, CA

2018-2020
2017-2019

Tutoring

Wyzant.com Richmond High School, Richmond, CA Lowell High School, San Francisco, CA San Francisco State University, San Francisco, CA	2017 - 2018 2015 2014 - 2015
Coaching Albany Middle School Head wrestling coach	2018-2019
Lincoln High School Assistant wrestling coach	2014-2015
Cheyenne Mountain Youth Wrestling Club Volunteer assistant coach	2008-2011

TECHNICAL SKILLS

Programming

Proficient in python and MATLAB for scientific programming and software development and experienced in shell scripting.

Neurophysiological signal processing and analysis

Extensive experience developing signal processing pipelines and analyzing for electroencephalography (EEG) and functional MRI (fMRI) data.

Autonomic physiological signal processing and analysis

Extensive experience developing signal processing pipelines for and analyzing data from many physiological sources, such as electrocardiogram (EKG), skin conductance (EDA), eye tracking, facial expressions, electrogastrogram (EGG), continuous blood pressure, arteriole compliance, and salivary cortisol.

Data collection

Proficient collecting EEG and fMRI data from a wide array of cognitive states, as well as behavioral data, physical fitness assessments, multimodal physiology, and real-world behavioral tasks using virtual reality and motion capture.

Statistical methods

Extensive experience using a many powerful statistical tools, such as linear modeling, clustering (k-means, hierarchical, SVMs), singular value decomposition techniques (e.g., ICA, PCA, CCA), spectral decomposition using fourier transformations, circular statistics to assess phase synchrony over time, and non-parametric techniques (e.g., Monte Carlo simulations).

Machine learning

Extensive experience applying machine learning techniques to neurophysiological data to predict behavior. These methods include kernalized ridge regression and connectome-based predictive modeling in cross-validation models.

Study design

Experience designing and conducting double-blind and placebo controlled Randomized Clinical Trials and testing the efficacy of the treatments tested.

Science communication

Proficient at communicating complex scientific concepts to diverse audiences through presentations and public talks, publications, and blog posts.

INTERPERSONAL SKILLS

Team leadership Supervised and managed teams of up to 20 researchers on several and management highly collaborative projects. Experienced recruiting, interviewing,

hiring, and onboarding research assistants.

Event coordination Organized numerous events at professional conferences while serv-

ing as Vice President of an international scientific training organization and planning small scientific conference for UCSF staff and

faculty.

Teaching and mentorship Have mentored over 40 undergraduate and postbaccaleurate stu-

dents, which included teaching complex neuroimaging data collection and analysis methods. Served as a teaching fellow for Dr. Greg McCarthy's undergraduate neuroscience class at Yale University, where I was in charge of leading lectures for two sections of 15 stu-

dents every week.

Collaboration Extensive experience collaborating with academic researchers and

physicians from around the world, and teaming up with industry part-

ners.

Consulting

Neural Data Analyst

NeuroThera 2024 - 2025 JelikaLite Corp 2022 - 2024 Cortica Healthcare 2019 - 2020

PEER REVIEW SERVICE

IEEE Transactions on Haptics Clinical EEG and Neuroscience

PROFESSIONAL AFFILIATIONS

Organization for Human Brain Mapping	2024 - present
Cognitive Neuroscience Society Trainee Association	2018 - 2022
Bay Area Memory Meeting planning committee member	2018 - 2020
Cognitive Neuroscience Society	2017 - present
Society for Neuroscience member	2016 - present

UNDERGRADUATE HONORS

Dean's List	2013 - 2015
Interscholastic athletic scholarship recipient	2011 - 2014
Varsity NCAA wrestler at San Francisco State University	2010 - 2014

POSTER PRESENTATIONS

Simon, AJ, Samardzija, A, Iannone, S, Parra, F, Mehta, S, Arora, J, Tokoglu, F, Scheinost, D, Shen, X, Constable, RT. *Brain networks that mediate clinical-cognitive relationships.* Organization for Human Brain Mapping (2025). Brisbane, Australia.

Simon, AJ, Samardzija, A, Iannone, S, Parra, F, Mehta, S, Arora, J, Tokoglu, F, Scheinost, D, Shen, X, Constable, RT. *What Clinical and Cognitive Measures Can We Predict and Why?* Whistler Scientific Workshop on Brain Functional Organization, Connectivity, and Behavior. Whistler, British Columbia, Canada.

Moles, L, Cheng, A, Riley, S, Lichenstein, SD, Babaeianjelodar, M, Kohler, R, **Simon, AJ**, Horien, C, Greene, A, Zhao, Y, Fan, CC, Constable, RT, Yip, SW. *Functional Connectivity Signatures of Polygenic Depression Risk in Youth*. European College of Neuropsychopharmacology (2024). Milan, Italy.

Yack, L, Walsh, CM, Falgàs, N, Pandher, N, Coppola, Q, Song, F, **Simon, AJ**, Tucker, M, Saloner, R, Casaletto, K, Kramer, JH, Gorno Tempini, M, Rosen, H, Rabinovici, GD, Grinberg, LT, Neylan, TC. *Non-REM stage 3 sleep disruption across the spectrum of AD severity: from cognitively unimpaired to dementia.* Sleep Medicine (2024). Houston, TX.

Simon, AJ, Shen, X, Luo, W, Mehta, S, Arora, J, Tokoglu, F, Samardzija, A, Horien, C, Constable, RT. *Evidence for network compensation to maintain cognitive abilities in clinically impaired individuals*. Organization for Human Brain Mapping (2024). Seoul, South Korea.

Pasquini, L, **Simon, AJ**, Gallen, CL, Kettner, H, Roseman, L, Gazzaley, A, Carhart-Harris, RL, Timmermann, C. *Brain substates induced by DMT relate to sympathetic output and meaningfulness of the experience*. Organization for Human Brain Mapping (2024). Seoul, South Korea.

Yack, L, Walsh, CM, Fàlgas, N, Pandher, N, Coppola, Q, Song, F, **Simon, AJ**, Saloner, R, Casaletto, K, Kramer, JH, Gorno Tempini, M, Rosen, H, Rabinovici, GD, Grinberg, LT, Neylan, TC. *Sleep disruption in cognitive healthy adults positive for AD biomarkers*. World Sleep Conference (2023). Rio De Janeiro, Brazil.

Falgàs, N, Walsh, C, Yack, L, **Simon, AJ**, Kramer, JH, Rosen, HJ, Rabinovici, G, Miller, B, Spina, S, Seeley, WW, Ranasinghe, K, Vossel, K, Neylan, TC, Grinberg, LT. *Behavioral and spectral sleep features in amnestic and atypical Alzheimer's disease*. Sleep Europe Conference (2022). Athens, Greece.

Simon, AJ, Walsh, CM, Ruoff, L, Varbel, J, Heuer, HW, Boxer, AL, Grinberg, LT, Kramer, JH, Miller, BL, Neylan, TC. *Investigation of overnight EEG spectral power in Progressive Supranuclear Palsy (2021).* UCSF Dementia Day Webinar. (Virtual).

Anguera, JA, Gerdes, MR, Jurigova, BG, **Simon, AJ**, Mittermaier, DR, Gazzaley, A, Marco, EJ. *Can a home-based digital treatment improve neural biomarkers of attention for children with ADHD? (2020).* 16th International Child Neurology Association Congress (ICNC). San Diego, CA.

Anguera, JA, Gerdes, MR, Jurigova, BG, **Simon, AJ**, Mittermaier, DR, Gazzaley, A, Marco, EJ. *Efficacy of Synergized Cognitive-Physical Training for Children with Inattention* (2020). International Society for Autism Research. Seattle, WA.

Simon, AJ, Gallen, CL, Volponi, JJ, Campusano, R, Schachtner, JN, Colville, AB, Verma, A, Ziegler, DA, Mishra, J, Anguera, JA, Gazzaley, A. *Characterizing Optimal Sustained Attention in Older Versus Young Adults Using EEG* (2020). Cognitive Neuroscience Society annual meeting. Boston, MA.

Simon, AJ, Anguera, JA, Ziegler, DA, Gallen, CL, Volponi, JJ, Campusano, R, Mishra, J, Marco, EJ, Gerdes, MR Schachtner, JN, Colville, AB, Gugel, M, Gazzaley, A. *Attention Span Decrements in Populations with Attention Impairments* (2020). Neuroscape Virtual Conference.

Thompson, CJ, Larkin, B, Volponi, JJ, **Simon, AJ**, Anguera, JA, Gazzaley, A. *Maximal Oxygen Uptake Responders Versus Nonresponders Show Differing Cognitive Responses to Movement-based Video Game Training* (2019). American College of Sports Medicine annual meeting. Orlando, FL.

Simon, AJ, Ziegler, DA, Mishra, J, Anguera, JA, Gazzaley, A. *Using multivariate EEG to predict a clinical measure of attention* (2019). Cognitive Neuroscience Society annual meeting. San Francisco, CA.

Volponi, JJ, **Simon, AJ**, Colville, AB, Javed, SV, Larkin, BJ, Samplay, KK, Park, SM, Schachtner, JN, Anguera, R, Thompson, CJ, Anguera, JA, Gazzaley, A. *Neural and behavioral transfer of a simultaneous cognitive-physical video game intervention in an older adult population* (2019). Cognitive Neuroscience Society annual meeting. San Francisco, CA.

Dacorro, L, Leggit, A, **Simon, AJ**, Rauen, K, Wais, P, Geisler, M. *Event related potentials of negative-valenced visual distractors on visual working memory* (2019). Cognitive Neuroscience Society annual meeting. San Francisco, CA.

Gerdes, MR, Jurigova, BG, **Simon, AJ**, Sandling, J, Anguera, JA, Marco, EJ. *Efficacy of Synergized Cognitive-Physical Training for Children with Inattention* (2019). International Society for Autism Research Annual Meeting. Montreal, Canada.

Ziegler, DA, **Simon, AJ**, Rolle, C, Skinner, S, Gallen, CL, Gazzaley, A. *Closed-loop, digital, meditation training program improves sustained attention* (2018). Society for Neuroscience. San Diego, CA. Online.

Volponi, JJ, **Simon, AJ**, Colville, A, Javed, S, Larkin, B, Samplay, K, Park, S, Schachtner, JN, Anguera, R, Thompson, CJ, Anguera, JA, Gazzaley, A. *The effects of a novel simultaneous cognitive-physical training video game on an older adult population* (2018). Bay Area Memory Meeting. Davis, CA.

Simon, AJ, Campusano, R, Volponi, JJ, Skinner, SN, Anguera, JA, Gazzaley, A, Ziegler, DA. *Common and Unique Markers of Sustained Attention and Impulse Control* (2018). Cognitive Neuroscience Society annual meeting. Boston, MA.

Ziegler, DA, Skinner, SN, **Simon, AJ**, Gazzaley, A. *Meditation-Inspired Cognitive Training Improves Working Memory and Increases Cortical Thickness* (2017). The annual meeting of the Organization for

Human Brain Mapping. Vancouver, Canada.

Thompson, CJ, Khan, C, Whitton-Martinez, L, Volponi, JJ, Souza, J, **Simon, AJ**, Skinner, SN, Kingsbook, D, Leggitt, A, Anguera, JA, Gazzaley, A. *Physiological And Cognitive Adaptations To 8 Weeks Of Training On A Movement-based Video Game* (2016). American College of Sports Medicine annual meeting. Boston, MA.

Skinner, SN, **Simon, AJ**, Ziegler, DA, Gazzaley, A. *Internal Attention Training Improves Sustained Attention and Distractor Suppression in Young Adults* (2016). Society for Neuroscience annual meeting. San Diego, CA.

Simon, AJ, Ziegler, DA, Janowich, JR, Gazzaley, A. *Baseline sympathetic activity predicts performance on a novel attention task in the presence of auditory distractions* (2015). Bay Area Memory Meeting. Davis, CA.

Volponi, JJ, Rolle, C, **Simon, AJ**, Kingsbook, D, Anguera, R, Thompson, C, Khan, C, Anguera, JA, Gazzaley, A. *Examining the benefit of a novel simultaneous cognitive-physical training video game* (2015). Bay Area Memory Meeting. Davis, CA.

Publications

- Ben-Zion, Z., *Simon, A. J., Rosenblatt, M., Korem, N., Duek, O., Liberzon, I., Shalev, A. Y., Hendler, T., Levy, I., Harpaz-Rotem, I., et al. (2025). Connectome-based predictive modeling of ptsd development among recent trauma survivors. *JAMA network open*, 8(3), e250331–e250331.
 - * Equal contribution to first authorship.
- Fradkin, Y., Anguera, J. A., **Simon**, **A. J.**, De Taboada, L., & Steingold, E. (2025). Transcranial photobiomodulation for reducing symptoms of autism spectrum disorder and modulating brain electrophysiology in children aged 2–7: An open label study. *Frontiers in Child and Adolescent Psychiatry*, *4*, 1477839.
- Pasquini, L., **Simon**, **A. J.**, Gallen, C. L., Kettner, H., Roseman, L., Gazzaley, A., Carhart-Harris, R. L., & Timmermann, C. (2025). Dynamic medial parietal and hippocampal deactivations under dmt relate to sympathetic output and altered sense of time, space, and the self. *Imaging Neuroscience*, 3, imag_a_00541.
- Anguera, J. A., Rowe, M., Volponi, J., Elkurdi, M., Jurigova, B., **Simon**, **A. J.**, Anguera-Singla, R., Gallen, C., Gazzaley, A., & Marco, E. (2023). Enhancing attention in children using an integrated cognitive-physical videogame: A pilot study. *NPJ digital medicine*, *6*(1), 65.
- Falgàs, N., Walsh, C. M., Yack, L., **Simon**, **A. J.**, Allen, I. E., Kramer, J. H., Rosen, H. J., Joie, R. L., Rabinovici, G., Miller, B., et al. (2023). Alzheimer's disease phenotypes show different sleep architecture. *Alzheimer's & Dementia*, 19(8), 3272–3282.
- **Simon**, A. J., Gallen, C. L., Ziegler, D. A., Mishra, J., Marco, E. J., Anguera, J. A., & Gazzaley, A. (2023). Quantifying attention span across the lifespan. *Frontiers in Cognition*, *2*, 1207428.
- **Simon**, **A. J.**, Gazzaley, A., & Ziegler, D. A. (2023). Digital meditation for improving focus. *Frontiers Young Minds*, *11*, 8.

- Anguera, J. A., Volponi, J. J., **Simon**, **A. J.**, Gallen, C. L., Rolle, C. E., Anguera-Singla, R., Pitsch, E. A., Thompson, C. J., & Gazzaley, A. (2022). Integrated cognitive and physical fitness training enhances attention abilities in older adults. *Npj Aging*, 8(1), 12.
- Anguera, J. A., Schachtner, J. N., **Simon**, **A. J.**, Volponi, J., Javed, S., Gallen, C. L., & Gazzaley, A. (2021). Long-term maintenance of multitasking abilities following video game training in older adults. *Neurobiology of Aging*, *103*, 22–30.
- Bréchet, L., Ziegler, D. A., **Simon**, **A. J.**, Brunet, D., Gazzaley, A., & Michel, C. M. (2021). Reconfiguration of electroencephalography microstate networks after breath-focused, digital meditation training. *Brain Connectivity*, *11*(2), 146–155.
- Gallen, C. L., Anguera, J. A., Gerdes, M. R., **Simon**, **A. J.**, Cañadas, E., & Marco, E. J. (2021). Enhancing neural markers of attention in children with adhd using a digital therapeutic. *PLOS ONE*, *16*(12), 1–14.
- **Simon**, **A. J.**, Schachtner, J. N., & Gallen, C. L. (2019). Disentangling expectation from selective attention during perceptual decision making. *Journal of neurophysiology*, *121*(6), 1977–1980.
- Ziegler, D. A., **Simon**, **A. J.**, Gallen, C. L., Skinner, S., Janowich, J. R., Volponi, J. J., Rolle, C. E., Mishra, J., Kornfield, J., Anguera, J. A., et al. (2019). Closed-loop digital meditation improves sustained attention in young adults. *Nature human behaviour*, *3*(7), 746–757.
- **Simon**, **A. J.**, Skinner, S. N., & Ziegler, D. A. (2016). Training working memory: Anatomy matters. *Journal of Neuroscience*, *36*(30), 7805–7806.

PREPRINTS

Samardzija, A., Shen, X., Greene, A. S., Mehta, S., Iannone, S., **Simon**, **A. J.**, Parra, F., Luo, W., Arora, J., Tokoglu, F., et al. (2025). A transdiagnostic fmri dataset with 300+ deeply phenotyped subjects across resting and task states. *medRxiv*, 2025–07.

Conference Proceedings

- Moles, L., Cheng, A., Riley, S., Lichenstein, S., Babaeianjelodar, M., Kohler, R., **Simon**, **A.**, Horien, C., Greene, A., Zhao, Y., et al. (2024). Functional connectivity signatures of polygenic depression risk in youth. *Neuroscience Applied*, *3*, 104803.
- Yack, L., Walsh, C., Falgàs, N., Pandher, N., Coppola, Q., Song, F., **Simon**, **A.**, Tucker, M., Saloner, R., Casaletto, K., et al. (2024). Non-rem stage 3 sleep disruption across the spectrum of ad severity: From cognitively unimpaired to dementia. *Sleep Medicine*, *115*, 236–237.
- Falgas, N., Walsh, C., Yack, L., **Simon**, **A.**, Kramer, J., Rosen, H., Rabinovici, G., Miller, B., Spina, S., Seeley, W., et al. (2022). Behavioral and spectral sleep features in amnestic and atypical alzheimer's disease. *JOURNAL OF SLEEP RESEARCH*, 31.
- Thompson, C., Khan, C., Whitton-Martinez, L., Volpini, J., Souza, J., Simon, A., Skinner, S., Kingsbook, D., Leggitt, A., Anguera, J., et al. (2016). Physiological and cognitive adaptations to 8 weeks of training on a movement-based video game. *Medicine & Science in Sports & Exercise*, 48(5S), 922.