Rajpreet Chahal

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Summary

Translational neuroscientist studying the roles of stress, cognition, and neural signatures in predicting depression and anxiety; 10 years of experience using longitudinal statistics, machine learning, and multimodal neuroimaging methods. Seeking to apply quantitative and neuroscience knowledge to improve mental health.

Education

- Ph.D., Human Development (Designated Emphasis in Translational Research), University of California Davis 2015-2019
- B.S., Psychology (Emphasis in Biology), University of California Davis 2008-2012

Skills

- **Research:** Neuroscience of depression and anxiety; effects of stressful experiences on cognition, mental health, and brain development using functional and structural neuroimaging methods (e.g., fMRI and DTI) and behavioral tasks.
  - Leading team-science collaborations between clinical and developmental psychologists, neuroscientists, and statisticians
  - Carrying out rigorous study design, grant-writing, data collection and optimization, data analysis, and manuscript-writing
- **Statistical Modeling:** multiple regression, latent class analysis, multilevel models, time series analysis, machine learning (e.g., clustering, dimensionality reduction), longitudinal analysis, graph theory, network-based models, structural equation models
  - Multimodal data collection and analysis with structural and functional MRI, eye-tracking, behavioral, and self-report data
  - Languages and packages: R, Matlab, SPSS, Shell, SAS, LISREL, Python, AFNI, FSL, GraphVar, SQL, Freesurfer, MRtrix
- **Clinical Experience:** 100+ hours of formal training and experience in conducting clinical interviews using the Structured Clinical Interview for the Diagnostic and Statistical Manual of Mental Disorders (DSM), Structured Interview for DSM Personality Disorders, Kiddie Schedule for Affective Disorders and Schizophrenia, and the Traumatic Events and Screening Inventory
- **Teaching:** Human development, clinical psychology, and data analysis lectures for undergrads, and grad and medical students

Experience

Postdoctoral Scholar, Department of Psychology, Stanford University **2019-present**

- Research program: examining the effects of stress (e.g., abuse, neglect) on brain development, cognition, and mental health
- Awarded the Klingenstein Third Generation Foundation Fellowship in Depression (2 years of funding) and the NIH Ruth L. Kirschstein National Research Service Award (3 years of funding)
- Principal Investigator of two projects studying brain network and cognitive predictors of depression and anxiety
- Analyzed data and published the first study showing that brain signatures predict depression symptom changes during the COVID-19 pandemic: **Chahal, R.** … Gotlib, I.H., *Biol. Psychiatry CNNI* (2021)
- Authored several studies showing that stress affects brain development and mental health: **Chahal, R.** … Gotlib, I.H., *Dev. Psychopathol* (2022); **Chahal, R.** … Gotlib, I.H., *Dev. Cogn. Neurosci.* (2021); **Chahal, R.** … Gotlib, I.H., *Neuroimage* (2021)
- Strong communication skills to convey scientific findings to the community (over 50 presentations at national meetings)

Ph.D. Student: Human Development, Center for Mind and Brain, University of California Davis **2015-2019**

- Research program: using neural signatures to predict the course of depression and anxiety in adolescents
- Awarded the TL1 Pre-doctoral Clinical Research Training Scholar Award by the National Center for Advancing Translational Science (2 years of funding), and Principal Investigator on two projects studying the effects of hormones on brain development and depression (awarded by the University of California Office of the President)
- Designed, collected, and analyzed the first study showing that the course of depression and anxiety can be predicted by unsupervised neural subgroupings: **Chahal, R.** … Guyer, A.E., *Psychol. Med.* (2020); and a review of the literature showing that response to depression treatments can be predicted by measuring functional connections in the brain: **Chahal, R.** … Guyer, A.E., *J Child Psychol. Psychiatry* (2020a). **Other key publications: Chahal, R.** … Guyer, A.E., *J Child Psychol. Psychiatry* (2020b); **Chahal, R.** … Guyer, A.E., *Neuroimage* (2018)

Research Specialist, Western Psychiatric Institute and Clinic, University of Pittsburgh Medical Center **2012-2015**

- Collected, coded, and analyzed MRI, PET, MEG, eye-tracking, self-report, and behavioral data for several longitudinal studies investigating cognitive development. Aided in implementing and optimizing imaging protocols
- **Key publications:** Hawes, S., **Chahal, R.** … Luna, B., *Neuroimage* (2017); Luna, B. … **Chahal, R.,** *Ann. Rev. Neurosci* (2015)

Honors, Talks, and Press (select sample)

- WGN News Interview: Anxiety and Mental Health During Winter Months of COVID-19
- NBC News Interview: Can Brain Scans Predict COVID's Mental Toll?
- Recent Talks: SOBP 2021, APS 2021, AACAP 2020, Flux 2020