

Shou-An Ariel Chang

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EDUCATION

The University of Chicago

Bachelor of Arts with General Honors

Major in Psychology with Honors

Minor in Romance Languages and Literatures

Cumulative GPA: 3.7/4.0

Chicago, IL

June 2015

PUBLICATIONS & PRESENTATIONS

Leno, V., Tomlinson, S., **Chang, A.**, Naples, A., McPartland, J., (under review). Modulation in EEG Power and Connectivity Associated with Specific Domains of the Broader Autism Phenotype.

Chang, A., Shic, F., Li, B., Malak, S., Trapani, J., Stinson, K., McPartland, J., Naples, A., (2017, May). Neural Correlates of the Pupillary Light Reflex in the Broader Autism Phenotype. Poster to be presented at the International Meeting for Autism Research, San Francisco, CA.

Rolison, M., Naples, A., Foss-Feig, J., Trapani, J., **Chang, A.**, McNaughton, K., Day, T., McAllister, T., McPartland, J. (2017, April) Attention and Brain Response to Eye Contact During an Interactive Social Neuroscience Experiment. Oral presentation to be given as part of Paper Symposium at Society for Research in Child Development, Austin, TX.

Naples, A., **Chang, A.**, Hasselmo, S., Rolison, M., Malak, S., Trapani, J., Stinson, K., McPartland, J. Neural (2017, April) Response to Feedback and Reward in Simulated Interactions in ASD. Oral presentation to be given as part of Paper Symposium at Society for Research in Child Development, Austin, TX.

Trapani, J., Naples A., Rolison, M., **Chang, S.A.**, Stavropoulos, K., Stinson, K., Jarzabek, E., Ellison, K., McNaughton, K., McAllister, T., Foss-Feig, J., McPartland, J. (2016, November). Attention and neural response to simulated social interactions in ASD. Poster presented at Society for Neuroscience Annual Meeting, San Diego, CA.

Naples, A., Foss-Feig, J.H., McAllister, T., **Chang A.**, Trapani, J., Stavropoulos K.K., Rolison M., Anticevic, A., Srihari V., McPartland, J. (2016, May). Neural Correlates of Emotion Processing during Simulated Social Interactions in Adults with Autism Spectrum Disorder and Schizophrenia. Oral presentation given at the International Meeting for Autism Research, Baltimore, MD.

Naples, A., Rolison, M., Foss-Feig, J.H., **Chang, A.**, Stavropoulos K.K., Winkelman, T., Stinson, K., Jarzabek, E., Ellison, K., McAllister, T., McPartland, J. (2016, May). Attention and Brain Response During Simulated Interactions in ASD. Poster presented at the International Meeting for Autism Research, Baltimore, MD.

Foss-Feig, J.H., Naples, A., Deckert, K., Levy, E., Stavropoulos, K., Rolison, M., **Chang, S.A.**, Trapani, J., Ellison, K., McAllister, T., Malak, S., Santamauro, N., Schleifer, C., Anticevic, A., Srihari, V., McPartland, J. (2016, May). Dissociating Social Functioning in ASD and Schizophrenia Using Clinical Assessment and Neural Response to Gaze Cues. Poster presented at the International Meeting for Autism Research, Baltimore, MD.

Chang, S.A.A., & Decety, J. (2015, April) Developmental Changes in the Mechanisms Motivating Empathic Concern and Helping Behavior in Children. Poster presented at the Chicago Area Undergraduate Research Symposium, Chicago, IL.

RESEARCH EXPERIENCE

Sara S. Sparrow Research Fellow, Yale Child Study Center, Yale School of Medicine
Principal Investigator: James McPartland, PhD, Supervisor: Adam Naples, PhD

November 2015-present

Autism Biomarkers Consortium for Clinical Trials

- Member of the eye-tracking and EEG branches of the Data Analytics and Acquisition Core, responsible for development of analyses and processing of all data collected on multi-site project
- Develop and contribute supercomputer MATLAB code for ERP pipeline analysis of biological motion, visual evoked potentials, and emotional face processing EEG paradigms
- Design, build, and maintain light meters used in pupillary light reflex eye tracking paradigm using Arduino components and 3D Printing
- Develop program for 3D color luminance matching of face and house stimuli utilizing the SHINE toolbox in MATLAB
- Analyze all ERP and EEG paradigms utilizing high performance computing cluster and perform correlations between EEG and eye tracking data
- Generate regions of interest for eye tracking analysis of dynamic social scenes
- Perform manual quality control on eye tracking data to ensure adherence to the eye tracking acquisition protocol
- Contribute to authoring the eye tracking data acquisition protocol, manual of operations, and training videos
- Represent the Data Analytics and Acquisition Core on weekly calls with clinical investigative sites to discuss data collection strategies, changes to experimental protocols, and answer site questions
- Collaborate weekly with the eye tracking, EEG, and video tracking data analytics cores as well as the data coordinating core to discuss data storage, workflow, and analysis strategies

McPartland Lab

- Collect and analyze data for independent research project utilizing EEG and eye tracking to investigate the neural correlates of the pupillary light reflex and behavioral traits in typically developing adults
- Analyze EEG resting state data using field trip toolbox to investigate the relationship between variability in EEG power and coherence and the broader autism phenotype in typically developing adults
- Assist in behavioral management of individuals with autism spectrum disorder, typically developing children and adults for simultaneous EEG eye tracking studies
- Analyze EEG/ERP and eye tracking data on studies looking at differences between typically developing children and children with ASD, as well as typically developing adults, adults with ASD, and adults with schizophrenia in the neural correlates of social cognition
- Automate cleaning and artifact detection of raw EEG data collected on Geodesic EEG System using PREP Pipeline and EEGLAB on high performance computing cluster
- Clean and analyze eye tracking data utilizing combination of python and R code to conduct a time series and growth curve analysis of face scanning
- Set-up and collect data for project analyzing voice prosody, body language, and facial expressions to identify differences between typically developing adults and adults with ASD
- Attend and contribute to weekly lab meetings discussing ongoing projects and collaborations

Research Assistant, Cognitive Neurology, Johns Hopkins University School of Medicine

August-November 2015

Principal Investigator: Barry Gordon, MD, PhD, Supervisor: Joseph Dien, PhD

- Analyzed heart rate variability data in MATLAB to explore the relationship between self injurious behavior and physiological reactivity in an individual with autism spectrum disorder
- Performed literature review on the neural correlates and physiology underlying auditory discrimination tasks to compare validity of data collected from Empatica 4 with data collected from gold standard equipment
- Initiated study involving EEG and eye tracking to investigate the neural circuitry underlying physiological reactivity to auditory stimuli in typically developing populations and individuals with ASD

Research Assistant, Child NeuroSuite, University of Chicago

October 2012-June 2015

Principal Investigator: Jean Decety, PhD

- Led investigation of the underlying mechanisms driving the developmental trajectory of empathic concern and helping behavior in children, authoring write-up of results culminating in honors thesis
- Authored and maintained protocols and scripts used to obtain IRB approval, designed and created stimuli, collected, coded, and analyzed statistical data using SPSS, creating adult version of study on Amazon Mechanical Turk

- Set-up and collected EEG data for study on the neural correlates of the development of morality, empathy, and prosocial behavior in infants and toddlers as well as children at risk for developing various psychopathologies including conduct disorder, oppositional defiant disorder, and attention disorders
- Trained incoming research assistants on actiCHamp EEG system maintenance and data collection
- Hand-edited EEG data utilizing BrainVision Analyzer and EEGLAB
- Recruited, ran, and coded data for cross-cultural study on the relationships among sharing, competition, fairness, and social groups on children's decision making

Research Assistant, Behavioral Insights and Parenting Lab, University of Chicago
Principal Investigators: Ariel Kalil, PhD and Susan Mayer, PhD

July-December 2014

- Coordinated recruitment of parents at multiple Head Start programs to participate in study that applied tools from behavioral economics to promote parental engagement in educational activities with their children
- Coded video data, entered data, and prepared all materials for on-site recruitment

Research Assistant, Becker Friedman Institute for Research in Economics, University of Chicago
Principal Investigator: Ali Hortacsu, PhD

April-December 2013

- Administered an fMRI prescreen involving a computer task and survey for a study on the neural correlates of economic decision-making. Coded and entered survey data for analysis
- Set-up and collected EEG data on study evaluating the effects of an early childhood intervention on preschoolers' executive function

Research Assistant, Infant Learning and Development Laboratory, University of Chicago
Principal Investigator: Amanda Woodward, PhD

January-April 2013

- Coded video data on children's learning of novel behaviors based on direct or indirect language
- Recruited participants for various studies run at the lab through infant database as well as outreach efforts to schools in the Hyde Park neighborhood

Summer Intern, Gopnik Cognitive Development Lab, University of California, Berkeley
Principal Investigator: Alison Gopnik, PhD Supervisor: Stephanie Denison, PhD

June-August 2012

- Collected and organized data and coded video on toddler's understanding of other people's preferences
- Coded video data and performed literature review on infant's intrinsic understanding of probability
- Contributed to weekly lab meetings discussing research design and theory motivating on-going projects in the lab

CLINICAL EXPERIENCE

Research Fellow, Developmental Disabilities Clinic, Yale Child Study Center

November 2016-present

Supervisors: James McPartland, PhD, Julie Wolf, PhD, Pamela Ventola, PhD, Michele Goyette-Ewing, PhD

- Administer the Vineland Adaptive Behavior Scales Interview (VABS-II & VABS-3) as part of a multidisciplinary comprehensive evaluation with emphasis on recommendations for intervention and educational planning
- Attend weekly rounds on clinic cases to discuss psychological testing, speech-language testing, evaluation of adaptive functioning, and psychiatric assessment

Research Fellow, McPartland Lab, Yale Child Study Center

November 2015-present

Supervisors: James McPartland, PhD, Brianna Lewis, PhD, Elzbieta Jarzabek, PsyD, Julie Wolf, PhD

- Administer Differential Ability Scales-II (DAS-II) clinical assessment to typically developing children as part of clinical characterization for research studies in the lab
- Administer the Vineland Adaptive Behavior Scales II to parents of participants as part of clinical characterization for various research studies

- Observe administrations of the Autism Diagnostic Observation Schedule-Second Edition (ADOS-2), the Scale for the Assessment of Positive Symptoms (SAPS), the Scale for the Assessment of Negative Symptoms (SANS), the M.I.N.I., and the Structured Clinical Interview (SCID) for DSM-5 to participants in research studies by licensed clinicians

PROFESSIONAL AFFILIATIONS

Association for Psychological Science	2016-Present
International Society for Autism Research	2015-Present

AWARDS AND FELLOWSHIPS

Sara S. Sparrow Fellowship in Clinical Neuroscience	November 2015-Present
Dean's List, The University of Chicago	2011-2015
Athletic Association All Academic Award, The University of Chicago	2011-2015

RELEVANT SKILLS

Computer: Proficient in R, SPSS, MATLAB, Python, Excel, high performance computing; basic knowledge of STATA

EEG and Eye Tracking Analysis: EEG system set-up (EGI and actiCHamp), operation, and data analyses using Brain Vision Analyzer, NetStation, EEGLAB, ERPLAB, fieldtrip, SHINE TOOLBox, PrepPipeline, PsychToolbox, Eyelink 1000, Eyelink Viewer

Engineering software: 3-D Print, Tinkercad, Cura, Makerbot

Languages: Proficient in French, conversant in Mandarin