Megan Spurney

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EDUCATION

NORTHWESTERN UNIVERSITY, EVANSTON, IL 2024 - Present
Ph.D. Student
Psychology; Cognitive and Affective Neuroscience
Advisor: Catherine Insel

CORNELL UNIVERSITY, ITHACA, NY 2017 - 2021
Bachelor of Arts in Psychology
GPA: 3.85/4.00, Distinction in all Subjects

HONORS & AWARDS

- 2024 National Science Foundation Graduate Research Fellowship Program "Honorable Mention"
- Post-Baccalaureate Intramural Research Training Award 2021, 2022, 2023
- 2022 National Institutes of Health Postbaccalaureate Poster Day "Outstanding Poster Award" Winner
- 2022 National Institute of Mental Health Office of Fellowship Training "Trainee Travel Award" Winner
- Cornell University Dean's List Fall 2017, Fall 2018, Fall 2019, Fall 2020

RESEARCH EXPERIENCE

NATIONAL INSTITUTE OF MENTAL HEALTH, BETHESDA, MD
CLINICAL & TRANSLATIONAL NEUROSCIENCE BRANCH – SECTION ON INTEGRATIVE NEUROIMAGING
Post-baccalaureate IRTA Research Fellow under Director Dr. Karen Berman, MD 2023 - 2024

- Analyze $H_2{}^{15}O$ positron-emission tomography data using SPM5 and AFNI to investigate differences in resting cerebral blood flow in the brain based on sex, menstrual cycle phase, and hormonal oral contraceptive use in healthy men and women.
- Collect structural and functional MRI data of typically developing children and adolescents to examine the influence of the pubertal transition on brain development.
- Collect, process, and analyze structural and functional MRI data of children and adults with Williams Syndrome, 7q11.23 duplication syndrome, and typically developing children.
- Coordinate a longitudinal study of children with Williams syndrome, 7q11.23 Duplication Syndrome, and healthy volunteers, including scheduling MRI scanning, neuropsychological testing, as well as facilitating patient visits.
- Collaborate with physicians, post-doctoral fellows, staff scientists, and post-baccalaureate fellows to improve data acquisition and analysis methods.

NATIONAL INSTITUTE OF MENTAL HEALTH, BETHESDA, MD
LABORATORY OF BRAIN AND COGNITION – SECTION ON FUNCTIONAL IMAGING METHODS
Post-baccalaureate IRTA Research Fellow under Director Dr. Peter Bandettini, PhD 2021 - 2023

- Conducted analyses on resting-state functional magnetic resonance imaging (fMRI) data using AFNI, nipype, and FreeSurfer to evaluate whole-brain functional connectivity during rest and discover relationships between functional connectivity and patterns of ongoing thought to further development of clinical biomarkers.
- Applied data science techniques to calculate statistical summary metrics from high-dimensional dynamic functional connectivity data structures calculated from resting-state fMRI.
- Modified and leveraged state-of-the-art modeling algorithms, such as linear and ridge regression and Connectome-Based Predictive Modeling, to generate brain-behavior associations.
- Utilized Jupyter notebooks and a plethora of Python packages including pandas, numpy, and nilearn to aid data analyses and interpretations and to create visualizations.
- Operated 3T and 7T fMRI scanners to acquire neuroimaging data.

- Synthesized results and findings into multiple presentations at national and international conferences as well as furthering publication writing skills.

CORNELL UNIVERSITY, ITHACA, NY
DEPARTMENT OF PSYCHOLOGY – LABORATORY OF NEUROBIOLOGY OF LEARNING AND MEMORY
Research Assistant under Director Dr. David Smith, PhD 2018 - 2021

- Performed small animal studies including T-maze working memory and olfactory tasks to analyze how manipulations of brain circuitry impacted task performance and processes of learning and memory.
- Executed daily training of Long Evans rats on learning and memory tasks to prepare for neuronal manipulation and subsequent behavioral testing.
- Utilized techniques including optogenetic cellular manipulation and intracellular neuronal membrane potential measurements to understand neuronal functioning during tasks of learning and memory.
- Attended and presented at weekly lab meetings and journal clubs.

CORNELL UNIVERSITY, ITHACA, NY
DEPARTMENT OF PSYCHOLOGY – PERSONALITY, ATTACHMENT, AND CONTROL LABORATORY
Research Assistant under Director Dr. Vivian Zayas, PhD 2017 - 2018

- Managed full research participant experience in study analyzing delay of gratification in adults.
- Applied best practice for documentation when recording data and managing source documentation.
- Provided data summaries and literature reviews for lab meetings.

GRANTS & FUNDING

- Northwestern University Cognitive Brain Mapping Group, Shark Tank Award; **$3,000** 2024

PUBLICATIONS

Gonzalez-Castillo, J., **Spurney, M.A.,** Lam, K.C., Gephart, I.S., Pereira, F., Handwerker, D.A., Kan, JWY., Bandettini, P.A. (*Under Review*) In-Scanner Thoughts Shape Resting-state Functional Connectivity: how participants "rest" matters. *bioRxiv.* https://doi.org/10.1101/2024.06.05.596482

Teves, J., Gonzalez-Castillo, J., Holness, M., **Spurney, M.A.**, Bandettini, P.A., Handwerker, D.A. (2023) The art and science of using quality control to understand and improve fMRI data. *Frontiers in Neuroscience*, 17. https://doi.org/10.3389/fnins.2023.1100544

PRESENTATIONS

Spurney, M.A., Phaneuf-Hadd, C.V., Somerville, L.H., Insel, C. (2025, April) *Investigating Age-Related Flexibility in Cognitive Effort Allocation*. Social Affective Neuroscience Society Annual Meeting, Chicago, IL, USA.

Gephart, I.S., Gonzalez-Castillo, J., **Spurney, M.A.**, Handwerker, D.A., Bandettini, P.A. (2025, April) *Removal of slow, brain-wide spatiotemporal patterns improves predictions of in-scanner experience during rest.* Social Affective Neuroscience Society Annual Meeting, Chicago, IL, USA.

Tian, T., Wei, SM., Kohn, P., Gregory, M.D., Kippenhan, J.S., Wilder, I.M., Wright, D.S., Raymond, C.B., **Spurney, M.A.**, Nieman, L.K., Yanovski, J., Schmidt, P.J., Berman, K.F. (2024, December) *Changes in Large-Scale Resting-State Brain Network Connectivity in Typically-Developing Children and Adolescents from Ages Eight to Eighteen Ascertained with High Temporal Density*. American College of Neuropsychopharmacology Annual Meeting, Phoenix, AZ, US.

Gonzalez-Castillo, J., Gephart, I.S., **Spurney, M.A.**, Handwerker, D.A., Bandettini, P.A. (2024, October) *Contribution of slow, brain-wide activity waves to spontaneous thought and wakefulness during resting-state*. Society for Neuroscience Annual Meeting, Chicago, IL, USA.

Gephart, I.S., Gonzalez-Castillo, J., **Spurney, M.A.**, Handwerker, D.A., Bandettini, P.A. (2024, June) *Contribution of slow, brain-wide patterns of activity to on-going experience in resting-state fMRI*. Organization for Human Brain Mapping Annual Meeting, Seoul, Korea.

Garvey, M.H., Nash, T., Kippenhan, J.S., Kohn, P., Mervis, C.B., Eisenberg, D.P., Ilsley, A., Kelemen, A., **Spurney, M.A.,** Chavannes, A., Gregory, M.D., Berman, K.F. (2024, June) *Impact of Copy Number Variation of the 7q11.23 Williams Syndrome Critical Region on Brain Structure*. Organization for Human Brain Mapping Annual Meeting, Seoul, Korea.

Spurney, M.A., Wei, SM., Eisenberg, D.P., Kohn, P.D., Recto, C. Wilder, I.M., Mann, N.S., Schmidt, P.J., Berman, K.F. (2024, May) *[^{15}O]-Water PET Regional Cerebral Blood Flow during Rest in Men, Naturally-Cycling Women, and Women using Oral Contraceptives*. Society of Biological Psychiatry Annual Meeting, Austin, TX, USA.

Recto, C.A., Wei, SM., Eisenberg, D.P., Kohn, P.D., Gregory, M.D., Bettina, J.S., Wilder, I.M., **Spurney, M.A.**, Mann, N.S., Schmidt, P.J., Berman, K.F. (2024, May) *Variations across the Menstrual Cycle and Between-Sex Differences in Presynaptic Dopamine Synthesis Capacity*. Society of Biological Psychiatry Annual Meeting, Austin, TX, USA.

Kelemen, A.G., Nash, T.A., Kippenhan, J.S., Gregory, M.D., Ilsley, A.K., Raymond, C.B., **Spurney, M.A.**, Chavannes, A.S., Garvey, M.H., Kohn, P.D., Eisenberg, D.P., Wei, SM, Mervis, C.B., Berman, K.F. (2024, May) *The Impact of 7q11.23 Copy Number Variation on Myelin Content in vivo*. Society of Biological Psychiatry Annual Meeting, Austin, TX, USA.

Raymond, C.B., Kippenhan, J.S., Nash, T.A., Gregory, M.D., Ilsley, A.K., Kelemen, A.G., **Spurney, M.A.**, Chavannes, A.S., Garvey, M.H., Kohn, P.D., Eisenberg, D.P., Kolachana, B., Wei, SM., Berman, K.F. (2024, May) *GTF2I Imputed Cortical Expression Levels Impact Myelin Development from Childhood through Young Adulthood in Typically Developing Participants*. Society of Biological Psychiatry Annual Meeting, Austin, TX, USA.

Chavannes, A.S., Nash, T.A., Gregory, M.D., Ilsley, A.K., Kelemen, A.G., **Spurney, M.A.**, Kippenhan, J.S., Garvey, M.H., Kohn, P.D., Eisenberg, D.P., Mervis, C.M., Berman, K.F. (2024, May) *Cerebral Blood Flow in 7q11.23 Duplication Syndrome*. Society of Biological Psychiatry Annual Meeting, Austin, TX, USA.

Spurney, M.A., Wei, SM., Eisenberg, D.P., Kohn, P.D., Recto, C. Wilder, I.M., Mann, N.S., Schmidt, P.J., Berman, K.F. (2024, May) *Resting Regional Cerebral Blood Flow Across Men, Naturally-Cycling Women, and Women using Oral Contraceptives Measured by [^{15}O]-Water Positron Emission Tomography*. Postbaccalaureate Poster Days, National Institutes of Health, Bethesda, MD, USA.

Wright, D.S., Nash, T.A., Gregory, M.D., Kippenhan, J.S., Ilsley, A.K., **Spurney, M.A.**, Garvey, M.H., Kohn, P.D., Eisenberg, D.P., Mervis, C.B., Berman, K.F. (2024, April) *Investigating the Neural Substrates of Working Memory in Williams Syndrome and Typically Developing Children*. Cognitive Neuroscience Society Annual Meeting, Toronto, Canada.

Garvey, M.H., Nash, T.A., Kippenhan, J.S., John, P., Ye, J., Ilsley, A. **Spurney, M.A.**, Kelemen, A., Chavannes, A., Mervis, C.B., Eisenberg, D.P., Gregory, M.D., Berman, K.F. (2023, December) *Contrasting Neurofunctional Correlates of Face- and Visuospatial-Processing in Children and Adolescents with Williams Syndrome: Convergent Results from Four fMRI Paradigms*. American College of Neuropsychopharmacology Annual Meeting, Tampa, FL, USA.

Spurney, M.A., Faskowitz, J., Gonzalez-Castillo, J., Handwerker, D.A., Bandettini, P.A. (2023, November). *Evaluating the predictive power of dynamic fMRI connectivity summary statistics*. Society for Neuroscience Annual Meeting, Washington, DC, USA.

Spurney, M.A., Faskowitz, J., Gonzalez-Castillo, J., Handwerker, D.A., Bandettini, P.A. (2023, September). *Exploring the landscape of brain-behavior predictions by leveraging dynamic connectivity information from resting-state fMRI*. NIMH Training Day, National Institute of Mental Health, Bethesda, MD, USA.

Spurney, M.A., Faskowitz, J., Gonzalez-Castillo, J., Handwerker, D.A., Bandettini, P.A. (2023, July) *Edge-time series summary metrics: predictive value for demographics and cognitive traits*. Organization for Human Brain Mapping Annual Meeting, Montreal, Canada.

Spurney, M.A., Faskowitz, J., Gonzalez-Castillo, J., Handwerker, D.A., Bandettini, P.A. (2023, April) *Building brain-behavior predictions from multiple measures of fMRI connectivity dynamics.* Postbaccalaureate Poster Days, National Institutes of Health, Bethesda, MD, USA.

Spurney, M.A., Gonzalez-Castillo, J., Lam, K.C., Handwerker, D.A., Teves, J., Pereira, F., Bandettini, P.A. (2022, November) *How conscious in-scanner thoughts modulate functional connectivity during resting-state fMRI.* Society for Neuroscience Annual Meeting, San Diego, CA, USA.

Spurney, M.A., Gonzalez-Castillo, J., Lam, K.C., Handwerker, D.A., Teves, J., Pereira, F., Bandettini, P.A. (2022, September) *Functional Connectivity Modulated by Conscious Thoughts During Resting-State fMRI Scans.* NIMH Training Day, National Institute of Mental Health, Bethesda, MD, USA.

Gonzalez-Castillo, J., **Spurney, M.A.,** Lam, K.C., Handwerker, D.A., Teves, J., Pereira, F., Bandettini, P.A. (2022, June) *How conscious thoughts during "resting-state" affect functional connectivity estimates*. Organization for Human Brain Mapping Annual Meeting, Glasgow, Scotland.

Spurney, M.A., Gonzalez-Castillo, J., Lam, K.C., Handwerker, D.A., Teves, J., Pereira, F., Bandettini, P.A. (2022, April) *Content and Form of Conscious Thoughts Modulate Functional Connectivity.* Postbaccalaureate Poster Days, National Institutes of Health, Bethesda, MD, USA.

Spurney, M.A., Hamberger, S., Sinistierra, M., Tully, C., Streisand, R. (2020, April) *Examining the Relationship Between Child Race, Income and Caregiver Psychosocial Functioning in Families of Young Children with Diabetes*. Children's National Research Institute Education and Innovation Week, Washington, DC, USA

VOLUNTEER EXPERIENCE

THE FOUNDATION OF CONTEMPORARY MENTAL HEALTH, WASHINGTON, DC
PARTNERS IN DRUG ABUSE REHABILITATION COUNSELING
Clinical Intern under Director Dr. Howard Hoffman, MD, DLFAPA June 2020 - August 2020

- Observed counseling sessions with substance abuse patients in the methadone maintenance program.
- Completed data entry tasks, including drug test results.
- Shadowed nursing activities within the clinic, extensively learning about substance abuse disorders.

CHILDREN'S NATIONAL HOSPITAL, WASHINGTON, DC
CENTER FOR TRANSLATIONAL RESEARCH – DIABETES RESEARCH TEAM
Research Assistant under Director Dr. Randi Streisand, PhD May 2019 - August 2019

- Analyzed data acquired by the Diabetes Research Team studying socioeconomic factors related to pediatric diabetes outcomes using SPSS.
- Observed pediatric diabetes and developmental clinics.
- Completed extensive literature searches for research projects using PubMed and Google Scholar, contributing to posters and publications.

WORK EXPERIENCE

RIVER FALLS COMMUNITY CENTER, POTOMAC, MD

Assistant Swim Coach 2018 - 2019

- Directly responsible for teaching swim team members ages 4 through 14 years old for competitive meets.
- Mentored children to develop swimming skills, improve self-confidence, and develop strong work ethic and teamwork strategies.

RESEARCH SKILLS

CODING/SCRIPTING LANGUAGES

- Python, Unix (bash shell), R, Java

COMPUTATIONAL TOOLS

- GitHub, Linux

NEUROIMAGING PACKAGES

- AFNI, FSL, FreeSurfer, SPM

ACADEMIC ACTIVITIES & INTERESTS

- Completed NeuroMatch Academy Computational Neuroscience Course (July 2022).
- Completed Graduate Level Course: Statistics for Biomedical Researchers (Fall 2021).
- Completed Empathy, Assistance, and Referral Service Peer Counseling Training (November 2020).
- Undergraduate Teaching Assistant for *Neurochemistry of Human Behavior* (Supervisor: Dr. Eve de Rosa, PhD) (Fall 2019).

PROFESSIONAL AFFILIATIONS

- Flux Society for Developmental Cognitive Neuroscience
- Social Affective Neuroscience Society
- Society for Neuroscience
- Psi Chi