

Megan Spurney

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EDUCATION

NORTHWESTERN UNIVERSITY, EVANSTON, IL

2024 - Present

Doctor of Philosophy in Psychology – Cognitive and Affective Neuroscience

Concentration in Developmental Science

Advisor: Catherine Insel

GPA: 4.00/4.00

Master's Thesis: *Precision Functional Mapping of the Frontoparietal Network in Adolescence*

CORNELL UNIVERSITY, ITHACA, NY

2017 - 2021

Bachelor of Arts in Psychology

GPA: 3.85/4.00, Distinction in all Subjects

RESEARCH EXPERIENCE

NATIONAL INSTITUTE OF MENTAL HEALTH, BETHESDA, MD

CLINICAL & TRANSLATIONAL NEUROSCIENCE BRANCH – SECTION ON INTEGRATIVE NEUROIMAGING

Post-baccalaureate IRTA Research Fellow under 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 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 Dr. Peter Bandettini, PhD

2021 - 2023

- Conducted analyses on resting-state functional magnetic resonance imaging (fMRI) data using AFNI, nipy, 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 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.

HONORS & AWARDS

- Third Place Poster (\$50) at the 2025 Northwestern University Institute for Innovations in Developmental Science Grad Student Research Symposium
- 2024 National Science Foundation Graduate Research Fellowship Program “Honorable Mention”
- National Institutes of Health Post-Baccalaureate Intramural Research Training Award 2021, 2022, 2023
- 2022 National Institutes of Health Postbaccalaureate Poster Day “Outstanding Poster Award” Winner
- Cornell University College of Arts & Sciences Dean’s List Fall 2017, Fall 2018, Fall 2019, Fall 2020

GRANTS & FUNDING

- Northwestern University, Cognitive Brain Mapping Group, Shark Tank Award; **\$3,500** (2024)
- National Institute of Mental Health, Office of Fellowship Training, Trainee Travel Award; **\$1,000** (2022)

PUBLICATIONS

Spurney, M.A., Phaneuf-Hadd, C.V., Somerville, L.H., Insel, C. (*Under Review*) Monetary Rewards Modulate Working Memory Performance During Adolescence. *PsyArXiv*.
https://osf.io/preprints/psyarxiv/xzu2n_v1

Gonzalez-Castillo, J., **Spurney, M. A.**, Lam, K. C., Gephart, I. S., Pereira, F., Handwerker, D. A., Kam, J. Y., & Bandettini, P. A. (2026). In-scanner thoughts contribute to resting-state functional connectivity. *Nature Communications*. <https://doi.org/10.1038/s41467-026-74953-6>

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>

ORAL PRESENTATIONS

Spurney, M.A., Seitz, K., Holubecki, A.M., Braga, R.M., Insel, C. (2026, September) *Precision Estimation Reveals that Adolescents Exhibit Idiosyncratic Organization of Functional Brain Networks*. Flash Talk, Flux Society, La Jolla, CA, USA.

POSTER PRESENTATIONS

Spurney, M.A., Seitz, K., Holubecki, A.M., Braga, R.M., Insel, C. (2026, September) *Precision Estimation Reveals that Adolescents Exhibit Idiosyncratic Organization of Functional Brain Networks*. Poster, Flux Society, La Jolla, CA, USA.

Spurney, M.A., Seitz, K., Harper, A., Holubecki, A.M., Insel, C. (2026, June) *Precision Functional Mapping of the Adolescent Brain Using Multi-Echo Resting-State fMRI*. Poster, Organization for Human Brain Mapping, Bordeaux, France.

Spurney, M.A., Phaneuf-Hadd, C.V., Somerville, L.H., Insel, C. (2025, September) *Children and Younger Adolescents Show Greater Reward-Boosted Working Memory Performance than Older Adolescents and Adults*. Poster, Flux Society, Dublin, Ireland.

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

Gephardt, 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*. Poster, Social Affective Neuroscience Society, Chicago, IL, USA.

Tian, T., Wei, S.M., 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*. Poster, American College of Neuropsychopharmacology Annual Meeting, Phoenix, AZ, USA.

Gonzalez-Castillo, J., Gephardt, 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*. Poster, Society for Neuroscience, Chicago, IL, USA.

Gephardt, 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*. Poster, Organization for Human Brain Mapping, 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*. Poster, Organization for Human Brain Mapping, Seoul, Korea.

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

Recto, C.A., Wei, S.M., 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*. Poster, Society of Biological Psychiatry, 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, S.M., Mervis, C.B., Berman, K.F. (2024, May) *The Impact of 7q11.23 Copy Number Variation on Myelin Content in vivo*. Poster, Society of Biological Psychiatry, 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, S.M., Berman, K.F. (2024, May) *GTF2I Imputed Cortical Expression Levels Impact Myelin Development from Childhood through Young Adulthood in Typically Developing Participants*. Poster, Society of Biological Psychiatry, 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.B., Berman, K.F. (2024, May) *Cerebral Blood Flow in 7q11.23 Duplication Syndrome*. Poster, Society of Biological Psychiatry, Austin, TX, 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*. Poster, Cognitive Neuroscience Society, 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*. Poster, American College of Neuropsychopharmacology, 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*. Poster, Society for Neuroscience, Washington, DC, 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*. Poster, Organization for Human Brain Mapping, Montreal, Canada.

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*. Poster, Society for Neuroscience, San Diego, CA, 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*. Poster, Organization for Human Brain Mapping Annual Meeting, Glasgow, Scotland.

TEACHING EXPERIENCE

NORTHWESTERN UNIVERSITY, EVANSTON, IL

Teaching Assistant – Statistical Methods in Psychology

April – June 2026

- Supervisor: David Smith, Ph.D.
- Course description: Measurement; descriptive statistics; probability and sampling; T-test, ANOVA, correlation, and regression.
- Responsibilities: Graded and provided feedback on course assignments and exams and held office hours.

NORTHWESTERN UNIVERSITY, EVANSTON, IL

Teaching Assistant – Introduction to Neuroscience

September – December 2025

- Supervisor: Catherine Insel, Ph.D.
- Course description: Neurophysiology and neuroanatomy; neuroscience of perception, emotion, morality, memory, mental illness, and consciousness.
- Responsibilities: Taught lectures on neuroendocrinology, graded and provided feedback on course assignments and exams, and held office hours and review sessions.

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NORTHWESTERN UNIVERSITY, EVANSTON, IL

Teaching Assistant – Brain Damage & The Mind

January – March 2025

- Supervisor: Ken Paller, Ph.D.
- Course description: Survey of human cognition as studied via investigations of brain damage and brain-imaging techniques.
- Responsibilities: Taught lectures on cognitive neuroscience methodology, graded and provided feedback on course assignments and exams, and held office hours and review sessions.

CORNELL UNIVERSITY, ITHACA, NY

Teaching Assistant – Neurochemical Basis of Human Behavior

August – December 2019

- Supervisor: Eve De Rosa, Ph.D.
- Course description: This course will focus on the complex interactions between neurochemicals and their receptors (pharmacodynamics) that drive human behavior. It will provide an overview of the principles of neurotransmission of chemicals as well as how alterations in their normal function can manifest in pathological behavior/mind processes.
- Responsibilities: Graded and provided feedback on course assignments and exams, and held office hours and review sessions.

TECHNICAL SKILLS

CODING/SCRIPTING LANGUAGES

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

COMPUTATIONAL TOOLS

- GitHub, Linux

NEUROIMAGING PACKAGES

- AFNI, FSL, FreeSurfer, SPM

PROFESSIONAL SERVICE

NORTHWESTERN UNIVERSITY, EVANSTON, IL

Volunteer – The Cognitive Brain Mapping Group January 2026 – Present

- Supervisors: Ken Paller, Ph.D., Rodrigo Braga, Ph.D., & Catherine Insel, Ph.D.
- Responsibilities: Organize weekly talk series for the Cognitive Brain Mapping Group; and coordinate events with the NIH T32 Training Program in the Neuroscience of Human Cognition.

NORTHWESTERN UNIVERSITY, EVANSTON, IL

Volunteer – Mentor Opportunities for Research Engagement Program September 2025 – Present

- Responsibilities: Mentor high school students at Niles West High School in Skokie, Illinois on designing original science experiments, conducting literature reviews, producing scientific writing and poster presentations, and presenting their work at the Illinois Junior Academy of Science Region 6 Science Fair.

NORTHWESTERN UNIVERSITY, EVANSTON, IL

Volunteer – Department of Psychology December 2024 – Present

- Supervisors: Satoru Suzuki, Ph.D. & Michael Kraus, Ph.D.
- Responsibilities: Organize annual Department of Psychology graduate student interview day; organize graduate student events with the Psychology Graduate Student Counsel; coordinate 2025-2026 Department of Psychology Colloquium series; and provide mentorship to Cognitive & Affective Neuroscience Ph.D. students through the First Year Mentorship program.

MENTORSHIP

Anagha Menon

March 2025 – Present

Northwestern University Undergraduate Student

- Developed and mentored on project to analyze basal body temperature data measured by actigraphy wearables to predict menstrual cycle phase and menstruation onset in adolescent female study participants
- Provided mentorship on awarded Northwestern University Summer Undergraduate Research Grant (\$4,000)
- Aided poster presentation development for Northwestern University Institute for Innovations in Developmental Science Undergraduate Research Poster Symposium (awarded 2nd place)

Nikol Kuzmenkova

September 2025 – Present

Niles West High School Student in Mentor Opportunities for Research Engagement Program

- Developed project to analyze the effects of increasing topical hydrocortisone concentrations on oxidative stress in *Caenorhabditis elegans*
- Aided poster presentation development for the Illinois Junior Academy of Science Region 6 Science Fair

- Project was awarded the Heidrich Foundation for Pediatric Cancer Research Award and the Health Sciences Research Excellence Award from the Village of Skokie Board of Health

Lucianna Bedoya

September 2025 – June 2026

Niles West High School Student in Mentor Opportunities for Research Engagement Program

- Developed project to analyze how Vitamin C and Vitamin B12 affect skin regeneration using *Planaria* as a model organism
- Aided poster presentation development for the Illinois Junior Academy of Science Region 6 Science Fair

AnnaGrace Harris

June 2025 – August 2025

Northwestern University Summer Research Opportunity Program Awardee

- Worked on developing R scripts to analyze relationships between sleep metrics measured by actigraphy wearables and affect acquired using ecological momentary assessments
- Aided poster presentation development for Northwestern University Institute for Innovations in Developmental Science Undergraduate Research Poster Symposium (awarded 2nd place)

PROFESSIONAL AFFILIATIONS

- Organization for Human Brain Mapping
- Flux Society for Developmental Cognitive Neuroscience
- Social & Affective Neuroscience Society

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.