M. Fiona Molloy

Postdoctoral Fellow
Department of Psychiatry
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EDUCATION & EMPLOYMENT

Postdoctoral Fellow, University of Michigan, Ann Arbor, MI
Addiction Center, Department of Psychiatry
Mentors: Dr. Chandra Sripada, Dr. Alex Weigard, and Dr. Mary Heitzeg
NIAAA T-32 Postdoctoral Research Training Fellowship (T32 AA007477-29)

Ph.D. (Cognitive Neuroscience), The Ohio State University, Columbus, Ohio
Co-Advisors: Dr. David Osher and Dr. Zeynep Saygin
Dissertation: Individualized Brain Mapping in Infants, Adolescents, and Adults
3.977 GPA | December 2023

Master of Applied Statistics, The Ohio State University, Columbus, Ohio
Qualifying exam passed January 2020
3.96 GPA | Autumn 2020

Master of Science (Cognitive Psychology), The Ohio State University, Columbus, Ohio
Thesis: An Integrative Model of Response Inhibition
3.96 GPA | Autumn 2020

Bachelor of Science, The Ohio State University, Columbus, Ohio
Major: Behavioral/Systems Neuroscience
Minor: Substance Misuse and Addiction; Minor: Integrative Approaches to Health and Wellness
Honors: Research Distinction in Neuroscience
3.767 Major GPA | 3.658 Overall GPA | Spring 2018

Awards

Summer Research Excellence Award | The Ohio State University
H. Dean and Susan Regis Gibson Research Award | The Ohio State University | *$3,000*
Elsevier/Vision Research Virtual Travel Award | Vision Sciences Society
SBS Graduate Scholarship Award | The Ohio State University
University Fellowship | The Ohio State University | *$25,800*
Prominence Scholarship | The Ohio State University | *$111,162* *(4 year tuition)*
Summer Undergraduate Research Fellowship | The Ohio State University | *$3,500*
Second-Year Transformational Experience Program Fellowship | The Ohio State University | *$2,000*
Women's Board Scholarship | MedStar Montgomery Hospital | *$3,500*

GRANTS

1F31HD107961-01: Molloy (PI). Predoctoral Individual National Research Service Award (2022-2023). "Brain basis and neural circuitry of habit-like attention in infants and adults." $33,167.00 (Year 1)

PUBLICATIONS

Molloy, M.F., Taxali, A., Angstadt, M., Greathouse, T., Toda-Thorne, K., McCurry, K. L., Weigard, A., Kardan, O., Burchell, L., Dziubinski, M., Choi, J., Vandersluis, M., Micheal, C., Heitzeg, M. M., & Sripada, C. (2025). Regional, but not brain-wide, graph theoretic metrics are robustly and reproducibly linked to general cognitive ability. *Cerebral Cortex, 35(4)*, bhaf074.

Michael, C., Taxali, A., Angstadt, M., McCurry, K. L., Weigard, A., Kardan, O., **Molloy, M. F.**, Thorne, K., Burchell, L., Dziubinski, M., Choi, J., Vandersluis, M., Hyde, L. W., Heitzeg, M. M., & Sripada, C. (2025). Somatomotor disconnection links sleep duration with socioeconomic context, screen time, cognition, and psychopathology. *Biological Psychiatry: Global Open Science,* 100522.

Kardan, O., Jones, N., Wheelock, M. D., Michael, C., Angstadt, M., **Molloy, M. F.**, Cope, L. M., Martz, M. M., McCurry, K. L., Hardee, J. E., Rosenberg, M. D., Weigard, A. S., Hyde, L. W., Sripada, C., & Heitzeg, M. M. (2025). Assessing neurocognitive maturation in early adolescence based on baby and adult functional brain landscapes. *Developmental Cognitive Neuroscience*, *73*, 101543.

Bibb, S.A., Yu, E.J., **Molloy, M.F.**, LaRocco, J., Resnick, P., Reeves, K., Phan, K. L., Krishna, S., Saygin, Z.M. (2025). Pilot study comparing effects of infrared neuromodulation and transcranial magnetic stimulation using magnetic resonance imaging. *Frontiers in Human Neuroscience, 19*.

Michael, C., Taxali, A., Angstadt, M., Kardan, O., Weigard, A., **Molloy, M. F.**, McCurry, K. L., Hyde, L. W., Heitzeg, M. M., & Sripada, C. (2024). Socioeconomic resources in youth are linked to divergent patterns of network integration and segregation across the brain's transmodal axis. *PNAS Nexus*, *3(9),* 412.

Molloy, M.F., Saygin, Z.M., and Osher, D.E. (2024). Predicting high-level visual areas in the absence of task fMRI. *Scientific Reports*, *14(1),* 11376.

Molloy, M. F., & Osher, D. E. (2023). A personalized cortical atlas for functional regions of interest. *Journal of Neurophysiology, 130(5),* 1067–1080.

Molloy, M. F., Yu, E. J., Mattson, W. I., Hoskinson, K. R., Taylor, H. G., Osher, D. E., Nelson, E. E., & Saygin, Z. M. (2023). Effect of extremely preterm birth on adolescent brain network organization. *Brain Connectivity, 13(7),* 394–409.

Molloy, M.F. and Saygin, Z.M. (2022). Individual variability in functional organization of the neonatal brain. *Neuroimage, 253*, 119101.

Molloy, M.F., Romeu, R. J., Kvam, P.D., Finn, P.R., Busemeyer J.R., and Turner, B.M. (2020). Hierarchies improve individual assessment of temporal discounting behavior. *Decision, 7*, 212-224.

Molloy, M.F., Bahg, G., Lu, Z.-L., and Turner, B. M. (2019). Individual differences in the neural dynamics of response inhibition. *Journal of Cognitive Neuroscience, 31(12),* 1976-1996.

Molloy, M.F., Galdo, M., Bahg, G., Liu, Q., Turner, B.M. (2019). What's in a response time?: On the importance of response time measures in constraining models of context effects. *Decision, 6,* 171-200.

Molloy, M.F., Bahg, G., Li, X., Steyvers, M., Lu, Z., Turner, B.M. (2018). Hierarchical Bayesian analyses for modeling BOLD time series data. *Computational Brain & Behavior, 2,* 184-213.

Turner, B.M., Rodriguez, C.A., Liu, Q., **Molloy, M.F.**, Hoogendijk, M., McClure, S.M. (2018). On the neural and mechanistic bases of self control. *Cerebral Cortex, 29(2),*732-750.

MANUSCRIPTS UNDER REVIEW

Lin, Z., **Molloy, M.F.**, Sripada, C., Kang, J., and Si, Y. (*Under review*). Population-weighted image-on-scalar regression analyses of large scale neuroimaging data.

Molloy, M.F., Lee, T., Jonides, J., Zhang, H., Sellers, J., Heathcote, A., Sripada, C., and Weigard, A.S. (*Under review*). Joint cognitive models reveal sources of robust individual differences in conflict processing.

Schettini, E., **Molloy, M.F.**, and Saygin, Z.M. (*Submitted*). Bayesian modeling to extract single trials from blockwise fMRI data in developmental neuroimaging.

RESEARCH INTERESTS

- Computational modeling of the link between brain and behavior, with a focus on neuroimaging and decision-making
- Dynamics of cognitive processes in addiction
- Risk factors for substance use problems in adolescence
- Development of the connectome and higher-order networks from infancy to adulthood
- Application and development of robust statistical analyses and models for neuroscience and psychology that can account for individual differences

PRESENTATIONS

Talk Presentations

The University of Michigan. *Department of Psychology Methods Hour: Estimating joint distributions of cognitive model parameters to understand individual differences in conflict tasks.* Ann Arbor, MI. Spring 2024.

Center for Cognitive and Behavioral Brain Imaging (CCBBI) Research Day. *Identifying visual brain regions in the absence of task fMRI*. Columbus, OH, Autumn 2022 ***Awarded Best Presentation***

The University of Iowa. *Broadscale network organization from infancy to adulthood and predicting functional regions of interest.* Virtual, Summer 2022

Vision Sciences Society. *Identifying visual brain regions in the absence of task fMRI.* St. Pete Beach, FL, Spring 2022

Center for Cognitive and Behavioral Brain Imaging (CCBBI) Research Day. *A personalized cortical atlas, generated from individual subject voxelwise connectivity*. Columbus, OH, Autumn 2021

Chronic Brain Injury (CBI) Research Day. *Data Blitz: Innate organization of the human brain.* Columbus, OH, Spring 2021

(Cancelled due to COVID-19) **American Psychological Society Annual Convention**, *Hierarchies improve individual assessment of temporal discounting behavior*. Part of accepted symposium on "Unrelated or Unrelated? Sources of—and Solutions to—the mismeasurement pervasive across psychological science" organized by Nathaniel Haines, Spring 2020

Midwest Cognitive Science, *Hierarchical Bayesian models for understanding neural dynamics of response inhibition*, Columbus, OH, Spring 2019

Poster Presentations

Research Society on Alcohol Annual Meeting. *Systematic Decision-making in Delay Discounting and Risk for Alcohol Use Disorder*. New Orleans, LA, Summer 2025

Silverman Conference. *Systematic Decision-Making in Delay Discounting is Closely Related to Cognition and Psychopathology.* Ann Arbor, MI, Spring 2025

Cognitive Neuroscience Society Annual Meeting. *Regional, but not brain-wide, graph theoretic metrics are robustly and reproducibly linked to general cognitive ability.* Boston, MA, Spring 2025

Silverman Conference. *Understanding individual differences in conflict tasks using joint cognitive modeling.* Ann Arbor, MI, Spring 2024

U-M Neuroscience Conference. *Contributions of the graphical properties of the functional connectome to general intelligence*. Ann Arbor, MI, Spring 2024

Vision Sciences Society. *A personalized cortical atlas for high level vision.* St. Pete Beach, FL, Spring 2022

Society for Neuroscience Annual Meeting. *A personalized cortical atlas, generated from individual subject voxelwise connectivity.* Virtual, Autumn 2021

Vision Sciences Society. *Innate organization of the human brain.* Virtual, Spring 2021

Chronic Brain Injury (CBI) Research Day. *Innate organization of the human brain.* Columbus, OH, Spring 2021

Cognitive Neuroscience Society Annual Meeting, *Best of both worlds: Integrating EEG and fMRI in the study of inhibition,* Virtual due to COVID-19, Spring 2020

Society For Neuroscience Annual Meeting, *Hierarchical Bayesian Analyses reveal individual differences in the neural dynamics of response inhibition,* Chicago, IL, Autumn 2019

Cognitive Neuroscience Society Annual Meeting, *Hierarchical Bayesian analyses for modeling BOLD time series data,* San Francisco, CA, Spring 2019

Mathematical Psychology, *Hierarchical Bayesian analyses for modeling BOLD time series data*. University of Wisconsin, Madison, WI, Summer 2018

Midwest Cognitive Science, *Hierarchical Bayesian analysis reveals complex neural dynamics of inhibitory control*. Indiana University, Bloomington, IN, Spring 2018

The Richard J. and Martha D. Denman Undergraduate Research Forum, *Hierarchical Bayesian analysis reveals complex neural dynamics of inhibitory control*. The Ohio State University Columbus, OH, Spring 2018

Fall Undergraduate Research Forum, *What's in a response time?* The Ohio State University, Columbus, OH, Autumn 2017

The Richard J. and Martha D. Denman Undergraduate Research Forum, *Neural basis of self control*. The Ohio State University Columbus, OH, Spring 2017

TEACHING

- Instructor of Record. *PSYCH 1100: Introduction to Psychology* (2021-2022)
- Graduate Course Assistant. *PSYCH 2220: Data Analysis in Psychology* (2020-2021)

SKILLS

- Resting state and task-based fMRI collection, preprocessing, and analysis (in fsl, freesurfer, SPM, Matlab, and R: including modeling using GLM, hierarchical Bayesian models, multivariate dynamical systems, machine learning)
- Joint modeling of fMRI, EEG, behavior
- Cognitive modeling of choice and response time data
- EEG analysis (eeglab and FieldTrip), source localization
- Statistical analyses including: linear modeling, ANOVA, nonparametric methods, stochastic processes, both Bayesian and frequentist methods
- Programming in R, MATLAB, and Python
- Proficiency in Latex, Photoshop, JAGS, HTML

PROFESSIONAL DEVELOPMENT & SERVICE

- Ad-hoc reviewer: *Proceedings of the National Academy of Sciences*, *Neuroimage*, *Journal of Research on Adolescence*, *Behavior Research Methods, Scientific Reports*
- Conference reviewer, Denman Undergraduate Research Forum. Columbus, Ohio (2022-2023)
- Teaching Psychology Seminar (Summer 2021, 5 credit hours)
- CCBBI Diversity Committee. Columbus, Ohio (2020-2023)
- CCBBI Student Group. Columbus, Ohio (2018-2023)
- Conference planning committee for Midwest Cognitive Science. Columbus, Ohio (2019)
- Attended Model-based Cognitive Neuroscience Summer School. Amsterdam, Netherlands (2018)

MENTORSHIP

- ABCD Research Assistant Team (Post-baccalaureate RAs; Autumn 2023-present)
- Maggie Duffy (Undergraduate RA; Autumn 2022-Summer 2023)
- Emily Yu (Undergraduate RA; Summer 2021-Summer 2023)
- Noreen Attalla (Undergraduate RA; Spring 2020)
- Stephanie Dietrich (Undergraduate RA; Spring 2020)