

MICHAEL C. FREUND

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EDUCATION

- Ph.D. in Cognitive Neuroscience**, Washington University in St. Louis (WUSTL) **2017–2023**
• [Cognitive, Computational, and Systems Neuroscience](#) and [Quantitative Data Analysis](#) tracks
- B.A.s in Psychology and Zoology**, University of Wisconsin–Madison (UW–Madison) **2013**

RESEARCH EXPERIENCE

- Post-Doctoral Associate**, Brown University, *Cogn., Ling. & Psych. Sciences* (PI: [Dr. David Badre](#)) **2023–Present**
- Graduate Student Researcher**, WUSTL, *Psychological & Brain Sciences* (PI: [Dr. Todd Braver](#)) **2017–2023**
- Research Assistant**, Johns Hopkins University, *Neurology* (PI: [Dr. Nazbanou Nozari](#)) **2014–2017**
- Undergraduate Research Assistant**, UW–Madison, *Psychology* (PI: [Dr. Bradley Postle](#)) **2011–2013**
- Undergraduate Research Assistant**, UW–Madison, *Harlow Primate Laboratory* **2012**

PUBLICATIONS

- 2024** **Freund, MC** and Braver, TS *The SAGE Handbook of Cognitive and Systems Neuroscience*
[Neurocomputational Models of Task Representation](#) (Ch. 29)
- Etzel, JA, Brough, RE, **Freund, MC**, ..., Braver, TS *Scientific Data*
[The Dual Mechanisms of Cognitive Control dataset, a theoretically-guided within-subject task fMRI battery](#)
- 2021** Braver, TS, Kizner, A, Tang, R, **Freund, MC**, Etzel, JA *Journal of Cognitive Neuroscience*
[The Dual Mechanisms of Cognitive Control Project](#)
- Freund, MC**, Etzel, JA, Braver, TS *Trends in Cognitive Sciences*
[Neural coding of cognitive control: The representational similarity analysis approach](#)
- Freund, MC**, Bugg, JM, Braver, TS *Journal of Neuroscience*
[A Representational Similarity Analysis of Cognitive Control during Color-Word Stroop](#)
- 2018** **Freund, MC** and Nozari, N *Cognition*
[Is adaptive control in language production mediated by learning?](#)
- 2016** Nozari, N, **Freund MC**, Breining, B, Rapp, B & Gordon, B. *Language, Cognition, and Neuroscience*
[Cognitive control during selection and repair in word production](#)

TALKS

- 2022** **Freund, MC** and Braver, TS *Society for Neuroscience (San Diego, CA)*
[Nanosymposium talk] [Searching for the neural correlates of history-driven control with EEG decoding](#)
- Freund, MC** and Braver, TS *Control Processes (remote conference)*
[Datablitz] [Examining the psychometrics of control-related fMRI activity in frontoparietal cortex](#)
- Freund, MC** *Arizona State University Psych. Dept. (remote)*
[Invited tutorial] [An Introduction to Representational Similarity Analysis \(with Examples in Cognitive Control\)](#)
- 2019** **Freund, MC**, Braver, TS *Cognitive Neuroscience Society (San Francisco, CA)*
[Accepted datablitz] [A pattern-similarity analysis approach to cognitive control in color-word Stroop](#)
- 2016** **Freund, MC** and Nozari, N *Psychonomics (Boston, MA)*
[Accepted talk] [Online regulation of language production](#)
- Freund, MC** and Nozari, N *Cognitive Science Society (Philadelphia, PA)*
[Accepted talk] [Conflict-based regulation of control in language production](#)

SELECTED POSTERS

- 2022** Org. Human Brain Mapping (Glasgow, UK): *Studying neural representations that support flexible distractor resistance*
- 2020** Org. Human Brain Mapping (remote): *A pattern-similarity analysis approach to cognitive control in color-word Stroop*
- 2016** International Workshop on Language Production (La Jolla, CA): *Domain-specific control in language production*

AWARDS AND HONORS

- Dissertation Research Award Winner** **2021**
\$1k awarded towards dissertation project by WUSTL Psychological & Brain Sciences Department
- T32 Fellow** **2021–2022**
Graduate stipend funded by NIH T32 Award to WUSTL Psychological & Brain Sciences
- Cognitive, Computational, and Systems Neuroscience Pathway Fellow** **2018–2019, 2020–2021**
Graduate stipend funded by the McDonnell Center for Systems Neuroscience at WUSTL

SERVICE AND MENTORSHIP

- Undergraduate Student Mentorship**
- Kate Scanlan (Soph., Neuroscience, Brown) *2023–Present*
 - Rowen Lee (Soph., Neuroscience, Brown) *2023–Present*
 - Avery Schwartz (Sr., Psychology, Neuroscience, & Philosophy, WUSTL) *2021–2022*
 - Kevin Kotzbauer (Soph., Comp. Eng., WUSTL) *2022*
 - John Hanrahan (Jr., Psych., Neuro., & Philos.) *2022*
 - Robert Kimelman (Jr., Math, WUSTL) *2020*
 - Nicole Costales (Soph., Comp. Eng., WUSTL) *2020*
 - Matt Witzerman (Jr., Comp. Eng., WUSTL) *2019–2020*
- Peer Reviewer** **2019–Present**
- eLife (3); Journal of Neuroscience (1); Cognitive, Affective, & Behavioral Neuroscience (1); Neuroimage (1, pre-2023); Cerebral Cortex (1); Psychological Review (2); Frontiers in Neuroimaging (1); Human Brain Mapping (2); Psychonomic Bulletin & Review (2); Perspectives on Psychological Science (1)
- Cognitive, Computational, and Systems Neuroscience Pathway** **2020–2022**
Retreat Planning Committee Member *WUSTL*
- Invited speakers for and led activities during a yearly research retreat.
- Amazing Brain Carnival** **Fall 2017–2023**
‘Cadaver brain’ exhibit leader *STL, MO*
- Lead members of public (all ages) through hands-on tours of gross human neuroanatomy.
- Peer-Mentor Program** **Fall 2013**
Mentor *UW–Madison Psychology*
- Assisted nine freshman in designing curricula, pursuing research opportunities, and exploring interests in psychology and neuroscience through regular individual and group meetings.

TEACHING

- Hierarchical Linear Models** **Fall 2019**
Teaching Assistant *WUSTL*
- On hierarchical (i.e., mixed-effect, multi-level) modeling; theory and implementation in R
- Select Topics in Statistics** **Spring 2019**
Teaching Assistant *WUSTL*
- On generalized linear models, resampling (permutation, bootstrap) methods, imputation, G-theory, item-response theory

COMPUTATIONAL AND PROGRAMMING SKILLS

Math and statistics	advanced Linear & Hierarchical Models, Modern Multivariate Statistics intermediate Linear Algebra, Calculus introductory Topology, Dynamical Systems, Recurrent Neural Networks
Languages, development	advanced R (base, tidyverse, data.table), intermediate Python (NumPy, Scikit-learn, pandas), MATLAB, shell, git, novice Julia, C++
Neural data analysis	tools AFNI, fMRIPrep, Nipy (nipy, nibabel, Nilearn), BrainIAK, MNE, techniques multivariate analysis of EEG and fMRI (decoding, encoding, RSA), fMRI timeseries models, ERP and EEG time-frequency analysis
Report generation	knitr/Sweave/RMarkdown, Jupyter, \LaTeX