



# Steven Lee Meisler

## *Curriculum Vitae*

Steven is a cognitive developmental neuroscientist who uses multimodal neuroimaging (fMRI and DWI) and psychocognitive evaluations to study neural bases of reading abilities, disabilities, and intervention in children. He is also broadly interested in better understanding the relationship between brain structure and function, and how these associations arise in development and vary with cognitive abilities and disabilities. Steven received his bachelor's and master's degrees in bioengineering from the University of Pennsylvania in 2017 and 2018, and will complete his PhD from Harvard in Speech and Hearing Bioscience and Technology in May 2024.

### **Education**

- 2019–2024 **PhD in Speech and Hearing Bioscience and Technology**, *Harvard University Division of Medical Sciences*, Cambridge, MA  
(anticipated) Secondary Field in Mind, Brain & Behavior  
Dissertation: "Neuroanatomical Correlates of Reading Abilities, Disabilities, and Intervention" - Advisor: John Gabrieli, PhD
- 2017–2018 **MSE in Bioengineering**, *University of Pennsylvania*, Philadelphia, PA, 3.79/4  
Thesis: "Evaluating the Effect of Intracranial EEG Data Cleaning on Univariate and Multivariate Classifier Performance" - Advisor: Michael Kahana, PhD
- 2013–2017 **BSE in Bioengineering**, *University of Pennsylvania*, Philadelphia, PA, 3.70/4  
*magna cum laude*  
Minors in Mathematics, Jazz Studies, and Engineering Entrepreneurship

### **Research Positions**

- 2019–Present **PhD Candidate**, *Gabrieli Lab*, MIT Brain and Cognitive Science (PI: John Gabrieli, PhD)
- Using advanced diffusion weighted imaging models to study white matter microstructural correlates of reading in large pediatric cohorts.
  - Studying longitudinal microstructural changes in white matter associated with response to reading intervention.
  - Examining contributions of right hemispheric activity to reading improvement after intervention among dyslexic children.
- 2018–2019 **Clinical Research Coordinator**, *Laboratory for Neuroimaging of Coma and Consciousness*, Massachusetts General Hospital (PI: Brian Edlow, MD)
- Used machine learning to test if EEG and MRI biometrics in the ICU can predict recovery outcomes from traumatic brain injury.
  - Was responsible for screening patients, as well as submitting and maintaining regulatory documentation.

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- 2017–2018 **Graduate Research Assistant**, *Computational Memory Lab*, University of Pennsylvania (PI: Michael Kahana, PhD)
- Researched efficacy of various data preprocessing methods on classification of neural activity during memory tasks
  - Created a Python-based GUI that visualizes and annotates EEG signals for analysis in a multi-site DARPA-funded clinical study

\* Denotes Equal Authorship

## Published Articles

1. Wang, H.-T., **Meisler, S. L.**, Shamarke, H., Clarke, N., Gensollen, N., Markiewicz, C. J., Paugam, F., Thirion, P., A reproducible benchmark of resting-state fMRI denoising strategies using fMRIPrep and Nilearn. *PLOS Computational Biology*, In Press (2024).
2. **Meisler, S. L.**, Gabrieli, J. D., Christodoulou, J. A., White Matter Microstructural Plasticity Associated with Educational Intervention in Reading Disability. *Imaging Neuroscience*, In Press (2024).
3. Poldrack\*, R. A., Markiewicz\*, C. J., **others**, The past, present, and future of the Brain Imaging Data Structure (BIDS). *Imaging Neuroscience*, In Press (2024).
4. Decker, A. L., **Meisler, S. L.**, Hubbard, N. A., Bauer, C. C., Leonard, J., Grotzinger, H., Giebler, M. A., Torres, Y. C., Imhof, A., Romeo, R., Striatal and Behavioral Responses to Reward Vary by Socioeconomic Status in Adolescents. *Journal of Neuroscience* (2024).
5. Marks, R. A., Pollack, C., **Meisler, S. L.**, D'Mello, A. M., Centanni, T. M., Romeo, R. R., Wade, K., Matejko, A. A., Ansari, D., Gabrieli, J. D. E., Christodoulou, J. A., Neurocognitive mechanisms of co-occurring math difficulties in dyslexia: Differences in executive function and visuospatial processing. *Developmental Science*, e13443 (2023).
6. Yu\*, T., Cai\*, L. Y., Torrisi, S., Vu, A. T., Morgan, V. L., Goodale, S. E., Ramadass, K., **Meisler, S. L.**, Lv, J., Warren, A. E., Englot, D. J., Cutting, L., Chang, C., Gore, J. C., Landman, B. A., Schilling, K. G., Distortion correction of functional MRI without reverse phase encoding scans or field maps. *Magnetic Resonance Imaging* **103**, 18–27 (2023).
7. Zhao, C., Tapera, T. M., Bagautdinova, J., Bourque, J., Covitz, S., Gur, R. E., Gur, R. C., Larsen, B., Mehta, K., **Meisler, S. L.**, Murtha, K., Muschelli, J., Roalf, D. R., Sydnor, V. J., Valcarcel, A. M., Shinohara, R. T., Cieslak, M., Satterthwaite, T. D., ModelArray: An R package for statistical analysis of pixel-wise data. *NeuroImage* **271**, 120037 (2023).
8. D'Mello, A. M., Frosch, I. R., **Meisler, S. L.**, Grotzinger, H., Perrachione, T. K., Gabrieli, J. D., Diminished repetition suppression reveals selective and systems-level face processing differences in ASD. *Journal of Neuroscience*. ISSN: 0270-6474 (2023).
9. **Meisler, S. L.**, Gabrieli, J. D., Fiber-specific structural properties relate to reading skills in children and adolescents. *eLife* **11** (eds Forstmann, B. U., Behrens, T. E. & Manning, K. Y.) e82088. ISSN: 2050-084X (2022).
10. Richie-Halford, A., Cieslak, M., Ai, L., Caffarra, S., Covitz, S., Franco, A. R., Karipidis, I. I., Kruper, J., Milham, M., Avelar-Pereira, B., **others**, An analysis-ready and quality controlled resource for pediatric brain white-matter research. *Scientific data* **9**, 1–27 (2022).
11. **Meisler, S. L.**, Gabrieli, J. D., A large-scale investigation of white matter microstructural associations with reading ability. *NeuroImage* **249**, 118909. ISSN: 1053-8119 (2022).
12. Edlow, B. L., Barra, M. E., Zhou, D. W., Foulkes, A. S., Snider, S. B., Threlkeld, Z. D., Chakravarty, S., Kirsch, J. E., Chan, S.-t., **Meisler, S. L.**, Bleck, T. P., Fins, J. J., Giacino, J. T., R. H. L., Solt, K., Brown, E. N., Bodien, Y. G., Personalized connectome mapping to guide targeted therapy and promote recovery of consciousness in the intensive care unit. *Neurocritical care* **33**, 364–375 (2020).

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13. **Meisler, S. L.**, Kahana, M. J., Ezzyat, Y., Does data cleaning improve brain state classification? *Journal of neuroscience methods* **328**, 108421 (2019).

## Articles in Review / Revision

1. **Meisler\***, S. L., Kubota\*, E., Grotheer, M., Gabrieli, J. D., Grill-Spector, K., A practical guide for combining functional regions of interest and white matter bundles. *Under Review*.
2. Hur, K.-H., **Meisler, S. L.**, Yassin, W., Frederick, B. B., Kohut, S. J., Prefrontal-Limbic Circuitry is Associated with Reward Sensitivity in Nonhuman Primates. *In Revision*.

## Invited Talks

1. **Meisler, S. L.**, Gabrieli, J. D., *Fiber-Specific Properties Relate to Reading Ability*. Penn Lifespan Informatics and Neuroimaging Center Lab Meeting. 2022.
2. D'Mello, A., Frosch, I. R., **Meisler, S. L.**, Grotzinger, H., Perrachione, T. K., Gabrieli, J. D., *Evidence for domain-specific neural adaptation reductions in autism spectrum disorder*. Society for Neuroscience. 2021.
3. **Meisler, S. L.**, Bodien, Y., Zhou, D., Edlow. B., *Comparing Brain Responses to Music and Language Stimuli to Classify Consciousness*. American Congress of Rehabilitation Medicine Conference. 2019.

## Poster Presentations

1. **Meisler, S. L.**, Gabrieli, J., Christodoulou, J., *White Matter Plasticity in Response to Educational Intervention in Reading Disability*. Flux Society Meeting. 2023.
2. **Meisler, S. L.**, Kubota, E., Grotheer, M., Gabrieli, J., Grill-Spector, K., *Multimodal MRI Software for Identifying Functional Sub-Components of White Matter Bundles*. Organization for Human Brain Mapping. 2023.
3. **Meisler, S. L.**, Gabrieli, J. D., *Fiber-Specific Properties Relate to Reading Ability*. Organization for Human Brain Mapping. 2022.
4. **Meisler, S. L.**, Gabrieli, J. D., *A Large-Scale Investigation of White Matter Microstructural Associations with Reading Ability*. Cognitive Neuroscience Society. 2022.
5. **Meisler, S. L.**, Ozernov-Palchik, O., Farah, R., Beach, S. D., Horowitz-Kraus, T., Gabrieli, J. D., *Musical Training is Associated with Better Reading and Differences in Resting State Functional Connectivity in Adults*. Cognitive Neuroscience Society. 2020.
6. **Meisler, S. L.**, Bodien, Y., Zhou, D., Edlow. B., *Comparing Brain Responses to Music and Language Stimuli to Classify Consciousness*. Society for Music Perception and Cognition. 2019.
7. **Meisler, S. L.**, Liu, Q., Horwitz, B., *Examining Neural Audiovisual Object Processing through Large-Scale Neural Modeling*. NIH Summer Poster Day. 2016.
8. Leitman, D. I., Edgar, C., Gamez, K., **Meisler, S. L.**, Berman, J., Roberts, T. P., *Amygdala Centrality To Dual Pathway Processing Of Affective Prosodic Communication Part 2: Structural Connectivity*. Society of Biological Psychiatry. 2016.

## Funding

### External

9/2023 – **Neurocognitive Mechanisms of Positive Intervention Response in Reading Disability**,  
Present Funding Agency: NIH, NICHD (type: F31; HD111139), Role: PI

8/2019 – **Training in Speech and Hearing Sciences**,  
8/2022 Funding Agency: NIH, NIDCD (type: T32; DC000038), Role: Trainee  
(PI: Gwenaelle S. Géléoc)

## Honors & Awards

- 8/2022 **Patrick J. McGovern Student Travel Award**, MIT  
3/2022 **Certificate of Distinction in Teaching**, Harvard University  
3/2020 **Mind Brain Behavior Graduate Student Award**, Harvard University  
3/2019 **University Fellowship (declined)**, The Ohio State University  
2017 ***magna cum laude***, University of Pennsylvania  
2015 – 2017 **Dean's List**, University of Pennsylvania

## Skills

1 - Basic Knowledge; 5 - Expert

	Level	Skill	Comments
Computing:		Python	<i>Comfortable with data analysis, Jupyter, and Python-based software development</i>
		MATLAB	<i>Can use MATLAB if required, but I prefer Python and terminal tools</i>
		Bash / Terminal	<i>Proficient in scripting and parallelizing jobs with HPC schedulers</i>
		R	<i>It's a work in progress...</i>
		L <small>A</small> T <small>E</small> X	<i>Prefer to write papers using either Overleaf or Google Docs (+Zotero)</i>
Methods		DWI	<i>Familiar with basic tensor and advanced diffusion modeling approaches</i>
		fMRI	<i>Familiar with several univariate and multivariate analytical approaches</i>
		EEG Time Series Analysis	<i>Master's thesis heavily employed ML-based analysis of continuous time-frequency decomposition</i>

## Other Skills

<b>Study Coordination</b>	EPIC, RedCap, IRB	<b>Open Science</b>	Github, BIDS-apps
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## Verified Peer Reviews

- **Brain Structure & Function**
- **Journal of Neuroscience**
- **Biological Psychiatry**
- **npj Science of Learning**
- **Frontiers in Neuroscience**

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## Professional & Service Affiliations

- 2021–Present Member, Organization for Human Brain Mapping
- 2019–Present Volunteer, Virtual Bedside Concerts, Mass General Brigham
- 2019–Present Member, Cognitive Neuroscience Society
- 2019–2021 Co-Chair, American Congress of Rehabilitation Medicine, Arts & Neuroscience Cognition Task-Force

## Teaching Experience

### Teaching Fellow, Harvard University

- Falls How Music Works: Engineering the Acoustical World
- 2021-2023
- 2020 Undergraduate Mentoring Certification, Faculty of Arts & Science, Division of Science

### Teaching Assistant, University of Pennsylvania

- Fall 2017 Differential Equations & Linear Algebra
- Fall 2016 Bioengineering Signals & Systems
- & 2017

## DEJI Experience

- 2024 University of Rhode Island Diversity and Inclusion Badge Program

## Software

### *FSuB-Extractor*

(Python/Bash) [https://github.com/smeisler/fsub\\_extractor](https://github.com/smeisler/fsub_extractor)

This is a flexible open-source software toolbox for finding components of white matter bundles that connect to functional regions of interest. Studying these **Functional Sub-Bundles** (FSuBs) could lead to more precise studies relating brain structure, function, and behavior.