BRYAN MADERO
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EDUCATION

UNIVERSITY OF IOWA — Iowa City, IA
Ph.D. in Psychology — May 2026
Advisor: Dr. Michelle W. Voss

UNIVERSITY OF IOWA — Iowa City, IA
M.A. in Psychology — May 2022
Advisor: Dr. Michelle W. Voss

UNIVERSITY OF CALIFORNIA, RIVERSIDE — Riverside, CA
B.A. in Psychology — June 2019

RESEARCH INTERESTS

My research examines individual differences in cognitive aging, with a focus on why cognitive abilities vary across older adults. I use structural and functional MRI to quantify variability in brain organization associated with executive function and memory. I am also interested in early cerebrovascular and metabolic biomarkers that may precede macrostructural change and help explain heterogeneity in cognitive outcomes.

AWARDS AND HONORS

DACC Travel Award, Dallas Aging & Cognition Conference, UI, 2023

PUBLICATIONS

PEER-REVIEWED

Madero, B., Sodoma, M., Oehler, C., Magnotta, V. A., Long, J. D., Hazeltine, E., & Voss, M. W. (2026; Advance online publication). Global functional connectivity of cognitive control networks predicts task-switching performance in older adults. Cortex. https://doi.org/10.1016/j.cortex.2026.01.002.

Chappell, H., Gilliam, Z., Madero, B., Springer, J., Pipoly, M., Baller, K., Oehler, C., Long, J., Pierce, G., & Voss, M. W. (2026). Nonexercise equations for cardiorespiratory fitness in older adults using body roundness index and waist circumference. Exercise, Sport, and Movement, 4(1), e00060.

Voss, M. W., Oehler, C., Daniels, W., Sodoma, M., Madero, B., Kent, J., Jain, S., Jung, M., Nuckols, V. R., DuBose, L. E., Davis, K., O'Deen, A., Hamilton, C., Baller, K., Springer, J., Rivera-Dompenciel, A., Pipoly, M., Muellerleile, M., Nagarajan, N., Bjarnason, T., Harb, N., Lin, L., Magnotta, V. A., Hazeltine, E., Long, J. D., &

Pierce, G. P. (2024). Exercise effects on brain health and learning from minutes to months: The Brain EXTEND trial. Contemporary Clinical Trials, 145, 107647.

Armstrong, M. K., Jain, S., Nuckols, V., Pewowaruk, R., Zhang, X., DuBose, L., Sodoma, M., Madero, B., Voss, M. W., & Pierce, G. L. (2024). The association of structural versus load-dependent large artery stiffness mechanisms with cerebrovascular damage and cortical atrophy in humans. GeroScience, 46(6), 5587–5597.

UNDER REVIEW

Pipoly, M., Hayley, C., DuBose, L. E., Madero, B., Rivera-Dompenciel, A., Sodoma, M., Oehler, C., Daniels, W., Baller, K., Springer, J., Armstrong, M., Gimblet, C., Nuckols, V. R., Magnotta, V. A., Long, J., Pierce, G. P., & Voss, M. W. (Manuscript under review). The relation between cardiorespiratory fitness and high-frequency head-motion contamination in fMRI.

Jung, M., Pipoly, M., Madero, B., Jain, S., Oehler, C., Baller, K., Magnotta, V. A., Long, J., Pierce, G. L., & Voss, M. W. (Manuscript under review). Effects of aerobic exercise intervention on the association between functional connectivity and cognition among older adults: The application of TVEM.

IN PREPARATION

Madero, B., Oehler, C., Magnotta, V. A., Long, J. D., Pierce, G. L., Hazeltine, E., & Voss, M. W. (Manuscript in preparation). Cardiorespiratory fitness and cognitive aging: Individual differences in executive function outcomes.

Baller, K., Jain, S., Springer, J., Madero, B., Sodoma, M., Oehler, C., Long, J., Magnotta, V. A., & Voss, M. W. (Manuscript in preparation). Do white matter lesions differentially impact cognitive domains in nondemented older adults?

TALKS

Madero, B., Sodoma, M., Magnotta, V. A., Long, J. D., Sonka, M., & Voss, M. W. (2023, September). Deep LOGISMOS & radiomics to investigate exercise-induced structural plasticity of the hippocampus. Workshop for Biomedical Imaging and Biomedical Approaches to Alzheimer's Disease (Virtual).

POSTERS

Madero, B., Oehler, C., Magnotta, V. A., Long, J. D., Pierce, G. L., Hazeltine, E., & Voss, M. W. (2025, February). Cardiorespiratory fitness and cognitive aging: Unraveling individual differences in cognitive outcomes. Poster presented at the Dallas Aging & Cognition Conference.

Madero, B., Sodoma, M., Oehler, C., Hazeltine, E., & Voss, M. W. (2024, April). Tertiary sulci and brain aging: A novel approach to understanding cognitive aging. Poster presented at the Cognitive Neuroscience Society Conference.

Gilliam, Z., Madero, B., Sodoma, M., Magnotta, V. A., Long, J. D., Sonka, M., & Voss, M. W. (2024, April). Deep LOGISMOS & machine learning to investigate exercise-

induced structural plasticity of the hippocampus. Poster presented at the Computational Psychiatry Symposium.

Madero, B., Sodoma, M., Oehler, C., Hazeltine, E., & Voss, M. W. (2023, February). Global functional connectivity underpinnings of the cognitive control network in task-switching. Poster presented at the Dallas Aging & Cognition Conference.

Madero, B., Oehler, C., Peterson, Z. J., Hazeltine, E., Nickl-Jockschat, T., & Voss, M. W. (2022, August). Global functional connectivity and transcriptomic underpinnings of the cognitive control network. Poster presented at the Behavioral Biomedical Interface Symposium.

Madero, B., Casten, L., Thomas, T., & Michaelson, J. J. (2022, April). Excess polygenic propensity for educational attainment negatively impacts SPARK participants (n = 36,229) behaviorally and cognitively. Poster presented at the Computational Psychiatry Symposium.

Madero, B., Hamilton, C., Oehler, C., Hazeltine, E., & Voss, M. W. (2021, November). Global functional connectivity of the cognitive control network predicts task-switching performance in older adults. Poster presented at the Society for Neuroscience Conference (Virtual).

Madero, B., Ibrahim, K., Rupp, M. A., & Bennett, I. J. (2019). Hippocampal but not caudate volume predicts implicit associative learning in aging. Poster presented at the R'Psych Conference, Riverside, CA.

Kyeong, Y., Wilhelm, B. H., Kim, J., Madero, B., & Cheung, C. S. (2019). Relations between parent-oriented motivation and goal orientations: A cross-cultural investigation. Poster presented at the Western Psychological Association Convention.

RESEARCH EXPERIENCE

UNIVERSITY OF IOWA — Iowa City, IA
Doctoral Researcher, Psychology — August 2020 – Present
Dr. Michelle Voss, Health, Brain, and Cognition Lab

- Led end-to-end analyses for the BikeEXTEND study (N=122 cross-sectional; N=92 longitudinal intervention), integrating resting-state fMRI, structural MRI, and behavioral tasks (task-switching, association, CHORD) to characterize individual differences in cognition.
- Built and executed reproducible R workflows for QC, preprocessing, and statistical modeling, emphasizing linear mixed-effects models (LMM) and GAMMs; generated publication-ready figures/tables and analysis deliverables for manuscripts and presentations.
- Conducted resting-state network analyses including connectivity metrics and ICA + dual regression to quantify variation in functional organization linked to cognitive outcomes.
- Produced peer-reviewed and conference outputs from this work, including 1 first-author publication, 7 co-authored publications, and multiple posters; delivered a collaboration talk with LOGISMOS.
- Mentored ~5 undergraduate/RAs on independent projects, providing training in data handling, analysis, and scientific communication, supported deliverables including poster presentations and a manuscript in preparation.

UNIVERSITY OF CALIFORNIA, RIVERSIDE Riverside, CA
Laboratory Assistant, Psychology July 2019 – July 2020
Dr. Ilana Bennett, Laboratory of Aging and Neurocognitive Imaging

- Performed MRI quality control and preprocessing for cross-sectional aging datasets (e.g., ~80 participants; ~40 young / ~40 older), with primary responsibility for structural MRI processing and data readiness for analysis
- Installed, configured, and operated FreeSurfer processing workflows; introduced lab members to standardized processing conventions and troubleshooting practices
- Improved anatomical processing quality by implementing FreeSurfer refinement steps (e.g., control points for intensity correction) and maintaining QC documentation for reproducible structural metrics
- Developed early computational infrastructure for the lab's imaging workflows, including bash/batch scripting to automate processing and QC routines

UNIVERSITY OF CALIFORNIA, RIVERSIDE Riverside, CA
Research Assistant, Psychology June 2018 – June 2019
Dr. Ilana Bennett, Laboratory of Aging and Neurocognitive Imaging

- Supported structural MRI and behavioral analyses for cross-sectional aging studies and completed an independent project culminating in a co-authored poster presented at a UCR internal research conference
- Conducted MRI quality control using FSL and FreeSurfer, tracking issues and ensuring analysis-ready inputs for downstream measurement.
- Transitioned from QC-focused support to pipeline execution by learning and running FreeSurfer processing on study data; documented procedures to support continuity across new datasets
- Trained and supervised junior research assistants on study procedures and imaging QC fundamentals; contributed to lab meetings via project updates and methods discussions

UNIVERSITY OF CALIFORNIA, RIVERSIDE Riverside, CA
Research Assistant, Psychology June 2018 – June 2019
Dr. Cecilia Cheung, Culture and Child Development Lab

- Transcribed and translated Spanish-language interviews to English for a multisite study involving underrepresented participant groups; produced analysis-ready transcripts for the research team
- Coded interview and video data and entered coded variables into the study database; performed basic verification checks to reduce entry errors and maintain data integrity

INTERNAL FUNDING

Behavioral Biomedical Interface Training Program (T-32 NIH)

University of Iowa; Iowa City, IA
August 2020 – May 2022: $60,000

Graduate College Iowa Recruitment Fellowship
University of Iowa; Iowa City, IA
August 2020 – May 2025: $50,000

TECHNICAL SKILLS

- Neuroimaging (MRI): FreeSurfer; FSL
- Statistical computing & analysis: R; SPSS; SAS; JASP; jamovi; GraphPad Prism
- Programming & automation: Python; MATLAB; Bash/shell scripting; C#; C++
- Productivity: Microsoft Office (Word, Excel, PowerPoint)
- EEG: Introductory exposure (course/lab experience)

TEACHING EXPERIENCE

UNIVERSITY OF IOWA — Iowa City, IA
Teaching Assistant, Department of Psychological and Brain Sciences — (Aug 2022 – May 2026)

Courses:

- Psychopathology (Aug 2025 – May 2026)
- Introduction to Cognitive Psychology (Jan 2025 – May 2025)
- Research Methods & Data Analysis in Psych I (Aug 2023 – Dec 2023)
- Laboratory in Cognitive Neuroscience (Aug 2022 – Dec 2022)

Selected instructional responsibilities:

- Led four discussion sections per term for Introduction to Cognitive Psychology and Research Methods & Data Analysis (≈30 students/section; ≈120 students/term), delivering discussion instruction aligned with primary lectures and facilitating in-class activities.
- Proctored exams; graded assignments and exams across courses; supported exam preparation and assessment logistics in Psychopathology.
- Delivered a guest lecture on cognitive aging and neurodegenerative disease in Psychopathology.
- Supported laboratory instruction in cognitive neuroscience, including modules introducing fMRI and EEG concepts for data acquisition and basic preprocessing/analysis workflows.

LEADERSHIP AND SERVICE

- Student Representative, University of Iowa, Graduate School, BBIP curriculum and evaluation committee, 2021-2023

REFERENCES

Dr. Michelle W. Voss
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Associate Professor
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(951) 827-2546

Dr. Eliot Hazeltine
Professor
University of Iowa, Department of Psychological and Brain Sciences
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