

ANDREA MÉNDEZ COLMENARES

Email: andrea.mendez@colostate.edu

Department of Psychology
1876 Campus Delivery
Colorado State University
Fort Collins, CO 80523-1876

EDUCATION

- PhD** Cognitive Neuroscience 2023
Dissertation: "New evidence for age differences, within-person declines, and plasticity in the aging white matter: New MRI techniques and analytical approaches."
Advisor: Aga Burzynska, PhD. Colorado State University, Fort Collins, CO, USA.
- MS** Psychology (Cognitive Neuroscience) 2020
Thesis: "Studying age-related changes in white matter microstructure in healthy aging using noninvasive MRI techniques". Advisors: Michael L. Thomas, PhD, Aga Burzynska, PhD.
Colorado State University, Fort Collins, CO, USA.
- Médico Cirujano (MD), *cum laude*** 2018
Universidad Del Zulia, Escuela de Medicina, Maracaibo, Venezuela.

HONORS AND AWARDS

- NeuroHackademy Participation and Scholarship, University of Washington** 2023
Selected for participation in a summer school in neuroimaging and data science
- Travel Award by the Advanced Psychometric Methods Conference** 2022
- CSU Dean's Graduate Diversity Summer Supplement** 2021
Award funding of \$700 for diversity-related mentorship of undergraduate students.
- CSU Eugene Oetting Fellowship** 2021
Award funding of \$1250 to a graduate student with a demonstrated interest in ethnic minority issues and general prevention research.
- MCIN Executive Committee - Travel Award** 2019
Award funding of \$800 to attend the Society for Neuroscience 2019 conference.
- CSU Programs of Research and Scholarly Excellence (PRSE) Fellowship** 2019
Allocation of a graduate fellowship (\$2000) for excellence in research.
- Henry Welch Scholarship by the Colorado Gerontological Society** 2018
Award of \$1000 for service in the field of aging.
- MCIN-CSU scholarship** 2018 – 2019
Scholarship comprising tuition remission and research assistantship for one academic year.
- World Learning's Alumni Engagement Initiative Grant Recipient** 2014
Winner of a grant (\$3500) by World Learning and the Newman's Own Foundation.

Global UGRAD Scholarship Recipient, U.S. Dept. of State Fulbright Commission 2013
Scholar for the Global Undergraduate Exchange Program (2013 – 2014) to study one academic semester at the University of Wyoming, College of Health Sciences.

RESEARCH EXPERIENCE

Postdoctoral Research Fellow

6/2023 – present

The BRAiN Lab - Colorado State University, Fort Collins, CO, USA.

- Analyzed 150+ MRI scans in Alzheimer's Association and NIH/NIA R21-funded studies on white matter aging and lifestyle-cognitive health associations.
- Developed expertise in analyzing myelin water imaging and other advanced MRI methods.
- Designed and executed clinical interviews involving various health metrics and cognitive tasks.

Visiting Clinical Researcher

8/2022 – 6/2023

Advanced Neurology of Colorado – UC Health. Fort Collins, CO, USA.

Advisor: Augusto Miravalle, MD

- Collaborated as co-Principal Investigator in a retrospective study investigating the relationship between SARS-CoV-2 infection and brain atrophy rates, cognitive function, and disability measures in 60 multiple sclerosis patients.
- Assisted with study management, mentoring medical and undergraduate students, statistical analyses, and screening patients using EPIC.

Graduate Research Assistant

2018 – 5/2023

The BRAiN Lab - Colorado State University, Fort Collins, CO, USA.

Advisor: Aga Burzynska, PhD

- Investigated different white matter neuroimaging techniques to characterize the aging white matter, identify lifestyle factors, and evaluate the effects of lifestyle interventions on white matter health.
- Coordinated four aging studies and assisted with manuscript writing, teaching, mentoring undergraduate research assistants, running clinical interviews, and analyzing cognitive, behavioral, and imaging data.

Visiting Research Associate

2021 – 2022

University of Colorado Anschutz Medical Campus, Department of Psychiatry. Aurora, CO, USA.

Advisors: Michael. L. Thomas, PhD and Jason Tregellas, PhD]

- Participated in developing adaptive cognitive tests and measures, applying the NIMH's RDoC framework, focusing on validity, reliability, and measurement bias.
- Gained expertise in psychometric methods, multivariate analyses, and their application in fMRI designs.
- Collaborated on manuscript writing, MRI preprocessing pipelines, and conducted clinical visits and interviews for patients with schizophrenia.

Research Assistant

2012 – 2017

Laboratorio de Neurociencias, Universidad Del Zulia. Maracaibo, Venezuela.

Advisors: Gladys Maestre, MD, PhD

- Collaborated with data collection, data entry, data analysis, and grant writing for the Maracaibo Aging Study, a longitudinal, population-based, one-step multidisciplinary study of age-related diseases.

- Supervised medical students in the acquisition and data entry of 24-hour blood pressure measurements for the Maracaibo Aging Study Database and the International Database of Ambulatory Blood Pressure in relation to Cardiovascular Outcome (IDACO) initiative.

Research Assistant

11/2015 – 1/2016

Mailman School of Public Health, Columbia University Medical Center, New York, NY, USA.

Advisors: Gladys Maestre, MD, PhD Joseph Lee, PhD

- Worked at the Gertrude H. Sergievsky Center, in collaboration with the Maracaibo Aging Study. Evolved into a research article about sex differences in risk factors for orthostatic hypotension in older adults.

CLINICAL EXPERIENCE

Neurology Externship

8/2022 – 6/2023

Advanced Neurology of Colorado – UC Health. Fort Collins, CO, USA.

Preceptor: Augusto Miravalle, MD

- Assessed and presented approximately 120 patients to the attending physician, carrying out detailed medical histories and comprehensive physical exams in both English and Spanish.
- Performed Botox injections for migraines and assisted in various neurological procedures, including trigger point injections and EMG-guided interventions.

Visiting Observer

6/2022 – 7/2022

Observership in Neurology – Cleveland Clinic. Cleveland, OH, USA.

Preceptor: Joao Gomes, MD

- Engaged in a 4-week clinical rotation in vascular neurology, neurocritical care, and general neurology, actively participating in daily rounds, noon conferences, teaching conferences and research events, which provided exposure to complex in-patient cases.
- Acquired insights into managing neurological cases with empiric treatments, specialized medications (e.g., IVIG), EEG utility, and therapeutic monitoring for anti-seizure drugs.

Rural Medicine Internship

Medical Intern – Hospital I Dr Romulo Farias, Mene Mauroa, Venezuela. 2/2018 – 3/2018

- Managed medical emergencies in the emergency unit, attending to approximately 10 patients daily, including asthma attacks, hypertensive crises, and injuries. Assisted in two deliveries and facilitated referrals to trauma centers from this rural hospital.

Internal Medicine Elective

8/2017 – 9/2017

Clinical rotation in Internal Medicine – Florida International University. Miami, FL, USA.

Preceptor: Heriberto Fernandez, MD

- Participated in the Internal Medicine and Hospitalist services at Hialeah Hospital, following up with 2-3 patients daily. Conducted daily physical exams, discussed treatment plans with attendings and residents, and documented patient notes and plans.

TEACHING EXPERIENCE

Graduate Teaching Assistant

2019 – 2023

Colorado State University, Fort Collins, CO, USA.

- Teaching assistant for NB399 (Neuroscience thesis seminar class) (1 section of 28 students), NB499 (Neuroscience thesis seminar class) (1 section of 24 students), PSY352 (Memory and Learning) (1 section of 74 students).

- Served as a laboratory instructor for PSY455 (72 students across 6 sections) and LIFE102 (57 students across 2 sections), impacting a total of 129 undergraduate students.

Graduate Teaching Assistant

2011 – 2012

Universidad Del Zulia, Escuela de Medicina, Maracaibo, Venezuela.

- Laboratory instructor for Clinical Biochemistry – Endocrinology Module (1 section of 44 students)

Advanced Teaching Training

Evidence-based approaches to college teaching, Graduate Seminar at Colorado State University. Fall 2022.

Inclusive Pedagogy Training, The Institute for Learning and Teaching at Colorado State University. Fall 2021.

Mentoring

Jennifer Felker, Medical Student Research Co-Mentor (2022 – present), University of Colorado. Jacob Borel, Undergraduate Neuroscience Thesis Co-advisor and Committee Member (Fall 2020), now a Physical Therapist in Vail, CO, USA.

Michelle Hefner, Undergraduate Research Mentor (2019-2022), incoming PhD student at University of Granada.

Brandon Paez, Undergraduate Research Mentor (2021-2022), now pursuing an MS in Counseling Psychology at Boston College, Boston, MA, USA.

Samantha Umland, Undergraduate Research Mentor (2021-2023), incoming MS student at Univ of Colorado Springs.

Ana Valeria Castro, Medical Student Research Mentor (Fall 2021), incoming PhD student at Colorado State University.

PUBLICATIONS

Mendez Colmenares, A., Hefner, M., Calhoun, V. D., Salerno, E. A., Fanning, J., Gothe, N. P., ... & Burzynska, A. Z. (2023). Symmetric data-driven fusion of diffusion tensor MRI: Age differences in white matter. *Frontiers in Neurology*, 14, 689. <https://doi.org/10.3389/fneur.2023.1094313>

Sturm, E. T., Castro, C., **Mendez-Colmenares, A.**, Duffy, J., Burzynska, A. A. Z., Stallones, L., & Thomas, M. L. (2022). Risk factors for brain health in agricultural work: A Systematic Review. *International Journal of Environmental Research and Public Health*, 19(6), 3373.

Colmenares, A. M., Voss, M. W., Fanning, J., Salerno, E. A., Gothe, N. P., Thomas, M. L., ... & Burzynska, A. Z. (2021). White matter plasticity in healthy older adults: the effects of aerobic exercise. *NeuroImage*, 118305, <https://doi.org/10.1016/j.neuroimage.2021.118305>.

Mendez A., Voss M., Fanning J., Salerno E, Gothe N., Thomas M., McAuley E., Kramer AF., Burzynska AZ. 6-months aerobic walking training increases T1w/T2w signal in the healthy aging white matter. *medRxiv*. Preprint available: <https://doi.org/10.1101/2020.11.09.20228627>.

Varela, R., Sánchez, M. E., **Méndez-Colmenares, A.**, Ahumada, A., Añez, R., & Salazar, J. (2021). Prevalence of depression, anxiety, and stress in medical residents from a Venezuelan hospital. *Gac Méd Caracas*, 129(1), 32-38.

Méndez, A.S., Melgarejo, J.D., Mena, L.J., Chávez, C.A., González, A.C., Boggia, J., Terwilliger, J.D., Lee, J.H. and Maestre, G.E. (2018). Risk factors for orthostatic hypotension: Differences between elderly men and women. *American journal of hypertension*, 31(7), pp.797-803, <https://doi.org/10.1093/ajh/hpy050>

MANUSCRIPTS IN PREPARATION

Burzynska, A., **Mendez Colmenares, A.**, Yul Choi, J., Hiner, G., Thomas, M. L., & Lee, J. Metabolic Syndrome Score is Associated with Lower Myelin in Cognitively Healthy Adults. Currently under peer review.

Mendez Colmenares, A., Prytherch, B., Thomas, ML., Burzynska, AZ. Within-person changes in the aging white matter microstructure: a systematic review of longitudinal diffusion MR studies. Preregistration is available on PROSPERO 2021 CRD42021273127. Currently under peer review.

Sturm, E., Sarabia, L., Delao, E., **Mendez-Colmenares, A.**, Sares, A., Thomas, ML. An Evaluation of Measurement Bias within RDoC Cognitive Online-Adaptive Tasks.

Duffy, J., Sturm, E., Sarabia, L., Delao, E., **Mendez-Colmenares, A.**, Sares, A., Thomas, ML. A Psychometric Evaluation of RDoC Cognitive Tasks.

ABSTRACTS/POSTER PRESENTATIONS

Burzynska, A., **Mendez Colmenares, A.**, Yul Choi, J., Hiner, G., Thomas, M. L., & Lee, J. (2023, July 16-20). Metabolic Syndrome Score is Associated with Lower Myelin in Cognitively Healthy Adults [Poster presentation]. Alzheimer's Association International Conference 2023, Amsterdam, Netherlands.

Sares, A. G., Mignard, M., Sturm, E. T., **Mendez Colmenares, A.**, Sarabia, L., Delao, E., Duffy, J.R., Tregellas, J. R., & Thomas, M. L. (2023, June 26-30). Multilingual Advantage is Absent in Many Cognitive Tests When Matching for Income, Age, and Racial Identity [Submitted for poster presentation]. International Symposium on Bilingualism Annual Meeting, Sydney, NSW, AUS.

Mendez Colmenares, A., Prytherch, B., Thomas, M., & Burzynska, A. (2023, April 22-27). Within-person changes in the aging white matter microstructure: a systematic review and meta-analysis of longitudinal diffusion MRI studies [Poster presentation] American Academy of Neurology 2023, Boston, MA, USA.

Weed, S., **Mendez Colmenares, A.**, Thomas, M.L. (2023, April 20). Effects of Pesticide Exposure on Seed-Based Connectivity of the Hypothalamus. [Poster presentation] Celebrate Undergraduate Research and Creativity Symposium at Colorado State University, Fort Collins, CO.

Goel, N., Pertsovskaya, V., **Mendez Colmenares, A.**, Orr, M., Naveed, H., Yarlagadda, R., & Emmanuel, R. (2023, April 22-27). @NMatch2023: A Student-Led Social Media-Based Initiative to Guide Adult and Child Neurology Residency Applicants and Programs in a Digital Era [Poster presentation] American Academy of Neurology 2023, Boston, MA, USA.

Felker, J., **Mendez Colmenares, A.**, Skoda, J., Keefer, K., & Miravalle, A. (2023, February 20-23). Improving Health Care Literacy Among Patients with Multiple Sclerosis through a Flipped Classroom Model [Poster presentation] Americas Committee for Treatment and Research in Multiple Sclerosis 2023, San Diego, CA, USA.

Sturm, E., Sares, A., Duffy, J., **Mendez Colmenares, A.**, Sarabia, L., Rojas, D., Tregellas, J., Young, J., & Thomas, M. L. (2023, February 1-4). Exploratory Factor Analysis of Cognitive and Positive Valence Measures for the RDoC [Poster presentation]. International Neuroscience Society Meeting, San Diego, CA, USA.

Henneke, M., Sturm, T. E., Duffy, J., **Mendez Colmenares, A.**, Sarabia, L., Delao, E., Mitchell, T., Manavi, R., & Thomas, M. L. (2023, February 1-4). Comparison of MCCB Autocorrelations between Schizophrenia and Healthy Comparison Populations [Poster presentation]. 2023 International Neuropsychological Society Meeting, San Diego, CA, USA.

Sarabia, L., Sturm, E., Sares, A., **Mendez Colmenares, A.**, Duffy, J., Tregellas, J., & Thomas, M. L. (2022, November 12-16). Disentangling effort, reward valuation, and reward learning in online cognitive test [Poster presentation]. Society for Neuroscience, San Diego, CA, USA.

Kellam, R., Diaz, J., Sturm, E., Duffy, J., **Mendez Colmenares, A.**, Burzynska, A., Stallones, L., & Thomas, M. L. (2022, December 15). Clinical Symptoms, Cognitive Functioning, and Brain Health in Agricultural Workers [Poster presentation]. Front Range Neuroscience Group Annual Meeting, Fort Collins, CO, USA.

Mignard, M., Henneke, M., Sares, A. G., Diaz, J., Sturm, E. T., **Méndez Colmenares, A.**, Duffy, J. R., Sarabia, L., Delao, E., Mitchell, T., Manavi, R., Tregellas, J., & Thomas, M. L. (2022, December 15). Brain Activity Associated with a Probabilistic Learning Task [Poster presentation]. Front Range Neuroscience Group Annual Meeting, Fort Collins, CO, USA.

Henry, J., Masayasu, U., Newton, N., **Mendez Colmenares, A.**, McGrath, S., Burzynska, A. (2022, October 12). Using diffusion MRI to bridge canine model of cognitive dysfunction with human [Poster presentation]. Human-Animal Translational Science Research Symposium at Colorado State University, Fort Collins, CO.

Burzynska, A., **Mendez Colmenares, A.**, Paez, B., Umland, S. (2022, March 1) White Matter: A Missing Piece of the Puzzle in Understanding Cognitive Aging and Dementia [Poster presentation]. College of Health and Human Sciences Research Day at Colorado State University, Fort Collins, CO.

Sturm, E., Castro, C., **Mendez Colmenares, A.**, Duffy, J., Burzynska, A., & Thomas, M. (2022, February 2-4). Do Age-Related Brain Activation Differences Survive Controlling for Performance? Comparison Using a Working Memory Paradigm [Poster presentation]. International Neuropsychological Society Annual Meeting, New Orleans, LA, USA.

Mendez, A., Voss, M., Fanning, J., Salerno, E., Gothe, N., Thomas, M., McAuley, E., Kramer, A., & Burzynska, A. (2021). Plasticity in the adult human white matter: the effects and modifiers of response to aerobic exercise interventions [Poster presentation]. 2021 Neuroscience Meeting Planner, Virtual: Society for Neuroscience, USA.

Sturm, E., Musich, M., Thorton, D., **Mendez Colmenares, A.**, Duffy, J., Burzynska, A., & Thomas, M. (2021). Age Differences in the Dorsolateral Prefrontal Cortex Activity During a

Novel Task Manipulating Memory Load and Logic Load [Poster presentation]. 2021 Neuroscience Meeting Planner, Virtual: Society for Neuroscience, USA.

Mendez Colmenares, A., Hefner, M., Calhoun, V., Kramer, A., McAuley, E., & Burzynska, A. (2021). Brain-age prediction from diffusion MRI data using neural networks [Poster presentation]. Organization for Human Brain Mapping Annual Meeting, Virtual, USA.

Sturm, E., Musich, M., Henneke, M., **Mendez Colmenares, A.**, Duffy, J., Burzynska, A., & Thomas, M. (2020, October 19-24). Separate Effects of Logical Reasoning and Memory Load on Prefrontal Brain Activity in Aging [Poster presentation]. National Diversity in STEM Conference, USA.

Mendez Colmenares, A., Calhoun, V., Kramer, A., McAuley, E., & Burzynska, A. (2020, June 26-29). Age differences in white matter: a 3-way multimodal fusion analysis [Poster presentation]. Organization for Human Brain Mapping (OHBM) Annual Meeting, USA.

Mendez, A., McAuley, E., Kramer, A., & Burzynska, A. (2020, February 5-8). White Matter Imaging and Cognition: Comparisons Between the T1w/T2w Ratio and Diffusion Tensor Imaging Measures in Healthy Older Adults [Poster presentation]. International Neuropsychological Society 2020 Annual Meeting, Denver, CO, USA.

Henneke, M., Musich, M., Kramer, E., **Mendez Colmenares, A.**, Duffy, J., Burzynska, A., & Thomas, M. (2019, December 11). Design and Evaluation of a Working Memory and Logical Reasoning Task for Characterizing Individual Differences in Cognitive Aging [Poster presentation]. Front Range Neuroscience annual meeting, Fort Collins, CO, USA.

Mendez Colmenares, A., Wang, H., Calhoun, V., McAuley, E., Kramer, A., & Burzynska, A. (2019, October 19-23). A new approach to studying age differences in white matter using a multimodal symmetric voxel-wise fusion of three MRI data types [Poster presentation]. 2019 Neuroscience Meeting Planner, Chicago, IL: Society for Neuroscience, USA

Mendez Colmenares, A., Melgarejo, JD., Lee, JH., & Maestre GE. (2015, June 12-15). Orthostatic Hypotension in Latino Elderly: Findings from The Maracaibo Ageing Study [Poster presentation and moderated discussion]. 25th European Meeting on Hypertension and cardiovascular protection, Milan, Italy. Journal of Hypertension, 33, e219.

ORAL PRESENTATIONS AND INVITED LECTURES

Oral Presentations:

Lost in Translation: Cultural and Language Barriers in Neurological Care. (April 24, 2023). American Academy of Neurology Annual Meeting. In-person and online presentation, available on demand.

Combining Quantitative MR and Symmetric Fusion Analysis to Study the "Myelin" Hypothesis of Cognitive Decline. (October 26-28, 2022). Quantitative Magnetic Resonance Imaging Conference: Applications in Neurodegeneration.

Aerobic Exercise Increases T1w/T2w in the Aging White Matter. (February 2021). International Neuropsychological Society.

6-Months Aerobic Walking Training Increases T1w/T2w Signal in the Healthy Aging White Matter. (November 2020). AAIC Neuroscience Next.

New Magnetic Resonance Techniques and Analytical Approaches to Study Aging. (September 21, 2021). XXIV Alzheimer's Association Venezuela Conference.

Exercise and Brain Health. XXIII Alzheimer's Association Venezuela Conference. (October 2020).

Orthostatic Hypotension in Older Adults. (October 2015). XVIII Alzheimer's Symposium, Maracaibo, Venezuela.

Invited Lectures:

Introduction to Clinical Neuroimaging. (November 9, 2022). Colorado University/CSU Medical School, 3rd year medical students.

Brain Health: Focus on the Role of Physical Exercise for Healthy Aging. (October 15, 2022).

Brain Health Center of the Rockies, University of Colorado, Hispanic/Latinx communities.

Clinical Case: Paresthesias and Loss of Strength in the Right Leg. (March 1, 2021). Multilingual Morning Report: Medical Case Reports in Spanish.

Explicit and Implicit Memory: A Short Review of the Literature. (March 2020). PSY352, Colorado State University.

Case Study: Gerstmann's Syndrome. (March 2020). NB581A1, Colorado State University.

Review of Physiology and Pathophysiology of COVID-19. (May 2020). Universidad Del Zulia.

The Aging Cardiovascular System: The Impact of Social Determinants on Cardiovascular Disease. (September 19, 2019; February 9, 2020). HDFS312, Colorado State University.

Research Skills and Reference Search. (July 19, 2014). Neuroscience Seminar Series, Universidad Del Zulia.

AD-HOC REVIEWER

Journals: Alzheimer's & Dementia x2, Neurobiology of Aging x1, Frontiers in Neurology x1, Frontiers in Aging x1

PROFESSIONAL AFFILIATIONS

PhD student member, American Academy of Neurology. 2022 – present

Associate Member, The International Neuropsychological Society. 2021 - 2022

Member, Molecular, Cellular, and Integrative Neurosciences program. 2018 - present

Member, Society for Neuroscience. 2019 - 2021

Seminar committee, Frontiers in Biomedical Sciences. 2019-2021

Seminar committee, Molecular, Cellular, and Integrative Neurosciences program. 2019-2020

Research fellow of the International Society of Hypertension (ISH). 2015-2018

U.S Department of State, Global UGRAD Program Alumni Association. 2013 - present

VOLUNTEER EXPERIENCE

Leader, NMatch2023, NMatch2024 Initiative, 8/2022 – present

- For the match cycle 2022-2023, co-led a mentorship program that linked 102 neurology applicants with mentors, organized a panel discussion featuring five neurology residency program directors with 133 attendees, and a panel discussion on the ranking process with residents with 40 attendees.
- For the match cycle 2023-2024, led a mentorship program and designed a computerized algorithm that linked 244 neurology applicants with mentors.
- Authored a guide for applicants pursuing research positions in Neurology.
- Fostered online engagement between students, residents, and faculty in Neurology, contributing to increased follower activity and resource sharing on social media platforms.

Research Lead, American Medical Women's Association IMG Initiative, 12/2022 – present

- Organized research workshops and research mentorship initiatives to support the research career development of international medical graduates.
- Organizer and Moderator, 'Research Essentials for IMGs' Webinar Series (2023).

Graduate Student Representative, Psychology Diversity and Inclusion Team, Colorado State University, 7/2022 – present

- Served as an advocate for international and minority students by proposing activities to promote their engagement in research, facilitating career advising, and bringing speakers from industry and research to the department.
- Helped analyze the results of a department-wide DEI survey.

Director, Social Project, Hoy Por Ellos, 2014 – 2015

- Volunteered as Director of a childhood development and mental health program for 60 children in an economically disadvantaged community in Maracaibo, Venezuela.
- Designed and implemented weekly workshops every Saturday focused on capacity building, sports, music, arts, and activities to promote social and emotional well-being among children in the community.
- Developed and maintained relationships with local stakeholders, including government agencies, non-governmental organizations, and community leaders.

Volunteer, FundaConCiencia Venezuela, 2012-2015

- Assisted in planning and organizing the Alzheimer's Symposium and Neuroscience Seminar Series every year and participated in fundraising activities.

Last updated: July 2023.