Meet Our Members: Layla Abdullatif, PhD

Layla Abdullatif, PhD, is an Advanced Fellow in Geriatrics at the Birmingham/Atlanta Geriatric, Research, Education, and Clinical Center (BA GRECC), a center of excellence within the US Department of Veterans Affairs and Atlanta VA Health Care System. She has been an ASNR Member since January of 2022. Dr. Abdullatif joined ASNR to share her research, connect with others working in the field of neurorehabilitation, and be part of a supportive community of professionals that spans a wide variety of backgrounds, career stages, and research areas.

1) How did you get interested in science, and what steps did you take to get to your current role?

Growing up, I loved my science classes the most. It wasn't until high school, when I took AP Physics and Biology, that I became curious about experimental and applied topics. My AP Physics teacher, who worked as an engineer before becoming a teacher, introduced me to the possibility of pursuing a career in engineering. My dad, a math professor, encouraged me to find ways to apply math to make a difference in the world, such as through engineering.

At Georgia Tech, I decided to enroll in pre-med courses alongside my engineering studies to keep my options open. As I gained research experience from human studies and primate research on aging and neurodegenerative disorders, I fell in love with it. Despite enjoying my research experiences, I still wanted to pursue medical school. As a next step after graduation, I enrolled in a master's degree program to explore my career goals further and experience what it was like to do research at a different university.

I started shadowing neurologists at the University of Florida's movement disorders clinic to gain more hands-on clinical experience. While there, I realized there were research limitations and knowledge gaps in in terms of the underlying neurophysiology and how it changes with different conditions and treatments. Additionally, I learned how much research can impact patients and clinicians. Research studies can provide opportunities for more in-depth interactions between clinician scientists and patients than just a short appointment every few months. Interventions in research studies can also provide treatment options beyond invasive procedures.

During the pandemic, I realized I missed home and Georgia Tech, where I found multiple labs aligned with my interests. Joining Dr. Lewis Wheaton's lab introduced me to rehabilitation science and engineering applications relevant to physiology and motor control. Wanting to help patients with neurological illnesses after my PhD, I planned a postdoctoral fellowship. Dr. Wheaton helped me identify the Center for Visual and Neurocognitive Rehabilitation at the Atlanta VA, which felt like the perfect fit. My mentors supported me in choosing the Advanced Fellowship in Geriatrics, which offers clinical experience and application of rehabilitation approaches, with excellent opportunities at the VA.

2) What is the focus of your current research, and what are some of your findings?

My primary interest centers on gaze and how what we look at is crucial to motor learning and control. Vision is also a critical input that can stimulate neurophysiological changes, specifically in motor behaviors and neural activation patterns. Given that gaze is related to sensory information, I would like to explore how sensory information is processed and integrated into action and movement outcomes.

I aim to understand the mechanisms underlying why specific rehabilitation methods addressing visuoperceptual deficits may be more effective than others, and how we can enhance particular interventions to achieve better motor recovery outcomes in older adults with aging-related neurodegenerative disorders. During my doctoral work, I discovered a connection between gaze patterns and the perception of task difficulty and visual cues while performing a motor task in clinical populations, such as those with stroke, as well as in healthy young adults.

My current research focuses on how visual-perceptual deficits in Veterans, particularly those with Parkinson's disease, alter gaze patterns, motor behavior, and neurophysiological responses. By learning more about the clinical relevance of these deficits and how they affect cognitive and motor changes as Veterans age, we can enhance and more effectively integrate cognitive and motor training, not only in rehabilitation settings, but also in community fitness programs.

I currently work with Dr. Madeleine Hackney on projects measuring the effects of different rehabilitation methods on clinical outcomes related to motor-cognitive and visuospatial deficits. We are especially interested in the effects of aerobic training interventions, including tango dance and walking, as well as a robotic device for

stretching exercises. I also participate in Dr. Joe Nocera's research on similar aerobic training interventions and their effects on cerebrovascular outcomes.

3) How have you benefited from your membership in ASNR and receipt of the Diversity Fellowship Award?

Ever since my first time attending the ASNR Annual Meeting in 2022, I have loved this organization—not only for the wide range of interesting research but also for the opportunities to meet like-minded, kind people in the field. I knew I wanted to remain involved with ASNR throughout my career, and this fellowship has now allowed me to do so. I was able to attend the Annual Meeting despite uncertain funding, and now I am seeking other opportunities within the organization's committees. I am grateful for the opportunity to stay involved and attend future conferences.

4) What are your longer-term career goals?

My long-term goals are to become a researcher at the Atlanta VA Health Care System (AVAHCS) and investigate how observational learning methods, which may alter neural activity, influence motor behavioral outcomes. After my fellowship, I plan to pursue more funding opportunities at the AVAHCS and the Center for Visual and Neurocognitive Rehabilitation. In the future, I want to improve the care of older Veterans with and without Alzheimer's and Parkinson's disease. By learning how older Veterans perceive and understand movement in their environment, we can better integrate cognitive and motor training in rehabilitation.

Additionally, I want to teach and mentor students interested in neuroscience and aging-related movement disorders. I had wonderful teachers and mentors throughout my early career, and it is important for me to give back by becoming a teacher and mentor myself. I want to remind people of the importance of research and cultivate the next generation of scientists, especially by showing young researchers who may face barriers beyond their control that there is a place for them in science.

Interested in connecting with Dr. Abdullatif to learn more? You can reach her by email (lbabdul@emory.edu or Layla.Abdullatif@va.gov) or find her on LinkedIn.