

Samantha Harker

“Mom, I stand on my tippy toes. Could I be autistic?” This was the question that my nine-year-old self asked my mother after we had met another family with an autistic son who stood on his toes. My mother replied, “No honey, you’re nothing like him.” However, when I was 14, I was diagnosed with autism spectrum disorder (ASD).

Before my diagnosis, the abusive childhood environment I grew up in made me feel as though something was intrinsically wrong with me; I felt like an outcast. Feeling that way, I took the initiative to emancipate myself from my parent’s abusive household; my newfound diagnosis and independence transmuted my life. Wanting to understand my autism, I sought solace in online support and information. To my surprise, upon consulting the internet, I discovered a bewildering lack of resources for autistic females, autistic adults, and autistic young adults. The information and statistics I did find on these groups was appalling. I learned that the origin of the autism diagnosis was founded on Nazi ideology, I learned that much of what the world knows about autism is rooted in ableist practices and eugenics-style ideas, I learned that there exists a male to female sex bias of 4.2:1 in autism research studies¹, I learned that approximately 90% of autistic women are sexual abuse survivors², I learned that a mere 38.8% of autistic individuals graduate college³, and I learned that there is no data on autistic women attending graduate school and earning advanced degrees³.

Much like the inadequate volume of autistic female research, the percentage of those who fall under the categories of autistic, female, abuse survivor, and doctoral student are abysmal. My identities have fueled my ambition to succeed in academia and autism research specifically by motivating me to **earn two bachelor’s degrees and begin my Ph.D. in Neuroscience at the age of 18**. Thus, my desire to advance fundamental understanding of autism is personal.

Through my brief career as a scientist, it has been my mission to combat sex biases in autism research and shift the paradigm by aligning my projects to be more participatory, more inclusive, and more accessible to best support autistic individuals as they age. Ultimately, I want to become a professional academic scientist to create research that will support the millions of soon to be autistic adults and imbue those individuals with a way to simply understand themselves. To date, my accomplishments

and commitment to research productivity **are 3 first author research manuscripts under-review, 10 poster presentations, 3 oral research presentations, 25 career awards/scholarships/fellowships, 4.0 GPA, 6 autism advocacy article publications, 6 panel presentations/guest lectures, and 3 TEDx presentations.**

Prior to 2021, there were no scholarly articles notating actual autistic researchers in the field of autism research. A 2021 article entitled, *Considering the Autistic Advantage in Qualitative Research: the Strengths of Autistic Researchers* was the first to identifying the advantages of having autistic researchers in autism research labs⁴. This paper introduces the idea of the “Autistic Advantage,” a construct that autistic individuals serve as assets to the social ecosystems due to their unique abilities⁴. As a female autistic autism researcher, **I have the “Autism Advantage.” I embody traits of attention to detail, depth of knowledge, and drive to conduct impactful research.** I will use my advantageous qualities and autistic introspect to improve the lives of those in my community by advocating for neurodivergent rights and mentoring neurodivergent students, among my other duties as a future neuroscience professor.

The Autism and Brain Aging lab, where I am a graduate student, has established **one of the largest longitudinal cognitive and brain aging studies of middle aged and older autistic adults in the world and has one of the largest representations of women in any autistic adult study.** Working with this dataset is particularly important as once identification of autistic females improves, up to half of the population of autistic aging individuals may be women. Thus, it is imperative to close the autism female knowledge gap now.

Through my doctoral degree, I aim to determine the genetic contributors to aging and sex effects on cognition and brain structure in autistic adults. My research project assesses the central hypotheses that autism polygenic risk scores (one’s genetic liability to a trait) contribute to accelerated cognitive and brain aging and sex differences on cognitive and brain measures. My research will **significantly impact biological understanding of cognitive and brain aging with autism and sex differences as it incorporates both molecular and systems levels approaches.** More specifically, this proposal may be one of the first to elucidate genetic mechanisms in cognitive and brain aging outcomes and sex differences for autistic adults.

My research could benefit society through the contribution of our data to ENIGMA ASD (a resource of MRI data collected from various autism studies) in order to provide information on autism and aging for other researchers. Additionally, I will seek to replicate my findings in larger sample sizes (i.e. ENIGMA data) with geographically diverse populations to fully observe the scope of the autism spectrum. The results may inform aging research in other neurodevelopmental conditions such as ADHD, intellectual disability, and cerebral palsy, which to date are all severely under-investigated.

The resources that will follow my research—improved accommodations, precision medicine, and personalized care—may invigorate new tools for the neurodiverse population of the world and potentially make society more inclusive and accessible for everyone, regardless of neurocognitive status. Through my experiences and unique position as an openly autistic scientist, I am redefining positive autism advocacy by reprobating sex bias and lack of diversity in autism research studies.

Like an army soldier, I have accrued a battery of pins that serve as my labels, all with different stories and denotations: autistic, disabled, abuse survivor, woman. For most of my life, my pins were displayed with emotions of shame and fear, but by advocating for my community, the distinguished enamel of 'autistic autism researcher' will be worn with pride and honor.

Sources:

¹<https://embrace-autism.com/the-autism-sex-ratio/>

²<https://www.readcube.com/articles/10.3389/fnbeh.2022.852203>

³<https://collegeautismnetwork.org/jcsd-article/>

⁴<https://www.tandfonline.com/doi/full/10.1080/21582041.2021.1998589>