

Neurodiversity Underrepresentation in Cybersecurity: Survey & Interview Findings

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Abstract—According to CompTIA, a leading organization for IT certification and training, and Lightcast, a top authority on global job skills, there are an estimated 4,970,000 job vacancies in the cybersecurity field, as reported through their project, Cyberseek—a cybersecurity jobs heat map web application tool. The 2025 Gartner CIO Talent Planning Survey surveyed IT leaders (n=487), 91% expect the demand for cybersecurity skills to increase in the next three years. Stakeholders express that cybersecurity professionals require a combination of STEM skills – problem-solving, mathematical aptitude, programming and coding, yet there is a shortage of these skills; therefore, a cybersecurity unemployment issue. ISC2, a top non-profit organization for cybersecurity training and certifications, surveyed 7,698 cybersecurity hiring managers and found that strong problem-solving abilities are the most sought-after. The neurodivergent community, including those with autism spectrum disorder (ASD) and attention-deficit/hyperactivity disorder (ADHD), possesses the STEM skillset, and can help address the shortage in the cybersecurity field. There is an increasing recognition of neurodiversity within the cybersecurity field; however, the community remains underrepresented. This paper explores why underrepresentation may exist by surveying and interviewing ASD and ADHD college students (n=32). Interviews were conducted with students, and their responses were analyzed using the Atlas.ti software. We applied Braun & Clarke’s thematic analysis and we reveal whether cybersecurity is of interest, as well as the key challenges and necessary tools or resources required to learn about cybersecurity, or pursue a career in this field. This paper highlights the crucial need for a kinesthetic toolbox and mentorship to support career integration for neurodivergent students interested in cybersecurity.

1. Introduction

The U.S. National Science Foundation’s National Center for Science and Engineering Statistics reports that while one in five people with disabilities is employed in the science, technology, engineering, and math (STEM) fields, they make up only about 3% of the overall STEM work-

force [1]. Within this group, neurodivergent individuals — such as those with autism spectrum disorder (ASD) or attention-deficit/hyperactivity disorder (ADHD) — remain especially underrepresented [2], even though qualitative data strongly suggest strengths in problem-solving, pattern recognition, and analytical thinking, which align closely with the demands of STEM careers, specifically cybersecurity [3]. Cybersecurity has become one of the most critical fields in today’s digital world, with industries experiencing heightened demand for expertise to secure systems and data against continually emerging threats. With the rapid growth of AI, the cybersecurity field will grow exponentially. The Bureau of Labor Statistics projects that cybersecurity careers will grow 20% from 2024 to 2034, faster than all other occupations [4]. The cybersecurity field is a field that is constantly changing and is never the same, which could be intriguing for the neurodivergent community.

What remains unclear is why the cybersecurity workforce appears so non-inclusive of the full spectrum of neuroabilities. The paper is structured as follows. In Section 2, we review the literature. Section 3, we detail the methodology. Section 4 presents the data collected and the study results. Section 5 draws the conclusion.

2. Literature Review

With the current cybersecurity workforce gap, diversifying the workforce should be of great consideration. Neurodiverse individuals, in particular, offer unique strengths and perspectives that can make them well-suited for certain cybersecurity roles. According to the British Medical Bulletin (BMB), 15–20% of the global population is neurodiverse [5]. The concept of neurodiversity began as a movement led by autistic individuals who wanted to be seen as unique instead of disabled [6]. Originally, the concept was intended to represent people with ASD, but it has been extended to include people with ADHD, intellectual disabilities (IDs), dyslexia, dyspraxia, and other learning differences. An explanation of neurodiversity; Neuro means brain, and diverse means a wide variety of groups with neurological differences as compared to a neurotypical individual [6].

The World Health Organization (WHO) reports that globally, about 4% of adults have ADHD, 1–2% are autistic, 10% are dyslexic, 5% have dyspraxia, and 1% have Tourette's [7]. Ezerins et al. found that young autistic adults transitioning to postsecondary education face high rates of unemployment and underemployment [8]. Even with a college education, only about 15% of autistic adults are employed full-time, compared to roughly 25 % of adults overall [9]. Given these numbers, the cybersecurity industry has an opportunity to tap into a large pool of talented individuals whose abilities align well with STEM-related work.

ASD and ADHD are among the most frequently studied neurodivergent conditions, and they often co-occur. Both can involve traits of hyperactivity, distractibility, or challenges with executive functioning. Yet research consistently shows that ASD and ADHD individuals often excel in technical thinking. Simon Baron-Cohen's research indicates that individuals with ASD are strong candidates for STEM fields, including cybersecurity [10]. His hyper-systemizing theory suggests that autistic individuals tend to understand and analyze systems by identifying rules, patterns, and detailed connections — whether in computers, vehicles, trains, or almost any machine [10]. A participant in Cohen's research with level 1 autism described this tendency by stating, "I see all information in terms of links. All information has a link to something, and I pay attention to these links. If I am asked a question in an exam, I have great difficulty in completing my answer within the allocated 45 minutes for that essay because every fact I include has thousands of links to other facts, and I feel my answer would be incorrect if I didn't report all of the linked facts [8]". Baron-Cohen also discussed how this theory suggests that the ASD community may demonstrate heightened rationality, often making decisions that are more object aivend less influenced by emotion or bias [11]. Autistic individuals' preference for rule-based thinking can reduce irrational decision-making and help them stay focused on logic rather than emotional cues [12].

Other researchers align with these findings. Autism researcher, Laurent Mottron's work demonstrates that often autistic individuals outperform neurotypical individuals in tasks such as identifying patterns in complex or distracting environments — a skill highly valued in cybersecurity [12]. Strong concentration and attention to detail are also common autistic traits, likewise essential in this field [12].

Similarly, Thomas Armstrong highlights that ADHD individuals possess comparable attention strengths. Armstrong describes that many ADHD individuals demonstrate "roving attention," which is the ability to rapidly shift focus and notice things quickly [6]. He also highlights that the ADHD community possesses "homing attention," the capacity to hyperfocus on a topic of deep interest for extended periods [6].

3. Methods

This study uses a qualitative approach and is part of a larger ongoing study investigating the use of a technological

Extended Reality (XR) / Virtual Reality (VR), Game-Based Learning (GBL) pedagogical tool improves the cybersecurity literacy of the neurodivergent audience for cybersecurity career readiness (under an approved protocol for human subjects research; Auburn University STUDY00000093). A qualitative approach was well-suited for capturing rich insights into participants' experiences, supported by thematic analysis and the use of Atlas.ti, a qualitative data analysis tool. Researchers collecting open-ended responses from approximately 32 neurodivergent Auburn University students. Participants participated in surveys and semi-structured interviews conducted by the authors between April and May 2025. Students were recruited via e-mail and flyers posted on the Auburn University campus, as well as social media posts containing all IRB documents, research materials, and links to a Qualtrics questionnaire requesting 18-30 year old, neurodivergent (i.e., ASD, ADHD), Auburn University students with no intellectual, hearing, or visual impairments, and English-speaking.

The study participants consisted of 32 individuals — 10 females and 22 males — with a mean age of 25.6 years. In this group, 22 participants self-reported a diagnosis of ADHD, and 10 participants self-reported a diagnosis of ASD. Table 1 summarizes the demographic details of all participants. To ensure anonymity, participants were designated by coded identifiers (e.g., P1, P2).

Semi-structured interviews invited participants to share how they learn best — the styles and strategies that support them — and which technologies they find most effective and engaging. Conversations also explored their current understanding of cybersecurity and how they approach the subject. From these discussions, researchers gained insight into the supports that help neurodivergent learners thrive, the barriers that make learning or career advancement more difficult, and the level of interest participants have in pursuing cybersecurity as a profession. The format allowed for guided discussion while giving participants space to share personal experiences and perspectives.

After obtaining consent to participate and audio record, interviews typically began with background questions about classroom and non-classroom experiences, learning preferences, and technology use. Later, participants were asked, "Do you know anything about cybersecurity?" and "If so, did you take a class or learn about it outside of the classroom?" Depending on their response, the follow-up question was "Would you want to pursue a career in it, and if so, what type of career?"

The research team conducted all interviews via Zoom, lasting 60 minutes, and they were audio-recorded and transcribed for analysis. Next, the team generated codes using Atlas.ti to label meaningful text segments, "hands-on opportunities," "ineffective learning," "structured guidance," "mentorship," and more. Code categories created, and two themes were identified. See Atlas.ti generated word cloud of word frequencies in Figure 1. We ensured that no identifying information was included in the analysis process.

Participants	Gender	Age	Race	Neurodivergence
P1	Male	25	Caucasian	ASD
P2	Male	27	Asian	ASD
P3	Male	25	African-American	ADHD
P4	Male	26	African-American	ADHD
P5	Female	22	African-American	ADHD
P6	Female	21	African-American	ADHD
P7	Male	24	African-American	ADHD
P8	Male	27	African-American	ADHD
P9	Male	22	African-American	ADHD
P10	Female	28	African-American	ASD
P11	Male	26	African-American	ADHD
P12	Male	27	African-American	ADHD
P13	Female	20	Asian	ASD
P14	Male	28	African-American	ADHD
P15	Male	30	African-American	ADHD
P16	Male	25	African-American	ADHD
P17	Female	28	African-American	ADHD
P18	Female	29	African-American	ASD
P19	Male	28	African-American	ASD
P20	Female	22	African-American	ADHD
P21	Male	26	African-American	ASD
P22	Male	29	African-American	ADHD
P23	Female	22	African-American	ADHD
P24	Female	23	African-American	ADHD
P25	Male	27	African-American	ASD
P26	Female	28	African-American	ASD
P27	Male	21	Caucasian	ADHD
P28	Male	25	African-American	ASD
P29	Female	25	African-American	ADHD
P30	Female	30	African-American	ADHD
P31	Male	26	African-American	ADHD
P32	Male	25	African-American	ADHD

TABLE 1. DEMOGRAPHIC CHARACTERISTICS OF PARTICIPANTS

4. Results and Discussions

Participants discussed their cybersecurity knowledge and their motivation to build a career in it, and the required tools and resources needed to learn and grow, in surveys and interviews. Of the 32 participants, 24 participants indicated interest in pursuing a career in cybersecurity, as recorded by their survey responses. 6 participants stated that they do not wish to pursue a career in cybersecurity, and 2 participants were undecided. See Table 2.

A majority of the participants expressed interest in pursuing a career in cybersecurity. Participant P7, a 24-year-old, African American male with ADHD, who enjoys playing games and is very detail-oriented, shares, *“I enjoy solving problems and analyzing systems, which makes me interested in being a penetration tester or working in threat detection.”* Similarly Participant P6, an African American female, 21 years old with ADHD, who enjoys watching videos and playing games as well, highlights a desire to deepen her knowledge of network protection and data security, states, *“I love to learn about protecting the network, how I configure systems and how to secure personal data.”*

Participant P8, a 27-year-old, African American male with ADHD, likes videos and enjoys breaking down complex problems and emphasizes whether assistance is needed for his learning preferences and cognitive abilities call for accommodations, he underscores the importance of technological tools in preventing cyberattacks and emphasizes a



Figure 1. Word Cloud

Participants	Cybersecurity Career Interest
P1	No
P2	No
P3	Yes
P4	No
P5	Yes
P6	Undecided
P7	Yes
P8	Yes
P9	Yes
P10	Yes
P11	Yes
P12	Yes
P13	No
P14	No
P15	Yes
P16	Yes
P17	Yes
P18	Yes
P19	Yes
P20	Yes
P21	Yes
P22	Yes
P23	Yes
P24	Yes
P25	Yes
P26	Yes
P27	No
P28	Yes
P29	Yes
P30	Yes
P31	Yes
P32	Undecided

TABLE 2. DEMOGRAPHIC CHARACTERISTICS OF PARTICIPANTS

commitment to public safety, *“I am also interested in the tech tools used to prevent cyberattacks and how I can help others stay safe online. I think these are my top priorities.”*

Participant P10, an African American woman with ASD, aged 28, who loves cooking and reality television, reinforced the appeal of analytical thinking and technical curiosity, remarking, *“I have an interest in pursuing a career in cybersecurity. enjoy solving problems, systems analysis, protective practices, and understanding how systems work.”*

An African American male participant with ADHD, Participant P9, who spends a significant amount of time on his phone and enjoys reading, speaks about his cybersecurity interest, *“I enjoy solving problems and analyzing systems, which makes me interested in being a penetration tester or working in threat detection.”*

Participant P30, a 30-year-old, African American female with ADHD, is highly detail-oriented and creative, asserts that, *“Cybersecurity involves critical thinking, problem-solving, and staying ahead of hackers, which keeps the work exciting and mentally engaging.”*

Participant P29, a 25-year-old, African American female with ADHD, dislikes cybersecurity, but does comment that she finds that *“Cybersecurity is a fascinating and rewarding field because it combines technology, problem-solving, and real-world impact.”*

Most participants acknowledge having some cybersecurity background, whether through formal education or personal exploration. They also discuss the various opportunities to deepen their knowledge in the field and consider whether they have an intrinsic interest in cybersecurity, regardless of the availability of learning opportunities. Participant P11, a 26-year-old, African American male with ADHD who enjoys watching and playing video games, explains cybersecurity as, *“The basics of cybersecurity, its confidentiality, kind of keeping data private, and you know, password management.”*

Participant P14, a 26-year-old, African American male with ASD, who plays video games and reads novels, finds, *“The idea of protecting data and systems from threats, and the constant challenge of staying ahead of cybercriminals is intriguing. I admire the problem-solving and technical skills needed to secure digital environments, and the importance it holds in our increasingly connected world.”*

Two themes, mentorship and hands-on opportunities were identified from the analyzed descriptive data based on their significant value. Participants expressed traditional training and lack of mentorship as barriers preventing the neurodivergent community from pursuing a cybersecurity career.

The first theme, mentorship, which has sub-themes, lack of guidance and lack of resources. This theme captures participants' emphasis on mentors as essential for improvement, guidance, and after-class support in their cybersecurity career paths.

The second theme is hands-on opportunities. Engagement strategies, financial barriers as well as lack of resources are identified as key sub-themes. This theme reflects participants' preference for practical, interactive, and visual

learning experiences, and their frustration with passive reading and lack of tools, labs, and simulations. Engagement strategies holds the highest importance as the neurodivergent community struggles with sensory processing, which can interfere with cognitive function by affecting how sensory information is perceived and interpreted. A majority of participants reported sensitivity to sights and sounds (19/32), thus contributing to anxiety, difficulty concentrating, and overstimulation.

4.1. Mentorship

In describing cybersecurity career readiness, mentorship came up repeatedly as a critical need. Several participants emphasize how the lack of mentorship can hold development back. As Participant P22, a 29-year-old, African American male graphic designer with ADHD who is a visual learner stated, *“Through mentorship, I can keep improving.”* Similarly, Participant 32, a 25-year-old, African American male with ADHD, prefers hands-on activities, shared, *“I could use more hands-on opportunities and mentorship.”* Participant P6, a 21-year-old, African American female with ADHD, likes watching videos and playing games. expressed, *“Mentors will really help me a lot.”*

Participant P8 explains, *“If I actually need it, I can have assistance, support, or accommodations. I think that would be after classes, where I think that's where I'll spend much of my time. And let me say that I don't have or get much of a mentorship kind of course, lectures, and professional guidance. I really want to know more, maybe in my kind of study or my career path, so I think I need much of the accommodations and assistance after class.”*

4.2. Hands-on Opportunities

Participant P32 agrees that mentorship is needed as well, but even hands-on learning is equally important. He states, *“I could use more hands-on opportunities and mentorship. The preferred ways participants process and engage with information is through visual, auditory, and kinesthetic learning, or rather, hands-on learning.”*

The incorporation of hands-on opportunities such as simulations and labs can help to enhance engagement strategies. Participant P3, a 25-year-old African American male with ADHD who prefers *“Hands-on activities like I said before, and learning through, you know, visual content like videos, no interactive apps, and simulations. So this actually helps me to stay focused and engaged, or like just reading text and everything. So this is my preferred method of learning.”*

Five participants (5/32) mentioned they struggled to retain information through passive learning, as most (15/32) identified as visual learners. For instance, many found that reading lengthy material without visual support for the text was not an effective way to learn. One participant explains, *“I think personally I would say passive reading, this is because I think it's very ineffective, especially when you're trying to grasp a new concept, and you're actively reading*

without necessarily understanding the information.” Sometimes, the text can be ambiguous, and participants may not understand its meaning.

Additionally, the lack of resources and financial barriers are not made so easily available to participants. Participant express concerns over the lack of access and costs. Participant P3 goes on to emphasize that, “*I feel like I’m missing some kind of hands-on tools or kind of access to labs where I can practice these skills. So I’m kind of missing those hands-on tools and yeah, access to those things. So, you know, more structured guidance would also help. But the thing is, some of these things are expensive, and that’s where the issue is.*” Participant P4, a 26-year-old African American male with ADHD, who is passionate about computers, particularly creating and posting content, shares, “*I think I have some basic tools. Let’s say my laptop and Internet access, but I need more resources like specialized software, access to online courses, and guidance on how to approach the subject. And I’ll definitely need a more structured kind of support to really drive into it.*”

Participant P18, a 29-year-old, African American female with ASD, likes exploring different paths in life, and solving puzzles, finds that hands-on learning is not entirely accessible, stating that “*Not entirely, but I think with more accessible tutorials and simulations, it will help, especially if they explain everything step by step.*”

5. Conclusion

The qualitative study highlights that the underrepresentation of neurodiversity in cybersecurity is not due to a lack of interest. It is because of the lack of mentorship and a kinesthetic toolbox. The interest is high, yet barriers remain.

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