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Being Kind to Diverse Minds: Creating a Neurodiverse Library Environment with Technology

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Libraries are often associated with the virtues of equal access, customer service, and equalization, but how true these virtues are in practice can be debatable. One of the core values of the American Library Association (ALA) is diversity, after all, which encapsulates "providing a full spectrum of resources and services to the communities we serve" (ALA, 2019). Though libraries have been historically accessibly minded institutions striving to serve their unique communities free of charge for the public, there are groups that have unfortunately been underrepresented in library considerations. One of these groups is those who are neurodivergent, including people on the autism spectrum and those with ADHD which can both be invisible disabilities. If libraries are to continue to provide exemplary service, they must remove systemic barriers to service, which can include adapting assistive technologies (AT) for people who are neurodivergent.

This project will therefore be presented as a review of existing technologies and theories for other, newer methods that demonstrate a potential to remove or mitigate the effects of systemic barriers for neurodiverse patrons. This topic is one that has been increasing in popularity lately and I hope that, with this brief review, more attention can be paid to the importance of neurodiversity in librarianship as a whole. As will be discussed in more detail later, technology has the potential to function as a uniquely comfortable assistive device for neurodivergent folk, much like how a wheelchair is used for someone with trouble walking or standing. Recommendations to improve library accessibility for neurodivergent folk will be noted, along with suggestions on how to implement them for maximum success. These

suggestions will be followed be recommendations for staff training and examples of nearby libraries currently engaging in this important work.

Definitions and Context

Neurodivergence is a nonmedical term that describes people with brains that either develop or work differently, for a variety of reasons (Cleveland Clinic, 2022). To be neurodivergent is the opposite of being neurotypical and presents many unique challenges when navigating a world built for neurotypicality. “Neurodivergent” is an umbrella term that can encapsulate a diverse group of people and disorders. For example, people who are neurodivergent are often given diagnoses like autism spectrum disorder (ASD), attention-deficit hyperactivity disorder (ADHD), down syndrome, dyscalculia, dyslexia, and Tourette syndrome, to name a few common conditions. Some conditions can be treated with medication, like stimulants for ADHD, to improve quality of life, but importantly, neurodivergence is not a problem to be fixed. Interestingly, only 50% of people with a neurodivergent condition are even aware of being neurodivergent or have gone undiagnosed for other reasons (Grainger & Grainger, 2021).

For this paper, I will be focusing on ASD and ADHD, as those are two of the most common conditions that I have the strongest personal connection to and wish to see better represented in library spaces and services. In 2020, 1 in 36 children were diagnosed with ASD (Centers for Disease Control and Prevention [CDC], 2020), and these numbers appear to be on the rise when compared to previous years. Despite this rising prevalence, in their current state, many libraries are unequipped to properly address barriers for people who are neurodivergent.

The Neurodiverse Landscape of LIS (Library and Information Science)

LIS is a cutting-edge field that is situated in the liminal space between both digital and physical spaces and resources. LIS professions, as a result, are often considering technological innovations by nature, as modern information can come in many forms. This unique situation positions LIS and libraries, specifically, in a place to adopt technology and alternative modes of communication quite readily and easily. Some scholars have further suggested that LIS is an appealing career for people who are neurodivergent (Anderson, 2018), but that there is a general lack of studies to determine the actual numbers (Everhart & Anderson, 2020). Anderson (2018) also notes that though there may be appeal in the profession for neurodivergent folk, many barriers to employment still exist that prevent them from achieving full-time status or working at a level that is appropriate for their competencies.

According to experts from the Cleveland Clinic (2022), many people who are neurodivergent excel at communicating in online spaces. This is because "nonverbal communication — such as eye contact, facial expressions, and body language — doesn't have to be a part of online interaction. Experts often compare computers and other digital devices to prosthetics for those with difficulties in social communication." It is therefore unsurprising that neurodivergent people tend to flock to information sciences, whether this is a conscious decision or not. If the theory above were to be implemented in libraries, an example could be offering text-based reference and reader's advisory services. In offering alternative modes of communication, the library would take the anxiety away from an interaction. With this idea in mind, technology's role is ever critical and when considered AT, which is what I argue in this paper, technology has the potential to increase the quality of service received and conducted by neurodivergent folk.

Technologies for ADHD

ADHD is just one of the increasingly prevalent disorders under the neurodivergent umbrella that is often characterized by absent-mindedness, impulsivity, and hyperactivity. It is estimated that 8.4% of children worldwide have ADHD, and for children, it can also often present as poor performance in school (Black & Hattingh, 2020). In children and adults alike, proper attention needs to be paid to something in order for learning to occur, which is one of the reasons why libraries, as information and learning institutions, need to pay careful attention to ADHD and other instances where focus is not adequate (Black & Hattingh, 2020). Many scholars have therefore suggested that AT be used to increase accessibility for people with ADHD in places like education, but I argue that these technologies could also be easily adapted to library spaces and practices.

Black and Hattingh, in their (2020) review of existing AT for children with ADHD in schools, note that there are five main criteria that AT should follow if it is to be useful. These criteria are also relevant for libraries and will be offered as a framework for useful technologies moving forward in this paper. Notably, Black & Hattingh (2020) assert that AT should be: easy and unobtrusive to wear, designed in a way that would not expose the child to stigmatization and bullying, relatively easy and non-frustrating to the child to set up, and any systems should account for ADHD behavior in and out of the classroom and deliver real-time, continuous feedback. For libraries, this means that any adopted AT should be easy, simple, and straightforward. Husain (2020) further notes that incorporating physical activities into tasks can improve symptoms of ADHD and keep children engaged in those activities. It is important to note, however, that much of the literature discusses children with ADHD, leaving adults somewhat out of the picture. Nonetheless, as far the library is concerned, adults would benefit

from many of the adapted technologies outside of those only present in children's programming-specific programming.

Black & Hattingh (2020) also note that in the literature, there are four main types of AT for ADHD: wearable technology, mobile applications, and computer-based gamification. Wearable technology is still in the experimental phases of development, but Black & Hattingh (2020) note the potential success of devices that bring children with ADHD back to focus. These wearable devices, in one study, would vibrate in intervals of 15 minutes to remind a child to stay focused or refocus their attention back to the task at hand in a school setting. Though there are no studies currently examining the application of this technology to libraries, offering these bracelets as a form of lendable technology could help people with ADHD to focus on their reading, which is often an issue for people with attention deficits. Importantly, the understated nature of these bracelets follows the five criteria mentioned above and would require little effort on the library's part for maintenance.

Though mobile applications may not seem as applicable to library initiatives and operations, libraries should consider how the accessibility of their online catalogues may incorporate mobile-friendly formats to help people with ADHD feel more comfortable. Similarly, the gamification – that is, developing activities into games on the computer or otherwise – of library programs offers an easy way to engage children with ADHD in learning activities. Finally, by transforming educational activities into games, the attention of children (and adults) can be more focused due to the reward mechanisms and the constant stream of stimuli. Having educational games available in the library, especially on library computers, therefore offers a promising alternative to more traditional ways of reading that still ensures that the content is being absorbed.

Technologies for ASD

ASD is a developmental disability caused by differences in brain development (Centers for Disease Control and Prevention (CDC), 2022), and in order to provide adequate service to people with ASD, libraries must be mindful of this. In her article, Gregory (2022) urges libraries to consider the raising rates of autism diagnosis by considering things like literacy programs for autistic children. She notes that, in general, there is a lack of training for people in MLIS programs on how to properly serve the neurodiverse, which is absolutely the case. Dimensions (2023) offers some helpful tips that library workers should be aware of, including having earplugs or headphones available at the desk, ensuring there is access to water, creating access to computers in a private area, consider reducing the lighting, and have autism-friendly signage. The signage aspect is particularly important, as uncertainty is a common cause of stress of people with ASD (Dimensions, 2023). With technology, having information available via signage could also mean having guides and maps available online that users could print out or save accordingly. These tips are particularly helpful because of their simplicity and easy implementation in library settings.

In terms of programming, autistic children have many of the same literacy needs as their neurotypical peers, meaning they can still benefit from things like Storytime programming (Gregory, 2022). To make it more accessible, Gregory (2022) suggests that dimming the lights and adding a sensory component to the Storytime – like scarves, feathers, and rubber bands – can be therapeutic and helpful for neurodiverse children. As mentioned previously, since many people with ASD find physical communication difficult, there must be emphasis on communicating with library users in alternative formats. In particular, Ringland and Wolf (2021) reflect upon the effectiveness of online gaming communities for crafting accessible social spaces

for people with ASD. Using a similar construction, libraries could host book clubs and community-focused programs online to increase accessibility of programming and community outreach more generally.

In their article, Everhart and Anderson (2020) draw attention to how autistic library users sometimes use the library as a place to escape from overwhelming sensory environments. A sensory-friendly library is therefore an incredibly important consideration. Wasser (2022) uses this idea to propose a few library activities to help with sensory issues including creating a library tour program to teach neurodivergent users how to use the spaces and services, installing a sensory wall, and a proposal for sensory friendly browsing hours, where lights and sounds would be dimmed to limit overwhelming stimulus. Though many of these suggestions are not "technology" in the traditional sense, they are human-developed 'solutions' that could drastically improve the quality of someone's library visit.

Today's Libraries

Some libraries, like the Halton Hills Public Library (HHPL), have already began to include sensory accommodations for neurodivergent folk. In 2022, the HHPL introduced their sensory collection, which consists of in-library use items that are intended to "reduce stress and anxiety, stimulate learning, and provide comfort during library visits" for neurodivergent people (HHPL, 2022). Importantly, anyone can take out the items in the collection, without judgement. The collection consists of "tactile and sensory items like fidget cubes, fidget spinners, liquid motion timers, fabric squares, press and stay blocks, picture communication cards, noise cancelling headphones, latex stretch foot bands, wiggle cushions, and weighted lap pads," which are all items that have been specifically designed by experts to make neurodivergent people feel more comfortable (HHPL, 2022). Along with an explanation of the collection, the HHPL's

website has a section explaining what neurodiversity is to reduce stigma, misinformation, and serve as an educational tool.

Many other libraries have also taken up the charge by having a sensory collection, including Halifax Public Library and Burlington Public Library. The Toronto Public Library (TPL) similarly provides access to resources on neurodivergence and even has a sensory room in one of its branches (TPL, 2023). On the website for this room, the TPL clearly identifies its many technological features including an image projector, fiber optic wall carpet, rainbow air tube, tactile elements, mirrors, magic circles, balancing equipment, gel floor tiles, soft seating, dimmable lights, and somacoustic cushions that amplify music vibrations to feel them in the body. At the bottom of the site, the TPL also provides resources about ASD and neurodiversity more generally. Though both of these examples are better suited to ASD, they provide helpful insights into how different technologies can be used in libraries to help users who are neurodivergent in a broader sense.

Staff Attitudes and Training

Finally, it is important to note that although technologies can be used in ways to assist neurodivergent folk, these technologies do little to address the stigma surrounding the use of assistive technologies more generally. Husain (2020), for example, points to the importance of empathy and emotional interactions when dealing with children with ADHD. Even if the identified technologies are adapted widespread, library staff are still often unequipped to serve neurodiverse library users free of judgement without proper training. In addition to Dimension's (2023) training toolkit, the *Autism-Ready Libraries Toolkit* (Annabi et al., 2022) was recently created with free online training modules for autism acceptance and inclusion, autism-inclusive customer service, and inclusive early literacy services. Though these are good first steps, there is

still ground that must be covered. Notably, these training modules are tailored specifically to youth librarians, meaning that adult populations are not yet considered. In fact, this child and youth centered bias is present in almost all LIS literature on autism, so it is unsurprising to find it here too. Child services are at the core of public library service, after all. Another drawback of this toolkit is that it is specifically discussing the treatment of autism, which though is important, does not offer applications to other kinds of neurodivergence despite being part of the larger Neurodiversity Initiative project. Therefore, in order to properly implement AT for neurodiversity, staff must be trained and emotionally equipped to deal with users with disabilities like ADHD and ASD.

Conclusion

Like physical disabilities, library users and staff with intellectual and developmental disabilities like ASD and ADHD can experience barriers to utilizing libraries and the services that they offer. Since these disabilities are often invisible, they tend to take a secondary focus in the minds of library staff. However, with this paper, I have argued that minimizing the effects of these barriers through staff training and AT is worthwhile and essential to a library's ability to provide equitable service. The technologies presented in this paper are innovative, easy to implement, and have virtually no drawbacks aside from situations where purchasing these technologies goes beyond the resources allotted to a library. Nonetheless, AT for invisible disabilities is an initiative that libraries are uniquely positioned to address, and by sharing these resources and technologies through lending services, libraries can minimize the pressure placed on neurodivergent people to express their needs and accommodate themselves. It is my belief that libraries can and should be mindful of how they can best serve their community, which

includes servicing people with disabilities like ASD and ADHD with dignity, respect, and an understanding of barriers to service.

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