WOW, THAT LOOKS LIKE ME! USING MIRRORS AND WINDOWS TO EXAMINE AUTISTIC REPRESENTATION IN CHILDREN'S PICTURE BOOKS

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ABSTRACT

Picture books, cherished in childhood, spark imagination and inspire young minds. Described by Bishop (1990) as both *windows* and *mirrors*, they provide children with glimpses into diverse worlds while reflecting their own experiences. This study investigates children's books' representation of autistic characters in terms of race/ethnicity, sex, and communication modality, and then further compares these characteristics to the current autistic population in the United States. A sample of 30 children's picture books, collected from a local library, featuring autistic main characters were analyzed. Through binomial tests, findings revealed statistically representative portrayals of all Races/Ethnicities, however there was limited representation in some groups. Additionally, there was an abundances of female characters and an limited representations of males, compared to U.S. prevalence rates. Communication modalities depicted in the books, such as spontaneous speech and augmentative and/or alternative communication devices, are further described. This investigation emphasizes the importance of accurate and inclusive representation of diverse racial and ethnic groups in children's literature, as well as the need for gender representation beyond binary categorization. The research highlights the necessity of prioritizing diversity and inclusivity within literature, especially considering the various communication modalities present in today's world. Ultimately, this investigation contributes to ongoing efforts to promote diversity, inclusion, and understanding in children's literature.

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INTRODUCTION

Picture books are a childhood item that inspires and sparks imagination. These books provide children a view into another world, and reflections of themselves. Bishop (1990) refers to picture books as *windows* and *mirrors* for children, offering them a glimpse into another individual's life and an echo of their own person. Picture books offer a valuable way of helping young children understand differences; these differences can include cultures, ethnicities, and disabilities, including autism (Azano et al., 2017). Children's books can provide a powerful tool that can be applied to educate children on how to be accepting, while also teaching a child that they are accepted. Kleekamp and Zapata (2019) discuss how a child's diagnosis, or label, can be presented in literature:

> These humanizing texts provide opportunities for children navigating these labels to see their experiences represented in books (a mirror). Simultaneously, children who are considered [neurotypical] can glean insight into the lives of characters who may experience the world in very different ways (a window). (p. 589)

Children need windows and mirrors, but research is needed to ensure there is a range of representation through the looking glass. The purpose of this project is to evaluate children's picture books about autism using the mirrors and windows framework, as proposed by Bishop (1990) and Kleekamp and Zapata (2019). The central focus is on representation within these books and how they reflect the diversity of the world and provide insights into the lives of children with autism. Specifically, this thesis will be investigating representation of autistic characters by their demographics and communication modalities.

Azano and colleagues (2017) discuss how educators in inclusive classrooms cannot always ensure neurotypical children are friendly and accepting of classmates with disabilities.

Research shows neurotypical individuals are less likely to interact with autistic individuals due to social presentation (Sasson et al., 2017). Specifically, autistic individuals, across all ages, report feeling lonely, detailing lower quality friendships, and struggling to form relationships with neurotypical peers (Hymas et al., 2022). Gilmore and Howard (2016) address how children's literature can promote inclusivity:

> Children's literature can potentially promote awareness of individual differences and similarities, acceptance of self and others, and information that counteracts ignorance, misperceptions, and stereotypes about disability. This awareness, acceptance and knowledge should ultimately contribute to greater understanding, empathy, and respect for diversity. (p. 218)

Children may struggle to grasp how society values them when the literature they encounter portrays them negatively or is has limited representation of different identities. Caregivers, clinicians, and educators should have an applicable way to teach differences and inclusivity. Caregivers, also referred to as care providers, are individuals responsible for the well-being, support, and nurturing of a child. This term encompasses a diverse range of individuals involved in a child's life, including parents, teachers, guardians, nannies, and other individuals who play a significant role in meeting the child's physical, emotional, and developmental needs. Children's books are one way we can promote inclusivity. In a 12-week experiment conducted by Balaz et al. (2022), preschoolers exposed to stories featuring autistic main characters demonstrated increased positive play and improved social interactions with their autistic peers. Educators noted that children referenced the books when engaging positively with peers, highlighting the potential of children's books as effective intervention tools for promoting acceptance and enhancing social behaviors among young children.

The researchers of this paper want to ensure they are using the most appropriate language when discussing the autistic population. Bottema-Beutel and colleagues (2021) describes any language that refers to those in disabled populations as inferior to those who are not disabled as ableist language. *Ableism* stems from oppression and is linked to all other forms of repression (sexism, racism, homophobia, etc); ableism has serious repercussions affecting the autistic population that can lead to assault, mental health crises, and limited employment opportunities (Botha et al., 2021; Bottema-Beutel et al., 2021). Neurotypical (NT) or non-autistic refers to individuals who do not meet the requirements for a diagnosis of autism and will be used in this study (Bottema-Beutel et al., 2021). Vivanti (2020) discusses how the self-advocates of the autistic community have been challenging person-first language and are pushing for identity-first language. Identity-first language calls for putting "autistic" before the individual, such as 'autistic person.' Many in the autistic community now argue that using person-first language contributes to ableism, because it separates an individual's autistic identity from oneself (Vivanti, 2020). There are several terms used in autism literature, including autism spectrum disorder (ASD), autistic, and person with autism; however, provided all the information above, the researcher will use identity-first language throughout this investigation. The prevalence of autism is continuously climbing over the years; therefore, we must also have a thorough understanding of autism (Baio et al., 2018; Hess, 2023; Kelley et al., 2015; Zablotsky et al., 2017).

Autism Spectrum Disorder

In these sections, the researcher will detail the diagnostic criteria for a clinical autism diagnosis. This section will then move on to examine the demographics of autism prevalence by gender/sex as well as by race/ethnicity. Finally, this section will look at modes of communication prevalent in autism, and current statistics reflecting communication usage.

According to the *Diagnostic and Statistical Manual of Mental Disorders: 5th Edition* (DSM-5), there are five diagnostic criteria for identifying autism spectrum disorder (ASD) (American Psychiatric Association, 2013). The first listed main criterion detailed in the DSM-5 is those who present with ASD will have persistent challenges in social interaction and social communication (American Psychiatric Association, 2013a, p. 50). The American Speech Language Hearing Association's (ASHA's) Practice Portal (n.d.-a) details impairments in social communication including difficulty in maintaining "joint attention, social reciprocity and social cognition" (ASHA, n.d.-a). These distinctions can be presented differently depending on the individual. Autistic individuals may be speaking, or non-speaking and their pattern of communication may differ compared to NT populations, and often leading to difficulty in maintaining social relationships with others (Johnson et al., 2007).

The second main criterion detailed in the DSM-5 is that those who present with autism will have restrictive, repetitive patterns of activities, interests, or behaviors. This could display as repetitive motor movements, such as hand flapping, and/or lining up toys (American Psychiatric Association, 2013). Autistic individuals' communication styles may also be restrictive or repetitive relative to NT communication styles. Communication differences common in autistic populations can include literalness of phrases, repetitive sounds/words, monotone voice, and/or echolalia (Beukelman & Mirenda, 2013). Cohn and colleagues (2022) add echolalia can also display as an individual copying another person's speech precisely; this can also be noted with songs, nursery rhymes, or videos. They further indicate, echolalia can be immediate or delayed. Immediate echolalia is when the verbal repetition is noted within two turns of conversation, while delayed echolalia occurs when the verbal repetition is noted after two turns of conversation post the initial verbalization being duplicated (Cohn et al., 2022). Cohn and colleagues (2022)

indicate that echolalia can serve a communicative function. Echolalia was initially labeled by many NT people as meaningless communication that serves no purpose; however, some individuals may use echolalia to seek information, comment, request items, or other communicative functions (Cohn et al., 2022).

The final three criteria from the DSM-5 are that the child's autistic behaviors are present during early development; that these challenges can lead to noticeable impairment in social, occupational, or other areas of functioning; and finally, although these disorders may co-occur, an intellectual disability cannot alone explain the observed behaviors (American Psychiatric Association, 2013).

The concepts of the neurodiversity movement state that neurodivergent individuals should be recognized and respected as natural variation in the human population rather than as a disorder that need to be normalized or cured. Therefore, reference to the neurodiversity movement is considered a social model in the sense that it reflects a particular perspective on the social and cultural understanding of neurological differences (McGee, 2007). The DSM-5 employs language in defining autistic traits that reflects ableism and a pathology-oriented approach. This intentional use of language focuses on the pathology, emphasizing the negative aspects of conditions, often neglecting, or portraying positive autistic traits as negative (Engelbrecht, 2021). Singer and colleagues (2022) discuss how in recent literature specific terms like those in the DSM-5, have been recommended to be avoided: such as deficit, inability, risk, symptoms, problem/challenge behavior.

According to Bottema-Beutel and colleagues (2021), when describing autistic individuals, they recommend to never use language referring to 'high or low functioning'. Instead, they recommend first referring to one's strengths and then, detailing the amount of

support required. Johnson and colleagues (2007) discuss that autism should be recognized by a primary care physician; however, their research suggests that only 8% of physicians routinely screen their clients for ASD (p. 1184). Both Johnson and colleagues (2007) and Snijder and collaborators (2022) suggest primary care providers (PCPs) as well as parents have a role in identifying when their child is not meeting developmental markers. Differences are usually noticed before the child's second birthday (Snijder et al., 2022). Primary care providers often refer parents to speech-language pathologists when a child is not speaking (Beverly & Mathews, 2021). Johnson and colleagues (2007) recommend collaboration among a team of autism experts for a definitive diagnosis. The National Institute of Mental Health (2023) suggests an interdisciplinary team, including developmental pediatricians, child psychologists, speech-language pathologists, and occupational therapists, working together to assess a child with suspected autism. Unfortunately, collaborative diagnoses may face challenges, leading to long waitlists in some areas (Johnson et al., 2007).

In this section, the criteria for an autism diagnosis were described. This section also discussed language used, as well as the importance of using a neurodiverse affirming dialectal. Finally, this section explained how professionals work as a team to create a diagnosis. The next section will analyze prevalence, and how this shapes the autism community.

Prevalence

Maenner and colleagues (2023) found that within the last 20 years, the prevalence of autism among eight-year-olds has grown from 1 in 150 individuals in the year 2000, to 1 in 44 individuals in 2018 (p. 2). The most current research reported from 2020, found 1 in 36 eight-year-olds had an autism diagnosis (Maenner, Warren, et al., 2023, pp. 2, 7). This is supported by Zablotsky and colleagues (2019) who reported from 2006 to 2017 there was an increase in the prevalence rate from 1.1% to 2.5% in US (United States) children aged 3-17 (Center for Disease Control, 2022, n.p.) as well as in Baio and colleagues (2018), who found from 2000 to 2014 the prevalence of autism at age 6 increased by 150% (p. 12). Although the statistics show autism rates are rising, it is important to understand whether this trend indeed reflects a true increase in autistic populations.

Researchers Matson and Kozlowski (2011), detail several researchers' explanations for this increasing autism prevalence. Although the diagnosis of autism was developed in the 1940s, the criteria for the diagnosis has expanded and developed over the years. Matson and Kozlowski (2011) examine the history of autism and its existence in the *Diagnostic and Statistical Manual of Mental Disorders.* They found that the diagnosis did not appear in the DSM until the 3rd edition, published in 1980. The diagnostic criteria were later modified to reflect research in 2000, when the 4th edition was published. Finally, in the most recent DSM-5*,* autism spectrum disorder became an umbrella term that covered Asperger's Disorder, Autistic Disorder, and Pervasive Developmental Disorder, Not Otherwise Specified (PDD-NOS; American Psychiatric Association, 2013; Harker & Stone, 2014). The DSM-5 also amended the diagnostic criteria to the details presented in the previous section to include the main two criteria of social communication deficits and RRB. The most recent edition expanded the age of onset to include

early childhood. Matson and Kozlowski (2011) state this progression of the diagnostic criteria has likely led to an increase in prevalence of clinical diagnosis. Therefore, the increased prevalence is likely not due to physical increase but due to changes in the identification process.

Matson and Kozlowski (2011) provide several other theories to potentially explain the increased levels of clinical diagnosis of autism. Different professionals such as psychiatrists, school psychologists, and neurologists can diagnose; however, these professionals may have differing experiences with autism. Thus, errors in diagnosis may be due to inaccurate labeling of intellectual and communication disorders; this leads to an increase of inaccurate diagnosis[1]. All these theories support the idea that autism diagnosis rates are rising. These increases are noticed in overall prevalence and specific occurrences across different demographics.

Sex and Gender

The DSM-5 specifies that an ASD diagnosis is four times more prevalent in males than females (American Psychiatric Association, 2013). Maenner and colleagues (2023) found that in 2020, 4% of boys and 1% of girls aged 8 were estimated to have autism (p. 1). Further research on autistic gender demographics come from Hess (2023) who states that autism among girls is currently at its highest, and the male to female ratio has decreased to 3.8 to 1. These statistics demonstrate prevalence rates in girls vs. boys are closer than ever before, but autism is still approximately 4 times more common in boys than in girls.

Dillon and colleagues (2021) examine potential causes for these statistics in diagnosis across sex assigned at birth. The article states one hypothesis, which speaks to potential clinical

[1] Matson & Kozlowski (2011) provide information on the speculations of environmental factors leading to an increase of autism diagnosis. These factors include use off the MMR vaccine, individuals being in catastrophic weather during pregnancy and toxins in the air. It is important to note, all of these potential causes have been debunked, or are not validated by research.

bias of diagnostic prevalence among males. The diagnostic criteria for autism were initially developed around limited samples of predominantly males. Therefore, diagnostic tools may be less likely to detect autistic behaviors in females. Furthermore, when females present with different indications of autism than the "typical profile," which was based on male samples, a misdiagnosis may be plausible. The researchers in this investigation postulate the increase of females with autism was due to increase in clinical diagnosis, not a decrease in male autistic populations (Dillon et al., 2021). Another potential explanation presented by Dillon and colleagues (2021) is females often *mask,* or hide, autism characteristics during evaluations. This sometimes-subconscious masking may be due to trying to appear more neurotypical, or because autistic behaviors do not align with societal values. This can lead to skewed statistics and variance in the presentation of autism when behaviors are hidden during evaluations. During Dillon and colleagues' (2021) investigation, they found that in females, parents reported fewer challenges related to autism, which may lead clinicians to provide an alternative diagnosis (such as a developmental delay). The study found when parents bring their initial concerns to a pediatrician, parents of males often reported speech and language delays, whereas parents of females reported more difficulty with motor control. All these theories reflect potential causes for the ratio in females to males to be 3.8:1 (Hess, 2023). These shifts in prevalence are noted in gender, but they can also be noted around changes in prevalence among different races and ethnicities.

Race and Ethnicity

Constantino and colleagues (2020) found that, when compared to white children, Black children autism diagnoses are, on average, provided 3 years later after initial differences are reported. Golson and colleagues (2022), found that Black and Latinx children with autism are

often misidentified, have poor access to services, and are frequently diagnosed at a later age than White children. Golson and colleagues (2022), state that disparities in autism identification may be due to "culture differences, implicit bias, and systematic racism" (p. 1424). Examples of implicit bias and systematic racism include having professionals that perpetuate stereotypes (implicit bias) or not having professionals who understand culture differences (systematic racism) when serving communities of cultures in which they lack education on expected differences from their own culture (Cohn et al., 2022). Cultural differences may be noticed in a variance of developmental milestones across diverse cultures, and this may also lead to a difference in time of diagnosis (Golson et al., 2022).

Nevison and Zahorodny (2019) examined the trends in race/ethnicity across the autistic community. This article discusses previous research stating that Black and Hispanic children often are diagnosed with autism that requires very substantial support or have a co-occurring disability. The authors state, "Hispanic and Black prevalence in the IDEA 3–5-year-old autism dataset has 'caught up' to and, in the case of Blacks [sic], surpassed white prevalence in the majority of states" (Nevison & Zahorodny, 2019, p. 4729). The researchers explain as these cultures begin to see autism numbers rise, it may be due to clinicians providing care to under-served populations. This may also be due to clinicians understanding criteria and providing diagnoses to those with decreased stereotypical deficits.

Over the last 15 years autism rates have increased dramatically with culture and societal factors influencing the identification and clinical diagnosis of autism across ethnicities and backgrounds (Matson & Kozlowski, 2011). Maenner and colleagues (2023) found that the autism prevalence increased by 30% from 2018 to 2020 in Asian, Black, and Hispanic children (p. 7). Further research found that although the prevalence of autism in white children was 14.6%

higher in 2020 than in 2018, there was a lower prevalence of autism in white children compared to other groups. Adding to this pattern of change, Hess (2023) states “for the first time, Black, Hispanic and Asian or Pacific Islander children show a higher prevalence than white children” (p. 2). Hess (2023) suggests this may be due to an elimination of some racial disparities in the identification process. Baio and associates (2018) state this could be due to minority communities finally getting the efficient outreach they deserve.

Modes of Communication - Augmentative and Alternative Communication

In LaRue and colleagues, (2016) it is estimated that 25-50% of children diagnosed with ASD are considered *nonspeaking*; individuals who do not develop any or intelligible speech. Other studies such as Rose and collaborators (2016) estimate closer to 25-35%, the authors also state that since researchers have different “definitions, measurements sample characteristics and age” of non-speaking autistic individuals it can be difficult to conclude a conclusive number. Autistic individuals who are non-speaking or minimally speaking often communicate using augmentative and alternative communication (AAC) systems. The term non-speaking was coined by AAC users as the previous term “non-verbal” assumed that AAC users did not understand spoken language, however spoken language is not the same thing as communication (Donaldson et al., 2023).

Currently, AAC devices are estimated to be utilized by over 2 million adults and children in the US. AAC is an umbrella term for alternate ways people communicate (ASHA, n.d.-b). ASHA (n.d.-c) describes several types of AAC that can be used. Some options do not use technology, such as writing, pointing to pictures, or using gestures to indicate speech and language. ASHA further describes alternative options that utilize technology, such as using a program on a tablet or iPad that can generate speech. Research shows that the use of AAC

devices does not hinder language development and will aid the development of overall language (ASHA, n.d-c).

According to Beukelman and Mirenda (2013), AAC supports literacy and communication skills and language development. These devices provide many advantages to speakers and listeners. They provide an individual with the ability to achieve all communicative functions (requests, negations, comments...etc.). Speech generating devices also "act as a readily understandable social bridge to both familiar and unfamiliar communicative partners" (p. 215). Further, speech generating devices increase communication efficiency by producing full sentences and individual words, to decrease miscommunication between partners.

In Brady et al. (2016), a revised version of the *Communication Bill of Rights* states, "All people with a disability of any extent or severity have a basic right to affect, through communication, the conditions of their existence" (p. 123). The listed 15 rights include the right to express opinions and comments, request items or food, and refuse any demand. Another essential right includes always having access to AAC. The bill also includes that any individual regardless of disability, has the right to be treated respectfully during conversations. Individuals also have a right to communicate so they can have positive social experiences with people and peers. Significantly, the bill states individuals with disabilities deserve to "interact socially, maintain social closeness, and build relationships" (Brady et al., 2016, p. 123). This includes autistic individuals, meaning it is within their rights to have positive social experiences and build connections regardless of their communication style or method.

Researchers may have considerable of knowledge when it comes to AAC devices, however when researching topics such as Autism and AAC it is important to consult 'the experts,' autistic individuals and AAC users. The article provided by Donaldson and colleagues

(2023) includes autistic authors and AAC users. This article is described as a tutorial for those new to AAC as it provides history, preferred terminology, and recommendations for professionals. These recommendations promote choice, access, and empowerment of AAC use, regardless of the child's speaking abilities. It emphasizes the importance of normalizing AAC use in classrooms, as well as encouraging different communication methods across various modalities. This has an overall goal of teaching the child to feel empowered in their communication (Donaldson et al., 2023).

Although autistic children have communication differences, this does not necessarily mean autistic children always want to limit their social interactions. In fact, autistic individuals often report great feelings of loneliness (Burgess & Turkstra, 2010). Unfortunately, NT adults and school-age children often perceive the differences in communication as negative and therefore are less willing to engage with individuals on the spectrum (Sasson et al., 2017). A promising way to increase acceptance and understanding of autistic individuals is educating youth on differences, and how to be accepting of social differences to help eliminate the loneliness barrier autistic individuals often report. First-graders have even reported they do not mind listening to interactions with an individual who uses a speech-generating device (Hyppa-Martin et al., 2016), but these children need exposure to fully understand the differences in social communication, and what alternative versions of communication can look like.

Bishop (1990) advocated the use of books as a tool for young adults and children to feel seen, with characters that mirror their own experiences in literature. Picture books function as a means for exposing children to unfamiliar situations and experiences in accordance with research findings. In a study conducted by Lian and colleagues (2020), the impact of teaching typically developing children using picture books about children with autism on their acceptance and

attitudes towards peers with autism was explored. The investigation assessed the attitudes of these children towards their peers with autism before and after the teaching, comparing the results with a control group. The findings revealed a significant improvement in the acceptance of children with autism among their peers in terms of basic understanding, emotional attitude, and behavioral tendencies (Lian et al., 2020). A key means for children to gain insight on different perspectives is by peering through 'windows.' As demonstrated by research, one effective way to open these windows is through the universal teaching tool of picture books.

Picture Books

In the previous section autism was described, as well as current prevalence across demographics. In this section the researcher will discuss the importance of picture books as an educational tool for young children. This section will also detail how the autistic community is portrayed in picture books, and how these books can be used to provide insight and acceptance of this community. This section will generally examine picture books as a mechanism to allow children across all communities, races/ethnicities, and abilities to see themselves reflected in stories as well as provide them insight into their peers' lives to gain understanding.

Why are they important?

Children use picture books to learn, grow, and understand the world around them. In a study conducted by Wagner (2013), a quantitative analysis was run on 100 picture books which provided a sample of a child's literature collection. The goal was to provide insight into common themes, narrative function, and/or how to categorize the books into coded groups. One example of the coding was analyzing the perspective in which the narration was told. Wagner (2013) stated that children "remember stories that [are] *properly structure[d]* better" (p. 2), meaning if a story is presented from a clear and concise perspective, it is more likely the child will remember

the message from that book. The study recommends that by creating a database such as this, researchers can identify different elements of picture books that allow a child to build a stronger overall understanding. Thus, picture books with an effective structure can help guide children towards accepting different social perspectives.

Bishop (1990) first introduced the idea that picture books provide children with *windows* and *mirrors*. Mirrors allow children to see themselves reflected and relate to the characters in the story. The mirrors in books can reflect a child's love, wonder, and hurt they experience in the world. Bishop (1990) discusses how people often read books in which they see themselves represented, potentially in a way society may not. She writes,

I once asked a ten-year-old Black girl who was an avid reader what kinds of things she like to read, and she replied, '*I like to read about strong Black girls.*' In other words, she wanted to see herself reflected in books (p. 12).

The article further states that children may feel unappreciated and lack empowerment if they are consistently exposed to literature that details them as harmful stereotypes or excludes them altogether. Researchers are starting to ask: how might children understand how others value them in society if their portrayal is negative or even non-existent in the literature they read?

As diversity continues to grow in education settings, so should the available literature be providing mirrors for these populations. Monoyiou and Symeonidou (2016) write that children must be educated in diversity, including equal rights, respect of others, and acceptance of all. Monoyiou and Symeonidou (2016) describe how "realistic representation" is needed throughout children's books. They state that character differences should represent all cultures, racial/ethnic groups, and explore the ideas of different social constructs such as race, gender, and identity expression. They further discuss how characters that are presented as part of a minority group are

often under-represented in literature or presented as stereotyped. Monoyiou and Symeonidou (2016) mention a previously conducted US study in which mixed race characters were mostly depicted in a negative way. If characters are often presented this way, it leads researchers to wonder what messages children are taking away from these stories and the types of literature that should be accurately representative of their world.

Bishop (1990) proposes that books can provide literal and mental illustrations of children that may be different than a child's own culture. She suggests if students from a dominant social group are only exposed to literature that reflects just them, their view of the world will be ethnocentric. Books provide students from a dominant social group with a *window* into a different culture than they are familiar with. This window allows children to peer into another individual's life and appreciate their perspectives and view of the world. Monoyiou and Symeonidou's (2016) study found two main themes while investigating diversity in Greek children's literature: (i) throughout the story a main character is usually accepted after an incident with characters from the dominant presented group, or (ii) often there is an identifiable group of dominant characters, and the other main characters belong with each other (within their community), but not with the dominant group. In one of the books analyzed, there was a little white fox who was stronger and braver than his siblings, and because of his beauty, the mother fox cares more about him. In this story the sibling foxes are marginalized, while the "other" fox is deemed perfect. This creates a false dichotomy where one group is inferior, and one has value. Researchers must critique how children's books depict individuals as "other," while further criticizing how inclusivity is portrayed in order to provide modern and appropriate models for children.

More specifically, Cameron and Rutland (2006) investigated the effects of children's literature containing a character with a disability on neurotypical children aged 5-10. They found that reading books advocating acceptance of diversity to children changed their attitudes positively. To eliminate divides in communities in children's books, such as those found in Monoyiou and Symeonidou (2016), researchers need to identify picture books that promote inclusivity. As Wagner (2013) suggested, further research needs to be conducted to expand and create new databases that apply to different populations. Diversity, including race, gender, and ability, must be reflected in children's books for them to have mirrors of their lives. Additionally, children need to learn acceptance of these differences; therefore, more windows must be provided to allow children to peer into the lives of others. One mentioned aspect of diversity is disability, which includes those with cognitive, intellectual, and educational differences, including autism.

Children's Picture Books about Autism

Sasson and colleagues (2017) stated that autistic individuals reported a desire for peer relationships, social relationships, and friendships. The authors further say these needs are currently unmet as autistic individuals report prominent levels of loneliness. Azano and colleagues (2017) also report children with autism struggle with social interactions and maintaining relationships. One way to address this is by encouraging educators to introduce and provide knowledge to NT developing peers about some differences autistic children may present and how they can help create a more accepting environment for their autistic peers. Azano and colleagues (2017) further state that although classrooms may offer an inclusive environment, it is challenging to ensure that non-disabled students will create relationships or accept those with disabilities. A valuable resource for care-providers, such as parents, teachers, and speech-

language pathologists, is picture books. Picture books are a common resource and provide windows and mirrors for children in the classroom. Azano and colleagues' (2017) research found, "These books convey the important message that while we may not understand all of the behaviors, emotions, and languages of children with autism, we should be open-minded and accepting of those who are different" (p. 9). Picture books have been shown to positively affect a child's thinking and understanding of the world around them (Cameron & Rutland, 2006).

Earlier in this research a study conducted by Balaz et al. (2022) was referenced in relation to the effectiveness of picture books about autistic individual used in classroom to promote social acceptance. Over 12-week period researchers read stories with an autistic main character to preschool aged students. The main character faces challenges with daily activities, including sensory challenges and socialization skills. Researchers observed the preschoolers' behavior and analyzed their engagement with their autistic peers to measure if there was an increase in positive social interaction and play, post intervention. The results demonstrated that positive play was increased across peers and the intervention impacted overall quality of the social/play between autistic and non-autistic peers. The study even notes "educators observed children referencing the books when engaging positively with a peer or encouraging others to do the same" (p. 1597). This study demonstrates that children's books can act as an intervention strategy to teach acceptance. When implementing this technique, it is important to analyze the content of the books being presented.

As previously mentioned, Bishop (1990) stated a need for *windows* and *mirrors*; as such, there has been a progression of what is needed for autistic individuals to be accurately represented reflecting the change in demographics and communication styles in the autistic community. Dyches et al. (2001) discusses the initial characterization of autism characterization

in children's books. 20 years ago, the world had just begun to see an increase in, "accessibility to buildings, programs, activities, transportation, communication tools, and employment; inclusion in schools and communities; and acceptance as a person first, who (secondarily) has a disability" (p. 230). However, person-first language can be viewed as perpetuating stigma in autistic communities because the use of this terminology implies there is a diagnosis identifying something medically wrong with the person (Botha et al., 2021; Vivanti, 2020). Therefore, many autistic individuals prefer "autistic person" as it recognizes autism as "expression of cultural diversity" (Vivanti, 2020, p. 691).

Dyches and colleagues (2001)performed a content analysis of 12 books containing characters with cognitive differences. They investigated characterization, personal characteristics, realistic depiction, positive portrayal, relationship among characters both neurotypical and neurodiverse, and if there was a victim, perpetrator, or protector. Dyches and colleagues (2001) analyzed 'characterization,' which investigated demographics of the characters in the selected picture books. These books only looked at characters diagnosed with a mental disability. Of the 12 books they analyzed, 9 books (82%) of the individuals with disabilities were male. Further, all the characters with a disability were white. All books analyzed were published before the year 2000.

In more recent research, Kleekamp and Zapata (2019) collaborated to create a list of criteria for educators, parents, and others when selecting books. In agreement with previously stated research, "These humanizing texts provide opportunities for children navigating these labels to see their experiences represented in books [a mirror]" (Kleekamp and Zapata, 2019 p. 589). Kleekamp and Zapata (2019) commented on how in literature a common negative theme is either "fixing" the character with a disability to have them appear more normal, or there is

redemption after bullying from a NT peer. Their research aimed to collect books that represent the character with a disability as "multidimensional" (p. 591). This includes viewing from whose perspective the story is told, and analyzing if the voice of the story is a voice of privilege. This research additionally analyzed how the readers are positioned to think and feel about the character with a disability, and what steps the author took to create and present authentic relationships throughout the story. This research only looked at a few specific books, but the themes can be generalized and compared to more literature containing autistic characters. One primary goal stated in the conclusion of this text was to generate and collect books that are representative of intersectionality of diverse categories or types, meaning books that tackle multiple diverse perspectives (race, gender, sexual orientation). This will overall provide more accurate representation of the current world to children.

As the autistic community continues to grow and recognizes a more diverse population, there is a need for greater representation of these populations in early educational literature. Autistic individuals self-reported a lower quality of life than their NT peers, scoring themselves particularly low for "peers include me in conversations" and "it is easy for me to communicate" (Burgess & Turkstra, 2010). We know from the DSM-5 that there are three levels of support for autistic individuals, and each has different support needs in social communication (American Psychiatric Association, 2013). LaRue et al. (2016) estimated that those who are nonverbal and implement AAC make up 25-50% of the autistic population (p. 32). These individuals need mirrors, to feel seen and represented in picture books. Meanwhile these books will provide windows so their peers can look through and understand why there is a need to create a more accepting environment. Picture books in early childhood settings provide these gateways for

children. We need a current content analysis to understand how representative the current existing and most accessible literature reflects current and accurate autism populations.

RESEARCH QUESTIONS

The purpose of this study is to evaluate children's picture books about autism through the lens of mirrors and windows (Bishop, 1990; Kleekamp & Zapata, 2019). Representation matters in children's books; when children read books, what do they see reflected back (mirrors), and what insights do they get into the lives of children who differ from themselves (windows)?

In other words: "This is the world; do picture books about autism accurately represent what the world looks like?" The current study will investigate the following questions: (1) How do children's books about autism portray autistic characters in terms of key demographic characteristics: race/ethnicity; sex/gender, and observed communication modality (speech or AAC)? (2) How do these characteristics compare to the current autistic population in the United States? It is predicted that there will be a high prevalence of white and male representation in the autistic characters. It is further hypothesized that augmentative and alternative communication will not be present in most of the books.

METHODS

Collection of Children's Books about Autism

In order to conduct this investigation, a sample of children's books was collected. This investigation utilized children's books about autism available in the Capital Area District Library (CADL) system in mid-Michigan. This library district consists of 13 different locations that cover Ingham County's 556 square miles and serve over 280,000 residents. Selecting this library and using their database yielded a representative sample of books that children, families, and educators had access to in an area that serves urban, suburban, and rural residents in mid-Michigan. An initial search for books was conducted on February 27, 2023. The researchers used the terms "autism" or "autistic" or "Asperger" or "Asperger's" + "toddlers" or "preschoolers" or "kids" when searching for literature. The books selected were fiction or non-fiction picture books. Chapter books and graphic novels were excluded. Overall, the search generated a list of 33 books. The researchers were unable to obtain Understanding Sam and Asperger Syndrome; it was not integrated into the results. Two more books, The Masterpiece and I See Things Differently, did not have an identifiable autistic main character; thus, they were not utilized for this specific research study. The remaining 30 books included one autistic main character. In the book "Benji, The Bad Day, And Me" (2018), the authors make it clear that Benji, is the only autistic main character from the writing in the story as well as in the author note at the end. Further, the character's name was in the title to draw attention to the fact that he was the main autistic character. The same for the stories with "A Friend for Henry" (2019) and "My Brother Charlie" (2010), the titles make it clear whom the main character is in these stories. These 30 books met criteria and will be used in this investigation. When comparing to US autistic population demographics, books featuring non-human characters will be excluded, as only

humans are included in those percentages. Appendix A shows all the CADL books and basic information.

Quantitative Content Analysis

This research study utilized quantitative content analysis based on the approach used by Wagner (2013). Ultimately the goal was identifying information that could be coded into quantitative values to generate a database of codes that will be analyzed to address the research questions. Although this coded dataset will continue to grow, for this specific study, an initial step of coding was to create codes that were as objective as possible. We return to the idea of subjective coding in the Discussion.

Codes for Key Demographic Characteristics

Appendix B presents all the codes used in this study. For this investigation, race/ethnicity was coded for the autistic main character present in the story. The coding system required raters to determine the character's race/ethnicity based on their best judgement, based on the text and illustrations in each book. The coding categories for this section were based on Aladé and colleagues (2021). The two codes of *o = other* & *i = irrelevant because not a human/humanoid character* were combined for consensus for characters such as animals, Muppets, or cartoon creatures.

Next, this study coded the characters' sex/gender. Researchers coded the characters as male, female, or another designation based on the text and illustrations in each book (e.g., explicit statements, gendered pronouns, physical presentation). For example, in the book *My Rainbow* the text explicitly states, "I am a transgender girl," and she/her pronouns were used. On the other hand, in the book *My Brother Charlie*, the use of the word "brother" and use of he/him/his pronouns led researchers to their determination of male.

The final coding component was analyzing the observed communication modality implemented by the autistic main character. The code required researchers to determine if an AAC system was implemented, and if so, what the system was. When analyzing spontaneous speech, characters were noted *yes* if there was evidence of verbal speech, such as a speech bubble, or quote of the character in text. If there was no explicit verbal speech included in the book, the character was marked *no,* in evidence of spontaneous speech. Though this was not a main research question, the researchers also broadly characterized the age group of the autistic characters (child vs. adult) to provide context for the other demographic features.

Coding Procedure and Inter-Coder Agreement

The coding team consisted of two student research assistants and two PhD level SLPs. Prior to coding for this study, the team underwent several rounds of pilot coding of books that were not included in the CADL sample. They coded independently and then compared codes and discussed any discrepancies. Codes were further refined based on these discussions. Once the codes were developed and refined, the coding team applied them to the CADL book sample. Each research assistant was paired with one of the PhD-SLPs. Coding was conducted independently by each pair, who discussed any discrepancies and updated codes accordingly. Following these discussions, the final codes from each pair were compared to determine agreement.

In this investigation, inter-coder agreement exceeded 90% for all codes. To address the research question of this investigation, the specific consensus for the utilized codes is as follows:

Table 1

Inter-Coder Agreement for Codes Relevant to the Study

Code	Agreement
From what point of view is the story told?	90.63%
If there is a first-person narrator, who is it?	96.88%
What is the autistic main character's race/ethnicity?	100%
Is the autistic main character female, male, or another sex or gender designation, or unclear?	100%
Does the story provide evidence that the autistic main character uses spoken immediate echolalia?	100%
Does the story provide evidence that the autistic main character uses spoken delayed echolalia?	100%
Does the story provide evidence that the autistic main character uses an AAC system?	100%

In this study, the agreement among coders regarding the relevant codes ranged from 90.63% to 100%., indicating strong consensus among the coding teams.

Analysis Plan

The first research question (How do children's books about autism portray autistic characters in terms of key demographic characteristics?) will be addressed by presenting descriptive statistics for each of the demographic characteristics. The second research question (How do these characteristics compare to the current autistic population in the United States?) will be addressed by comparing the findings from the CADL book sample to information from

Maenner and colleagues (2023), a study that analyzed the prevalence of autistic children, age 8, across 11 sites across the United States. This study utilized the *Autism and Developmental Disability Monitoring (ADDM) Network.* These statistics were developed by using the total denominator of autistic children divided based on individuals in a specific demographic collected in the sample. These analyses only included human autistic characters; non-human characters were removed to allow comparison to the U.S. population. Binomial tests were used to determine whether rates of representation in the CADL book sample significantly differ from population estimates (e.g., see Aladé et al., 2021). The CADL library, as stated previously, spans across 13 distinct locations, encompassing 556 square miles of Ingham County and catering to more than 280,000 residents. The goal was to provide a representative sample reflective of the demographic mix in mid-Michigan, which includes urban, suburban, and rural communities. Ingham County, Michigan, displays a diverse demographic profile. According to the U.S. Census Bureau's QuickFacts data, children under 5 years constitute 5.1% of the population, while those under 18 years comprise 19.2%. Additionally, individuals aged 65 and over make up 14.8%, with females constituting 51.0% of the total population (U.S. Census Bureau, 2023). The racial and ethnic composition includes 75.4% White alone, 12.6% Black or African American alone, 6.6% Asian alone, 0.6% American Indian and Alaska Native alone, 0.1% Native Hawaiian and Other Pacific Islander alone, and 4.6% Two or More Races. Furthermore, 8.3% of the population identifies as Hispanic or Latino (U.S. Census Bureau, 2023).

Table 2

Adapted from Maenner et al. (2023, Table 5) Prevalence of Race and Ethnicity in Autistic Sample

Race/Ethnicity	# of Autistic Children	% of Autistic Children
White (non-Hispanic)	2680	43.50%
Black (non-Hispanic)	1384	22.46%
Hispanic	1331	21.60%
Asian or Pacific Islander (non-Hispanic)	476	7.73%
American Indian/Alaska Native	29	0.50%
Two or more Races	261	04.24%

Note. The total number of autistic children (which was used as the denominator to determine percentages) for this demographic was n = 6161. Data on Middle Eastern Autistic populations was not collected by the ADDM (2023).

In 2020 the ADDM examined six Race/Ethnicity categories in 6161 autistic children (see Table 1). The next demographic of autistic individuals being examined is sex. Maenner and colleagues (2023), found across their surveyed sites that of all children aged 8, autistic males made up approximately 4.00% of the general population whereas autistic females made up 1.00% of the sampled population. The researchers in the investigation did not collect data on autistic individuals who identified with they/them pronouns. Table 2 details statistics regarding sex in autistic children found in 2020 from the ADDM.

Table 3

Adapted from Maenner et al. (2023, Table 5) Prevalence of Sex in Autistic Sample

Sex	# of Autistic Children	% of Autistic Children
Male	4894	79.59%
Female	1255	20.41%

Note. The total number of autistic children for this demographic was $n = 6149$.

The final demographic of characters that will be examined in this study is communication modality. As mentioned earlier, it is estimated that in the autistic population, 25-35% of individuals are nonspeaking (Rose et al., 2016). Although not specific to autism, ASHA (n.d.-d) collected data across the United States surveying communication modalities seen by special educators. The educators reported that 18.2% of students utilize alternative communication. Specifically, "6.9% use gestural modes, 6.5% employ pictorial supports, and 4.8% use a speech-generating device" (n.d.-d, para. 3). In this current study, we will be analyzing if any form of AAC systems is present in the stories.

Demographics of autistic children were presented in this section. The next step of this analysis is to run binominal tests with the ADDM collected demographics against the coded demographics collected by the researcher in the children's books containing an autistic character. The researchers will employ a statistical significance threshold of $\alpha = 0.05$. A p-value equal to or less than 0.05 indicates a significant difference between the observed and expected frequencies. The goal of this investigation is to see if the current existing autistic child-based literature is reflective of the current autistic child population. In the next section of this investigation, the results of this study will be detailed.

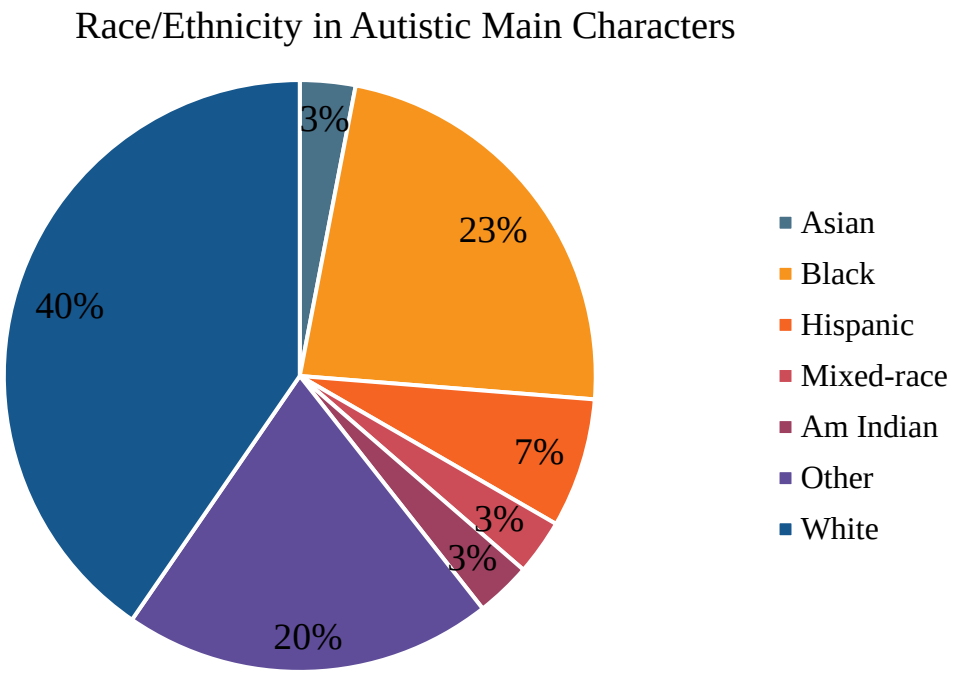
RESULTS

The first research question was: How do children's books about autism portray autistic characters in terms of key demographic characteristics?

Of the 30 books selected, the autistic main character was identified as American Indian or Alaska Native (n), or Asian, Southeast Asian, or Pacific Islander (a), or mixed-race/multi-racial (m) in only one book each (3%). For Black or African American (b), seven books (23%) featured a Black main character. For Hispanic, Latino, or Spanish origin (h), two books identified a Hispanic main character or 7% of total books. Twelve books (40%) were identified as having a White (w) autistic main character. The researchers identified six books (20%) as having autistic main characters who were non-human. Of the 30 books collected 6 books contained characters that were non-human, such as animals, or puppets. There was a code present for Middle Eastern (e) but there were no books identified (0%). See Figure 1 for an illustration of the race/ethnicity results.

Figure 1

Pie Chart of Race/Ethnicities Present in Each Book of the Collected Sample

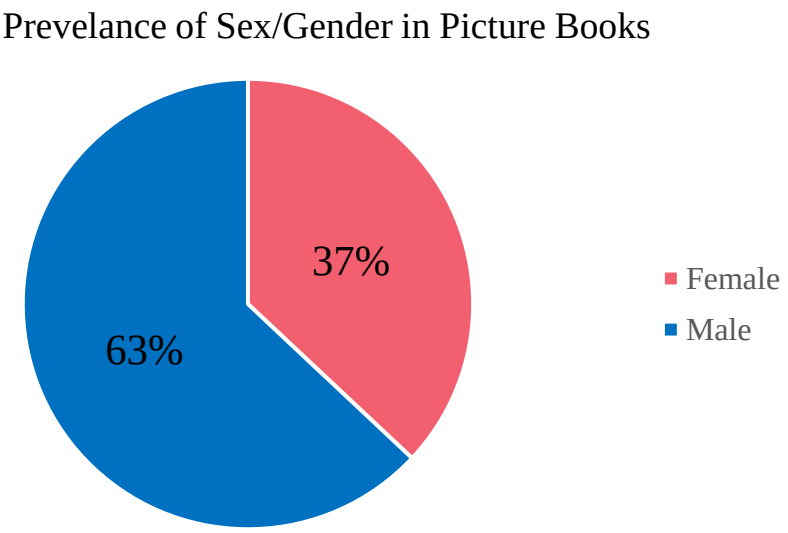


Note: This figure is representative of all 30 books collected. *Middle Eastern* was represented in 0% of the collected sample. *Other* refers to non-humanoid characters such as animals or puppets.

The next portion of this investigation identified the sex/gender of the autistic main characters. Of the 30 books, 19 (63.33%) books contained a male main character, and 11 (36.67%) contained a female main character. No books included characters who fit a designation of 'other', outside the binary labels. The data follows below:

Figure 2

Pie Chart of Sex/Gender Present in Each Book of the Collected Sample



To address the final component of the first research question the investigators examined the representation of communication modalities, encompassing both verbal expression and the utilization of AAC systems. Of the 30 total books, 20 included characters who used spontaneous speech to communicate, or 66.67% of the total collection. Ten books (33.33 %) included autistic main characters who did not use spontaneous speech to communicate. Of the 30 total books, 3 included characters who used some form of AAC, which is 10% of the total books. Below is a table describing what types of AAC were included in the books. It is also important to note that 2 out of the 3 books featuring AAC representation had autistic main characters who were non-human. We will revisit this point in the Discussion.

Table 4

Evidence of Augmentative and/or Alternative Communication in Picture Books

Book	Evidence	Type
Russell's World	Russell uses sign language for "eat", "drink" and "more".	Sign Language
Julia	Grid with 8 icons	High Tech Device
Talking is Not My Thing	Picture card to ask to use bathroom	Picture Exchange System

Note: American Sign Language does not follow spoken English word order.

When referring to AAC the term manual sign is often implemented. Manual sign refers to the one-to-one correspondence of spoken English combined with individual signs. Out of respect for the Deaf community manual sign systems is the preferred term when referring to using individuals' signs to supplement spoken English. (Beukelman & Mirenda, 2013)

In this next section, the second research question will be addressed: How do these characteristics compare to the current autistic population in the United States? The three factors examined are Race/Ethnicity, Sex, and communication modality, using a binomial test to interpret the data.

Race/Ethnicity Results

The results section presents the findings of the analysis conducted to investigate the representation of various racial and ethnic groups among autistic characters in picture books. Binomial tests were conducted to assess the significance of the observed frequencies of each racial and ethnic group. In order to align with statistical standards when comparing with the U.S. autistic population, non-human characters were excluded from the denominator of the book sample, leaving a remaining 24 books as the denominator.

Our findings revealed an observed frequency of 40% (12 books) featuring *White* characters, compared to an expected frequency of 43.50% based on demographic data. Two binomial tests were conducted to assess the significance of these findings. The first test evaluated the probability of observing fewer than 40% books, yielding a p-value of *.329* This suggests that the likelihood of encountering fewer than 12 books with *White* characters out of 24 books is $p = .329$, which is not significant. The second test assessed the probability of observing more than 40% (12 books), resulting in a p-value of *.802.* This indicates the likelihood of encountering more than 12 books with *White* characters out of 24 is $p = .802,$ which is also not significant. These results demonstrate that the proportion of *White* characters (.40) did not significantly differ from the expected proportion of .435, suggesting that White autistic characters were represented at a rate similar to the U.S. population.

The same binomial tests were conducted for each Ethnicity/Race. For *Black* characters the analysis revealed 7 books (23%) featuring characters of this group, compared to an expected frequency of 22.46%. The first test evaluated the likelihood of *Black* characters being underrepresented is $p = .644,$ which is non-significant. Conversely, the second test assessed the probability of observing over representation of *Black* in the sample, resulting in a p-value of $p = .525$, also non-significant. The results demonstrate that autistic *Black* character representation in picture books is similar to the current US demographics.

For *Hispanic* characters, the analysis revealed 2 books (7%) featuring autistic characters of this group, compared to an expected frequency of 21.60%. The first test evaluated the likelihood of *Hispanic* characters being underrepresented, resulting in a p-value of $p = 0.028$, which is statistically significant. The second test assessed the probability of observing overrepresentation of *Hispanic* characters in the sample, yielding a non-significant p-value of *p*

= 0.994. These results indicate that in our book sample, autistic *Hispanic* characters were significantly underrepresented compared to the U.S. autistic population.

For characters identified as *Asian or Pacific Islander,* the analysis revealed 1 book (3%) featuring autistic characters of this group, compared to an expected frequency of 7.73%. The first test assessed the likelihood of characters who were *Asian or Pacific Islander* being underrepresented, resulting in a non-significant p-value of $p = .314$. Similarly, the second test evaluated the probability of observing overrepresentation of characters who were *Asian or Pacific Islander* in the sample, also yielding a non-significant p-value of $p = 0.911$. These results found autistic *Asian or Pacific Islander* individuals in children's literature there was not a significant over or under representation of the current autistic U.S. representation.

For autistic characters identified as *American Indian/Alaska Native* in the literature the same binomial tests were conducted. The analysis revealed 1 book (3%) featuring a character of this group, compared to an expected frequency of 0.50%. The first test evaluated the likelihood of *American Indian/Alaska Native* characters being underrepresented is $p = .990$, which is non-significant. The second test assessed the probability of observing over representation of *American Indian/Alaska Native* in the sample, resulting in a p-value of $p = .140$, also non-significant.

Finally, for autistic characters identified as *Two or more races* in the literature the same binomial tests were conducted. The analysis revealed 1 book (3%) featuring characters of this group, compared to an expected frequency of 4.24%. The first test evaluated the likelihood of *Two or more races* characters being underrepresented is $p = .635$, which is non-significant. The second test assessed the probability of observing over representation of *Black* in the sample, resulting in a p-value of $p = .727$, also non-significant.

Below are detailed data tables showcasing the over and underrepresentation of Race/Ethnicity categories:

Table 5

Under Representation of Race/Ethnicity

Race/Ethnicity	% of Autistic Individuals in the US	# of Autistic Individuals in Book Sample	# of Autistic Individuals in Book Sample	*p*
White (non-Hispanic)	43.50%	50.00%	12	.802
Black (non-Hispanic)	22.46%	29.16%	7	.849
Hispanic	21.60%	8.33%	2	.083
Asian or Pacific Islander (non-Hispanic)	7.73%	4.16%	1	.437
American Indian/Alaska Native	0.50%	4.16%	1	.994
Two or more Races	4.24%	4.16%	1	.729

Table 6

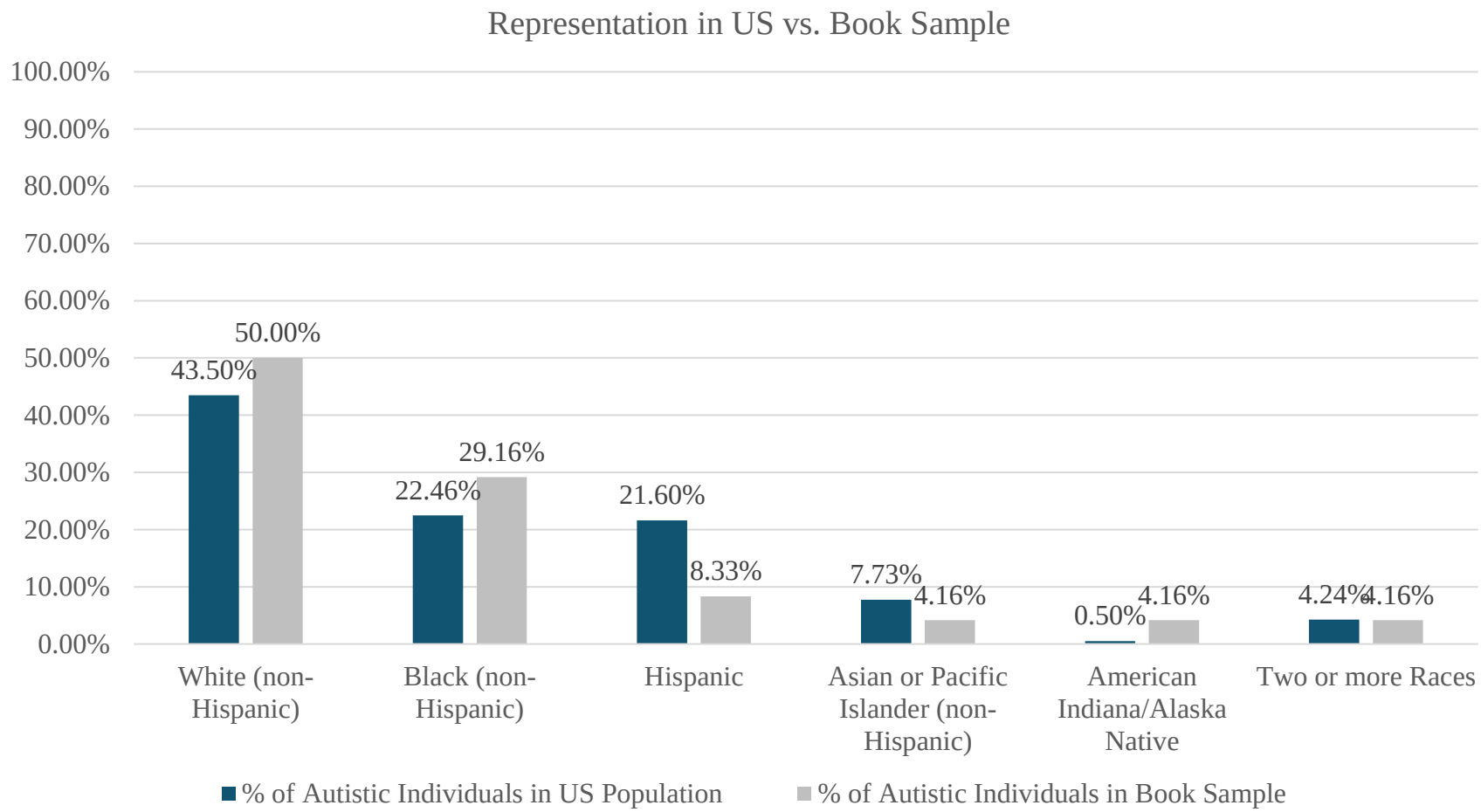
Over Representation of Race/Ethnicity

Race/Ethnicity	% of Autistic Individuals in the US	# of Autistic Individuals in Book Sample	# of Autistic Individuals in Book Sample	*p*
White (non-Hispanic)	43.50%	50.00%	12	.329
Black (non-Hispanic)	22.46%	29.16%	7	.283
Hispanic	21.60%	8.33%	2	.978
Asian or Pacific Islander (non-Hispanic)	07.73%	4.16%	1	.855
American Indian/Alaska Native	00.50%	4.16%	1	.113
Two or more Races	04.24%	4.16%	1	.646

Presented below is a visual representation in the form of a bar graph, aiming to illustrate the comparisons between Race/Ethnicity demographics in picture books and the autistic population:

Figure 3

Comparison of Representation of Race/Ethnicity



Sex and Gender Results

A binomial test was conducted to evaluate the significance of the observed frequencies of autistic individuals identified as *female or male* in picture books compared to the autistic US population. The analysis revealed that out of 30 books, 63.33% of books (19) included a male autistic character, which deviates from the expected frequency of 79.59% male autistic individuals in the US. The computed binomial test statistic yielded a p-value of $p = .024$. The results indicate that males were significantly underrepresented in this sample of picture books, compared to the U.S. population.

The analysis revealed that out of 30 books, 36.67% of books (11) exhibited a female character which deviates from the expected frequency of 20.41% female autistic individuals in the US. The computed binomial test statistic yielded a p-value of $p = .024$. With a significance threshold set at $\alpha = 0.05$, the results indicate that there is a significant difference between the female representation in picture books and the US populations. In particular, autistic female characters were prominent in our library sample.

Table 7

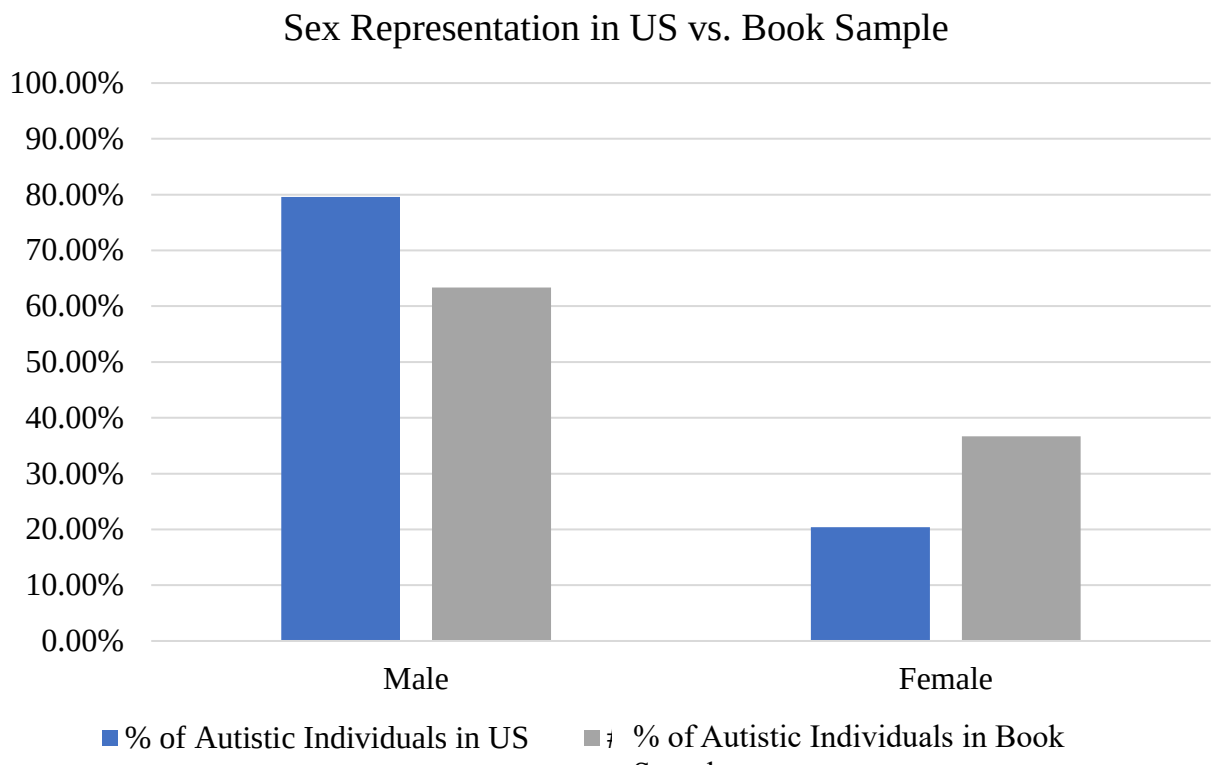
Representation of Sex in Sample Compared to US.

Sex	% of Autistic Individuals in the US	# of Autistic Individuals in Book Sample	# of Autistic Individuals in Book Sample	*p*
Male	79.58%	63.33%	19	.0236*
Female	20.41%	36.67%	11	.0236*

Here is a visual bar graph illustrating the comparisons of sex between picture books and the autistic population.

Figure 4

Comparison of Representation of Sex Compared to U.S.



Communication Modality

Next, we investigated communication modalities. The analysis revealed that out of 30 books, 66.67% of books (20) included a speaking autistic character. As mentioned previously Rose and colleagues (2016) found that 25-35% of individuals are non-speaking, suggesting that approximately 70% would be considered speaking individuals. A binomial test was conducted comparing the 66.67% representation in books to the 70% of speaking individuals in the autistic population. The first test evaluated the likelihood of speaking characters being underrepresented, resulting in a p-value of $p = 0.411$, which is not statistically significant. The second test assessed the probability of observing overrepresentation of speaking characters in the sample, yielding a non-significant p-value of $p = 0.730$.

To our knowledge, a valid measure of the prevalence of AAC in autistic populations is not currently available. The most relevant data recorded is special educator reports of AAC use in classrooms. According to ASHA (n.d.-d), data was gathered nationwide through surveys administered to special educators in the United States, revealing that 18.2% of students [in special education classrooms] utilize alternative communication methods (n.d.-d, para. 3). Three books contained evidence of AAC or 10% of the total sample. The researchers were unable to conduct a valid comparison to of AAC prevalence in books vs. the Autistic population, as the data does not exist for prevalence of AAC in the autistic population.

DISCUSSION

In the discussion section, the researcher will examine autistic characters' representation in children's picture books. This will focus on the portrayal of race/ethnicity, gender, and communication modalities within the autistic characters, comparing them to demographic data from the autistic US population. The aim is to determine the extent of diversity in these representations, providing insights into the depiction of the characters in the collected sample. These findings will contribute to understanding of how various demographics of autistic individuals are pictured in children's literature, identifying the gaps in diversity and the over/underrepresentation of various characteristics.

Focusing on the Capital Area District Library (CADL) as the source for book selection was a strategic decision to offer a diverse representation of literature available to children, families, and educators in mid-Michigan. CADL's collection likely reflects the socio-economic and cultural diversity of the region, spanning urban, suburban, and rural areas. In Ingham County, Michigan, males represent 49% and females account for 51.0% (U.S. Census Bureau, 2023, July 23). Racially, the population comprises 75.4% White, 12.6% Black or African American, 6.6% Asian, 0.6% American Indian and Alaska Native, 0.1% Native Hawaiian and Other Pacific Islander, and 4.6% Two or More Races, with 8.3% identifying as Hispanic or Latino. This deliberate choice ensures that the sample of books chosen mirrors the broad spectrum of literature accessible to individuals from various socio-demographic backgrounds within the community. This stresses the importance of recognizing and embracing diversity in literature and the readers it serves.

First, the results and implications of the race and ethnicity findings will be discussed. Starting with white autistic characters, the analysis revealed the representation of the book

sample (50%) aligns closely with the demographic data. This suggests that white autistic characters are portrayed in pictures books at a rate similar to their proportion in the general population. This finding was somewhat surprising because we had predicted that there would be a high prevalence of white autistic characters, potentially exceeding the prevalence in the U.S. autistic population (i.e., over-representation). While the white population is accurately represented. In the researcher's opinion, an ideal diverse world, there would be equal representation of all races and ethnicities. This observation emphasizes the need to continue ongoing research as the population statistics change over time.

Similarly, looking at Black autistic characters the book sample (29.16%) revealed to be closely aligned with the expected frequency based on demographic data (22.46%). Statistical results did not find significant evidence of underrepresentation or overrepresentation, suggesting that the portrayal of autistic Black character is reflective of the US autistic population. While these findings indicate a degree of equivalence in representation, it is essential to consider biases and systematic inequalities. Adding this point, Golson and colleagues (2022), identified a lack of diagnosis of autistic in Black populations as well as Asian and Latinx populations, suggesting biases and inequality in the evaluation process. Maenner and colleagues (2023) identified white individuals to have the highest prevalence; therefore, Golson and colleagues (2022), may be providing a potential explanation for the current demographics.

Examining the autistic characters identified Asian or Pacific Islander descent, American Indian/Alaska Native heritage, or two or more races the results did not reveal significant differences between representation in the library sample and the U.S. population. However, there was only one character identified in each of these demographics, accounting for just 4.16% of the sample in each case due to the smaller sample size of 24 books analyzed. Hispanic

representation only had two instances of autistic characters which is 8.33% of the sample. Thus, these few characters may not fully capture the diversity within these communities. Although the statistical tests did not reveal a significant difference compared to the U.S. autistic population, the limited presence of these characters indicates potential for more inclusive representation.

The lack of representation deprives children of these backgrounds their mirrors and does not allow for other children to peer through the windows of these children's lives. It is worth mentioning, however, that our sample only contained English books. It is possible (and perhaps likely) that children's books in other languages would include identified Hispanic, Asian or Pacific Islander descent, American Indian/Alaska Native heritage, or Two or more races' characters at a higher rate than English-only books. Additionally, our coding did not identify any autistic characters that were Middle Eastern. In the ADDM data there was no data present for autistic individuals of Middle Eastern decent (Maenner et al. 2023). Interestingly in a similar study analyzing representation of demographics in STEM television shows, there was no characters identified as Middle Eastern (Aladé et al., 2021).

The minimal representation in groups such as Hispanic, Asian or Pacific Islander, Native American, and Multi-racial, and the absence of Middle Eastern characters speaks to a lack of diversity and inclusivity present in this sample. As a result, autistic children from these backgrounds may struggle when looking for relatable characters. Further as Bishop (1990) warns, if children from dominant social groups only see reflections of themselves… "they grow up with an exaggerated view of their importance and value in the world – a dangerous ethnocentrism" (Bishop, 1990, pg. 15). This means that when children have limited access to diverse windows, they may misunderstand or misinterpret the world around them by developing an inflated view of their own importance in it. Addressing this underrepresentation is crucial for

promoting diversity and providing all children, regardless of their racial or ethnic background, with literature that accurately reflects them and the world around them.

Another finding was that non-human characters, which encompassed characters such as puppets, animals, constituted 20% of the sample (a total of 6 characters). Children may certainly relate to non-human characters, which are common in children's books overall. However, in a study completed by Larsen and colleagues (2018), they found that children engaged in more prosocial behavior with after engaging in books with human characters. In this study, children were given stickers to share before and after reading different types of books—some featuring humans, others anthropomorphic animals. In the study, the researchers examined sticker sharing in children who were read books with non-human characters, compared to those read books with human characters. Those who read about humans exhibited more generosity afterward, revealing a link between narrative content and heightened prosocial behavior in children. The article states when children are exposed to stories that are closer to their reality, they may be more likely to transfer that information to the real world. Therefore, it should be considered how much non-human characters are used when attempting to communicate differences to children. When choosing literature to educate children about disabilities, it is essential to analyze the characters and ensure they accurately reflect (mirror) children's experiences, making the material more relatable to them.

Let us now shift our focus to a broader examination of overall sex/gender representation and implications. Surprisingly, males were identified as underrepresented, compared to the prevalence of males in the U.S. autistic population. This finding differs from the hypothesis which solely focused on the prevalence of white male characters. Although white males emerged as the most prevalent demographic, the sample did not exhibit the expected overabundance of

male characters. Instead, the results indicated that the proportion of female autistic characters in the library sample was significantly higher than the proportion of autistic girls in the U.S. population sample. Dillon and colleagues (2021) had stated, due to traditional diagnostic criteria, rooted in stereotypes of autistic males, there may be an inaccurate ratio diagnosis between male and females. Given this uncertainty, there appears to be a pressing need for increased representation of women to bridge these gaps. Further, since there was a well-balanced representation of male and female characters it brings a sense of equality the author of this paper was searching for throughout this investigation.

An interesting note about women in the book sample is the multiple representations of Dr. Temple Grandin. Dr. Temple Grandin is an autistic woman. She is known for revolutionary inventions used in livestock handling facilities (American Humane, n.d.). In our sample there are two books about her, “How to Build a Hug” (2018) and “The Girl Who Thought in Pictures: The Story of Dr. Temple Grandin” (2017). Dr. Temple Grandin is a white woman, and 6% of the sample was a specifically about her. That is higher representation, in terms of absolute numbers, than each demographic of Asian/Southeast Asian or Pacific Islander, American Indian or Alaska Native, Middle Eastern, and Multi-Race/Mixed Race. It is important to have representation of autistic women, in part to encourage more women to feel able to express themselves and limit the amount of masking they may do in their day to day lives. However, it is also important to consider autistic women within demographics where only male representation was included. These autistic girls may also search for their mirrors to reflect themselves beyond figures such as Dr. Temple Grandin.

Next looking at another representation of women in books, one of the books identified is called “My Rainbow” authored by Trinity and DeShanna Neal, a Black mother-daughter duo

who advocate for gender expression rights for all children. In the story a transgender girl is frustrated by her short hair, which she wants to fully express her gender. With unwavering support from her mother, she is empowered to embrace her true self as her mother crafts a rainbow wig, allowing her to authentically express her identity. This narrative sheds light on a demographic often overlooked in children's literature: those exploring gender identities beyond the traditional male and female labels. In the data collected from Maenner and colleagues (2023), only sex of male and female were recorded. This unique book offers invaluable insights into a previously underrepresented group, enriching the diversity of stories available to young readers.

Though it was not one of the primary research questions, it is also important to consider how sex/gender is depicted within each racial/ethnic group. Looking at white characters, seven out of 12 were male, aligning with our hypothesis and establishing white males as the most prevalent demographic in the sample. Five of the 12 white characters were female. Next, examining Black characters, the majority were male, with five of the Black characters being male compared to the two females identified.

A unique pattern observed in the analysis is that autistic characters from Hispanic/Latino/Spanish Origin (2), Asian/Southeast Asian or Pacific Islander (1), American Indian or Alaska Native (1), and Multi-Race/Mixed Race (1) backgrounds were exclusively male. This limited representation of sex/gender and race/ethnicity intersectionality raises important questions about representation in children's literature about autism. Just as Bishop (1990) started the conversation, it prompts reflection on whether underlying stereotypes or biases contribute to this pattern and how it impacts the diversity and inclusivity of the literature. Similarly, Gilmore and Howard (2016) stated that children's literature has the power to promote acceptance, understanding, and respect for diversity by highlighting individual differences and

similarities, challenging stereotypes about disabilities, and promoting compassion. The exclusive portrayal of male characters from these backgrounds may limit the representation of diverse experiences and perspectives within the autism community. Girls from Hispanic/Latino/Spanish Origin, Asian/Southeast Asian or Pacific Islander, American Indian or Alaska Native, and Multi-Race/Mixed Race backgrounds may have a difficult time finding book with autistic characters who mirror their own identities in both gender and ethnicity, potentially leading them to draw a disheartening conclusion regarding representation and inclusivity.

The final demographic of the research question is analyzing the representation of communication modality observed in each book. First, we will examine how spoken language is presented in the literature. In the library sample, two-thirds of the books included characters that produced spontaneous speech. This aligns closely with the current statistics we have about autistic individuals who are considered “speaking” individuals. We also examined AAC usage in autistic characters. Although we were unable to locate prevalence data about how many autistic individuals utilize AAC (which prevented us from conducting a statistical analysis), we were able to consider the findings in terms of absolute numbers.

As hypothesized, AAC was absent from most of the books. The study revealed it was present in three instances. The first instance was in “Russell's World: A Story for Kids About Autism” (2011), where Russell’s parents say they taught him sign language for requesting. The second book was “Julia” (2022) where she was observed to have a high-tech device with a grid of icons to use to communicate. Finally, “Talking is not my thing” (2020) included use of a picture exchange system, when the autistic main character used a picture card to indicate she needed to go to the bathroom. When the creators of these books have varied models of

communication, it creates a more inclusive representation of autism communication modalities in books.

The researcher of this investigation wants to note that in “Julia” (2022) and “Talking Is Not My Thing” (2020), both characters were non-human. In “Talking Is Not My Thing” (2020) the text explicitly says the character does not speak, it does say they try to use their use but “the words don’t come out right” (p. 6). In “Julia” (2022) we do not see the character use her AAC device pragmatically. The book also does not state if she used verbal speech in combination with AAC use. In the general population autistic individuals may use multiple modes of communication which could include speaking and AAC use. As state previously, it is hypothesized that children have a more difficult time relating to stories that are not portraying real human inter-actions. Therefore having 2 of the 3 instances of AAC be presented by non-human characters, it raises questions about how well these presentations of AAC will provide authentic windows for children engages in these stories.

Further, the depictions of AAC systems in these books were limited. As discussed, the *Communication Bill of Rights* emphasizes the rights of individuals who utilize AAC to be able to interact socially with peers, express opinions, comment, as well as make requests/refusals (Brady et al., 2016). In both “Russell’s World” and “Talking is Not My Thing” both instances of AAC were used for only requesting, pragmatic functions going beyond requesting, with functions such as commenting or protesting are not depicted. ″Julia” was pictured alongside a high-tech device as described earlier, but she was not shown to use it in any pragmatic contexts in the book. Though high-tech devices have flexibility with adding a larger number of icons, in *Julia,* there were only eight icons present. As discussed by AssistiveWare Technology (which creates many versions of AAC software on high-tech devices), having more icons per grid results in a more

robust communication system for many individuals. They suggest having more icons (when appropriate for the target client) encourages participation and supports the individuals' communication abilities. Functional high-tech AAC that is in alignment with the *Communication Bill of Rights,* would meet the individual needs and abilities, such as in "A Day with No Words" (Hammond, 2023), which will be discussed later.

As stated by Bishop, (1990) children need mirrors (to feel seen) and windows (to understand others). As educators, researchers, and speech-language pathologists, "our challenge comes because statistics indicate by next year, thirty percent of the school population today are members of so-called minority groups – parallel cultures composed of people of color mainly Latinos (the fastest growing population group), Asian- Americans, Afro-Americans, and where will they find their mirrors" (Bishop, 1990 p. 12). This was in 1990. More recent statistics state from 2009 to 2020, nationally in public schools, the percentage of students who were white decreased from 54% to 46%, the percentage of students who were Hispanic increased from 22% to 28%, and the current 2020 statistic of students who were Black was 15% (National Center for Education Statistics, 2023). Additionally, as Maenner and colleagues (2023) found, the prevalence of autistic individuals of color is also increasing. The prevalence of AAC use is also rising among autistic individuals. As the demographics of classrooms and society change, so should the demographics of individuals represented in their school's literature.

Since this study, several books about autism have been added to the CADL library, the local public library system in the greater Lansing area. One noteworthy addition is "A Day with No Words" (2023) by Tiffany Hammond. This book stands out to researchers as it provides details and illustrations of high-tech AAC being utilized for various communication purposes. What makes "A Day with No Words" particularly unique is that it is authored by an autistic

individual and centers around her non-speaking Black autistic son. This work is refreshing to researchers as it represents not only racial diversity, but also showcases AAC in everyday use, thereby offering a multifaceted perspective on autism.

In addition to its primary findings regarding autistic representation in children's books, this study has some methodological implications as well. Wagner (2013) detailed the importance of conducting quantitative content analyses of children books. By assigning numerical values to the individual elements in the stories, that can more easily be compared and rated. In order to ensure we had accurate values for each code, inter-coder agreement was used. In all instances the coders reached a higher than 90% agreement; in many instances, agreement was 100%. This high level of agreement suggests that the way the characters are perceived by the collected researchers is likely to be representative of the views of the general population. This high agreement also shows it is possible to continue this process of identifying specific demographics in books. These findings are encouraging as future studies may include bigger samples, which couple mean a larger collection of books or a collaboration of library systems.

LIMITATIONS AND FUTURE RESEARCH

The study's design comes with its own set of constraints that form some limitations of our findings. First, the study was limited to books that were published and available at the start of this study. This is only a small portion of the potential sample of “all books picture books about autism.” Another thing to consider is since this project focused on the Lansing area, the findings may not generalize to other library systems in the U.S. There is potential that other library systems may have different books offering diverse viewpoints. Further, since all the books analyzed were in English, there is a risk of language bias, possibly excluding important contributions from non-English literature. As discussed, regarding “My Rainbow,” there was additionally a limitation of gender representation. Relatedly, Maenner and colleagues (2023) only had data collection for autistic individuals identifying as male or female. There was not specific data on any other gender representation such as those who identify as non-binary and may utilize pronouns like "they/them." There are currently limited studies of gender diversity in autism and there is currently no data reflecting current statistics of gender identity. These limitations highlight areas where future research can step in to fill these gaps in knowledge and representation.

This research paves the way for future research aimed at growing our understanding of autism representation in literature. Further studies could focus on analyzing the portrayal of autistic behaviors, examining whether they are depicted through positive or negative stereotypes. This could involve observational studies or qualitative analyses to explore how autistic behaviors are presented in various forms of media and literature.

Additionally, future investigations could examine the language used in literature related to autism to determine whether it tends to convey positive or negative perceptions. Examining

the text would provide insight on the portrayal of autism and its impact on societal attitudes towards neurodiversity. Additionally, exploring the representation of autism authored by autistic individuals is being called for. Just as in research it is recommended to collaborate with autistic individuals when tailoring research (Donaldson et al., 2023). Assessing the authenticity of narratives presented in literature written by autistic authors could provide valuable insights into the lived experiences of autistic individuals. By pursuing these research directions, scholars can advance our understanding of autism representation in literature, contributing to a more thorough understanding of how behaviors, language, and authorship shape societal perceptions of autism.

CONCLUSION

This research aimed to answer two main research questions; (1) How do children's books about autism portray autistic characters in terms of key demographic characteristics: race/ethnicity; sex/gender, and observed communication modality (speech or AAC)? (2) How do these characteristics compare to the current autistic population in the United States? Throughout the exploration, it became clear that children's books can serve as an educational tool for understanding autism amongst young readers, while also providing reflections for autistic children to feel included. The analysis of demographics within the collected sample revealed various degrees of representation, demonstrating progress in areas such as gender inclusivity, and areas for improvement in promoting diversity and inclusion. Comparing the collected demographics to the real-world statistics, the research sheds light on discrepancies and highlights the importance of authentic representation in children's literature. Ultimately, this study aims to continue the conversation of how to make children's literature more inclusive of the entire autistic population. It emphasizes the importance of providing *windows* for NT children to foster understanding and gain empathy, while calling for more *mirrors*, allowing autistic children to see reflections of themselves and leaving these readers saying, "Wow, that looks like me".

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APPENDIX A - Capital Area District Library - Book List

Note: 33 total books

Title	**Author: Last Name**	**Author: First Name**	**Year**	**Illustrator: Last Name**	**Illustrator: First Name**	**Publisher**
Understanding Sam and Asperger's Syndome	Van Niekerk	Clarabelle	2008			Skeezel Press
Janine	Cocca-Leffler	Maryann	2015	Cocca-Leffler	Maryann	Albert Whitman & Company
Uniquely Wired	Cook	Julia	2019	DuFalla	Anita	Boys Town Press
Charlie makes a splash!	Peete	Holly Robinson	2022	Evans	Shane W.	Scholastic Press
My brother Charlie	Peete	Holly Robinson	2010	Evans	Shane	Scholastic Press
A friend for Henry	Bailey	Jenn	2019	Song	Mika	Chronicle Books
My Friend Has Autism	Doering	Amanda	2020	Sorra	Kristin Caraan	Picture Window Books
Ian's Walk	Lears	Lauria	1998	Ritz	Karen	Albert Whitman & Company
Looking after Louis	Ely	Lesley	2004	Dunbar	Polly	Albert Whitman & Company
Waiting for Benjamin	Altman	Alexandria	2008	Keeter	Susan	Albert Whitman
Russell's World	Amenta	Charles	2011	Pollak	Monika	Magination Press
Armond goes to a party	Carlson	Nancy	2014	Isaak	Armond	Free Spirit Punlishing
All my stripes	Rudolph	Sofia	2015	Zivion	Jennifer	Magination Press
Why Johnny doesn't flap	Morton	Clay	2015	Merry	Alex	Jessica Kingsley Publishers

We're amazing 1, 2, 3!	Kimmelman	Leslie	2017	Nelson	Marybeth	Sesame Workshop
The Girl Who Thought in Pictures	Mosca	Julia Finley	2017	Rieley	Daniel	The Innovation Press
Benji, the bad day, and me	Pla	Sally	2018	Min	Ken	Lee & Low Books
Handprints, snowflakes and playdates	Bronstein	Christine	2018	Young	Karen	Nothing but The Truth Publishing
How to Build a Hug	Gugliemo	Amy	2018	Potter	Giselle	Atheneum Books for Young Readers
Caillou meets sophie	Thompson	Kim	2019	Allard	Mario	Caillou; Special edition
The masterpiece	Miletsky	Jason l.	2019	Peres	Luis	New Paige Press
Too Sticky!	Malia	Jen	2020	Lew-Vriethofff	Joanne	Albert Whitman & Company
Me and my sister	Robbins	Rose	2020	Robbins	Rose	Eerdmans Books for Young Readers
Talking is not my thing	Robbins	Rose	2020			Eerdmans Books
My rainbow	Neal	Trinity	2020	Twink	Art	Kokila
Juan has the jitters	Cruz	Aneta	2020	Yamamoto	Miki	North Atlantic Books
Daniel and Max play together	Rosenfield-Kass	Amy	2021	Fruchter	Jason	Simon Spotlight
Thunder and the noise storms	Ansloos	Jeffery Paul	2021	Pawish-Steckley	Joshua Mangeshig	Annick Press
It was supposed to be sunny	Cotterill	Samantha	2021	Cotterill	Samantha	Dial Books

I See Things Differently: A First Look at Autism	Thomas	Pat	2021			Wayland
The right move	Powe	Jason	2022			Pawprints Publishing
Julia	Posner-Sanchez	Andrea	2022	House	Random	Random House Books for Young Readers
Thomas and Bruno	Webster	Christy	2023	House	Random	Random House

APPENDIX B – Questions for Coding

- Title
- Author: Last Name
- Author: First Name
- Illustrator: Last Name
- Illustrator: First Name
- Does the title of the story mention any terminology related to autism? Include things like subtitle, special series name, stamp on front cover.
    - If yes, what terminology related to autism is used in the title? (autism, autism spectrum disorder, ASD, spectrum, on the spectrum, autistic, Asperger's)
- Are there any dedication/s, notes, recommendations, questions, and/or resources before and/or after the story, and/or on the book (flaps or back cover)? Don't include the excerpts of book reviews. Back cover book synopses? AUTHOR BIO ONLY? PUBLICATION PAGE ONLY?
- Do the notes mention any terminology related to autism?
- Is there one autistic main character?
- From what point of view is the story told?
    - (first person = I, we; OR third person = he/she/they). Choose one of these; do not need to mention 2nd person.
- If there is a first-person narrator, who is it? (autistic character or NT character)
- Does the text of the story mention any terminology related to autism? (Yes or No; if Yes, go to Terminology codes sheet to list all, exhaustively)

- "What is the autistic main character's race/ethnicity? (IF YOU HAD TO PICK) *IF NO SINGLE AUTISTIC MAIN CHARACTER, PUT NA
    - w = White
    - b = Black or African American
    - a = Asian, Southeast Asian, or Pacific Islander
    - h = Hispanic, Latino, or Spanish origin
    - n = American Indian or Alaska Native
    - e = Middle Eastern
    - m = Mixed-race/multi-racial
    - = other (clearly a non-human skintone, e.g., green, blue)
    - i = irrelevant because not a human/humanoid character"
- On what information did you base this decision about race/ethnicity? (e.g., illustration, text, language used)
    - How sure are you?
        - 1 = not sure; 5 = very sure
- Is the autistic main character female, male, or another sex or gender designation, or unclear?
- On what information did you base this decision about male, female, or another designation? (e.g., gendered pronouns or family roles like brother; illustrations; name)
- What age group is the autistic character in: baby/child, or adult?
- Does the autistic main character use spontaneous speech to communicate in the story? (only count dialogue, like in quotes or speech bubbles. NOT just first-person written narration.) *IF speech is immediate or delayed echolalia, it does NOT go here.

    - If so, briefly describe their spoken communication.
- Does the story provide evidence that the autistic main character uses spoken immediate echolalia? (only count dialogue, like in quotes or speech bubbles. NOT just first-person written narration.)
- Does the story provide evidence that the autistic main character uses spoken delayed echolalia? (only count dialogue, like in quotes or speech bubbles. NOT just first-person written narration.)
- Does the story provide evidence that the autistic main character uses an AAC system (speech generating device, communication board, picture symbols, or sign language)?
    - If so, briefly describe the AAC system. (e.g., sign language, picture communication system, communication board, tablet, speech-generating device). EXCLUDE visual schedules.
- Are illustrator and author the same person?
- Author: are there any personal or professional connections to autism referenced in the book, anywhere? [IF there are 2 authors, make a note for each]. Professional connections: count educational and psychological (teacher, psychologist, SLP, etc).
    - If yes what is it?
- Illustrator: are there any personal or professional connections to autism referenced in the book, anywhere? Professional connections: count educational and psychological (teacher, psychologist, SLP, etc).
    - If yes what is it?