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**Causes and Consequences of Sex-Based Disparities in the Diagnosis of Autism Spectrum  
Disorder**

Elena Floyd

Antonian Honors Program, St. Catherine University

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Rafael Cervantes, PhD; Andrea Olson, PhD; Allyson Green, MS; Sharon Doherty

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### **Abstract**

Autism Spectrum Disorder (ASD) is a neurodevelopmental disorder that requires thorough assessment and adherence to an established set of criteria in order to obtain diagnosis.

Historically, the research conducted to set the standards for this criteria has been conducted on a narrow study population; this research is typically done with individuals who are assigned male at birth (AMAB), typically of a young age. However, the presentation of ASD symptomatology differs between AMAB and AFAB (assigned female at birth) individuals. As such, ASD is not as easily recognized in AFAB individuals, and is not as readily diagnosed, thus creating a diagnostic disparity between AMAB and AFAB individuals. Late or missed diagnosis of ASD in AFAB individuals can be a major detriment to an individual; lack of a diagnosis often results in a lack of support surrounding the needs of the autistic individual, and the lack of these supports can be harmful to physical and mental health in multiple regards. This project will focus on examining existing literature and research surrounding the history of ASD and its diagnosis and presentations, as well as the importance of receiving a diagnosis and support. The goal of this project is to construct a literature review illustrating the causes, the extent, and the consequences of this diagnostic gap, as well as what may be done to improve the existing disparity.

**Keywords:** Autism Spectrum Disorder (ASD), Diagnosis, Gender, Assigned Male at Birth (AMAB), Assigned Female at Birth (AFAB), Disparity, Gap, History, Causes, Consequences, Implications, Symptoms, Presentation

## **INTRODUCTION**

### **Background & History**

Autism Spectrum Disorder (ASD) is classified in the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) as a neurodevelopmental disorder. Neurodevelopmental disorders refer to conditions that are present and begin in the early years of development, most often in early childhood, and affect the development and functioning of the individual. These disorders include intellectual disabilities, Autism Spectrum Disorder, communication disorders, Attention-Deficit/Hyperactivity Disorder (ADHD), coordination disorders, and specific learning disorder (Diagnostic and Statistical Manual of Mental Disorders [DSM-5], 2013). While many of these disorders occur comorbidly, this analysis will focus exclusively on concepts and issues surrounding ASD.

The understanding and knowledge of Autism Spectrum Disorder is relatively new; children matching the diagnostic traits have been mentioned in literature as early as the 1700s without classification, but the first recorded research, observation, and classification of ASD was introduced by Leo Kanner in 1943. Kanner's work was published following his observations of 11 case studies between 1938 and 1943 (Kanner, 1943; Rosen et al., 2021). The first diagnosed case of autism was accredited to Kanner in 1938. One year after Kanner's publication, Hans Asperger published a similar work detailing 4 of his own case studies in Austria. The previous diagnosis of Asperger Syndrome, referring to a specific profile of ASD including low support needs and high intelligence, was named after Hans Asperger. However, this diagnosis is no longer in use; Asperger Syndrome was eliminated as a separate diagnosis between the fourth and fifth editions of the DSM (Rosen et al., 2021). This diagnosis was likely eliminated due to Asperger's Nazi affiliations. The label of Asperger Syndrome has also been considered elitist and

denoting a sense of supremacy, given that this diagnosis often included individuals with savant abilities and low support needs; the diagnosis excluded those who require more support, and experience more day-to-day struggles. A diagnosis of Asperger Syndrome is now considered simply an Autism Spectrum Disorder diagnosis (Rosen et al., 2021).

Despite being recognized and classified by these and other subsequent researchers, the first diagnostic criteria for Autism Spectrum Disorder was not included in the Diagnostic and Statistical Manual of Mental Disorders (DSM) until its third version, published in 1980. The diagnostic criteria for ASD has continued to evolve over time following research; the current criteria is detailed in the fifth and current edition of the DSM, published in 2013.

Current ASD diagnostic criteria is characterized by 5 key components, two of which refer to the symptomatology, and three to the occurrence of these symptoms. The criteria referring to symptomatology include: social communication and interaction deficits (Criterion A) and restricted and repetitive patterns of behavior (Criterion B). The other three criteria refer to the symptoms and presentation, indicating that they must be present in early development (Criterion C), significantly impair functioning (Criterion D), and cannot be better explained by an intellectual disability or a global developmental delay (Criterion E) (DSM-5, 2013).

Criteria A and B maintain striking similarity to the initial characteristics presented by Leo Kanner in 1943. Kanner addressed two particular traits of the autistic profile as being the most important: issues with social interaction and connectedness, and resistance to change (Kanner, 1943; Rosen et al., 2021). These relate, and have been adapted and expanded upon to create the current diagnostic highlights. Criteria category A refers to the deficits and difficulties regarding social-emotional communication and interaction. These include concepts such as reciprocity, or the ability to initiate and maintain back-and-forth conversation with others; this also includes

difficulties surrounding the use of non-verbal communication, such as the inability to maintain eye contact or interpret body language. The social-emotional criteria also addresses the presence of difficulties understanding and managing relationships.

Criterion B operationalizes the concepts of repetitive and restrictive behaviors. Repetitive behaviors often refer to the use of stimming, a method of self-stimulation and regulation (Healthline, 2019). These behaviors include, but are not limited to, repetitive motor movements, such as rocking or flapping limbs, as well as employing the use of other sensory stimulation including visual, vocal, auditory, or tactile sensations. Criterion B also includes the tendency to prefer rigid routine, or sameness. This emphasizes the presence of extreme distress or emotional turmoil in the face of changes to one's routine or rituals. Restricted, or special, interests also fall under this diagnostic category; this highlights the presence of very narrow and fixated interests that the individual focuses on intensely, and forms strong attachments to. Sensory perception abnormalities, such as hypersensitivity and hyposensitivity are a part of Criterion B as well; this illustrates the presence of an over or under reaction to sensory stimuli, such as noise or texture aversions (DSM-5, 2013).

Before continuing this analysis, it is important to note the current linguistic discussion surrounding the concept of person-first versus identity-first language in the context of ASD. Person-first language emphasizes identifying the person before their disability, while identity-first language places emphasis on the disability, usually as an adjective or identifier. When discussing Autism Spectrum Disorder, person-first language would refer to a statement such as “a person *with* autism,” or “an individual who *has* autism.” Statements favoring identity-first language might include “an autistic person” (AskEarn, n.d.). While both of these statement forms are linguistically correct, discussions surrounding the preferred language are

occurring in the neurodiverse and autistic communities. Many individuals in these communities are favoring the use of identity-first language over person-first language, encouraging people to avoid viewing diagnoses such as autism as “accessories,” and emphasizing that an autism diagnosis is viewed as part of one’s identity, and that this language better addresses this (ASAN, n.d.). In recognition of these discussions and communicated preferences by the associated communities, this analysis will employ the use of identity-first language, and use statements such as “autistic individuals,” “autistic males/females,” etcetera.

Another linguistic distinction that will be utilized in this analysis is the difference between being “late-identified” and “late-diagnosed” autistic. Late-diagnosed refers to the occurrence of, or individuals who receive a formal diagnosis above the average diagnostic age, while late-identified simply refers to an individual who becomes aware that they are autistic above the average diagnostic age. The average age of diagnosis for females is around six and a half years (McDonnell et al., 2021). The nuances and implications of this statistic will be discussed more below. Although this average age is relatively young, “late-diagnosed” and “late-identified” in this analysis will primarily refer to adolescents and adults who face repercussions of the diagnostic gap. Due to barriers that will be discussed further in this analysis, it is not always attainable for females, particularly adult females, to receive an ASD diagnosis. However, in the face of personal research and a growing body of social media information, many adult females become aware of ASD and its presentations, and begin understanding their identities as autistic individuals before receiving formal diagnosis. These diagnostic barriers also contribute to the acceptance within autistic communities as being “self-diagnosed,” or identifying with ASD without a formal clinical diagnosis (AutismBC, 2022). In recognition of

this, the following analysis will distinguish between late identification and late diagnosis when relevant.

The final definitions and distinctions to address relates to the concept of gender versus sex. This analysis will use terms such as female, male, AFAB (assigned female at birth), or AMAB (assigned male at birth), rather than terms such as boy/girl or man/woman. The purpose of this distinction is to recognize the separation between the concepts of biological sex and gender identity; this review will discuss the diagnostic gap and its nuances on the basis of sex assigned at birth, rather than gender. The justification for this distinction lies in the fact that individuals who identify with a gender that does not align with their assigned sex still experience these disparities; an individual who was assigned female at birth but identifies as nonbinary or transgender may still get missed by the diagnostic processes that will be further discussed in the same way that a cisgender identifying female might. Investigating the nuances of how the biases that will be discussed may affect cisgender versus transgender populations is beyond the scope of this review, and as such, this analysis will focus on the concept of sex assigned at birth, and the diagnostic disparities based on that criteria.

### **Epidemiologic Data**

Autism Spectrum Disorder is currently estimated to be diagnosed at a rate of 1 case per 44 births in the United States (Centers for Disease Control and Prevention [CDC], 2022). ASD is currently diagnosed four times as often in individuals assigned male at birth (AMAB) than it is in individuals assigned female at birth (AFAB). Some sources indicate that this ratio may be closer to 3:1, while others report 5:1; despite these slight variations, current research provides the consensus that AMAB individuals represent at least three times the diagnostic prevalence as their AFAB counterparts (Loomes et al., 2017; Maenner et al., 2021). Autism is diagnosed across all



racial and ethnic groups; however, diagnostic rates are higher among White and Black populations than Hispanic populations (Maenner et al., 2021). Spatial analyses have indicated that the prevalence of ASD may be higher in the upper eastern portions of the United States, including the entire region of New England. The lowest prevalence of ASD has been seen in central and southern states, such as Alabama (Hoffman et al., 2017). Diagnosis of ASD in children is more likely to occur in children from families with a higher socioeconomic status, as well as children whose mothers have obtained a higher level of education (Dickerson et al., 2017). It is believed that these disparities are due to the lack of access to healthcare systems for those with lower socioeconomic status, and an improved ability to navigate the diagnostic system for parents with higher education (Dickerson et al., 2017).

### **THE DIAGNOSTIC GAP**

As stated above, ASD is diagnosed four times as often for AMAB individuals as it is for AFAB individuals. This sex-based difference in diagnostic prevalence is the main focus of this analysis, and will be referred to as the disparity, or the gap in the diagnostic rates. This section will expand on the prevalence of this gap, as well as the historical and phenotypic (presentation) differences that contribute to its existence. Following the discussion of the prevalence and causes of the gap in diagnostic rates, the consequences for those who are affected by this gap will be presented.

The diagnostic disparity that is seen in males versus females is also consistent in regards to the average age of diagnosis. The average reported age of diagnosis for ASD varies by source, but there is a general consensus that this diagnosis most often occurs around the age of four to five years, or 50 to 60 months (van't Hoff et al, 2020; McDonnell et al., 2021). However, this statistic appears to be more accurate to males than females; AFAB individuals are more likely to be diagnosed at a later age, at approximately 80 months (around six and a half years). Despite this difference in age of diagnosis, the average age of concern, or the age at which parents or third party observers first notice potential autistic traits, does not differ between males and females. The average age of concern for both males and females is about two years. The lack of difference seen for age of concern between males and females is important to note, as it indicates that the presence of an older age of diagnosis in females cannot be attributed to later symptom onset, but more likely systemic inequities and prolongation of the diagnostic pathway (McDonnell et al., 2021). Additionally, the average age for diagnosis for females has been increasing over time, and is predicted to continue increasing, due to both long assessment

waiting lists, and the increased prevalence of older children and adults seeking diagnosis following increased awareness and personal education (McDonnell et al., 2021).

### **Causes**

One major cause for this diagnostic gap is the downstream effects of the trends in participant demographics among historic and present-day research. Historically, the majority of the participants of research in neurodevelopmental disorders such as ASD have been white male children. In Kanner's original research, all eleven of his subjects were children under twelve years, and eight were male; similarly, Asperger's case studies were performed on 4 male children, all below the age of ten (Kanner, 1943; Asperger 1944). In Asperger's case, he framed the diagnosis of autism as sex-limited to males, referring to an autistic profile as "an extreme variant of male intelligence" (Asperger, 1944 p. 84). These participant trends in research have continued over time; many studies since the original Kanner and Asperger publications have continued to conduct research on primarily male participants (Head et al., 2014). Research on Autism Spectrum Disorder often consists of nearly 75% male participants. These male-dominated studies range from qualitative trait research, to the understanding of the autistic brain using neuro-imaging and gray matter analysis in the brain (Phillip et al., 2011; Via et al., 2011; Mottron & Bzdok, 2020). This disparate trend even exists among studies that aim to examine the differences between male and females; the aforementioned study aiming to compare average ages at diagnosis between sexes contained only 19.7% female participants, despite attempting to discuss and draw conclusions about these differences (McDonnell et al., 2021). Many studies contain this phenomenon; the study population that is being targeted is still underrepresented in research, creating difficulties in drawing assumptions about these sex-based diagnostic nuances. Additionally, although researchers are beginning to acknowledge this

disparity in representation and have begun to correct, the diagnostic criteria for ASD has not been updated to reflect these changes in research beyond an acknowledgement in the DSM-5 addressing that there may be differences between male and female presentations of autism, and that these differences might impact the likelihood of receiving a diagnosis for females (DSM-5, 2013). This acknowledgement in the DSM refers specifically to the likelihood of missing a diagnosis in females without an accompanying intellectual disability. The diagnostic criteria remains the same, and consequently, the traits that psychologists target in their assessments and diagnostic observations continue to reflect primarily the male presentation.

The complication presented by this narrowed research population relates to the existence of presentation, or phenotypic, differences between autistic males and autistic females. Research has begun to acknowledge and accept the phenomenon that autistic males and autistic females do not present their autistic traits in the same way. There is a collection of autistic traits that, although present in both AMAB and AFAB individuals, do not look the same between the sexes (Halladay et al., 2015; Bargiela et al., 2016; Dean et al., 2017; Loomes et al., 2017). These phenotypic differences will be discussed in detail in the following section. Due to the tendency in research to focus on male participants, the diagnostic criteria for ASD is based on the male phenotype, and aligns with the conceptions of autism for male identifying individuals (Head et al., 2014; Hull et al., 2020). The lack of a set of diagnostic criteria that addresses the differences between the male and female phenotype is likely to be a large contributor to the sex-based gap seen in the prevalence of ASD.

Demographic barriers are not limited to the male versus female participant data, but also include the diagnostic status of the participants. There is existing research and studies being currently conducted that address the differences in presentations between autistic males and

females; however, these studies are largely done on individuals who possess a formal Autism Spectrum Disorder diagnosis. One of the main concerns and results of this diagnostic gap and the male/female presentation difference is examining and reducing the occurrence of individuals (particularly females) who are misdiagnosed, or lack a diagnosis at all. Therefore, as the research is being conducted using participants who possess a diagnosis, these observations are excluding the populations of which this issue most affects (Bargiela et al., 2016). The research addressing these issues, containing only those who have a formal diagnosis, is excluding those who may be self-diagnosed as well; these individuals are likely to have a significant amount of experience and understanding of the issue, but are not being included in the research. Additionally, autistic females who are missed by the system would likely be helped the most by these studies and expanding knowledge/awareness, and likely offer the best insight into the concept; however, they are the most likely to be excluded from the research.

Another factor that might contribute to the lack of female representation in diagnostic statistics is intelligence quotient (IQ). AFAB individuals without an intellectual disability, often characterized by an IQ above 60-70 points, represent less of the diagnostic body for Autism Spectrum Disorder than females with an intellectual disability (Hull et al. 2020). Interestingly, the diagnostic gap between males and females diminishes when addressing individuals with lower IQ (Head et al., 2014). A higher verbal IQ is associated with a later age of diagnosis for females, demonstrating that females with a higher IQ may be more difficult to identify as autistic (McDonnell et al., 2021). This trend may indicate that the absence of an intellectual disability for a female may be a barrier, or a block, to an ASD diagnosis (Halladay et al., 2015). IQ is considered to be a “protective factor,” and may be related to the subtler presentation associated with females, and the propensity to camouflage or hide one’s autistic traits (Loomes et al., 2017).

Both of these concepts will be discussed further. Additionally, although the concept stands, the use of the term “protective factor” when referring to IQ appears to be a bit of a misnomer, despite being commonly used in current research. “Protective factor” may imply that the concept of higher IQ blinding an ASD diagnosis and contributing to a missed or late diagnosis is a positive thing; the consequences section of this analysis will detail why this is not the case. Using the term “barrier,” or “obstacle,” may provide a more accurate connotation.

### **Phenotypic Gender Differences**

As mentioned, ASD symptomatology differs between AFAB and AMAB individuals, and the presentation, or phenotype, of autism can be different depending on assigned sex. The presentation of autism that occurs specifically among AFAB individuals is often referred to as the Female Autism Phenotype, or FAP. The core criteria are present between both males and females, but differ in the outward appearance. The main differences in presentation between sexes vary across a few different aspects, including social relationships, relational interests, repetitive behaviors, and aggression & hyperactivity. These differences are compounded by a phenomenon known as camouflaging. The recurring theme that separates AMAB autism presentation from AFAB autism presentation is the subtlety of the traits, in that the Female Autism Phenotype is considered to be more subtle, thus easier to miss. The nuanced differences regarding these behaviors will be discussed below. It is important to acknowledge that these differences are not present in every case; the phenotypic differences are widely observed between sexes and illustrate a common diagnostic issue, but the subtler traits associated with the FAP are not exclusive to females, and the more overt male manifestations are not exclusively observed in males. ASD occurs across a spectrum, and as such, none of the discussions of these

traits are strictly accurate in every case; however, given the prevalence of the differences, this analysis will talk about this issue in general terms of male versus female presentations.

One of the most prominent differences between autistic males and females as noted in the Female Autism Phenotype is the presentation of diagnostic Criterion A, regarding social-emotional abilities, relationships, and connectedness. In general, qualitative research has indicated that AFAB individuals, both autistic and non-autistic, display higher desires to build and maintain social relationships than AMAB individuals (Hull et al., 2020). In congruence with this trend, autistic AFAB individuals are often more motivated and have a higher desire to build “traditional” friendships with their female peers (Bargiela et al., 2016). Additionally, autistic males are more prone to social isolation than autistic females, and often experiencing higher levels of ostracization from their non-autistic peers (Dean et al., 2017). The DSM-5 notes, as a part of Criterion A, that lacking the interest to build relationships with peers is a common trait for autistic individuals (DSM-5, 2013). However, this criterion, like the rest of the diagnostic standards, is based on the desires and presentation of male individuals, and does not take into account the differences that may occur between sexes. The inherent difference in social motivation between males and females challenges the idea that all autistic individuals are averse to forming social relationships, despite not being addressed in the DSM criteria.

These social differences can be seen across age groups; they are often most relevant during early childhood, as this is the age at which most neurodevelopmental disorders are diagnosed. Due to this, early childhood and school-aged years are the times in which it is most beneficial to receive a diagnosis, and consequently when it is the most missed in those who present more subtle phenotypes. It is also often easiest to see social differences during this period. Previous studies have indicated that male and female socialization varies at a systematic

level (Dean et al., 2017). Female socialization in young children has been referred to as a more fluid process, meaning that females often come and go between less structured social interactions between groups. Female socialization may include sitting in small groups and engaging in primarily conversation or unstructured imaginative play, rather than structured activities. Females, autistic and non-autistic alike, have a generally higher likelihood of flitting between groups than males. Autistic females, even those who struggle with social interaction, are not likely to stand out from their peers when they flit between groups and conversations (Dean et al., 2017). Female children also tend to score higher on measures of friendship and empathy than males, and the differences in these scores is consistent across autistic children as well. Autistic females present more desire and capability for friendship and empathy than autistic males (Head et al., 2014).

In contrast, male socialization commonly involves more structured and physical interactions, such as sports or physical games. Autistic males who do not connect with their peers or who are not interested in the common passions of their peers are often found standing to the side or going off on their own. The individuals are often easier to pinpoint, as they are isolated from the rigid structure of their male peers, while autistic females may still blend in with their non-autistic peers due to the more fluid nature of their interactions (Dean et al., 2017). Female social groups are also likely to be smaller than male groups, with a higher rate of movement between groups, thus making it less likely for an autistic female flitting between groups to be noticed.

As mentioned above, male and female autism phenotypes also differ across the presentation of repetitive behaviors. Research has indicated that not only do autistic females show a lower prevalence of repetitive and rigid behaviors than males, but that the quality and



type of these behaviors is not consistent between sexes (Halladay et al., 2015). Autistic males tend to exhibit repetitive and rigid behaviors that are more likely to be deemed as unusual by observers, such as rocking back and forth or flapping one's hands for stimulation, at a higher rate than autistic females. Male repetitive behaviors are more likely to consist of larger body movements that are more noticeable. In contrast, this criterion in the Female Autistic Phenotype is often characterized by more subtle repetitive behaviors, such as reading the same book repeatedly, or engaging in subtler body movements, such as playing with one's hair or fingernails (Dean et al., 2017). These repetitive behaviors that are demonstrated by females still adhere to Criterion B of the DSM-5 diagnosis, but are not as overt as other behaviors often seen in males, thus making it difficult to take note of this behavior in females. It is important to note that autistic females can, and do, engage in the more overt behaviors mentioned above, such as rocking, flapping, or larger body movements, but do so less frequently than males (Halladay et al., 2015; Dean et al., 2017).

Another phenotypic difference between male and female presentation of autism is similar to the above, and addresses relational or special interests. As part of Criterion B, this refers to a concept that an individual focuses on with extreme intensity, and to which they form a strong attachment and devotion (DSM-5, 2013). These differ between sexes in a similar way as the repetitive behaviors, in that autistic males often display overt, or obvious restricted interest, commonly in what are perceived to be more "unusual" topics (Dean et al., 2017; Loomes et al., 2017). Common examples of restricted interests among autistic AMAB individuals include things such as computers or technology, vehicles (cars, trains, trucks, etc) or physics (Hull et al., 2020). Observers often note these anomalous interests with ease, and are able to identify that they do not fit a norm. However, common restricted interests for autistic AFAB individuals

commonly include interests that have “relational purposes” such as animals, fictional characters or stories, or person-oriented subjects such as psychology (Hull et al., 2020). These interests are not seen as inherently unusual by societal standards; a female identifying individual with an intense passion for a young adult novel is not as overt or obviously out of the ordinary as a male identifying individual having extensive knowledge about cars or trains (Hull et al., 2020). As noted with repetitive behaviors, the interests listed are not exclusive to males or females, and the divide is not always present. However, this phenomenon occurs with enough frequency that it is a likely contributor to the gap seen between female and male diagnostic rates. Additionally, restricted interests may include a very large variety of concepts; the examples listed above are common and often stereotypical examples of this phenomenon.

Autistic males and females also vary in their internalization techniques, and associated aggression and hyperactivity. Autistic females are more likely to internalize their struggles and day-to-day issues, including sensory and social concerns. In contrast, autistic males are more likely to react externally, often displaying notable hyperactivity, aggression, or conduct issues (Bargiela et al., 2016). AMAB autistic individuals are more likely to experience anger outbursts and react in an aggressive, outward fashion, while AFAB autistic individuals turn these reactions inward; this internalization often manifests in comorbid mental health conditions such as depression, anxiety, or eating disorders (Halladay et al., 2015; Bargiela et al., 2016). This internalization is also tied into the concept of self-stimulatory behavior, in that on the occasion that an autistic male individual uses a stimming behavior to regulate emotions or respond to a daily struggle, it is likely to be more overt and noticeable. Anger outbursts and bouts of hyperactivity can often be characterized by the use of self-stimulatory behavior and fidgeting. An

autistic female may also utilize repetitive behaviors to regulate and compensate for these struggles, but will often do so on a smaller, subtler scale.

One difference that compounds these variations between the male and female autism phenotypes is the presence of a phenomenon called camouflaging. Camouflaging is a technique used by autistic individuals that is commonly defined as a coping or “masking” strategy used to hide the existence or the extent of one’s autistic traits to appear non-autistic, or to appear and behave in a more socially acceptable manner (Hull et al., 2017; Lai et al., 2017; Cook et al., 2021; McQuaid et al., 2022). These techniques are often used to blend or fit in with non-autistic peers, and is characterized by a variety of behaviors including: scripting and practicing conversations, altering speech patterns, mimicking facial expressions and nonverbal behaviors, forcing eye contact, or suppressing self-stimulatory behaviors (Hull et al., 2020; Cook et al., 2021). These behaviors are often imitated or mimicked from non-autistic peer models, or even from media sources, such as TV, films, magazines, and books (Bargiela et al., 2016).

Compensatory behaviors are also commonly learned behaviors, and expand with the individual’s experience and knowledge of social situations and interactions. Camouflaging behaviors are also sometimes referred to as compensatory behaviors; autistic individuals often express that camouflaging feels as if they are compensating for their autistic traits and putting on a performance for others in social situations (Hull et al., 2017). Camouflaging is frequently referred to as masking; this analysis will use the terms “camouflaging” and “masking” interchangeably.

A large proportion of all autistic individuals report utilizing camouflaging or masking behaviors in certain situations, usually to improve their social belonging. However, camouflaging is a much more prevalent behavior in autistic females than autistic males (Dean et

al., 2017; Lai et al., 2017; Hull et al., 2020; McQuaid et al., 2022;). Being female is often considered to be a predictor of possessing strong imitation skills; females are stronger imitators than males, indicating that autistic females are better at masking, and therefore engage in the behavior with higher frequency (Dean et al., 2017). Higher IQ may be associated with an increased ability to mask autistic behaviors, further contributing to the phenomenon regarding IQ and diagnostic pathways for autistic females as detailed previously (McDonnell et al., 2021). Societal expectations and perceived gender roles (discussed further below) may also contribute to the higher prevalence of these camouflaging behaviors among females.

The higher prevalence of camouflaging in females often presents a unique diagnostic situation for this population; due to the tendency to mask one's autistic traits, many females who undergo assessment for ASD find themselves scoring above threshold on self-report measures of autistic behaviors, but falling short of actual external diagnostic criteria and therefore not qualifying for diagnosis (Loomes et al., 2017). Autistic females are able to identify their own autistic traits and therefore meet certain diagnostic tests, but their masking behaviors often prevent psychologists and other relevant observers from noting these behaviors. For example, an autistic female who has grown accustomed to scripting or preparing conversations ahead of time, suppressing stims, and forcing eye contact during social interaction might not appear to others, including clinicians, as deviating from social norms or standards. However, these observers do not witness the aforementioned preparation, or the potential discomfort experienced by the individual when providing eye contact. Observers also might note that the individual is not fidgeting or stimming, but are not privy to the internal efforts used and the resulting discomfort from keeping those behaviors suppressed. A female individual undergoing an ASD assessment in this situation may score high on self-report measures of autistic traits, but these same traits would

not be likely to be observed by a clinician. These cases present a disconnect between the internal experience of the autistic individual and the outward presentation of their traits, often leading to a lack of individual-clinician agreement. A diagnosis of ASD is often subjective and dependent on the views of the clinician; self-report measures and personally identified traits are used as a contributing aspect to a diagnosis, but the decision ultimately falls to the clinician or clinicians involved in assessment and diagnosis of the individual. As such, a lack of third party or clinical corroboration often results in dismissal, or an inability to receive an ASD diagnosis (Loomes et al., 2017; Tint & Weiss, 2018).

Observable autistic traits are often referred to as diagnostic seeking behaviors, meaning that the observation of these traits often prompt teachers, parents, or other observers to suggest intervention or assessment for that individual (Halladay et al., 2015). The traits discussed above, such as aggression and hyperactivity, intense focused interest on an “unusual” topic, repetitive behaviors, and social isolation or struggles are common examples of these diagnostic seeking behaviors. The tendency to internalize struggles, stronger social acceptance and desires, as well as less overt repetitive behaviors and relational interests in females often contrast the stereotypical behaviors in males that commonly trigger the need for an assessment. This subtler presentation of autism, combined with the higher prevalence of camouflaging behaviors in autistic females often means that observers do not notice anomalous behaviors in AFAB individuals, and therefore do not raise any concerns that could lead to assessment or diagnosis (Halladay et al., 2015).

Differences in stereotypical gender roles and expectations also present a barrier for autistic females; social expectations for women’s behavior and communication styles differ from men’s, and this too translates to the presentation of autistic traits. Autistic females are likely to

present as passive or compliant in comparison to both autistic and non-autistic males; these behaviors are commonly mistaken for being shy or obedient, which are common socially encouraged traits for females (Bargiela et al., 2016). Similarly, qualitative research has indicated that difficulty understanding social implications, and social faux pas, are less likely to be accepted among autistic females than they are in autistic males; these social struggles are more likely to be interpreted as lazy or rude, rather than as a misunderstanding. The social pressure of presenting in a gender-appropriate manner may also contribute to the perceived need to camouflage and hide the traits that might be seen as disruptive or noisy. Similarly, a higher threshold of social acceptance for boisterous behavior for males may also contribute to their lesser prevalence of camouflaging (Bargiela et al., 2016).

The male presentation of autism is often characterized by more overt, or conspicuous traits compared to the Female Autism Phenotype. These more noticeable traits exist across the facets of social-emotional communication, relational interests, internalization, and repetitive behaviors, all of which are part of diagnostic criteria A and B as described in the DSM-5. The existence of a more subtle presentation of autism in females, combined with a higher propensity to engage in camouflaging behaviors and pre-existing social expectations, often results in a lack of third-party observation of diagnostic seeking behaviors, consequently leading to the diminished likelihood of females receiving an Autism Spectrum Disorder diagnosis.

### **Consequences**

There are many notable consequences of the diagnostic gap for ASD between males and females, the most prominent being that autistic AFAB individuals are often missed by traditional assessment and do not receive diagnosis in childhood. Not receiving a diagnosis in childhood often leads to either a later-in-life diagnosis, a misdiagnosis of a different mental health disorder,

or no diagnosis at all. The lack of a timely ASD diagnosis can be a precursor to many adverse events in adolescence and adulthood, including higher prevalence of mental health issues, and a lack of access to appropriate support and health services.

Of the adverse experiences listed above, mental health issues in adolescence and adulthood are the most commonly reported consequence of a late or missing autism diagnosis. These frequently include depression, anxiety, eating disorders, and suicidality (Cage et al., 2018; Tint & Weiss, 2018; Cage & Troxell-Whitman, 2019; Leedham et al., 2020).

A major contributor to the existence of mental health issues in late-identified autistic females is, albeit ironically, the employment of camouflaging behaviors, especially long-term (Cage et al., 2018; Tint & Weiss, 2018; Cage & Troxell-Whitman, 2019). Camouflaging behavior is a commonly accepted risk factor for the presence of depression, anxiety, as well as suicidal ideation and behavior (Cage et al., 2018). Camouflaging or masking behaviors have been reported to result in fragmentation of one's identity. Presenting oneself in a manner that does not accurately represent true personality or true identity can often lead to a lack of, or confusion upon identity, as well as high amounts of stress.

This concept is well represented by a theory known as The Disconnect Theory, which describes the phenomenon of acting differently according to context, rather than acting consistently across all contexts (Cage & Troxell-Whitman, 2019). This theory is highly applicable to the concept of masking, in which an autistic individual changes and tailors behavior to the social context in order to hide autistic traits and appear more socially acceptable. Masking behaviors often change depending on the social situation in order to reflect appropriate social norms, a concept very similar to the Disconnect Theory. As with high employment of masking behaviors, acting in accordance with the Disconnect Theory, even unknowingly, can result in

identity confusion, and subsequent anxiety and depression (Cage & Troxell-Whitman, 2019). Additionally, masking behaviors require a large quantity of effort from the autistic individual, in preparation and in practice. The chronic exertion of this effort and energy can lead to exhaustion, burnout, anger, and depressive symptoms. These struggles can also result in suicidal ideation and behaviors after time (Cage et al., 2018; Leedham et al., 2020). Camouflaging and masking behaviors are often used to avoid and find solace from the potential bullying and ostracizing from their peers; however, unfortunately, masking presents its own mental health and identity complications, creating a negative cycle with no clear solution (Cage & Troxell-Whitman, 2019).

Mental health issues can also be associated with the lack of community belonging and identity security that autistic individuals often experience. Obtaining and possessing an ASD diagnosis allows an individual to be a participant in neurodiverse and autistic communities, both metaphorically, and in social media platforms or community groups. Belonging to a community and having the capacity to identify with ASD is associated with a positive sense of self, positive sense of belonging, and greater mental health outcomes (Bargiela et al., 2016). Possessing an autistic identity is considered to be protective against negative mental health outcomes; autistic identity acts as a mediating variable to improved depression and anxiety outcomes, and is associated with better self-esteem and general sense of self (Cage et al., 2018). Belonging to an autistic community, or possessing an autism diagnosis also results in a stronger social support system; those who have an ASD diagnosis have more readily available social support, found in family, friends, peers, and health providers. The presence of a stronger support network is also associated with better mental health outcomes, and like strong identity, can be a protective factor against depression and anxiety (Cage et al., 2018).



Similarly, acceptance of an autism diagnosis or of autistic identity, both internal and external, can also be protective against adverse mental health outcomes. This includes acknowledgement and acceptance of not only one's identity, but also of the traits and required accommodations or associated struggles. Acceptance of these from oneself and from others can decrease the likelihood of experiencing depression, anxiety, and other negative outcomes (Cage et al., 2018). Because of these associations, it has been seen that lacking an ASD diagnosis can result in lowered support systems, as well as a lack of community and identity. The absence of a diagnosis can exclude individuals from the autistic community, and thus exclude them from the benefits of the support, belonging, and sense of identity (Bargiela et al., 2016). Lacking a diagnosis also means that these individuals lack the acceptance and the associated protection from adverse mental health outcomes (Cage et al., 2018). Late-diagnosed individuals often express that the lack of a diagnosis, particularly when they possess limited knowledge of ASD, can also lead to low self-esteem, in that they are not able to explain or justify their own behavioral traits, and experience beliefs about being bad or broken (Leedham et al., 2020).

This diagnostic gap and phenotypic variation are also associated with consequences surrounding healthcare, both mental and physical, as well as general service and accommodation needs. These are particularly seen in the experiences of late-identified females as they learn about ASD and attempt to pursue assessment and treatment later in life. This barrier can also be attributed to the existence of long-term camouflaging behaviors. As mentioned in the discussion of camouflaging, many AFAB individuals seeking or undergoing an ASD evaluation often experience a disconnect between their own experiences and the external observations from their clinician. This disconnect often leads to dismissal and lack of diagnosis (Tint & Weiss, 2018). AFAB individuals who have sought out an ASD diagnosis and have been dismissed have

communicated frustration and lack of trust towards these providers. These individuals also report that they often feel unworthy of service, and feel a significant amount of shame for seeking help and support, only to be dismissed (Tint & Weiss, 2018).

Another consequence of the biases in the diagnostic criteria is the occurrence of misdiagnosis for females of a separate mental health disorder. Autistic males can experience misdiagnosis as well, but as the autism diagnostic criteria are catered towards male presentation, it does not happen as often. Many females may still present with certain traits that raise flags within themselves and other observers; however, due to the fact that they do not necessarily meet the criteria for the DSM-5 diagnosis, they are diagnosed with a different condition (Fusar-Poli et al., 2022). Many autistic females begin assessment and evaluation by psychologists and mental health professionals years before they obtain a formal diagnosis, and some never do. Instead of an ASD diagnosis, many of these AFAB individuals are assigned a diagnosis that may reflect some of the traits that they are experiencing, but not all. Clinicians often hesitate or do not even consider ASD as a possibility, due to the widespread belief about its male centered presentations. Some examples of these common misdiagnoses are personality disorders, such as borderline personality disorder, narcissistic personality disorder, or schizoid personality disorder. Other misdiagnoses include language disorders, depressive disorders, and anxiety disorders (Fusar-Poli et al., 2022).

Lacking an accurate diagnosis may be of detriment to an individual in a few ways. As discussed, there is a significant amount of identity comprehension that can be intertwined with an ASD diagnosis (Cage & Troxell-Whitman, 2019); receiving a different diagnosis may prevent an individual from experiencing the sense of community and identity acceptance that can accompany the correct diagnosis. Additionally, if diagnosed with an inaccurate disorder, an

individual may undergo treatment that is not therapeutic or necessary. There are no drugs or treatments that are used specifically to treat ASD, as it is a neurodevelopmental disorder that cannot be “cured” in the traditional sense of the word. Antidepressants or antipsychotic medication may be used to mitigate behavioral symptoms, but many autistic people are not prescribed medication specifically for their ASD diagnosis (NICHD, n.d.). However, drugs may be prescribed for a misdiagnosis of depression, anxiety, or certain personality disorders that may not provide therapeutic benefit to individuals who do not actually possess those disorders. The potential negative effects of unnecessarily prescribed medications are beyond the scope of this analysis, but are important to note as a potential consequence under the occurrence of misdiagnosis.

In sum, the phenomenon of a missing or late diagnosis in females can be the cause of significant consequences, including adverse mental health outcomes including depression, anxiety, burnout, and potential self-injurious behavior, as well as a lack of community and support. These mental health outcomes can be more specifically attributed to the negative impacts of long-term camouflage and identity disconnect, and the detrimental effects of not possessing a strong identity or support system to protect mental health and self-esteem. This collection of negative outcomes demonstrates a significant health concern for this population of late-identified and late-diagnosed individuals, and illuminates the need for reform.

### **IMPLICATIONS**

The presence of the disparity in the diagnostic rates between males and females, as well as the discussed consequences of this gap indicate a dire need for improved and more inclusive research, diagnostic reform, and attempts to eliminate biases from the diagnostic criteria of Autism Spectrum Disorder. The current diagnostic criteria caters towards the male phenotype of ASD, and excludes those with a “subtler” presentation of the disorder, often females. Although current research is being conducted to understand these differences, no significant diagnostic reform has been instituted. These reforms would likely include altering the wording, or adding separate subsections to each criteria to reflect the manner in which these core traits differ between sex. It is imperative that these diagnostic criteria be altered to reflect a comprehensive portrayal of Autism Spectrum Disorder to diminish the gap, and reduce the prevalence of individuals that are not identified by the system.

This diagnostic reform may not only include updating the Diagnostic and Statistical Manual for Mental Disorders and other diagnostic tools, but may also necessitate updated training and education of currently practicing and student psychologists and mental health professionals. As the diagnostic criteria has not been edited to reflect the changing perceptions of the Female Autism Phenotype, it is very possible that students in training, as well as currently practicing clinicians may not be aware of these systemic biases or the changing climate of ASD. Education and increased awareness amongst individuals that play a role in the diagnostic pathways may assist in greater recognition of autistic females, and thus may aid in diminishing the gap.

One of the root causes of this disparity lies in the disparate research trends; much of existing literature and understanding is based in male study populations, thus excluding females

from the research base. This reveals a need for increased research containing higher proportions of female participants in order to obtain a better understanding of the true differences between sexes. Conducting more of this research is necessary for bettering the understanding of the prevalence and presentations of ASD, as well as allowing female voices to be heard.

In addition to research reform and changes to diagnostic pathways, these consequences and their associated factors indicate the need for increased support systems for autistic individuals who are late-diagnosed or late-identified, and seeking community or acceptance. As discussed, a lack of community and support can yield negative mental health outcomes; those who are late-diagnosed or late-identified are often lacking these constructs. Increasing support, including social, tangible, or governmental, could reduce the adverse effects of receiving a late diagnosis. An example of this type of support can currently be seen in social media communities and forums across the internet. Many autistic and neurodivergent individuals on social media use their platforms to share information and educate their following on ASD and related disorders. These platforms can also curate opportunities for community interactions and inclusion. These communities and the rise in awareness and accurate portrayal in the media can not only help increase a sense of community for autistic individuals, but can also spread the information and knowledge to those who may not have previously been aware. Self discovery of autistic traits in late identified individuals can be the instigating event for seeking an assessment or diagnosis in adulthood, and the first step in building connections for oneself.

The need for improved support for late-identified autistic individuals may also extend to increases in governmental, financial, or academic support. There are a collection of established support systems and methods that are in place for individuals who have obtained an ASD diagnosis, however, as mentioned, these are often more difficult to access for individuals who

have received a late diagnosis, or no formal diagnosis at all. Increasing access to these support systems for late-identified and late-diagnosed individuals could help increase the ability to cope with struggles, and improve mental health outcomes.

### **Limitations**

Among the research in this study, various limitations have been identified, some of which have been mentioned previously. As discussed, much of the research surrounding ASD has been limited to children. This trend is persistent even among the sources used for this analysis, simply given the general lack of available research in adults. Many of the discussions surrounding phenotypic differences were drawn from source material that utilized younger research participants. As the further parts of this analysis was addressing the concepts of adult diagnosis and ASD in adulthood, it is important to note that this source material was targeted towards younger populations. Additional research disparities include that lack of female participants in studies, even among those who are examining the differences between sex presentation of ASD. The lack of female representation in these studies not only limits the scope of this review, but also indicates a need for future research with more inclusive study cohorts. The final research limitation lies in the fact that of these studies mentioned, all were conducted in reference to those who had obtained an official or clinical diagnosis of ASD. As this review discusses the gap of this diagnosis, and emphasizes the idea that many females do not get diagnosed, this inclusion criteria in research excludes individuals who may have experienced significant struggles through the diagnostic pathways. This also excludes individuals who identify as self-diagnosed and have also experienced the negative impacts of being missed by the system. Excluding these voices from research could limit the understanding of late-identification and experiences of these individuals.

Given that this analysis addresses these disparities in terms of assigned sex at birth, its generalizability is limited to sex identifiers, rather than gender. The relationship between gender identity and late identification of ASD is not well researched, and these nuances are not well known. This review discusses these concepts as a disparity based on sex, and all characteristics and comparisons created thereupon are only generalizable within sex-based discussions, rather than gender. Future research is needed to better understand the intersectionality between gender identity and ASD, particularly how gender relates to this diagnostic gap.

This review focused on a view of ASD that was collected from research originating in Western and developed countries. This analysis did not delve into the differences in understanding, social acceptance, or even diagnostic differences between other cultures or countries. As ASD traits are often viewed in contrast to social expectation and acceptability, the perspective of the diagnosis may vary across cultural contexts and locations. The present review does not discuss these concepts outside of a Western view, and as such, these results and this understanding of ASD and the gap examined are only generalizable to Western cultures.

Another limitation to this analysis is the lack of discussion of the tradeoffs, or possible risks of obtaining an ASD diagnosis. This review discusses the consequences of not receiving a diagnosis until adulthood, but there are additional consequences that are associated with being diagnosed. A diagnosis of ASD could be associated with receiving possible stigma from others, as well as discrimination and negative attitudes from those around them. Late-diagnosed individuals also often report a lack of post-diagnosis support from clinicians and government, sometimes on the basis of the fact that they have aged out of available supports (Bargiela et al., 2016; Milner et al., 2019; Huang et al., 2020; Leedham et al., 2020). Obtaining an ASD diagnosis is not always seen or received as a positive thing, and this can create stigma and

potentially harmful situations for these autistic individuals. These situations or other potential drawbacks of a diagnosis are not discussed in this analysis.

Additionally, this analysis does not address external difficulties that are faced in obtaining diagnosis of ASD that are unrelated to assigned sex. These facets are associated with the diminished ability to obtain a diagnosis, and include things such as socioeconomic status, education level, healthcare access, etcetera. An official diagnosis of ASD must occur through the healthcare system, and as such, is subject to all of the same inequities and disparities that are seen regarding income, insurance coverage, and simple access to providers. These additional barriers could compound the struggles faced by late identified autistic females and create an even more challenging diagnostic process. These additional barriers are again outside of the scope of this research, but are worth recognizing as external obstacles and potential contributing factors to the diagnostic gap.



## CONCLUSION

Autism Spectrum Disorder (ASD), is a neurodevelopmental disorder that is most commonly diagnosed in childhood, and requires a clinical diagnosis in accordance with an established set of criteria in the Diagnostic and Statistical Manual of Mental Disorders (DSM). ASD exists and can be recognized in both females and males; however, there is a disparity in the rates in which this diagnosis is given between sexes. Individuals who are assigned male at birth (AMAB) receive ASD diagnoses at approximately four times the rate of females. This disparity is not due to a legitimate difference in the occurrence between males and females, but can rather be attributed to biases and misconceptions that exist within the diagnostic pathway and criteria, leading to a significant portion of autistic females who are not recognized by the traditional diagnostic system. The root causes for this diagnostic gap include the presence of a phenotypic, or presentation, difference in autism between males and females. The outward appearance of autistic traits can vary depending on sex; the female presentation has often been referred to as the Female Autism Phenotype, and is different from male presentations. Disparate trends in research both past and present, are intertwined with this concept, and have helped create this gap in that studied populations consist of young male children, leading the diagnostic criteria to be exclusive of these female phenotypes.

As a result of these biases and this diagnostic disparity, many autistic females do not get recognized by the traditional criteria, and often go undiagnosed, or receive a diagnosis later in life. This delayed diagnosis can lead to the occurrence of a multitude of adverse mental health events, including depression, anxiety, burnout, eating disorders, and even self-injurious or suicidal behavior. These outcomes are often associated with and attributed to the lack of support

and community that often accompanies a missing or late autism diagnosis, as well as the confusion and fragmentation as a result of masking one's true identity.

This gap and its consequences indicate a dire need for more inclusive research, diagnostic reform, and increased support systems for autistic individuals. Increased research and more inclusive research populations are needed to better understand the differences between sexes, as well as the true effects of this diagnostic disparity. Diagnostic reform may include the alteration or expansion of current criteria to reflect the phenotypic differences that are seen between males and females to minimize the likelihood of an individual being missed by the diagnostic criteria. These reforms may also include education and updating training for psychologists and mental health professionals to ensure that their knowledge and understanding reflects the changing climate of this issue. The consequences of this disparity also reveal the necessity of increased support systems for late identified autistic individuals, including governmental, as well as academic or community based supports. Increased public awareness, through general education as well as social media may also be effective in improving belonging and community for autistic individuals. These reforms and support modifications would serve to increase awareness and education of these systemic biases in order to reduce the diagnostic gap, and to increase the mental health outcomes of autistic individuals who are affected by this issue.

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## **Appendix A.**

### Prefatory Essay

The experience of producing this project was an extremely enlightening one; the idea for this project came from the increase in social media awareness that I have personally noticed in the last few years. Striking comparisons between the social media content that I have observed and the qualitative and quantitative research that exists was very interesting, and quite illuminating. This project was also beneficial to my personal understanding of psychology and the difference between what is traditionally accepted and the reality, and how this may negatively impact individuals who may get passed by.

This project was frustrating at times as well; the lack of comprehensive and inclusive data was not only frustrating, but also disheartening. Seeing firsthand the lack of proper research and lack of tangible movement towards a change in this issue was difficult to accept, and at times made it challenging to feel hopeful about future outcomes. The experience of recognizing that this topic is still lacking significant understanding, even amongst experts, was also a challenging one.

Although this project yielded fruitful and illuminating results, there were still some problems that emerged while conducting searches and perusing the literature. One of these emergent problems was a general lack of consistency of statistics and qualitative data between sources. Measures of prevalence, as well as statistical measures of disparities were not consistently reported; some research indicated higher overall prevalences of ASD, while others reported lower. Certain studies cited very few differences between prevalences and presentations among males and females, while others noted nearly entirely different recognizable criteria. The



discrepancies between sources not only proved challenging for synthesis, but also revealed the influence on statistics that the subjective and biased diagnostic criteria can have.

Another prevalent concern while conducting this analysis was the difficulty in keeping up with preferred terms and avoiding the use of terminology that is not appreciated by the community. Some examples of this include the terms “high functioning” or “low functioning” to refer to the level of support needed by an autistic individual. These terms are not always accepted or appreciated within the community; however, these terms are seen frequently in research. Another example of this is the use of Asperger Syndrome, as opposed to ASD. Asperger Syndrome is no longer a recognized diagnosis in the DSM-5, but it is still used in research on a surprisingly frequent basis. This may be related to the idea that for studies being conducted on adults, the participants may have been recipients of an Asperger’s diagnosis, given that it was not discredited until 2013. Noting the discrepancies between what is communicated within autistic communities and what is portrayed in the research was at times a difficult barrier to work around. It was challenging to find a balance between accurately representing the community and their preferences, and the formal research that has been synthesized.

There are quite a few research and analytic avenues that were rejected for this paper, mainly due to the fact that these additional topics were beyond the scope and timeline of this project. One of these rejected avenues would address the relationship between Autism Spectrum Disorder and Attention Deficit Hyperactivity Disorder (ADHD). Both of these conditions are classified as neurodevelopmental disorders, and can often occur comorbidly. ADHD has faced similar research disparities as ASD, in that the diagnostic criteria has been created to reflect characteristics that were observed in young white males. ADHD traits, like autistic traits, can appear differently in males than females, thus creating a similar sex-based diagnostic gap. Social

media awareness has also had a similar effect that autism awareness and education has, and has emerged as a point of concern for many. Examining the relationship between these concepts for both ADHD and ASD could reveal their similarities, and likely help demonstrate the need for future research and diagnostic reform for both diagnoses.

Another rejected avenue of study is the way in which these disparities and diagnostic perceptions vary depending on race, ethnicity, and cultural background. This analysis was conducted using research from Western medicine and developed first-world countries; the diagnostic criteria and understanding of ASD could be drastically different depending on cultural context and the state of health systems. Social norms and societal expectations, as discussed, also play a role in the diagnosis and potential gaps that are seen in ASD; social norms vary depending on culture and could further impact the way that ASD is viewed, both between males and females in different cultures. Global statistics on prevalence of ASD vary drastically, and this is likely indicative of variations of the views of the disorder, and the subsequent issues that arise specific to that cultural context. Further research examining the variations and potential causes for these global differences could be used to better understand how the diagnosis and perception of ASD differs between cultures.

As discussed, this analysis focuses on the diagnostic gaps and nuances of this issue on the basis of sex, rather than gender identity. Delving into the disparities seen within the gender spectrum would have been too complicated for this analysis, but could be a potential avenue for further study. Examining whether these differences vary depending on gender identity rather than just sex alone could shed light on the diagnostic aspects of ASD diagnosis and how they intertwine with societal expectations and gender norms. In particular, examining the prevalence and nuances of this diagnostic gap for individuals who identify as nonbinary or transgender and

the age at which they “transitioned,” or began presenting as an identity that did not align with their assigned sex at birth, could illuminate the extent to which social expectations for men versus women plays a role in this diagnostic gap. Additionally, this distinction between sex and gender presents an important limitation to this analysis, in that these traits are examined across a sex-based dichotomy, but are generalized to be applicable to men versus women. This generalizability may be used erroneously to apply sex-based differences to trends in gender differences. Conducting further research addressing gender versus sex could help alleviate this generalizability issue.

Overall, despite the frustrations, this was a very illuminating and intensely interesting project to complete, with plenty of further avenues for future research. The need for continued exploration and improved understanding of this concept is clear. My hope would be to continue seeing rises in social media awareness and discussions, as well as improved research and reformed diagnostic criteria in order to allow people to adapt their views and acceptance of ASD, and to include those who have been missed by traditional systems.