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Empathizing and Systemizing

Benefits of Cognitive Diversity and
Support Mechanisms for ASC Individuals

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Empathizing and Systemizing:
Benefits of Cognitive Diversity and
Support Mechanisms for ASC Individuals

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Abstract: Diversity is increasingly important to individuals, organizations, and societies. Despite this rise in popularity, the benefits of diversity can be misunderstood and suboptimally supported. This misunderstanding is often related to a lack of precision in defining and measuring diversity. This article explores the manifestation and significance of neurodiversity, an important but often overlooked element that can contribute to the diversity of groups of all shapes and sizes. Neurodiversity may be defined as relating to the strengths and preferences of empathizing and systemizing behaviors. This article evaluates the impact of diversity of empathizing and systemizing preferences and, through the application of Empathizing-Systemizing Theory, provides recommendations for leveraging strengths along this spectrum. The relation of neurodiversity to other forms of diversity, primarily demographic diversity, is also discussed. Recommendations are provided about how one may harness knowledge about neurodiversity to create and contribute to approaches that support individual and societal innovation and wellness.

Keywords: Empathizing, Systemizing, Diversity, Neurodiversity, Autism, Support

Introduction

Diversity is an increasingly important topic in all areas of personal, professional, and public life (Horwitz and Horwitz 2007). Although widely recognized as a value of both individuals and organizations, the benefits of diversity are often poorly understood and suboptimally supported (Harrison and Sin 2006). This article explores an important, but often overlooked, element of diversity: neurodiversity (Baron-Cohen 2020). More specifically, this article evaluates the impact of diversity of empathizing and systemizing preferences and behaviors in teams, organizations, and societies. Much like the spectrums of strengths and preferences that exist in other dimensions of individual difference (e.g., extraversion vs. introversion), there is a spectrum of differences among brain functioning related to empathizing strengths and systemizing strengths (Baron-Cohen 2020). This empathizing-systemizing spectrum is pictured in Figure 1. As individuals, organizations, and societies, we benefit from the unique contributions of individuals who fall at all points along this spectrum.

Figure 1: The Empathizing-Systemizing Spectrum
Source: Baron-Cohen 2020

Individuals with preferences and behaviors at the high systemizing end of the spectrum can be described as having Autism Spectrum Condition (ASC). Oftentimes referred to as Autism Spectrum Disorder, or ASD, the term ASC better demonstrates that this way of thinking, processing, and relating is not a disorder, rather simply a different way of being. In fact, far

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from being a disorder, ASC has led to contributions and advances that would not be possible without individuals who are able to cognitively process information in a highly systematic way (Baron-Cohen 2020).

The value of individuals with ASC, or high systemizers, does not in any way diminish the value or contributions of those on the opposite end of the spectrum, high empathizers. These individuals have great strengths in relating to and understanding others and also contribute greatly to the advancement of society. Indeed, our lives and our world would be far less rich if it were not for individuals with behaviors and preferences at all points along this spectrum (Baron-Cohen 2020). The benefits that come from these unique individual strengths exemplify the contributions diversity may provide to societies. In order to better support cognitively diverse individuals, to foster their flourishing, and to maximize the potential of their special contributions, we believe that it is necessary for individuals and organizations to have a curiosity about this important form of diversity, an acceptance of individual differences, and an openness to enable different types of thinking to further the growth and benefit of everyone.

To that end, this article provides information about diversity, paying specific attention to the importance of precisely defining different types of diversity and clarifying the different benefits that may arise from these distinct types. Next, we review current literature to describe ASC and associated stigmas and, through the use of Empathizing-Systemizing Theory, provide information about how individuals and groups can use knowledge about different brain types to support cognitive diversity. The relation of neurodiversity to other forms of diversity, primarily demographic diversity, is also discussed. The article concludes by providing recommendations about how one may harness knowledge about neurodiversity, creating mechanisms which ensure that support is provided to enable all individuals, and, therefore, societies to thrive.

Diversity and Performance: Demographic and Cognitive Diversity

The importance of diversity is not new phenomenon. For over 100 years, individuals in a number of different fields have recognized the value that comes from diverse perspectives and experiences (see Montalto and Montalto 1982). In recent years, however, the topics of diversity, equity, and inclusion have received more attention in both the popular press and academic literature than ever before. This rise in the popularity of diversity and related topics has contributed to wonderful advances in all areas of daily life. For example, most organizations now hire for the position of Chief Diversity Officer, and there are for-profit companies that operate with the sole purpose of measuring corporate inclusivity.

One potential drawback of the rise in information about diversity and its benefits, however, is that there is a general lack of awareness of the many forms that diversity may take and the different benefits yielded by the presence of these different forms. This rise in information, therefore, amplifies misunderstanding. According to Harrison and Sin (2006), diversity is meaningful only when it is narrowly defined or dimensionalized. There is no single measure that can accurately reflect a team or organization's overall diversity and there is no conceptual basis for expecting different dimensions of diversity to be related to one another (Harrison and Sin 2006).

Many broad areas may be used to conceptualize different forms of diversity. For example, McGrath, Berdahl, and Arrow (1995) divided diversity into three dimensions: (1) personality, demographics, and traits; (2) values, beliefs, and attitudes; and (3) knowledge, skills, and abilities. Bell and colleagues (2018) used the terms surface- and deep-level attributes to distinguish between various forms of diversity. In this article, we distinguish between cognitive and demographic diversity.

Similar to Bell et al. (2018), the distinctions of cognitive and demographic diversity mark those attributes of diversity which may be visible or easily intuited versus those requiring more information. Demographic diversity includes such attributes as age, gender, and race. Cognitive

diversity relates to qualities like personality, moral values, and patterns of thinking. Some measures of diversity, including elements like religious beliefs or academic background, blur the lines between surface- and deep-level and can be thought to have characteristics of both.

Although there are important differences between cognitive and demographic diversity, both types of diversity can contribute to organizations or societies in important ways. Considering demographic diversity, Conley (2018) persuasively wrote that organizations comprised of individuals from different age groups can collectively achieve remarkable results. Herrmann and colleagues (2016) identified the important role that gender diversity in leadership positions can play in academic settings. Turban, Wu, and Zhang (2019) defined the benefits that organizations can derive from gender diversity. Chang (1999) found that racial diversity of educational institutions leads to enhanced educational outcomes. Clearly, demographic diversity is important.

Considering cognitive diversity, other important benefits emerge. According to Rodan and Galunic (2004), diverse pools of knowledge are critical to team innovation. Reynolds and Lewis (2017) noted that differences in knowledge processing and perspective lead to enhanced performance. Similarly, Williams and O'Reilly (1998) found cognitive diversity to positively affect team performance, especially where innovative or creative tasks are required.

Unfortunately, many of the findings related to the benefits of cognitive diversity and demographic diversity have been conflated. General statements such as "more diverse teams come up with more innovative ideas" are common. Although this statement is true, it is imprecise. Along with that imprecision comes misinterpretation about how to leverage diversity to best achieve desired outcomes. For example, simply adding females to a male-dominated team will not necessarily lead to more creative output. Where gender diversity is more meaningful is by providing leadership representation that inspires ambition of all individuals regardless of gender.

One must be especially careful when discussing the benefits or outcomes of diversity because the various forms that diversity may take are not necessarily related. In fact, more often than not, there is no relation between demographic and cognitive diversity (Harrison and Sin 2006; Kilduff, Angelmar, and Mehra 2000). Although cognitive diversity has been clearly shown to positively influence team effectiveness, the same cannot be said for demographic diversity. According to Chowdhury (2005), demographic diversity is not important for team effectiveness in innovative settings. More generally, Horwitz and Horwitz (2017) found that demographic diversity is not related to task performance.

It should also be noted that the influence of demographic and cognitive diversity is not static. When teams are first formed, demographic diversity has a larger level of influence as teams have not yet learned about the deep-level attributes that define their members. As team members work together over time, the influence of demographic diversity weakens and the role of cognitive diversity becomes increasingly important (Harrison, Price, and Bell 1998).

Autism and Neurodiversity

As previously stated, an important form of cognitive diversity is neurodiversity. ASC is one form of neurodiversity and impacts the daily functioning of an individual. The condition may be indicated by deficits in sensory processing (or sensory hypersensitivities, such as strong reactions to lights, sounds, touch, etc.), challenges with peer connections, intolerance for ambiguity, resistance to change, and repetitive actions (Baron-Cohen 2009; Boulter et al. 2014; Chamak et al. 2009; Cuccaro et al. 2003; Leveto 2018; Nuske et al. 2019). Although the basis for ASC is continuously changing, the condition persists to be recognized by challenges in social interaction, impairment in verbal and nonverbal communication, and narrow interests and activities (Baron-Cohen 2009; Leveto 2018; Nuske et al. 2019).

Due to the diverse traits an autistic individual might embody, their behaviors are often identified as straying from "normal" behavior. For someone to be diagnosed with ASC, the pattern of that individual's behavior is observed by a clinician over time to determine consistency and progression of symptoms (Leveto 2018). Within psychiatry, autistic individuals are distinguished from neurotypical people without consideration for biological markers (Anckarsäter 2010).

As a result of "abnormal" behaviors exhibited by autistic individuals, different communities may attempt to improve the condition. For example, some medical communities and parents insist that medicine could facilitate normalization by "curing" autism (Chamak et al. 2008). Within the medical model of autism, there is an aspiration to normalize the condition by reducing symptoms and removing the condition based on difficulties believed to cause functional impairment in daily life (Baker 2011). Categorizing autism in this way disregards advantageous behaviors, the purpose for behaviors, and society's position in deciding appropriate conduct (Kapp et al. 2013). From the medical perspective, autism is perceived as a hostile and separate part of the child that needs to be cured due to the upsurge in diagnoses, rather than as a unique aspect of the person's identity.

As argued by Skubby (2012) though, it is primarily those with autism who own the knowledge of their condition to cope with it. Therefore, acceptance and admiration within a community significantly enhances the lives of autistic people more so than behavioral and psychiatric treatments (Skubby 2012). In this way, treatment can truly manifest when people recognize that autism is not a harmful disorder, but rather, a unique condition that further differentiates human beings. As suggested by Leveto (2018), future goals should "attempt to provide a space where the human experience is centered on the dynamic interplay between the individual and society" (Leveto 2018, 13). Even though autism lays out a perspective into expressions of unusual interpersonal relations, it can reflect and teach new ways of comprehending humans, humanity, and the world we live in.

Neurodiversity Movement

To better understand the experiences of people with autism, the neurodiversity movement has supported a more positive view of the condition. In one study conducted by Kapp and colleagues (2013), results indicated that self-identification as autistic and neurodiversity comprehension were linked with perceiving autism as a positive identity that requires no cure. Thus, the neurodiversity movement disputes the medical model's interest in causation and cure by suggesting that autism does not need to be removed and social conditions should be improved for autistic individuals. Instead of perceiving autism as a disorder that needs to be treated, advocates of the neurodiversity initiative often adopt a form of the social model of disability (Shakespeare 2006) by detailing ways of being (i.e., autism) and disability as currently having unreachable social and political support (Baker 2011). More importantly, the movement celebrates autism as an inseparable aspect of identity, suggests that autism is produced by biological factors, and recognizes autism as an element of natural human distinction (Jaarsma and Welin 2012; Ortega 2009). The difference model is often referred to in the neurodiversity movement, which understands autism as a "different way of being" and an outcome of differently wired brains (Kapp et al. 2013; Leveto 2018).

The neurodiversity movement originated from the difference model and supports the rights of autistic individuals. This approach views autism as a unique cognitive style rather than as a "disorder" and "calls for acceptance of neurological variation among people" (Leveto 2018, 3). Neurodiversity promoters highlight that the experiences of autistic individuals make them important influencers in guiding efforts to rectify sociopolitical obstacles and enable equal opportunity. For example, advocates go against negative criticisms of autism, such as avoiding eye contact or repetitive body movement, by seeking to improve accommodations in various aspects

of life through and by emphasizing the importance of personal coping strategies (Baker 2011; Chamak et al. 2008; Ortega 2009). Thus, interventions like Applied Behavioral Analysis (ABA) are viewed as opposing the mission of the neurodiversity movement because it is deemed as an attempted approach to normalize the behaviors of autism into more "normal behaviors," rather than accepting the behaviors as unique to an autistic person's identity (Kapp et al. 2013).

The neurodiversity movement encompasses various goals that benefit society and autistic individuals alike. One of the goals of the neurodiversity initiative is to contribute a culture where autistic people feel gratification in a minority group identity and give mutual assistance in self-advocacy as a community (Baker 2011; Jaarsma and Welin 2012; Ortega 2009). Another goal is to advance subjective well-being and "adaptive instead of typical functioning" (Kapp et al. 2013, 60), such as reliable, but not necessarily spoken, communication (Ne'eman 2010; Robertson 2010). As a result of beneficial social support and self-confidence, self-advocates can perceive strengths, differences, and weaknesses linked with autism as essential to their identity.

Neurodiversity Advantages

Despite the multiple shortcomings of having a developmental "disability" like autism, the condition provides advantages in different aspects of a person's life. As explained by Austin and Pisano (2017), many managers acknowledge the pros institutions can attain from diversity in backgrounds, academic training, gender, culture, and other individual characteristics of employees. In regards to autistic individuals, they are 'wired differently' than neurotypical people. Therefore, neurodiverse people provide a fresh perspective to a company's efforts to design or realize values.

The behaviors of many neurodiverse people might be viewed as the opposite of what typically makes an ideal employee: solid communication skills, being part of a team, emotional intelligence, persuasiveness, sales-person type skills, the ability to make connections with others, and the capability to observe usual practices without special arrangements, among others. Due to these absent qualities, neurodiverse people are often turned away from opportunities and remain a largely ignored talent pool. For instance, neurodiverse people in a research study shared that even after displaying valid credentials, they had to settle with occupations people leave behind in high school, such as working at a grocery store (Austin and Pisano 2017).

Although the above "desired traits" of an employee are ever-present in today's social world, the ability to compete on the grounds of innovation has become more important for companies in recent decades. Having people who view things uniquely, who might not "fit in" at first, helps counterbalance the inclination for large companies to think unilaterally. Historically, companies have asked employees to cut back on their inconsistencies because it is easier to group people together if they are all perfectly shaped. This necessitates employees to "leave their differences at home," which are differences organizations need to innovate and to display their creativity in the workplace (Austin and Pisano 2017, 103). It is important for neurodiverse people to feel comfortable and able to share their talents in the professional world so they can contribute to their community in meaningful ways (Austin and Pisano 2017).

Luckily, there are many well-known organizations that act upon the need to innovate by valuing the contributions of neurodiverse people in the workplace. Contemporary neurodiversity initiatives encourage organizations and their leaders to place each person in an environment that maximizes their contributions. For example, SAP's Autism at Work program uses a metaphor that emphasizes the need to have a neurodiverse workplace: "People are like puzzle pieces, irregularly shaped" (Austin and Pisano 2017, 103). SAP, a major global technology company based in Germany, states that the company does not ask employees to change what makes them unique or conform to an ideal way of being. Rather, the organization embraces people's uniqueness and supports the diverse skills and perspectives of autistic individuals to promote creativity as the company helps customers become intelligent

enterprises. The program taps into an underused talent source (i.e., autistic persons), lessening barriers to entry so qualified people can fully embrace their potential. As a result, autistic employees are applauded for their skills, such as attention to detail, memory, and intelligence. Simultaneously, autistic employees are able to exit their comfort zone by attending social gatherings and becoming more confident in themselves.

Education and Autism

Autistic children often face different behavioral, communicative, and emotional obstacles in daily life, including in school settings. In general, children with autism have lower social skills than neurotypical (typically developing, TD) classmates. As highlighted by Nuske and colleagues (2019) in a review about school transition difficulties, previous studies (e.g., White et al. 2015) showed that ASC children struggled with anxiety and experienced increased social pressure. Also, their parents felt overwhelmed with complex placement choices and worried about the well-being of their children. As detailed by parents, ASC children transitioning to kindergarten experienced challenges effectively communicating with peers and teachers and adjusting to new routines. These anxieties continued through the secondary transition, where children and parents reported an increase in social and emotional fears between the transition. Furthermore, ASC children moving on to secondary school encountered additional difficulties with their mental health, sensory, behavioral and adaptive functioning, academics, peer relations, social skills, and other obstacles. The various challenges disrupted ASC pupils' adjustment to their new environment and learning.

Student Strategies

Although anxiety and challenging behavior (e.g., aggression and reactive outbursts to sensory overstimulation) are also commonly reported among neurotypical students when transitioning between schools (Ladd and Price 1987), ASC pupils might feel more overwhelmed due to their communication difficulties and poor peer support. This overwhelm might also be an outcome of unmet needs in other areas such as adaptive and executive functioning, processing speed, sensory sensitivity, emotion regulation, attention control, and repetitive behaviors (Nuske et al., 2019). Four different strategy themes were provided for the student interactivity and characteristics challenges experienced: planning, visual supports, social supports, and self-regulation. For instance, a peer buddy system gives ASC students social support to help navigate the new school environment. Having a designated safe person or space reassures students that they always have a person or place they could trust for support at school (e.g., library). Also, coping strategies empower students to calm themselves and manage their negative emotions at school (Nuske et al. 2019).

Overall, the techniques aimed to promote social support and coping strategies reflect the difficulties encompassed within the common traits of ASC. With the success of peer-mediated school interventions for ASC students (Chang and Locke 2016), it is important to investigate the impact of peer-mediated techniques on classroom acceptance of diversity and inclusion attainment (Nuske et al. 2019). To reach acceptance and inclusion, individuation of support is vital since there are a variety of ways ASC symptoms can present themselves and there are different individual needs of children across the autism spectrum.

Making Sense of Themselves

Due to insufficient social support and absence of coping mechanisms, ASC pupils might find it increasingly difficult to make sense of themselves in the school environment. Since young people spend most of their time in school, interpersonal undertakings occurring in that setting

have a powerful effect on sense-making (Williams, Gleeson, and Jones 2019). There are three intersecting elements of experience which contribute to many ASC students perceiving themselves as "different" to neurotypical peers in negative ways: challenges associated with ASC; interpersonal relationships, mainly with parents; and availability of the school setting. According to Nuske and colleagues (2019), there must be greater efforts to inform education policy and practice so that the individual needs of pupils are answered and to improve the experiences, self-esteem, and well-being of ASC students in inclusive settings.

As an individual progresses through life, there becomes an increased aspiration to become accepted by others. For example, adolescents have a desire for high-quality, close friendships, which give way to a sense of belonging and have a strong positive effect on overall self-worth and long-term mental health (Bagwell, Newcomb, and Bukowski 1998). Contrarily, peer rejection is associated with decreased self-esteem (Ladd and Troop-Gordon 2003) and poorer mental health (Bagwell, Newcomb, and Bukowski 1998; Humphrey and Hebron 2015). As stated by Williams, Gleeson, and Jones (2019), evidence that interpersonal connections and self-reflection in the social world are vital in developing self-understanding, plus findings that most ASC students are marginalized at school, raises serious concerns that the school experiences of these students might unfavorably affect sense-making about the self. For instance, studies using social networking surveys to investigate peer relationships in mainstream classrooms containing at least one ASC student have discovered that autistic individuals are less accepted by peers and have fewer reciprocal friendships than TD classmates (e.g., Kasari et al. 2011). This problem has not received much research attention, possibly because some falsely assume that the social world is less relevant to autistic people's self-examination, when in reality it is quite the contrary (Bagatell 2007).

As a result of unfavorable social interactions, autistic students primarily view their condition and themselves negatively. To reach a point where ASC pupils can become accepted and included by others so that their uniqueness can be perceived positively, self-development plays a significant role. As explained by Morf and Mischel (2012), self-development is socially constructed through interactions with (and perceptions of) others, while these interpersonal experiences are themselves illuminated by a socially acquired comprehension of both the nature of relationships and the person's thoughts and feelings about themselves. Therefore, ASC students can begin to positively make more sense of themselves with the help of strong and willing social support.

Social Comparisons

Autistic students, who perceive their differences as mostly negative, might refer to neurotypical students to determine how to seem "normal." Over the course of a child's time in school, the child becomes more aware of how they are unique from others. In an effort to figure out where they stand socially, children compare themselves to others to determine their self-value and self-understanding. For example, at around age eight, children's self-acceptance and self-evaluation become increasingly connected to others' appraisal of them (e.g., Ladd and Troop-Gordon 2003). Developmental research demonstrates that from early to middle childhood, young people's need to fit in with their peers and avoid rejection grows (Rubin et al. 2005). Within this research, various findings (e.g., Hill 2014; Humphrey and Lewis 2008; McLaughlin and Rafferty 2014) have identified that many ASC pupils share this desire, but report being unable, or not knowing how, to fit in. Documentation (e.g., Mussweiler 2003) shows that social comparisons, which increase and become narrower over time, play a vital part in framing one's self-appraisal.

Social comparisons often highlight the differences and negative elements of an autistic student's condition compared to neurotypical pupils, which informs their self-evaluation. The comparisons mainly revolve around the idea of "normality" and lead to an awareness of being "different," rather than promoting self-esteem as is often the case in TD individuals (e.g.,

Mussweiler 2003). Particularly, upward social comparisons (Festinger 1954) highlight things ASC students do poorer than peers, underlining the effect of restrictive parts of autism rather than facilitating improvement (Williams, Gleeson, and Jones 2019). Furthermore, several studies (e.g., Baines 2012; Carrington, Templeton, and Papinczak 2003) emphasized the perceived disadvantages autistic students felt, which were explicitly connected to their diagnosis. From this perspective, ASC students viewed their condition as limiting them in specific ways, taking something away that they otherwise would have had (such as friends), being an obstacle to getting along with others, causing people to disrespect them, making them stand out as odd, or as distancing them from their peer group by leading them down an alternative route. A previous analysis by McLaughlin and Rafferty (2014) also demonstrated that the perceived effect of issues connected to ASC might be sharpened by specific beliefs about the issues, such as the thought that they are permanent and unchangeable.

Fortunately, the perceived restrictive effects of autism are not inevitable and are not permanently self-destructive, thus turning the limitations into positive self-evaluations. In a few studies (e.g., Baines 2012; McLaughlin and Rafferty 2014; Penney 2013), some students made positive (downward) social differentiations, mostly between themselves and individuals understood to have more severe ASC, considering themselves closer to "normal" compared to students and peers with more visible conditions. Other autistic students detailed themselves as better than peers in association to particular skills, highlighting certain strengths. In one instance, a student highlighted accomplishments and good friends in their life, suggesting their self-identity resides more in what they *can* do and what they possess, as opposed to perceived hindrances (Humphrey and Lewis 2008). The experience of the student is consistent with research delving into positive accounts of people with other conditions, which shows that negative aspects are not always integrated into self-identity (Shakespeare, Thompson, and Wright 2010). Although ASC students may view themselves as "different" from TD peers, an inclusive conventional environment might heighten, rather than reduce, variation (Williams, Gleeson, and Jones 2019).

Autism Stigmas

Regardless of the social environment, stigmas affect the thoughts and behaviors of autistic individuals in various situations. As stated by Gray (2002), stigmas of autism are usually centered round the family, such as parents with autistic children. Stigmatization among parents with autistic children involves various factors: biological variations of children, negative evaluation of qualities by others, unfavorable responses by others, and disadvantageous social and emotional outcomes for parents themselves. Previous findings suggested that most parents of autistic children experienced 'felt stigma', the feeling of shame or fear of rejection. Embarrassment was the most common manifestation of felt stigma of parents because they thought others disapproved of their child-raising abilities (Gray 2002). Within countries like the United States for instance, there is an expectation that parents should be able to control their children's unusual behaviors (Leveto 2019). More commonly though, autistic students themselves are stigmatized in the form of constant victimization due to their perceived differences.

Bullying

A prominent theme within previous literature is that bullying makes it more difficult for autistic students to express their individuality. Previous research (e.g., Humphrey and Hebron 2015; Rowley et al. 2012; Schroeder et al. 2014) detailing accounts of parents, teachers, and self-reports outlined that autistic students encounter significantly higher levels of bullying than TD students and most other groups with special educational needs. Bullying is characterized by peer victimization, which encompasses name calling, physical violence and teasing. Due to its

continuous nature, many autistic pupils noted experiencing emotional distress, depression, and/or anxiety (e.g., Humphrey and Lewis 2008; Penney 2013).

Some students believe they are constantly targeted due to being perceived as "different" by TD peers and/or because the students are known to have autism (Carrington, Templeton, and Papinczak 2003; Punshon, Skirrow, and Murphy 2009). This stigma of affiliation is known as courtesy stigma, which applies to people who are associated with a stigmatized group or member of a stigmatized group. The feeling of failing to be 'normal' is an instance of enacted stigma (Gray 2002), which causes autistic pupils to understand themselves as falling short in some way and leads to feeling rejected by others (Baines 2012; Humphrey and Lewis 2008; McLaughlin and Rafferty 2014).

Traits linked with autism initially seem to increase the risk of autistic pupils becoming victimized. Consequently, the way students react to the victimization further increases the possibility of future bullying, resulting in a progressively worsening scenario. For instance, ASC pupils reported their difficulty in judging peers' intentions toward them and their inability to differentiate between teasing and a friendly approach (e.g., Humphrey and Lewis 2008; Penney 2013). Over time, this, along with constant bullying, reduces autistic students' trust in peers and lessens engagement in social interactions (Hill 2014). This translates into increased social isolation, which contributes to an absence of peer acceptance and further increases autistic pupils' chances of future bullying (Humphrey and Hebron 2015; Schroeder et al. 2014). As result, autistic students might utilize negative terms to characterize themselves, such as "weido"/"weird"(Carrington, Templeton, and Papinczak 2003) and "different from normal people" (McLaughlin and Rafferty 2014), which likely reflect an internalization of the negative reactions of peers toward them as they identify with terms related to bullying and teasing.

Altogether, prior research suggests that negative peer reactions (i.e., constant teasing and bullying) can greatly worsen existing challenges and negative perceptions of variation in ASC pupils. Contrarily, not all students view their condition in a negative sense. Positive attitudes and behaviors (i.e., supportive friendships) can generate a positive sense of self and feelings of acceptance. As a result of kind and supportive gestures, previous studies (e.g., Humphrey and Lewis 2008; McLaughlin and Rafferty 2014) reported that a few people interpreted their perceived variation and autism more positively, accepting it either as something to commemorate, an important part of the individual, or as simply unproblematic. This favorable self-evaluation highlights the importance of fostering an inclusive community where ASC individuals may feel comfortable expressing themselves and display their unique talents without fear of victimization.

Empathizing-Systemizing (E-S) Theory

Various models and theories have been used when framing autism, such as the social model of disability and the difference model. One theory that could aid in framing an intervention to enhance acceptance and support of autistic individuals in a variety of social settings is the Empathizing-Systemizing (E-S) Theory. This approach explains social and communication difficulties in autism and Asperger syndrome in connection to delays and shortfalls in empathy while noting superior skills in systemizing (Baron-Cohen 2009).

As explained by Baron-Cohen (2009), the theory argues that two factors are required to explain social and nonsocial aspects of autism: affective empathy and systemizing. Affective empathy is having an appropriate emotional response to another person's thoughts and feelings. Since autistic individuals have below average empathy, the theory provides a simple way to explain their social and communication hardships. Systemizing is the ambition to examine or formulate systems, which distinctly behave by certain rules, by deciphering a system's rules in anticipation of how that system will act. When a person systemizes, things are kept constant and are only changed one item at a time. By doing so, it is possible to see what might be causing

what, which makes the world more predictable for autistic individuals. There are many kinds of systems, including collectible systems (e.g., differentiating between types of stones), mechanical systems (e.g., a video recorder), and numerical systems (e.g., a train timetable), among others. Regardless of the system, rules are established when "p" and "q" are linked in a structured way, such that if "p" happens then "q" happens (Baron-Cohen 2009).

Systemizing has been reported to be enhanced in ASC individuals relative to TD individuals (Baron-Cohen 2020). For instance, unusually strong systemizing in autism and Asperger syndrome showed that children demonstrated above-average performance on a physics test (Baron-Cohen et al. 2001). Other research highlights the Systemizing Quotient (SQ), where the higher the person scores, the stronger their desire to systemize. Previous studies (Baron-Cohen et al. 2003) outlined that people with high-functioning autism or Asperger syndrome scored higher on the SQ than neurotypical individuals. Furthermore, Baron-Cohen, Leslie, and Frith (1985) found that children with typical autism reportedly performed better than TD people on picture sequencing assessments because stories can be sequences utilizing physical-causal concepts inherent in E-S Theory. ASC persons also scored higher than average on an assessment of how a Polaroid camera functions (e.g., Baron-Cohen, Leslie, and Frith 1985).

Advantages to E-S Theory

Baron-Cohen (2009) highlighted several advantages of E-S Theory. First, the theory can help characterize distinct profiles of ASCs. For example, strong systemizing abilities of autistic individuals could be used to teach empathy by showing emotions in an autism-friendly manner. One suggestion was to present virtual facial expressions so that autistic people can teach themselves emotion recognition using computers. This method involves showing mental states (e.g., emotional expressions) as if they are lawful or structured, even if they are not (Baron-Cohen 2009).

Second, the theory can explain what is usually viewed as an inability to "generalize" in autism. The E-S Theory states the inability to generalize is what one could anticipate if the autistic individual is attempting to comprehend each system as its own. Baron-Cohen (2009) explained that an effective systemizer is a splitter, not a lumper, because combining things together makes it possible to miss key differences that allow a person to predict how the two things behave uniquely. An example would be teaching a child with autism to complete a task in one setting (e.g. washing hands at home) and teaching it again for a different location (e.g., washing hands at school). If the child is viewing the situation as a system, the separate characteristics (e.g., type of faucets) of each may be more prominent than their common features (e.g., turning on water, using soap) (Baron-Cohen 2009).

Third, the E-S Theory destigmatizes autism and Asperger syndrome. The theory connects autism and Asperger syndrome to individual distinctions seen in the general population (i.e., demographics), instead of categorically distinct or strange. For many years, the autism diagnosis was feared by numerous parents because to them, it presented autism as a brain disease and proposed that their child was biologically set apart from the rest of humanity in not having proper social interaction skills (Baron-Cohen 2009). To combat this, the theory posits that although distinct from TD individuals, autistic people can bring their own exceptional systemizing skills to the places they inhabit while also hopefully gaining support for improving their empathy. Since the theory focuses on both the areas of difficulty (empathy) and the realms of strength (systemizing) in ASC, the E-S Theory views the condition as an individualized uniqueness in cognitive style part of a continuation of such differences found in everyone (Baron-Cohen 2009). Even though the Empathizing-Systemizing Theory is new and empathy is difficult to assess, the approach can predict the preferences of ASC individuals and is beneficial in arguing for acceptance and inclusion of autistic individuals for who they are as human beings.

Neurodiversity and Demographic Diversity

The prevalence of autism diagnoses varies depending on a multitude of factors, including gender, race, and age. Gender refers to a range of internal and external experiences (Kirkovski, Enticott, and Fitzgerald 2013), the complex interaction between social gender and inner gender-related experiences, and deeply personal aspects of people that another person would not understand or realize without communication. Contrary to the assigned sex at birth, gender encompasses experiential, social, and cultural components like gender norms, gender roles, and gender identity (i.e., a person's experienced internal gender; American Psychological Association 2015), and other aspects. Due to the tendency to focus on differences in self-awareness in some autistic persons (Huang et al. 2017), there has been a general absence of attention to autistic people's inner experiences (Gillespie-Lynch et al. 2017), or in some cases, even acknowledgement that autistic people have an inner experience. Therefore, promoting curiosity about inner experience in autism is crucial because it links gender and sex discrepancies.

Since people might experience ignorant bliss related to an autistic person's inner experiences, there could be incorrect perceptions about sex and gender, such as a person's gender identity, traumatic experiences, and comfort with gendered roles. Additionally, there could be mistrust of the voiced experiences of autistic people who have gender-related traits and needs that diverge from the "average" experience (Strang et al. 2020). Within the complex process of adjusting social gender norms with one's inner experiences, some autistic people might feel unique pressure to conform to gender-related expectations. This pressure is especially prevalent in social interventions like compliance-based training, which emphasizes and reinforces how a person of a particular sex or gender must behave through rewards. The desire to be rewarded for appropriate actions might contribute to strong attachment to stereotypical gender norms and expectations, even if they are harmful and differ from a person's true inner experiences and needs (Jack 2014).

Gender Diversity and Differences in Autistic Males and Females

The relation between gender and autism is an example of how demographic and cognitive traits may be related as ASC affects males at a higher frequency than females (Brugha et al. 2011; Kim et al. 2011). Average estimates across studies proposed 4:1 for the spectrum as a whole (Fombonne 2003, 2009). Although autism is usually diagnosed in male children, previous research has suggested the proportion of females receiving diagnosis increases with age (Rutherford et al. 2016). There is a general understanding of the differences in autism between men and women; however, gender has yet to be articulated in autism (Cooper, Smith, and Russell 2018). Autism-related traits might facilitate greater freedom regarding social gender roles and societal gender expectations. For instance, autistic persons might feel less pressure to conform to societal norms (Strang et al. 2018), which could lead to increased expression of gender diversity, such as gender expressions, interests, and identities. Even though previous research (e.g., Geurts and Jansen 2012; Rutherford et al. 2016) indicated that age of diagnosis and duration from referral to diagnosis were reported to be similar between men and women, there are disparities between difficulties experienced in men and women with autism.

Regarding gender differences, it has been noted that autistic women and girls show distinctions in usual expressions of autism compared to autistic boys and men. Particularly, many autistic women and girls have fewer signs of repetitive behaviors and unnoticeable narrow interests than autistic boys and men. Autistic girls and women seem to have stronger social motivation compared to autistic boys and men (Sedgewick et al. 2016; Sedgwick, Hill, and Pellicano 2019), but have more difficulty creating and sustaining appropriate peer relationships and friendships. Due to increased societal expectations placed on females, the

group might exhibit greater social deficiencies, lower empathy abilities, and limited social functioning compared to autistic males. Specifically, none of the female participants in the McLennan, Lord, and Schopler (1993) study had any kind of reciprocal friendship after age ten, while at earlier points the outcomes showed more difficulty in this area for males.

Another way autistic males and females differ is in their play behavior. For instance, Knickmeyer, Wheelwright, and Baron-Cohen (2008) found that ASC females displayed superior imaginative play skills. Although autistic individuals were less likely to select games involving make-believe compared to TD children, the study showed that autistic females were more likely to choose to play female typical games involving imagination. Contrarily, autistic males did not show a preference for anything make-believe. Autistic females might have chosen make-believe activities because Kopp and Gillberg (1992) found that autistic girls were more likely to show patterns of copying other people's actions, thus hiding the presentation of social deficiencies. As a result, autistic females show what *appears* to be socially-appropriate play behavior, but do not have a deeper comprehension of the social value and meaning of their interactions and play (Kopp and Gillberg 1992).

Non-Binary Individuals

There is evidence that many autistic individuals experience incompatability between their assigned sex and gender identity. Increasing documentation (e.g., Dewinter, De Graaf, and Begeer 2017; Walsh et al. 2018) proposes that nonbinary experiences and identities might be particularly common in autism. Currently, there are no validated means of measuring nonbinary gender experiences in autism due to the limited information on nonbinary autistic individuals' gender-related needs, experiences, or mental health. Community-based accounts of gender development in autism have indicated that societal expectations for binary gender expressions might lead some autistic people to feel discomfort with their gender (Strang et al. 2020). This information further demonstrates the difficulties autistic individuals experience due to social gender norms and emphasizes the importance of establishing individualized, accepting, and inclusive settings for neurodiverse persons.

Recommended Framework for Gender and Autism

Strang and colleagues (2020) provided several recommendations for embracing a sex- and gender-informed framework in autism research and clinical practice. One of the suggestions was that sex and gender be included and measured as distinct entities, consisting of multiple continuously changing elements rather than as one constant variable. Therefore, new, autism-friendly measures should be created and implemented to include both binary and nonbinary experiences of gender. Evaluation and diagnosis of autism should also realize the effect of the gendered social environment autistic individuals. Since autism is a condition that develops over the course of a person's life and a person's gender experience may change over time, it would be beneficial to design an intervention that accounts for how norms affect an autistic individual's perception of themselves in an accepting and inclusive environment (e.g., workplace or school). Although autistic people of various genders behave and think differently from typically developing people, autistic persons (regardless of gender) provide unique perspectives and experiences to the social world (Strang et al. 2020).

Race and Autism

A number of prior studies (e.g., Emerson, Morrell, and Neece 2016; Jo et al. 2015), found that race is a distinguishing factor among diagnosed autistic individuals. For instance, Jo and colleagues (2015) found that non-Hispanic-white, any language (NHW) children with

mild/moderate ASC had a significantly higher proportion of later diagnoses than non-Hispanic-black, any language (NHB) or Hispanic-any race, other language children. The disparities in diagnosis could be because both physician and parent behavior contribute to diagnostic holdups in minority children (Emerson, Morrell, and Neece 2016).

In a different study by Horovitz and colleagues (2013), the connection between ASC diagnosis, race, and challenging behaviors was assessed using the Autism Spectrum Disorders-Behavior Problems for Adults (ASD-BPA) rating scale. From the ASD-BPA test, it was observed that people with ASC and intellectual disability (ID) showed significantly more challenging behaviors than those with just ID. No significant main effect for race was seen, but there was a significant interaction between ASC diagnosis and race. For example, in autistic people, Caucasian people showed more challenging behaviors than African Americans. Interestingly, in people without autism, African Americans showed more challenging behaviors than Caucasians (Horovitz et al. 2013). The relation between race and autism is another example of how forms of demographic and cognitive diversity may be correlated, although this relation may be due to diagnoses rather than actual differences among individuals of different races.

Age and Autism

Although autism diagnosis and perception of autistic individuals by peers impact how a person views themselves, previous research has shown positive outcomes stemming from early diagnosis. In one study by Johnson and Joshi (2016), it was reported that compared to individuals diagnosed later in life, people who were assessed for autism at an earlier age experienced greater organization-based self-esteem and lowered perceived discrimination. The greater self-value and reduced discerned discrimination came about when autistic individuals talked about their condition, worked at less socially demanding jobs, and were employed in ASC-supportive organizations. In most aspects of the study, when participants chose to disclose, or express, their ASC diagnosis to others at work, they shared this information with people they believed to be friends or in workplaces that were likely to have more acceptance and education about autism.

Overwhelmingly, however, participants in the study desired nondisclosure, or to suppress the stigma-related information, in the workplace because of concerns about stereotypes and further stigmatization upon disclosing that part of their identity (Johnson and Joshi 2016). Future interventions should be facilitated by knowledgeable individuals who are compassionate toward the autism community so that autistic persons feel more accepted, included, and comfortable expressing themselves within their community. Although the manifestations of autism are expressed differently by individuals at different ages, it is rare that autism will appear or disappear at any point during any individual's life. There is, therefore, no relation between age and presence of ASC, and there are a variety of differences among adults and children with ASC depending on their age of diagnosis and the expression of this condition.

Implications and Conclusions

For good reason, diversity is an increasingly important topic in the eyes of academic researchers and the general public. The misattribution of the effects of diversity; however, have become so widespread that some have explored whether diversity is a truly valuable concept or merely a "buzzword" (Clementi et al. 2019). Many of the arguments surrounding the empty promises of diversity are due to problems with defining and measuring this construct (Harrison and Sin 2006). In recognition of this importance, we have aimed to offer precise definitions and descriptions of different forms that diversity may take, focusing on the critical but under-recognized value that neurodiversity may play in group or organizational functioning.

Before value can be derived from the contributions of neurodiverse individuals, it is vital that there is a general appreciation for the different value that is contributed by high-systemizers. After differences are acknowledged and recognized as valuable, the important work of lifting up systemizing tendencies while simultaneously supporting lower empathic abilities may begin. E-S Theory provides an approach that reinforces our recommendation that future interventions should incorporate an accepting and inclusive environment that accounts for and improves the social conditions for autistic individuals based on their individualized strengths and weaknesses. At the same time, the theory combats societal stigmatizations, reinforces positive self-perceptions about identity, and presents a framework to recognize the unique inner experiences of all individuals regardless of demographic (e.g., gender, race, age).

Recognizing and enhancing social conditions is critical in all settings, from schools, to business environments, to society at large (Griffiths et al. 2016). We focused much of our discussion in this article on the academic environment as the most significant efforts to recognize, appreciate, and elevate the contributions of neurodiversity have been found in this setting. That is not to say that there is not more work to be done. Teachers, administrators, parents, and other individuals connected with school systems must be provided with opportunities to enhance their understanding of high-systemizing individuals. Along with these educational opportunities, information should be provided that highlights the important role that ASC individuals play in society, especially related to their work in creative and innovative capacities (Baron-Cohen 2020). As we look to create programs that foster creative thinking and entrepreneurial mindsets, we should look to the field of neurodiversity to provide guidance as to how the talents of individuals with high potential in these areas can be leveraged to benefit us all.

The importance of psychological safety is becoming more widely understood, thanks in large part to the high-profile work of Google (Delizonna 2017). The belief that one is "safe" despite their differences and the presence of a welcoming stance toward new information, differing opinions, and diversity of strengths leads to enhanced outcomes in academic and other settings (Foldy, Rivard, and Buckley 2009). We believe that these same recommendations apply to organizations of all shapes and sizes. We are all familiar with the adage that the jobs of the future will be drastically distinct than those which exist today. Requiring both empathy and innovative capacities, it is clear that individuals with strengths at both ends of the E-S spectrum will be critical to enable us to keep pace with technology and thrive in the future.

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