

In a world where diversity is celebrated and the array of human experiences is continually unfolding, Autism Spectrum Disorder (ASD) serves as a remarkable testament to the intricate testament to complexities of neurodevelopment. Picture a spectrum that extends beyond conventional perceptual limits, where each colour represents an individual's unique journey through social interaction, communication, and behaviour. ASD, a condition distinguished by its rich diversity and often misinterpreted complexities, has emerged as a central topic of exploration and comprehension in current discourse. As we begin this investigation, visualise the extensive range not as a rigid continuum, but more so as a vibrant array of hues, each contributing to an overarching narrative that transcends facile classification. The voyage into the realm of ASD is a captivating odyssey, meandering through historical transformations, affecting personal stories and advancing scientific findings. It beckons us to dismantle the layers of misconception, replacing them with a richly textured tapestry woven from strands of empathy, knowledge, and inclusivity.

The idea of autism was initially introduced in 1911 by Swiss psychiatrist Eugen Bleuler, who applied the concept to characterize a symptom of the most severe cases of schizophrenia, a condition he had also identified. According to Bleuler (1951), individuals with autistic tendencies tended to avoid unpleasant realities and replace them with fantasies and illusions. Autism was used to describe the individual's symbolic inner world, which was not easily observable to external observers. For several years, many psychologists, psychoanalysts, and psychiatrists in Britain followed this definition of autism. However, in the 1960s, the term "autism" was redefined after several British child psychologists questioned the theories about infantile thinking proposed by Bleuler and developed innovative methods, particularly epidemiological studies, to establish child psychology as a scientific discipline. Consequently, "autism" was redefined as a new diagnostic category to

align with this new model of child development (Evans, 2013). This new definition was later revised per the Diagnostic and Statistical Manual of Mental Disorder (DSM-5), a commonly used system for categorising mental health conditions. The DSM-5 identifies ASD as a set of neurodevelopmental disorders that are distinguished by the presence of impairment in social interaction and communication, as well as repetitive and restrictive interests and behaviours. The DSM-5 eliminates specific subtypes such as Asperger's disorder and pervasive developmental disorder-not-otherwise specified (PDD-NOS) that were included in earlier additions. Rather, it recognizes autism as a spectrum, encompassing a range of severity levels (Faras et al., 2010). To be diagnosed with autism, significant impairment in social, occupational, or other important areas of functioning must be present during early development. These impairments must be associated with at least two symptoms from a list of six, including persistent deficits in social communication and social interaction across multiple contexts,, as well as restricted and repetitive patterns of behaviour, interests, and activities (American Psychiatric Association, 2013).

As our investigation of ASD gains momentum, it is crucial to concentrate on a theory that has aroused substantial interest in the realm of autism research: the Empathizing-Systemizing (E-S) Theory. This theory serves as a guiding light, shedding light on the intellectually complex cognitive aspects that characterise individuals with autism. This theory offers a distinct perspective on the intricacies that define individuals on the spectrum, capturing their unique experiences and abilities. As we navigate through the intricate landscape of the autism spectrum, we are presented with a wide array of theories that aim to decipher its numerous facets. Among these theories, the Empathizing-Systemizing Theory distinguishes itself as a groundbreaking conceptual framework that transcends conventional categorizations. Developed by psychologist Simon Baron-Cohen, this theory emphasises the

dynamic interplay between two important cognitive dimensions: empathising and systemizing, as the name suggests. Picture this as a teeter-totter, where empathising represents the aptitude to comprehend and share others' feelings; systemizing signifies the inclination to dissect, predict, and construct frameworks. Baron-Cohen's theory posits that autistic individuals may display an imbalance in these cognitive aspects, inclining towards heightened systemizing and diminished empathising. According to his theory, this imbalance may contribute to the development of the disorder. Baron-Cohen's model suggests that empathising and systemizing are two separate cognitive processes that work together in the brain. Individuals who are more empathising-focused tend to be better at understanding other people's emotions and intentions, while those who are more systemizing-focused tend to be better at analysing and predicting patterns in their surrounding environment (Baron-Cohen, 2009).

Baron-Cohen's theory of mind suggests that individuals with Autism Spectrum Disorder may have difficulty with social communication and may struggle to understand the emotions and intentions of others. This may be due to a heightened focus on systemizing and reduced empathising. Studies have shown that individuals with ASD tend to score lower on measures of empathy and higher on measures of systemizing. Additionally, research has found that there may be genetic components to the imbalance in empathising and systemizing in individuals with Autism Spectrum Disorder. This was further explored during the class debate where it was mentioned that sex differences play a role within the empathising quotient (EQ) and systemizing quotient (SQ), where the Extreme Male Brain theory (EMB) - an extension of the E-S Theory, posits that autistic individuals display a tendency towards a masculinized brain in terms of the E-S dimensions (Greenberg et al., 2018). In the discourse, the subject of the Empathizing-Systemizing Theory and Extreme Male Brain Theory was

broached, with reference made to the initial premise of E-S Theory, which posited that men were more likely to have autism than women, whether diagnosed clinically or otherwise. The debate further discusses how the E-S Theory was merely a preliminary idea that did not delve into the heart of the matter, which was the transition from cognitive empathy to affective empathy. Briefly mentioned was the notion put forward by researchers that autism could be identified through the measurement of affective empathy and the observation of how individuals on the spectrum systemize things. Building on this extensive explanation, the debate continued by exploring how gender stereotypes have influenced our perception of autism in different sexes. An illustration of this was provided by the speaker, who pointed out that while societal norms may label a young male child who displays an intense fascination with trains, planes, or cars as autistic, a young female child who exhibits similar behaviours, such as twirling her hair or biting her nails, is merely regarded as conforming to societal expectations of femininity.

Greenberg et al. (2018) touch on this, whereby they state that the Empathizing-Systemizing Theory makes six predictions to explain sex differences in the general population. Based on this theory, females, on average, will outperform males in empathy (E), while males will outperform females in systemizing (S), which has been confirmed in Baron-Cohen's 2004, and Wheelwright's 2006 study. Furthermore, a small inverse correlation between the two is expected. Greenberg et al. (2018) mention that when the data is converted into five "brain types" based on the difference (D-score) between E and S, more females will have Type E brains, whereas males will have Type S brains. The theory also predicts that evolutionary selection pressures will result in Type E having the highest number of females, and Type S having the highest number of males. These predictions have been confirmed in modest-sized samples of fewer than 5,000 people, indicating that

evolutionary pressures have favoured specialised brains in empathy and systemizing, with sex-associated differences likely due to the adaptability in different environments, such as social versus technical.

In another case where the E-S Theory was evaluated along with the EMB Theory. Craig et al. (2019) carried out a cross-sectional study aimed at assessing whether empathising and systemising are components of the broad autism phenotype (BAP) in parents. As it was mentioned previously by Greenberg et al. (2018), the differences between males and females may be partially attributed to the different developmental differences in brain structure and function, which are in turn affected by both biological and cultural factors. While it is true that exposure to foetal testosterone and genetic common variance can influence empathy and systemising scores to certain degrees, it is crucial to acknowledge that social experience also exerts a substantial influence in shaping these traits. Based on the evidence provided by Greenberg's research, the study was specifically designed to determine whether empathising and systemising are components of the BAP, where their primary objective was to compare the levels of empathising and systemising in parents, specifically of mothers and fathers of children with ASD to those of parents with typically developing (TD) children (Craig et al., 2019). The authors assume parents of autistic children exhibit a substantial difference in their lower expected scores and higher expected scores, compared to parents of TD children, as per their research findings. They proposed that there would be a correlation between the deficiency in social communication and social interaction of children with Autism Spectrum Disorder, and the parents' emotional intelligence (EQ) scores. Additionally, they also suggested that the scores of parents' social awareness quotient-restricted (SQ-R) would be associated with the restricted interests and repetitive behaviours of children with ASD. However, in their study, they were unable to discover any empirical evidence that validates

the Empathizing-Systemizing theory as a component of the BAP. The reason being there are no significant differences observed among the groups on these measures, and consequently, they did not find any proof to further support the theory.

Escovar et al. (2016) briefly touch on the Empathizing-Systemizing theory, where research frequently connects the theory with mathematics, associating it with systemizing skills in undergraduate students and adults with Autism Spectrum Disorder. This connection is supported by findings indicating that mathematics majors are more inclined to have ASD diagnoses or family members with ASD. However, despite the associations found, there is limited direct evidence linking systemizing to Type S to mathematics abilities in individuals with ASD or neurotypical individuals. Two studies were conducted to investigate the direct relationship between systemizing and maths achievement in adult females. The first study involving 93 participants did not establish any significant relationships, meanwhile, the second study, which included 125 adults, found a correlation between systemizing abilities and mechanical reasoning, as well as spatial thinking styles (Morsanyi et al., 2011). This paper, however, does not cover any part of ASD, solely focusing on maths achievement and systemizing instead.

According to Merritt (2012), the Empathizing-Systemizing Theory model has the potential to benefit both psychoanalysts and dynamic psychotherapists by aiding in the organisation of empirical research in a psychoanalytic context. Understanding this model can provide valuable insights for those in the field. Merritt proceeds to quote Hubbard (2010), noting that longitudinal evaluations of an individual's position on the autism spectrum may be subject to change, which raises the question about the dependability of measurements of emotional quotient and social quotient taken over time. However, recommendations for

assessing changes resulting from therapy are being made. This suggestion is based on the premise that these measurements may not be reliable when taken over an extended period. From this, we can draw up that the Empathizing-Systemizing Theory model could enable changes, more so in EQ, in which previous research has shown that individuals on the autism spectrum may experience changes in their social and emotional abilities with the help of therapy. For instance, a study conducted found that children with autism who received social skills training demonstrated significant improvements in their social interactions and communication skills. Similarly, another study revealed that children with autism who participated in a program focused on developing emotional regulation skills showed a reduction in anxiety and an increase in positive emotional expression. Despite these findings, there is limited research on the longitudinal measurement of EQ and SQ in individuals on the autism spectrum. Therefore, it is still unclear how these measurements may be affected by changes in an individual's position on the spectrum over time. In any case, it is still recommended to assess changes resulting from therapy to ensure that individuals on the autism spectrum receive appropriate support and interventions to improve their social and emotional abilities.

Though Merritt (2012) does note that the Empathizing-Systemizing Model is not an all-encompassing solution for comprehending or treating autistic features, psychodynamic therapists may find it to be a useful framework. The Empathizing-Systemizing model has not received much attention in psychoanalytic literature to date considering it is still relatively new, which shows that analytic circles are particularly aware of it. Jankovic-Nikolic et al. (2023) carried out a study that aimed to explore the relationship between sex, empathy, systemising and autistic traits in elementary school children, as well as to investigate the extent to which individual differences in empathy and systemising could account for

individual differences in autistic traits. The research demonstrated that empathy and systemizing were both substantial predictors of autistic traits and when assessed independently, they exhibited a more potent predictive ability than when combined in the difference score (D-score). Nevertheless, the theory was only subjected to empirical testing in individuals with intellectual capabilities that were average or higher. As many individuals with ASD have intellectual disabilities, it remains uncertain whether the theory can be applied to everyone with ASD, which is still its major limitation (Jankovic-Nikolic et al., 2023).

While the Empathizing-Systemizing Theory has garnered attention and research, it still possesses many limitations and lacks to present with proper empirical evidence. As with any theory, it embarks on a journey of discovery; however, even as it captures the imagination of researchers and enthusiasts alike, there are intriguing gaps in the theory that yearns for further explanation. Early investigations into the Empathizing-Systemizing Theory primarily transpired in Western societies, which was mentioned in the debate, albeit briefly. A bridge must be constructed to bridge this gap as there is a longing to validate this theory across a variety of cultures. Besides that, the cognitive development of empathising and systemising is a field that warrants further exploration by researchers. While this theory has been utilised in the realm of adult cognition, it is essential to examine its application in childhood and adolescence. It is crucial to investigate how these cognitive styles develop and change as individuals navigate the complex pathways of growth. The developmental journey of empathising and systemising is an area that requires additional research to better understand its impact on cognitive development across the lifespan.

Although much research has been done to back up what this theory suggests, which is that females are more inclined towards empathising, while males systemise better, the picture is still not entirely fixed. The big question still remains: What role does gender play in shaping these cognitive styles? Is it a rigid story, or a dynamic narrative that takes into account individual differences? One has yet to stumble upon empirical evidence to prove further this theory true. In addition to that, as the theoretical framework is revealed, a possibility of integration arises. In the vast field of personality theories, the question emerges as to the extent to which the Empathising-Systemising Theory aligns harmoniously with its peers or operates independently, creating a cohesive understanding. Researchers may recognise the artistic significance in the delicate interplay, where cognitive styles interact with various aspects of personality, contributing to the intricate tapestry of human complexity, especially in regard to Autism Spectrum Disorder.

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