

What Is Autism?

Autism (clinically referred to as “autism spectrum disorder”) has a prevalence estimated at 1 in 100 people worldwide (Baird et al., 2006). Record monitoring reports, for example from the Centres for Disease Control, USA (Maenner, 2020), suggest a higher prevalence of autism around 2 to 3 in 100. However, these reports are at high risk of overestimating prevalence – they are based on the monitoring of routinely collected health and education data, meaning novel autism diagnoses are assigned to children without any direct assessment. As such, these reports are valuable tools to estimate demographic characteristics of autism, but they should not be used as single source of information regarding prevalence estimates.

People are born autistic and remain autistic their whole lives, regardless of when they receive a diagnosis. Autism is characterised in diagnostic manuals by atypical sensory sensitivity, repetitive behaviours, and difficulties in communication and interaction behaviours. Autism often co-occurs with ADHD, anxiety, or dyslexia. A population-based study in Scotland showed that about 1 in 5 autistic people also have a learning disability (Dunn et al., 2019). While autism has long been diagnosed more commonly in males, there is now a much greater recognition that people of all genders can be autistic. Due to historic biases in diagnostic tools (developed for mostly-male participants) it is still difficult to know if there are any true gender-related differences in autism prevalence.

The current hypothesis is that the causes of autism are combinations of genetic, epigenetic, and gene-environment factors. For example, complications during pregnancy, when added to the presence of certain genetic factors, can increase the likelihood of the child being autistic. There are also many factors that we know are not causes of autism. Indeed, it is definite that autism is not caused by vaccines, parenting behaviours, the child’s diet, or infectious conditions (Plotkin et al, 2009; Langan, 2011; Marí-Bauset et al, 2014).

The range of language profiles amongst people with autism is remarkably wide. Between 15 and 25% of autistic children are minimally- or non-speaking (Norrelgen et al., 2015), but most autistic people do develop language (Brignell et al., 2018). Autistic people with language show typical or even enhanced language skills (Hyltenstam, 2016), in one or multiple languages (Digard et al., 2020), with or without atypical language or speech patterns (Gernsbacher et al., 2016). Importantly, the presence of language impairments is distinct from general non-verbal cognitive abilities. There is now increasing recognition of the diversity of social and communication profiles between autistic people themselves. For example, recent findings suggest that growing up in a bilingual environment shapes the social communication and social cognitive skills of autistic and neurotypical people alike (Digard, 2020; Digard et al., 2020).

Common Strengths

The specific functioning of the autistic mind is often considered from a deficit perspective. However, features of autism can also yield many strengths. For example, autistic people are far less vulnerable to various forms of bias, less deceptive and often have a strong and principled sense of justice (McMullen, 2000).

At the cognitive level, autism often involves an increased ability to perceive and process

details, and find patterns or inconsistencies in patterns. Again, these skills can facilitate certain types of learning, and can also be applied for reasoning tasks.

For example, one study found that autistic children outperformed their neurotypical peers in pitch memory and pitch identification task (Heaton, 2003), and other studies found greater visual and auditory capacities in autistic adults and children compared to neurotypical peers to accurately detect information and patterns (Remington & Fairnie, 2017; Remington et al., 2012).

Restricted and repetitive behaviours are common amongst autistic people (Troyb et al., 2016). In young children, these include stereotyped gestures or sounds (i.e. flapping hands), stereotyped uses of specific objects or parts of objects (i.e. spinning an object), or ritualistic behaviours (i.e. lining up of objects). In adults, the same patterns may be apparent in collections, daily routines and often-subtle physical “stims”. The clinical category of restricted behaviours can also be reflected as intense interests in a given topic. Passionate interests combined with hyperfocus often allows autistic people to reach expert knowledge in their topic of interest, and the theory of monotropism proposes that such attentional patterns are the defining feature of autism (Murray, Lesser & Lawson, 2005).

There is a strong and complex relationship between anxiety and restricted and repetitive behaviours, especially those related to insistence on sameness (Joyce et al., 2017; Lidstone et al., 2014). This relationship may partly be due to *Intolerance of Uncertainty*, a vulnerability factor which makes ambiguous and unexpected information highly stressful (Boulter et al., 2014). For example, a person’s specific sensory sensitivities combined with a new environment can be a source of uncertainty, leading to anxiety and stress, which are then managed by the person with the restricted and repetitive behaviours that confer a feeling of certainty (Wigham et al., 2015). Indeed, in a semi-structured interview study with thirteen autistic young people aged 13 to 20, the young people reported engaging in restricted and repetitive behaviours to deal with uncertainty, anxiety, or boredom (Joyce et al., 2017). In this sense, restricted and repetitive behaviours can provide important soothing and coping functions for autistic people, as well as bringing huge amounts of joy, and should be nurtured and facilitated.

Common Challenges

Autistic people generally feel and process senses differently to non-autistic people (Robertson & Baron-Cohen, 2017). Sensory differences occur from early childhood to late adulthood, and are experienced by most autistic people, with prevalence rates ranging from 69% to 95% (Baranek et al., 2006; Crane et al., 2009; Tomchek & Dunn, 2007). The sensory profile of an autistic person can have a pervasive influence on a their experience of daily life and their health (Suarez, 2012). In childhood, sensory processing differences can impact the child’s school achievements (Ashburner et al., 2008; Butera et al., 2020) and their ability to engage in social activities (Reynolds et al., 2011). Sensory differences in autism can also lead to synaesthesia (Ward et al., 2017), where the activation of one sensory modality can trigger the activation of another. This can be both advantageous and challenging depending on the specific manifestation and its intensity.

Social difficulties in autism may be apparent in differences in joint attention (focusing on an object alongside another person, following their cue), imitation, or emotion recognition from faces (Bottema-Beutel et al., 2019; Peñuelas-Calvo et al., 2019). At a more complex level, autistic people perform differently to neurotypical people on tasks measuring perspective taking (guessing what another person thinks or feels) (Velikonja et al., 2019). Historically, this has been framed as a categorical (and central) “deficit” in the autistic person. However, more recent research and theory acknowledges the

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mutual divide between autistic and neurotypical conceptualisation of others' mind and experiences. The Double Empathy Problem (Milton, 2012), suggests that difficulties in complex social cognitive mechanisms are not inherent to autism, but simply demonstrate that autistic and neurotypical people function differently. As such, these difficulties are experienced by autistic people who try and understand neurotypical minds, and by neurotypical people who try and understand autistic minds. Importantly, the social difficulties experienced by autistic people are less strong when they interact with other autistic people (Sasson et al., 2020; Crompton et al., 2020).

The social and communication behaviours of autistic people also link to compensatory processes such as “masking” – when autistic people actively camouflage their difficulties and imitate the social behaviours of others. This process often leads to fatigue, discomfort, and mental health issues (Hull et al., 2017; Lai et al., 2017).

Autism is a spectrum, and therefore the best type of support is different for each individual, and must be tailored to their need. Autistic children often need the help of a range of clinical practitioners, such as psychologists or speech and language therapists. They may require measures to help them engage with school, including modifications to the sensory environment, provision of additional processing time and creation of clear structures. Later in adolescence and adulthood, some autistic people can have high support needs, requiring the help of a full-time carer, others need support for specific activities only, and others do not need any specific support.

Appropriate support across the lifespan is now more focused on mental health support (Cage et al., 2018) and stigma reduction (Botha et al., 2020; Jones et al., 2021). With the appropriate level of support and societal acceptance, autistic people can fully live their life as they choose.

What's Next in Research?

Research in autism is moving further away from a description against a neurotypical standard, and instead is focusing on the individual differences between autistic people.

Research is also now turning towards better understanding of elements including

- the social skills of autistic people when interacting with another autistic person
- the way some autistic people can mask their identify, and the cost of this process
- whether repetitive behaviours in early childhood can predict abilities later in life
- the behavioural and cognitive evolution of autistic people throughout life and ageing.
- understanding the experiences of autistic people of different genders, and re-evaluating diagnostic processes in this light

Historically, the main focus of clinical research has been on early life interventions, with the aim to trigger a developmental cascade of skills. However, to date, no early life intervention has been found to robustly achieve this goal. Moreover, many autistic advocates have been drawing attention to the potentially damaging effects of teaching young autistic children to behave in more neurotypical ways. Instead, research is now turning towards better understanding and acceptance of autistic people throughout their life (Davis et al., 2021). The focus is also shifting towards the needs of older children, adolescents, and adults, but later adulthood is still a step behind.

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