

Autism challenges individuals, parents, schools, business and society. Autism spectrum disorder (ASD) is a complex diagnosis with mixed inputs from genetics, early experience and environmental factors. All sources agree on the increase in Autism diagnosis over the past 30 years – at least 25-fold. It affects 1 – 1.6% of the population (*Simon Baron-Cohen, Professor at Cambridge in Autism*). As a “systematiser” myself, I believe we need to understand Autism better and stay open to how we might counter this increase.

Autism Overview

Leo Kanner first described Autism in 1943. The word comes from the Greek “autos” that means “self”. Prescient, as it is a profound difficulty appreciating another person’s different perspective. In 1978, it was considered something you had or not and it was estimated to affect 4 in 10,000 children. Today, it is thought to affect 1 in 68 by the US Centres for Disease Control (CDC). This would be a 36-fold increase. Some suggest that it may be 1 in 10 in Silicon Valley. Controversy is rife.



We are concerned by obesity, diabetes, ADHD, and depression, conditions once thought genetic and now understood to have multiple influences. The data:

Conditions	Increase (years)	Prevalence	References
Obesity	2 x (30 yr)	~17- 20%	CDC, 2015
Diabetes (type 2)	1-2 x (30yr)	~ 0.05%	CDC, JAMA, ADA
Depression	5-10 x (40yr)	~ 11-20%	CDC, Seligman, Twenge
ADHD	0.5 x (10yr)	~ 5 - 11%	CDC, 2015
Autism Spectrum	14.7 x * (30yr)	~1.4%	CDC, 2015, Cambridge

* Recent (2015) Danish study estimated that 60% of increase is explained by diagnostic changes. Therefore the 36.7 fold increase is reduced to 14.7 fold.

The Autism Spectrum

Autism is not black and white. There is brilliance along with the suffering. Baron-Cohen makes the point that “a dash of Autism” supports scientific success. He believes those on the Autism spectrum are high systematisers. They thrive with logic, detail and engineering complexity. Quite possibly, it is the increase in Autism that plays a role in the success and growth of science, technology, engineering, mathematics and global businesses.

Being male increases the likelihood of being a systematiser due to higher levels of foetal testosterone supporting the development of a more systematising brain. Girls with a male twin will have an increased chance of being on the systematising spectrum.

Empathising is the opposite end of the spectrum. A strong empathiser is wired for social connection and tends to be quicker to see others’ perspectives and align themselves more skilfully in complex, fluid

social environments. It is this latter environment that can be very challenging for someone on the Autism spectrum.

Autism Spectrum Diagnosis

Baron-Cohen from Cambridge has worked extensively on the idea of a spectrum of conditions showing that elements of Autism act across the range of high empathisers to high systematisers.



The diagnosis is complex and requires a specialist. There are three questions:

1. Does the person have significant social difficulties?
2. Does the person have communication difficulties?
3. Does the person have narrow, unusual and strong interests, as well as unusually repetitive behaviour?

The Autism spectrum is the overlap between a) repetitive behaviour / narrow interests and b) social-communication difficulties. Those diagnosed range from very high functioning (mostly in logic) to very compromised (particularly in social complexity).

Views on Causation

Most experts agree that genetics play a major role causing between 50% and 98% of Autism. A recent study showed that variations in the GABRB3 gene are more likely in those with Autism. They also discovered that variations in this gene are linked to the display of empathy in the general population. Most say parenting has no effect. Research is exploring interactions between genes and

environment with infections during pregnancy, premature birth, older parents and toxins having a role. Genes and environment interact in complex ways. For example: *“Given the amount of evidence supporting a significant contribution of environmental factors to autism risk, it is now clear that the search for environmental factors should be reinforced. One aspect of this search that has been neglected so far is the study of interactions between genes and environmental factors.”* Dialogues in Clinical Neuroscience, September, 2012.

Treatment

It is strongly noted that there is no cure for Autism but there are many ways in which we can help children with Autism function better. The CDC offers four groups of treatment:

1. Behaviour and Communication Approaches (strongly supported, start early)
2. Dietary Approaches (limited research)
3. Medication (usually for related conditions such as ADHD and depression)

4. Complementary and Alternative Medicine (limited research)

Simon Baron-Cohen recommends emotion recognition training and the DVD training tool can be bought. (<http://www.jkp.com/mindreading>).

Barbara Fredrickson recommends limiting time on screens as when a child is engaged with a screen the vagal and empathy systems close down. This is supported by the work of Stephen Porges on the Vagal Nerve.

Richard Davidson comments on Autism in his new book *The Emotional Life of your Brain*. His current

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view is that the avoidance of eye contact is a key factor in the failure to engage the fusiform gyrus – the part of the brain that recognises faces and expressions. He has proved this in fMRI investigations.

Autistic children had very high levels of amygdala activity and threat response to eye contact. A patient described abject terror when he looks at faces and especially the eyes. When he tested their “normal” siblings, they too had the same, albeit milder response – avoiding eye tracking and a strong amygdala response. Two studies published in 2015 show that emotion regulation is inhibited in those with autism and that it can be improved

A Hopeful Future

Autism can result in difficulty and brilliance, thus research is well funded and flourishing. Much will be learned. In conclusion my vision of hope:

1. With over 100 genes involved, Autism must have had advantages in evolution. Perhaps it helped our warriors, shepherds, builders and knowledge seekers. Today we know that it can support scientists, entrepreneurs, engineers, technologists, mathematicians and perhaps athletes. We must help direct children with Autism towards these disciplines.
2. The rapid growth in Autism suggests that something other than genes is active. Perhaps we will discover environmental toxins, medication effects, food, activity and other triggers.
3. Excess screen time compromises empathy and social function. The increase in screen-time in both adults and children matches the increase in Autism. We know that empathy and facial recognition improve after just five days free of screens. For families and children at risk of being systematisers, we should be much firmer on restricting time on devices.
4. Autism changes the structure and function of the brain. We have techniques to stimulate plasticity.

We might find that emotion regulation, impulse control, empathy, and cognitive reappraisal can help shape the development of the brain. No one doubts that these are learnable. Early studies are hopeful.

5. As our society becomes more empathic (proven) and compassionate, we may well learn how to create connected environments better suited to those with the social and communication challenges of Autism.

Further reading and references

Autism and Asperger Syndrome, Simon Baron-Cohen, Oxford, 2008

The Essential Difference, Simon Baron-Cohen, 2004.

[Autism Research Centre, Cambridge](#)

The Emotional Life your Brain, Richard Davidson, Sharon Begley, 2012