

‘Autistic Sensitivities’¹

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Although autism is a condition with a wide-ranging degree of severity, all those affected have problems in the areas of social communication and restricted, repetitive and stereotyped patterns of behaviour, interests and activities. Though conventional, this definition is not necessarily satisfactory, and more and more researchers emphasise the necessity to reconsider it. The matter is, the ‘diagnostic symptoms’ are behaviours that cannot be reliable as they may be caused by different factors.² Instead of describing outer behaviours (what it is look like from outside), autism can be viewed through inner realities (what it feels like from inside). So in this paper, autism is seen as ‘the intense world syndrome’ (Markram *et al.* 2007) – a condition with multiple aetiology (genetic and/or environmental factors) in which all traditional diagnostic criteria (impairments in social communication and inflexibility of thoughts and behaviours) are rooted in different sensory perception, sensory overload and hypersensitivity.³

Autistic people perceive, feel, and remember too much. Faced with a bombarding, confusing, baffling and often painful environment, autistic infants withdraw into their own world by shutting down their sensory systems. This brings unfavourable consequences for their social and linguistic development (while their cognitive and emotional development follows an atypical route). Depending on strategies and adaptations these children acquire and the support they get, they may experience autism differently – sometimes it may feel comfortable, and at other times it may be very frustrating. In contrast to official definitions of autism as outer behaviours (the more ‘bizarre’ behaviours the person exhibits, the more severe the autism is seen to be), for autistic people autism is an inner reality and it can appear (on the surface), disappear and reappear in various degrees in different circumstances. Autism as an experience is a very complex interplay between identity, personality, environment, experience and the equipment with which to make sense of that experience (Williams 1998).

Before talking about ‘autistic sensitivities’ we have to discuss sensory dysfunction.

Sensory dysfunction

I have no statistics based on research but I strongly believe that more than 90% of the population can be regarded dysfunctional in their sensory perception. Typically, all sensory modalities are involved. However, as the majority is affected this can be considered a ‘normal sensory dysfunction’. Some of the main characteristics are: restricted detection of sensory stimuli; and limited amount of sensory information coming through.

Restricted detection: ‘Sensory filters’

All our sensory systems are limited in their ability to detect sensory stimuli. We are not conscious of our limitations as we have grown up with them and do not know otherwise. In fact, if we compare the senses of other species sharing the planet with us, we are nearly blind, deaf and dumb, to say nothing of our (very limited) ability to smell. Actually, we are meant to be “dysfunctional” in both (restricted) detection and the (limited) amount of the sensory stimulation that we are conscious about – in order to function successfully; we have filters in place to reduce the sensitivity, thus reducing the ability to detect certain sensory stimuli and to limit the stimulation coming in. So most of the time ‘normal’ people know only what comes into their reduced awareness (which is further consecrated as genuinely real by concepts and language). That is why those who seem to be born with a kind of by-pass experience unlimited/unrestricted perception. Isn’t it ironic that ‘full functionality in sensory perception’ becomes ‘dysfunction’ in the world constructed by ‘normal’ people?

Many autistic individuals seem to have no filters to stop the flooding – having brains with “no sieve”, - when all the stimuli are competing for processing when they should not have:

“I have been jumping between processing the white of the page and the print, the flicker of light and shadow as well as the objects themselves, the sounds of the people moving about in between syllables of words being said at the time, the rustle of clothing and the sound of my own voice” (Williams 1996).

“When I step into a room for the first time I often feel a kind of dizziness with all the bits of information my brain perceives swimming inside my head. Details precede their objects. I see scratches on a table surface before seeing the entire table; the reflection of light on a window before I perceive the whole window; the patterns on a carpet before the whole carpet comes into view (Tammet 2009).

Markram and colleagues (2007) have shown that contrary to some neurological studies emphasising underconnectivity and hypoactivity of mental processes in autism, autistic brains are, in fact, overperforming and are very hyper-reactive and hyperplastic. Excessive processing of sensory input leads to exaggerating perception, producing extremely intense images, sounds, smells and so on.

“I feel that my autism enables me to experience my surroundings in an intense way, both physically and emotionally. I have finely developed hearing and smell, and I react to tiny changes in weather patterns and atmospheric pressure, much the way an animal would” (O’Neill 2003).

It is to describe autism from this perspective, that the researchers have coined the term the Intense World Syndrome (Markram *et al.* 2007). In this view, ASDs are “disorders” of hyper-functionality. Minicolumns have a higher than normal capacity for processing information. Excessive processing of the sensory input in the microcircuits leads, in turn, to exaggerated perception, producing extremely intense images, sounds, smells, and so on, bringing overload that causes autistic children to withdraw and miss the opportunity to develop *shared* conceptual understanding of a ‘normal world’ (Bogdashina 2010) while creating their own.

If ‘limited’ perception is considered ‘normal’, than any deviation from it is described as dysfunctional, and the ability to detect stimuli outside the ‘normal’ range as (disabling) sensitivity [a higher (than ‘normal’/average) degree of being sensitive to something’, or ‘hypersense’].

The ability to hypersense

What can be detected by some autistic people would not necessarily be noticed by the majority. Some autistic individuals’ senses are very acute and they can see, hear, feel, etc. stimuli that ‘normal’ people are blind, deaf, numb, etc. to. For instance, some autistic persons have been reported to react to positive ion changes in the weather systems, others are physically sensitive to small differences in colour. Temple Grandin (2006) argues that the senses of some people with autism resemble the acute senses of animals.

When we hear about sensitivities in connection with autism, the first impression that typically springs to mind is ‘hypersensitivity to sounds, sights, smell, touch, etc.’ However, the special

abilities of autistic individuals to sense the environment are not limited only to hypersensitivity to sensory stimuli. ‘Autistic sensitivities’ can be (roughly) grouped into several categories, e.g.:

- Sensory sensitivities
- ‘Cognitive sensitivities’
- Emotional sensitivities

Sensory sensitivities

Sensory hypersensitivities are quite common in autism. Traditionally, we consider seven senses (vision, hearing, tactility, olfaction, gustation, proprioception, vestibular). Any of these senses (or a combination of the senses) can be hypersensitive. For example:

Hypervision (seeing ‘invisible’) means that they can see more than other people, i.e. their vision is too acute. For example:

“Visual sensitivity to fluorescent lights can make them appear like strobe lights to a person with autism... [The eyes of people with this type of sensitivity] vibrate in synchrony with 60 Hz. cycling of fluorescent lighting” (Shore Undated)

Hyperhearing (hearing ‘inaudible’) means they are able to hear some frequencies that only some animals hear. For example:

“There was an increase in sound sensitivity on some frequencies...[and it was] so odd that I did not recognise it because I felt it as vibrations rather than noise” (Blackman 2001).

Hypertactility results in experiencing even light touch as painful. For example:

“There are certain things I touch that hurt my hands...[Even] the air brushing past my hands is a source of pain” (McKean 1999).

Hyperproprioception is reflected in odd body posturing, difficulty manipulating small objects, etc., and *vestibular hypersensitivity* brings a very low tolerance for any activity that involves movement or quick change in the position of the body.

Hypersmell: some autistic individuals have olfactory sensitivities comparable to canines, and they can be felt as allergies to certain smells. For example:

“My allergic reaction to her perfume made the inside of my nose feel like it had been walled up with clay up to my eyebrows. Her perfume burned my lungs; my mouth tasted like I had eaten a bunch of sickly smelling flowers” (Williams 1999).

Hypertaste: for some, almost all types of food taste too sharp, or they cannot tolerate the texture or the sound of the food in their mouth:

“Many children with autism are finicky and will eat only certain foods... I hated anything that was slimy, like Jell-O or undercooked egg whites” (Grandin 2006)

Besides, for the purpose of our investigation it is appropriate to add more senses. For example, Guy Murchie (1978) considers thirty-two senses, among which are, e.g., senses of radiation, electricity, magnetism and temperature. Though most humans are unable to consciously perceive most forms of magnetic radiation because the frequencies are beyond those of visible light, but it is possible at least theoretically to register electromagnetic radiation that lies *outside* of the normal range (Jawer 2009).

Sensitivities to magnetism and electricity are well researched in some animals; and there have been reported cases of individuals who can hear radar as buzzes and hisses, someone who receives radio broadcasts through his teeth, and it seems that for some autistic individuals sensitivity to electricity can be everyday experience. For example, a 50-year old woman with Asperger syndrome has to unplug all the electrical appliances in her flat before going to bed, otherwise she would be unable to screen out the radio programmes from the switched off transistor and buzzing sounds from a (switched off but plugged in) microwave oven, for example, which at night are very “audible and annoying” (Personal communication.) (Her partner jokes, “If a flea sneezes, she jumps.”) Temple Grandin (2005) writes about her student Holly, who has such acute auditory perception that she can hear radios that aren’t turned on. All appliances that are plugged in continue to draw power, even when they’re turned off. Holly can hear the tiny little transmissions a turned-off radio is receiving.

Murchie also describes *the feeling senses*: apart from hearing, this category includes awareness of pressure, sense of weight, sense of balance, awareness of one’s proximity to

someone or something in their surroundings, and a broad sense of what Murchie calls ‘feel’ – “particular touch on the skin,.. awareness of intra- and intermuscular motion [proprioception], tickling, vibration,.. cognition of heart beat, blood circulation, breathing, etc.” These ‘feeling senses’ can also include what is often called ‘sixth sense’, or ‘gut feeling’; ‘sensing’ (the term suggested by Donna Williams (1998)); and the ability to predict human behaviour, relying on pattern-recognition skills which occur intuitively.

‘Cognitive’ sensitivities

Strictly speaking, ‘sensitivities’ is not the best term to describe cognitive phenomena typical in autism. However, in some ways at least, the word does stress both positive (‘seeing’ unusual connections, extraordinary abilities, etc.) and negative (e.g. difficulty to deal with verbal abstractions) implications of the autistic modes of thinking. The examples of ‘cognitive sensitivities’ are: ‘extraordinary abilities’, ‘seeing’ unusual connections and unconventional patterns, subconscious thinking, etc.

Extraordinary abilities: Savant syndrome is not necessarily about ‘spectacular skills’

Savant syndrome is thought to be a rare but extraordinary condition in which individuals with serious mental disabilities have some ‘islands of genius’ that stands in a marked contrast to things they cannot do. Areas of skills traditionally attributed to savants are: musical and artistic ability, an exceptional memory for spelling, mathematical abilities, calendar calculating, geographical ability (reading maps, remembering directions, locating places, mechanical abilities (taking apart and putting together complex mechanical and electric equipment), a remarkable ability to balance objects, spatial skills (to estimate the size or distance of objects with great accuracy) and outstanding knowledge in specific field (such as, for example, history, navigation, statistics).

Only 10% of people with autism are said to have savant skills. However, if we move away from ‘spectacular skills’ (like the ability to perform musical piece after hearing it only once, or outstanding drawing abilities, or calendar calculating), we will see that due to the differences of their sensory perceptual and cognitive processes *all* individuals with autism

can do something non-autistic people cannot (Daria 2008), while being helpless at some skills which are considered basic:

“In my experience, [the savant skills] can extend into mimicry, speed-reading, automatic writing, the acquisition of foreign languages and, in some cases, to the intermittent presence of so-called ‘clairvoyance’. Taking into account these wider areas in which ‘savant skills’ may be found, a larger percentage of so-called ‘savants’ may be present among the ‘autistic’ population than is presently realised” (Williams 1996).

Unlike ‘recognized savant skills’ (that are spectacular because ‘normal’ people can achieve them only with a lot of practice and hard work), other skills that only autistic people possess are not recognized because the ‘normal’ population cannot even imagine that they exist.

In contrast to the ‘verbal thinking’ of non-autistic individuals, ‘autistic thinking’ is mostly sensory-perceptual’. When a non-verbal person thinks, there are no words going through his mind, only sensory impressions such as visual images, sounds, smells, taste and touch sensations. Being a spatial thinker means that a person represents things in mind with a multidimensional model. This way of thinking brings both disadvantages and advantages. On the one hand, it is more difficult to do things that are sequential (one-dimensional and in linear progression). On the other hand, it is easier to see certain patterns of the world and infer things from those patterns. Since they think with their subconscious they can see the decision making process that is not perceived by ‘normal’ people (Grandin 2006). Grandin hypothesizes that in most people language covers up the primary sensory-based thinking that humans share with animals. Sensory-based thinking is subconscious in most people, while those like Temple Grandin think with the primary sensory-based subconscious areas of the brain. When well-developed, it brings certain advantages not available to others. For example, ‘normal’ people have a difficulty to conceptualize multi-dimensional processes which can be linked to unconscious processes operating “in a space of a higher number of dimensions than that of our perceptions and conscious thinking” (Matte-Blanco 1988). When thinking we divide the whole into parts, i.e. thinking about separate ‘things’, while missing the whole. (It is ironic that we ‘accuse’ autistic individuals of not seeing the forest behind the trees, while categorizing and classifying ‘parts of the forest’ in our minds all the time and

losing a ‘big picture’ of our reality.) Many autistic individuals, on the other hand, have their own systems to interpret their surroundings:

“I had an internal colour system which became a way of connecting information about different worlds... Everything became a colour inside me – people, words, feelings, atmospheres, sunshine coming through it. Tiredness, when I hadn’t the energy to try to understand, came and laid a dark green on top of the orange light and put it out.

The dining-room world, the kitchen world and the hall world – none of these had anything to do with each other until a colour made me connect. If my mother said something in a violet-coloured way in the kitchen and two months later used that violet tone of voice in the bathroom, I suddenly realised that the kitchen and the bathroom had something to do with each other, so I could begin to find other similarities such as that there was water in both rooms. But the first connection was always via colours” (Gerland 1997).

It is logical to assume that perceptual thinking gives us an unbiased [or, at least, less-biased] approach to any problem. People who think perceptually are not restricted by traditional conventions. In contrast to ‘normal’ *sequential* thinking that involves analysis, the progression from simple to complex, organizing information in linear deductive reasoning, *spatial* thinking involves a synthesis, an intuitive grasp of complex systems (often missing the steps), simultaneous processing of concepts, including reasoning (from the whole to the parts), use of imagination and generation of ideas by combining existing facts in new ways (creative thinking).

Emotional sensitivities

Emotions start as feelings and they are closely connected to sensory perception as they start as *sensory* feelings. As most autistic individuals’ senses work in hyper, and feelings start as sensations (either conscious or unconscious) it is no wonder that many autistic people are emotionally hypersensitive.⁴

“All things are heightened for me, so what a regular person would be tickled with pleasure over, I’ll be totally ecstatic. Likewise, someone else’s small irritation will turn into a catastrophe for me, like 100 nails screeching a blackboard” (O’Neill 2001).

Empathy in autism (and alleged lack of it)

Autistic people are said to be (severely) impaired in their ability to empathise with other people which is reflected in ‘mind-blindness theory’ of autism (Baron-Cohen *et al.* 1985; Frith 1989/2003). Recent research studies, however, show that it is an overgeneralisation to claim that individuals with Asperger syndrome have a ‘deficit in empathy’.⁵

Research has also shown that people respond to emotional expressions unconsciously, and emotions seem to be contagious (Hatfield *et al.* 1994); people involuntarily tend to mimic facial expressions of those with whom they interact (Surakka and Hietanen 1998). It can explain empathy when people ‘feel’ others’ moods (Sonnyby-Borgström 2002). ‘Emotional contagion’ develops very early in life and is fully established by the age of two (Hay 1994).

There is some research evidence that the perception of someone’s facial expression activates the neurons that would produce the same expression in the self (Preston and de Waal 2002). For example, when people, in response to someone else’s smile, pose their own smile, they begin to experience the emotion that goes with it (Tantam 2009). Tantam proposes that persons with autism do not show this involuntary response, but it does not necessarily mean that they lack empathy – they simply may not recognize the ‘conventional expression of emotions’. An alternative explanation is, they may not be consciously aware that they have perceived emotion because they are too busy understanding what someone else is saying and preparing their response; their ability to read the emotions of others seem to increase when they can observe their communicative partners without having to think in language (Kimbal 2005). However, there is another explanation as well: ‘emotional contagion’ ‘normally develops with a very early ability to imitate, and by mimicking their carers facial expressions and body language normally developing children learn to connect outside expressions of emotions with their physical sensations (activating the same areas in the brain).

In contrast, in autism ‘emotional contagion’ develops through resonance (Williams 1998), i.e. they actually ‘catch’ the emotional energy of others, resonating with them, and experiencing

the same physical sensations through their bodies.⁶ So despite having difficulties identifying ‘conventional’ emotional cues that are easily ‘read’ by ‘normal’ people, some individuals with autism are very hypersensitive to the emotions of others, which can sometimes become mixed with their own emotions that they cannot easily separate them. Stephen Shore calls the phenomenon ‘echoemotica’, or taking on other people’s moods and emotions and not being able to separate them.

Many autistic children can easily pick up emotions of others and may be very distressed by the emotional behaviour of those around them (even though they cannot interpret the feelings). Often those who take care of autistic children trigger (by their emotional state) what we call challenging behaviours and then are puzzled what could cause the outburst/meltdown. Many autistic individuals seem to automatically tune into the mood of their carer(s) and instantly share their emotions. These hypersensitive individuals seem to amplify their carer(s)’s emotions and feed them back. If the emotions are negative, there emerge ‘difficult behaviours’ which, in fact, are caused by the negative emotions that had been ‘fed’ to the children by those around them.

Some autistic individuals argue that there are different types of empathy: sensory empathy, emotional (affective) empathy, and intellectual empathy. ‘Normal’ people have emotional empathy but some of them may be very deficient/or lack ‘sensory-based empathy’, quite common in many autistic peoples. Donna Williams (1998) describes sensory-based (not mental) empathy as the one working “through resonance in a relationship between sender and receiver in which the receiver loses their own separateness in merging with the sender as part of the mechanism of acquaintance before returning to the unmerged state of its own entity”.

Sensory empathy can be very strong in autism, but weak in ‘non-autism’:

“For me to have empathy I have to visually put myself in the other person’s place. I can really empathize with a laid-off worker because I can visualize his family sitting at the dining room table trying to figure out how the bills will get paid. If the worker fails to pay the mortgage he will lose his house. I really relate to physical hardship. I have observed that normal people have had bad visual empathy. They are often not able to perceive how another person would see something” (Grandin 2006).

“[Watching news on TV] As I feel my worries for trapped coal miners, I can smell the boiling starch, frothing on the brim of the clay pot, then spilling out with the smell of burning rice. My worries grow as the voice of the newsreader continues to say that the miners are still trapped. I smell burning rice all across the room as more starch spills out” (Mukhopadhyay 2008).

Intellectual empathy is also quite common in some people with autism – typically, high-functioning individual with autism whose sensory empathy is not pronounced but who are able to feel and appreciate emotions intellectually – through art, music, literature and other creative and artistic means. This is because through the arts, emotions are translated into sights, sounds and words. “They register on the intellectual and aesthetic sensibilities” (Schneider 1999). These ‘intellectually emotional people’ can become emotionally moved under the effects of arts, music, literature, or films. Paradoxically, art (whether visual or music or literature) is a *felt* experience, even if it is not consciously registered.⁷ These (intellectual) emotions are as powerful as sensory emotions are. For example, Temple Grandin gets great emotional satisfaction from her career of designing livestock equipment. She feels happy when a client is pleased with the facility she designed. When her project fails or a client criticises her unfairly, Temple becomes depressed and upset. Her emotional satisfaction from doing something that is of value to society is very real and very powerful:

“The happiness I feel when a client likes one of my projects is the same kind of glee I felt as a child when I jumped off the diving board. When one of my scientific papers is accepted for publication, I feel the same happiness I experienced one summer when I ran home to show my mother the message I had found in a bottle on the beach. I feel a deep satisfaction when I make use of my intellect to design a challenging project. It is the kind of satisfied feeling one gets after finishing a difficult crossword puzzle or playing a challenging game of chess or bridge; it’s not an emotional experience so much as an intellectual satisfaction” (Grandin 2006).

So even if some may lack ‘affective empathy’ because of difficulty reading (conventional) signals, they compensate for it with ‘cognitive/intellectual empathy’.

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The reality is the same but realities are different. We trust our senses (and the equipment we create) too much, and mistake our personal reality (what our senses/equipment tell us what is ‘out there’) for the real physical world. And we react accordingly to what we *think* is going on. It is very important to remember that sensory perceptual differences are very real for many people with autism. We all live in the same physical world, but for many individuals with autism it looks, sounds, smells, etc. different. They develop their own concepts to understand it, and their reactions (we label some of these reactions as ‘challenging behaviours’) are logical and valid from their perspective. We need to recognise that ‘autistic realities’ are part of the everyday life of many people on the spectrum. And it is not good enough to teach autistic children how to cope in ‘our’ world; we should also learn about their worlds and meet them half-way. Let us accept that the reality is the same but realities are different.

¹ This paper is based on several chapters of this book - <http://www.jkp.com/catalogue/book/9781849052856>

² Some authors urge to distinguish between ‘different autisms’ as different causes can lead to the same clinical manifestation of the condition.

³ See a brief review of the past and present research of sensory aspects in autism here - <http://www.oapublishinglondon.com/images/article/pdf/1362234564.pdf>

⁴ This emotional hypersensitivity can be accounted for by the intense world syndrome (Markram *et al.* 2007) which indicates that the amygdala and related emotional areas of the brains of autistic individuals are affected with hyper-reactivity leading to hyper-perception, hyper-attention, and hyper-memory.

⁵ Roger and colleagues (2006) administered the Interpersonal Reactivity Index (IRI), a multi-dimensional measure of empathy, and the Strange Stories test to 21 adults with Asperger syndrome and 21 matched controls. Their data show that while the AS group scored lower on cognitive empathy and Theory of Mind, they were no different from the controls on an affective empathy scale of the IRI (empathic concern), and scored higher than the controls on the personal distress test.

⁶ Jawer (2009) has introduced the concept of ‘emotional energy’ that just like other form of energy “can be stored, focused, drained, or liberated. It can radiate out to others, for better or for ill; it can be vividly felt or left to work its own way in our bodies and nervous systems”, and like other forms of energy, it can be felt by some while being ‘invisible’ to others. This energy produced by the brain and the heart extends outside the body and can be measured by devices such as electrocardiographs (ECGs), magnetocardiographs (MCGs) and magnetoencephalographs (MEGs)” (Jawer 2009).

⁷ A very important feature of ‘intellectual emotionality/empathy’ is that it is very logical. They can logically explain and rationalise the feelings they have in different situations.