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Introduction

At present, the diagnosis of autism is based on behaviour. The behaviours that indicate autism are interpreted as impairments in social interaction, communication, rigidity of thoughts and activities. That is what we see. However, can we rely on the analysis of these behaviours when we develop programmes to help people with autism?

Let us take one example: A child enters the room and touches the walls, the furniture the objects, and then takes an object from the table and smells it. How shall we analyse this behaviour? Shall we count how many times this child smells things and people, taps objects, touches furniture, etc. and then create sophisticated graphs, tables and statistical charts to explain it? Or shall we find out why he does it? If we find out that this particular child is blind we would not need the statistics of his 'bizarre behaviour' in order to understand his problems (and his behaviours). That is exactly what is happening in the field of autism. We examine, analyse and measure 'impairments of social interaction, communication and rigidity of thoughts and create theories to explain them. However, a breakthrough has come from personal accounts of people on the autistic spectrum. Their descriptions of experiences (though they may differ in some ways) have a potential to point researchers in the right direction. It is difficult to overemphasise the importance of *listening* to those who experience differences in their perception of the world. If we know what is going on, we can investigate what causes it (including brain structure and function studies, biochemistry, cognitive, linguistic, emotional and social development). To start with, instead of asking why they behave the way they do, we should ask: How do they perceive the world?

From the very beginning of the 'official history' of autism (Kanner, 1943), the syndrome of autism has been described from the outside, what it looks like, rather than how it feels from the inside. Now we can get a unique opportunity to learn what it is like to live with autism. Numerous personal accounts have been published and many autistic individuals are willing to talk at conferences and congresses about their experiences. The autistic authors feel they have to give their side of the

story as hundreds of books on autism written by professionals and parents often 'get it wrong'. They want to clarify things and their views must be taken seriously. They want us to know what it is like to live with a nervous system that functions differently, what it is like to be different, what it is like to be misunderstood and mistreated.

Because autism is a spectrum disorder, it means that people are affected to different degrees, and autistic individuals have a wide range of social awareness, sensory perceptual differences, communicative skills and cognitive abilities. However, the spectral character of autism is seen differently by autistic individuals – not as described behaviours but rather as identified underlying problems. For example, in some people autism may cause difficulty with emotional information, while in other cases it may cause problems with language, sensory processing or a combination of these (Williams, 1996). Autism never manifests itself in the same way twice, as there are many types of it (O'Neill, 1999). Autistic individuals differ from each other as much as their non-autistic peers.

Donna Williams (2006), an adult with autism, describes autism spectrum not as single condition, but as a 'fruit salad' – a cluster of a whole range of often unrelated underlying conditions. If we take several people diagnosed with autism and focus on the behaviours known as the Triad of Impairments, each area of difficulty may have a completely different underlying cause or a combination of causes for each of these individuals (Williams, 2006). Donna does not see 'autism' (as a collection of symptoms) but rather compounding collections of autism-related problems and different adaptations and compensations to different types of autism-related problems, when any difficulty affecting one system of functioning will cause a weakening in another system as it tries to compensate (Williams, 1996). According to Donna Williams (2006), any (or a combination) of the following, can cause problems with communication, social interaction, imagination, learning or behaviour (i.e. autism):

information-processing differences; social-emotional anxiety states; impulse-control and mood issues; personality and identity issues; environmental and boundaries issues (p.17).

The majority of cases of autism may actually be compositions of a combination of co-morbid conditions that block and severely disrupt development. The idea that someone who is severely autistic will grow up to be just as severely autistic may in many cases depend on whether these 'blocks' are recognised and addressed (Williams, undated, b).

Each person gives his or her *personal* perspective on autism which may not coincide with others. Nevertheless, in all the diversity of their descriptions one can find certain similarities that run through *all* the accounts. And surprise, surprise, they do not see autism as a triad of impairments but as information processing problems and cognitive and sensory perceptual differences. In short, autism is seen as a fundamentally different way of being – perceiving, interpreting and thinking. How does the triad of impairments fit into this construct? Unfortunately, the triad, while being useful for diagnosis and recognition of autism from the outside, has brought many misconceptions of the condition. Often "impairments of social

interaction, communication and imagination” are interpreted as *inabilities* to interact, communicate and imagine. However, if we look at these ‘impairments’ from the point of view of “fundamentally different ways of being” we will see a different interpretation of the same behaviour:

Social interaction

People with autism do interact and form relationships but of a different nature. Many of them have a strong desire to be with other people, to express themselves and to be understood. Although some of them want friends desperately, they often find that the people with whom they interact consider their interests somewhat strange. Since their world is so different from that of non-autistic people, they often have a hard time in ‘normal’ social relationships that come from ideas learned in early childhood. These ideas are not necessarily logical for autistic people and are a sort of ‘fantasy’ which they do not understand well. Therefore, they may do and say many things that violate most people’s social context without realising that there is something they are violating. The social isolation that results from this increases their loneliness and feelings of being different (Joan & Rich, 1999).

Social communication

Non-autistic people are often puzzled by the ‘odd’ communication expressed by individuals with autism. However, persons with autism may be equally puzzled by their non-autistic communicative partners. It is often not so much that an individual with autism has no regard for their rules, as that the person cannot keep up with so many rules for each specific situation (Williams, 1996). Sometimes they are not aware of social cues because of the same perceptual problems which affect their understanding of other aspects of the environment. For example, visual processing problems may prevent the person from learning to recognise and interpret facial expressions. They may have to develop a separate translation code for every person they meet. Even if they can tell what the cues mean (because they have learned them theoretically) they still may not know what to do about them (Sinclair, 1992).

Establishing communication and understanding between any two people with different experiences and perceptions involves developing a common language. As an autistic person’s experience and vocabulary (verbal and non-verbal) may be idiosyncratic, a great deal of effort must be taken on both sides to develop this common language (Sinclair, 1989). Communication is a two-way process, and it takes two people to mess up a conversation. Not all the problems are caused by people with autism. Non-autistic people have a lot to learn about the art of communication with those who do not converse in the same way, whether it is verbal or non-verbal language (Bovee, undated). Thus, the impairments of communication in autism are better described as qualitatively different ways to interact, communicate and process information which do not coincide with conventional ones.

Imagination

Bearing in mind that autistic cognitive processes are qualitatively different relative to the cognitive processes of the non-autistic population, the creativity

and imagination of a person with autism will be qualitatively (and contextually) different as well (Bogdashina, 2004). For example, visual thinking has enabled Temple Grandin¹ to build entire systems in her imagination (Grandin, 1996a). The extremely vivid imaginative powers and enormous creativity of people with autism are seen in poetry and prose, music and art (e.g., Kochmeister, 1995; Lawson, 1998; Williams, 2003).

On the other hand, there are behaviours, such as unusual responses to sensory stimuli, that have not been included into the diagnostic definition of autism but which are difficult to ignore. (In the past, these responses were described as 'abnormal' or 'bizarre'.) However, bearing in mind the differences in perception, cognitive processes and adaptive strategies that autistic people acquire, their so-called 'bizarre responses' are likely to be logical and functional. These behaviours "help ground the autistic person, provide rhythm and order, calm, and simply feel good!" (O'Neill, 1999, p. 33). Many individuals with autism describe their stereotyped ('bizarre') behaviours as compensatory strategies to regulate their systems and to cope with information overload. These self-stimulatory behaviours (or 'stims') may serve several purposes, and one and the same behaviour may have different underlying causes. Some examples of different functions of stimming are:

- *defensive*: in order to reduce the pain or discomfort caused by hypersensitivities (e.g., "This behaviour is an attempt to eliminate a sensory assault that interferes with functioning." (Shore, undated))
- *self-stimulatory*: to improve the input in the case of hyposensitivity (e.g., "You may observe the same autistic person rubbing sandpaper on his bare arm, or banging his knuckles sharply into a solid wooden dresser, then peering at them as if to say, 'Oh, hello, hand. So you do belong to me, then... A lot of self-stimulation, including rocking the body, swaying, flapping the hands, rubbing the skin, and countless others, are pleasurable, soothing connections with the senses." (O'Neill, 1999, p. 33))
- *compensatory*: to interpret the environment in the case of 'unreliable' sensory information (e.g., "I was coping in a world where other people effectively realised nothing of that. I reacted to all this bombardment and confusion with those physical movements, silence and strange sounds which are generally lumped together as 'autistic behaviours'." (Blackman, 2001, p. 19))
- *out of frustration*: (e.g., "Sometimes head banging and knuckle nibbling, tantrums, or outbursts happen as a way of letting someone know enough is enough!" (Lawson, 2001, p. 78))
- *just pleasurable experiences* that help to withdraw from a confusing environment: (e.g., "Rocking and spinning were other ways to shut out the world when I became overloaded with too much noise. Rocking made me feel calm. It was like taking an addictive drug. The more I did it, the more I wanted to do it." (Grandin, 1996a, pp. 44-45))

¹ Temple Grandin (born August 29, 1947) is an American doctor of animal science and professor at Colorado State University, bestselling author, and consultant to the livestock industry on animal behavior. As a person with high-functioning autism, Grandin is also widely noted for her work in autism advocacy and is the inventor of the squeegee machine designed to calm hypersensitive persons. (ed.)

Characteristics of autism defined as secondary in mainstream research literature seem to be primary for many people with autism. Such features, for example, as unusual responses to sensory stimuli are often seen as the core description of autism. Besides, from the 'autistic' perspective, these responses are 'normal' (not 'unusual' or 'bizarre') because they are caused by different sensory-perceptual processing. Many authors with ASD consider autism largely as a condition relating to sensory processing (e.g., Gerland, 1997; Grandin, 1996a; Hale, 1998; O'Neill, 1999) and suggest that the true deep-rooted cause of all social and communicative and emotional problems is of a sensory-perceptual nature (see, for example, VanDalen, 1995; Morris, 1999):

Now I think that the use of speech and of other sensory activities that are normally lumped together as 'communication' are themselves a kind of sensory exploration. One's sense of self as a person is augmented and developed in the process. The spoken environment is a peculiarly human invention, and like all other environments is learned by experience, both as a receiver and as a speaker. But for me all was distorted and unpredictable (Blackman, 2001, p. 11).

They identify the problems they experience as differences/ disturbances in their sensory perception and information processing. Temple Grandin (1996a) puts forward a hypothesis that there is a continuum of sensory processing problems for most autistic people, which goes from fractured, disjointed images at one end to a slight abnormality at the other.

However, not all people with ASD make sensory-perceptual issues the cornerstone of autism. One of the reasons may be the different interpretation of sensory problems. The confusion may be caused by 'official descriptions' of sensory difficulties – limited to hypersensitivities (over-responsiveness) and hyposensitivities (under-responsiveness). In this case, the statement "autism is not about sensory difficulties" is absolutely correct. Autism is about sensory differences, which are far more complicated than, for example, 'tactile defensiveness'. Autism is about a different development of sensory perception that brings about a different development of cognitive mechanisms. Visual thinking, for instance, which is quite common in autism, is the product of this development, while hypersensitivities and defensiveness are by-products that should be addressed as soon as they have been detected.

However, there is a very important point to take into account – not all the differences in perception are dysfunctional, and sensory differences are not necessarily problems or difficulties. Some may be interpreted as strengths or even superabilities that can become 'dysfunctional' if not recognised by the outside world. Non-autistic people can not appreciate some perceptual abilities of autistic individuals because they do not know they exist! Imagine that you are unable to see the colour red, how could you appreciate the beauty of red roses? If the majority can not see it, the ability to enjoy the 'redness' becomes useless and dysfunctional (Bogdashina, 2005b).

The problem for many autistic individuals is that they do not realise that their sensory perceptual processing is different (e.g., Grandin, 1996ab; Lawson, 2001; McKean, 1994; O'Neill, 1999; Willey, 1999). Temple Grandin, for instance, thought

that other people were better and stronger than she was because she could not tolerate scratchy clothes or loud noises (Grandin, 1996a). A typical thought they might have is:

There is something wrong with me. I can't do things right. Everyone is mad at me. No matter how hard I try, something goes wrong. Other people can do things I can't. It must be my fault that I'm having so much trouble (Spicer, 1998).

It is no wonder that they are often unaware that they perceive the world differently from the other 99 per cent of the population, because they have nothing to compare their perception with (Morris, 1999). The first realisation of their differences usually comes in the late teens or even later (Lawson, 2001; Willey, 1999). It may come as a kind of revelation, as well as a blessed relief, when they learn that their sensory problems are not the result of their weakness or lack of character. However, the problem is that people around them are often unaware of their different perceptions, and do not make any effort to accommodate and adjust to these differences:

Suppose you are color-blind, and cannot distinguish between red and green. You are in a room with other people, all of whom have normal vision. No one – not even you – knows that you are color-blind. Everyone is handed a list of instructions. They are printed in red against a green background. Everyone except you knows exactly what to do. They cannot understand why you just sit there. The paper looks blank to you, and you cannot understand how others know what to do. Think of how you would feel, especially if the others stared at you, or whispered, or laughed (Spicer, 1998).

Everything we know about the world and ourselves has come through our senses. All our knowledge therefore is the product of what we have seen, heard, smelt, etc. Differences in perception may radically change the course of cognitive, language, emotional and social development. The manifestations of sensory differences are likely to be different in different people (or in the same person at different ages), but it is possible to identify the common features and recognise compensatory strategies and adaptations children with autism have developed to cope with their problems, and construct hypothetical paths of sensory development in order to free the child from developmental blocks that hinder the unfolding of their abilities.

We can distinguish some features of 'autistic perception' of the world, based on the testimonies of high-functioning autistic individuals and close observations of autistic children. Below I will discuss the most commonly reported perceptual phenomena and their possible influence in other aspects of development.

An inability to distinguish between foreground and background information (Gestalt perception – Bogdashina, 2003)

Autistic people are bombarded with sensory stimuli. They are often unable to filter irrelevant details and, instead, perceive the whole scene as a single entity. They perceive everything without filtration and selection. This results in a paradoxical phenomenon: sensory information is received in infinite detail and holistically at the same time. It can be described as gestalt perception – perception of the whole scene

as a single entity with all the details perceived (but not processed!) simultaneously (Bogdashina, 2003). This feature was described by Kanner (1943) as a universal feature of autism – the inability to experience wholes without full attention to the constituent parts:

a situation, a performance, a sentence is not regarded as complete if it is not made up of exactly the same elements that were present at the time the child was confronted with it (Kanner, 1943, p.246).

In the past, Kanner's comments were interpreted as a characteristic that followed from a deficit in central coherence (Frith, 1989; Happe, 1994). However, with evidence from personal accounts and given research studies (see, for example, Ozonoff et al., 1994), we can conclude that at a perceptual level autistic children have a strong drive for coherence – 'gestalt perception'. If the slightest detail is changed, the whole scene (gestalt) is different, i.e. unfamiliar. For children with autism to recognise things, these things must be exactly the same as when they initially experienced them. Only then will they know what to do with them (Williams, 1996). The same is true about routines - if something goes differently, they do not know what to do. The gestalt of the situation is different. All of this results in fear, stress and frustration and may explain their dislike of changes and preference for routines (Bogdashina, 2003). They may react to all this bombardment and confusion with certain physical movements which are generally known as stereotypical 'autistic behaviours' (Blackman, 2001). These 'ritualistic behaviours' serve as reassurance and create some order in daily life (O'Neill, 1999). Individuals with ASD may experience gestalt perception in any sensory modality. A person who experiences visual gestalt perception has great difficulty in separating a single detail of the scene from the whole picture (without this detail the whole picture will be different). People with auditory gestalt perception seem to pick up all sounds with equal intensity. They often feel 'drowned' in the sea of background noise and can not isolate, for example, the words of the person they are talking to from other noises in the room (e.g., fans working, doors opening, somebody coughing).

On the conceptual level, gestalt perception leads to rigidity of thinking and difficulty in generalising. Autistic children can perform in exactly the same situations with exactly the same prompts but fail to apply the skill if anything in the environment, routine or prompt has been even slightly changed. Each and every situation is unique. They can learn what to do in one situation but be lost if the slightest detail is different. Children with autism might be baffled when things change or go differently. Even the slightest changes may confuse and upset them. Another confusing (and frightening) thing for children with autism may be when something emerges in the situation that does not belong to it, as it destroys the 'gestalt' of the situation. To feel safe, they create 'gestalt behaviours' – rituals and routines. These behaviours bring reassurance and order in daily life which is otherwise unpredictable and threatening. These rituals may seem long and complicated to outsiders. However, for an autistic person, it is one act of meaningful experience, and if any part of it is missing (for example, a person is prevented from completing a seemingly meaningless ritual) the whole experience becomes incomplete, unfamiliar and frightening (Bogdashina, 2004).

Gestalt perception may bring sensory overload that, in turn, may have different consequences, such as overloaded, fragmented perception, delayed processing, distorted perception and hypersensitivity.

Vulnerability to sensory overload

The vulnerability to information overload is one of the distinctive features of individuals with ASD, which often goes unnoticed by their non-autistic communicative partners. If they continue to process all the in-coming information, despite their inability to keep up with it, overload sets in. This eventually brings anxiety, confusion, frustration and stress, which, in turn, can lead to challenging behaviours (Bogdashina, 2005).

Fragmented perception

When too much information needs to be processed simultaneously, people with autism are very often not able to break down the whole picture into meaningful units and process only those bits which happen to get their attention (Bogdashina, 2003). It seems as though people with autism react to parts of the objects as being complete entities in themselves (VanDalen, 1995). As children with ASD perceive their surroundings and people they encounter in bits and pieces, they interpret and store in their memory their individual (and idiosyncratic – from the non-autistic point of view) impressions of their experiences. They use these unconventional definitions of places, things and people to function in their environment. As these definitions differ from non-autistic ones, the carers find the behaviour of their child incomprehensible. In contrast to the ‘universal weak central coherence’ explanation in autism, Ozonoff et al. (1994) hypothesize that individuals with autism do indeed focus on details at the expense of seeing the big picture, but do it at a conceptual level. That is, they may have no problem visually processing the whole picture; their difficulty may only be apparent when the individual elements are meaningful pieces of information that must be integrated to form a general idea or understanding at a higher-order conceptual level.

In the context of fragmentation, we can see the role of attention and how the attentional mechanism functions in autism. Differences in attentional functioning may be central to many social and cognitive deficits in persons with autism, as efficient attending is essential to the development of other aspects of functioning. Sensory issues and attentional issues become closely connected and are most likely to be both real and primary. In some cases, one may help cause the other. Both attentional and sensory problems may have developmental consequences which may lead to the full autistic syndrome (Blackburn, 1999). As there is too much information coming in, it is hard to know which stimuli to attend to. The inability to filter out the information (gestalt perception) and distinguish the relevant from the irrelevant, to distribute different amounts of attention across present stimuli depending on their significance, and to sustain attention results in increased distraction and overload and impairs cognitive functioning. Involuntary responses to irrelevant stimuli interfere with the processing of relevant information. Without efficient filtering and selectivity of attention, the child finds it difficult to make sense of the environment. Children with ASD are often unable to divide their attention between the object

they want and the person from whom they are supposed to ask for it, because for many of them, shifting attention from one stimulus to the other is a relatively slow process. Being able to use divided attention enables an individual to assess a number of situations and to make choices about them far quicker than many people with autism (who use single focused attention) are able to. Therefore, many individuals with ASDs may have difficulty with executive functioning (e.g., organizing, planning, processing, decision making). Sometimes this leads to obsessive ordering, rituals, repetitive behaviour and/or a lack of organizational ability outside the attention tunnel (Lawson, 2003).

Another common attentional difficulty in autism is the failure to establish and maintain joint attention, i.e. the ability to attend to the same stimuli as another person. This leads to a failure to share experiences. In turn, this results in the failure to comprehend the meaning of the interaction and hinders social and cultural development (Bogdashina, 2005). However, overselectivity and narrow attentional focus may be seen not as a deficit but rather as an attentional difference (Lawson, 2001).

Delayed processing

As a consequence of fragmented perception, people with autism may experience delayed processing. Perception by parts requires more time and effort to interpret what is going on with or around them. It may appear as though they do not feel pain, do not want help, do not know what they are saying, do not listen or do not want to. However, by the time some of these sensations are processed and understood, they may be several minutes, one day, a week, a month, even a year away from the context in which the experiences happened (Williams, 1996).

Distorted perception

People with autism may experience all sorts of distortions in their perception, especially when they are in a state of nervous overarousal and/or information overload. No one can guess that their eyes, for example, pick up different signals from the light, shade, colour and movement (Blackman, 2001):

My enchanted world of light and sudden gaps into which people and objects moved, affected the way that I processed my fellow human beings... I basically emphasised folds and depths... So I perceived people... as slightly distorted. This was not only in shape, but also in the composition of the components of their bodies in my visual imagination (p. 26).

Hypersensitivity

Hypersensitivities to sensory stimuli are very common in autism. Their senses may be too acute and be disturbed by stimuli that do not bother non-autistic individuals. For instance, certain things they touch may hurt their hands (McKean, 1999). They may dislike places with many different noises or lights (Grandin, 1996a; Lawson, 2001; Shore, Undated). The fear of certain sounds that hurt their ears may be the cause of many 'challenging behaviours' and tantrums. Many 'bad behaviours' are triggered due to anticipation of being subjected to a painful stimulus (Grandin, 1996a).

Hyposensitivity

Sometimes their senses may become dull to the point that they can not clearly see or hear the world around them, or even feel their own body (Hawthorne, 2002). This state may be either permanent or temporary. To stimulate their senses and to get at least some meaning of what is going on, they may wave their hands around or rock or make strange noises.

Inconsistency of perception

People with autism may be tossed in a sensory maelstrom, so that the sensations may be unbearable one minute and yet completely unfelt the next (Blackman, 2001). Fluctuation of the 'volume' of perception is quite common in autism. The inconsistency of perceiving information, when the sensations (hence, the interpretation of what is going on) are changing day to day, hour to hour, sometimes even minute to minute (McKean, 1999), does not help the learning of social and emotional cues from people.

These and other sensory-perceptual inconsistencies and differences bring sensory overload in situations that would not bother other people. Stephen Shore (a high-functioning person with autism) calls sensory problems in ASDs (when the senses are turned up too high or turned down too low) 'sensory violations'. Combined with distorted and unreliable sensory information, these sensory differences can make dealing with the environment in an intensive manner very difficult, especially when transitions are involved (it is easier to do what you already know) (Shore, 2003).

Adaptations and compensations

Consciously or unconsciously, autistic persons develop their own perceptual styles in order to cope with their unique perceptual issues. These styles may be seen as defensive strategies and voluntary and involuntary adaptations and compensations, which the person with autism acquires very early in life. Timing and personal and environmental differences bring further variables of development in each particular individual, influencing cognitive and language functioning, emotional and social development. Many children with autism who are considered 'low-functioning' could develop and lead more independent lives if their compensatory strategies were understood, fostered, developed and refined (Williams, 1996). They learn very early in life to control their environment. The most common adaptations and perceptual styles in autism are:

- System shutdown
- Mono-processing
- Peripheral perception
- Compensating for an unreliable sense with other senses.

System shutdown

Too much sensory overload may result in a system shutdown. When the person cannot cope with sensory information, s/he may shut down some or even all sensory channels. Many children with autism are suspected to be deaf as they do not react to any (even very loud) sounds. Their hearing, however, is often very acute, but

they learn to 'switch it off' when they experience overload and can not cope with the rate of incoming information. In order to shutdown the painful channel(s), they may engage in stereotypic behaviours or deliberately distract themselves through other channels (for instance, touching objects to 'switch off' their vision or hearing), or to withdraw altogether. If this strategy is mastered early in life, they are often reluctant (in the fear of painful bombardment of unmodulated, unfiltered stimuli) and, with time, unable to 'switch the channels back on'. It leads to self-imposed sensory deprivation that, if not addressed, may lead to irreversible hindrance of development:

Auditory and tactile input often overwhelmed me. Loud noise hurt my ears. When noise and sensory stimulation became too intense, I was able to shut off my hearing and retreat into my own world (Grandin, 1996b).

When a baby is unable to keep up with the rate of incoming information, its threshold for involvement or attention is not great before aversion, diversion or retaliation responses step in, or plain and simple systems shutdown: nobody's home (Williams, 2003, p. 50).

Many individuals with ASD agree that perceptual problems such as feeling deaf, blind or dumb, are experienced as very real. They are caused by shutdowns of the sensory systems that may be, in turn, caused by stress, or brought on by an inability to cope with incoming information (Williams, 1999). In shutting down their sensory systems, they may not receive the stimulation that is required for normal development. Temple Grandin (1996b) hypothesizes that possibly there are secondary central nervous system abnormalities which happen as a result of the child's avoidance of input. The initial sensory processing abnormalities with which the child is born cause initial avoidance. However, the limbic system, which has abnormalities, is not mature until the child is about two years old. The possibility of secondary damage to the central nervous system (CNS) may account for why young children in early intervention education programmes have better prognosis than children who do not receive special treatment (Grandin, 1996b). To back up her argument, Grandin (1996b) cites animal and human studies that show that restriction of sensory input causes the CNS to become overly sensitive to stimulation. Animals placed in an environment that severely restricts sensory input also develop many autistic symptoms such as stereotyped behaviours, hyperactivity, and self-mutilation. The effects of early sensory restrictions are often long lasting, and the hypersensitivity caused by sensory deprivation seems to be relatively permanent. One possibility is that autism may be a type of developmental deprivation syndrome and disturbances of the attentional mechanism (in combination with sensory difficulties) may also contribute to the condition (Blackburn, 1999).

Mono-processing

To limit the amount of information and avoid overload and fragmentation, people with autism may use one sensory channel at a time, while the rest of the senses are on hold. It brings certain restrictions to their perception but helps to make sense of information in at least one sensory modality. Later, they learn to switch channels and, though not simultaneously through all the senses, they may still get some meaning of an object, event, or situation. For example, the child uses his vision and sees every

minute detail, sees that the colours are vibrant and, perhaps radiantly brilliant, but loses track of s/his other senses and does not make much sense of sounds in the background, loses the feeling of touch or body awareness (O'Neill, 1999). People with autism may be unable to process information produced simultaneously on the outside and inside and, for instance, while touching something they may feel the texture of the object, but have no sense of the hand, and then switch channels and feel the hand but lose the sensation of what the hand is in contact with (Williams, 1998).

Peripheral perception

Another strategy to avoid overload and get meaning from the outside world is peripheral perception. Autistic persons can often understand things better if they attend to them indirectly, for instance, by looking out of the corner of their eyes (O'Neill, 1999) or listening peripherally. The same is true of other senses if they are hypersensitive – the indirect perceptions of smell, taste or touch are often defensive strategies to avoid overload and keep in touch with reality. In this case, it is a kind of indirectly confrontational approach in contrast to a 'normal' directly confrontational one (Williams, 1996).

Timing

If sensory problems start early in life and the child learns to shut the systems down (in order to protect himself from painful and scary experiences), he creates a self-imposed sensory deprivation that leads to the complete isolation of the child from the outside world. It prevents him/her from learning via imitation and social interaction. Those who acquire autism-specific perceptual styles (monoprocessing, peripheral perception) get different experiences from the same stimuli that can not be shared with non-autistic people whose perceptual styles are 'normal' (Bogdashina, 2005).

Most, if not all, autistic children may have auditory processing problems, but they vary in severity. Those with minor difficulties often end up hyperverbal and have above average intelligence, more in the Asperger syndrome pattern than in the classical autism pattern (Klein, 2002). There is a group of children with ASD (at the so-called low-functioning end of the spectrum) who experience very severe auditory processing problems. They are not only late speakers, but may not speak at all or spend their entire lives with 'dysfunctional' speech. Many of these people have significant problems getting even the literal meaning of receptive language in any consistent or ongoing way. They can be anywhere from completely functionally 'meaning-deaf' to, at best, getting the literal meaning of 50–70 per cent of incoming auditory information. Their ability to link auditory input to any mental images is missing – the words fall, meaningless (Williams, undated, a). If the capacity to perceive and interpret information is impaired, no verbal conceptualisation is achieved spontaneously. In this case, the transition from what Donna Williams calls 'sensing' to interpretation and verbal development may be delayed. The ability of a child to automatically learn language cannot proceed if the incoming information is perceived as a confusing jumble of noise, rather than coherent speech, when someone talks to him/her. Klein (2002) hypothesizes that the longer this auditory deficiency continues, the longer the neurons will continue to develop in a haphazard

(and useless) manner, and the harder it will be to remediate the growing language difficulties. Developmental blocks (biochemical, metabolic, perceptual, cognitive, emotional, psychological) should be unblocked to free up development. This will bring the beginning of expression through social interaction and communication with others. A lot depends on how consistent and predictable sensory perception and information processing are and how rewarding and comprehensible the new experiences are (Williams, 1998). The timing of the advent of sensory problems may determine which type of autism develops:

The exact timing of the sensory problems may determine whether a child has Kanner's syndrome [here: HFA] or is a nonverbal, low-functioning autistic. I hypothesize that oversensitivity to touch and auditory scrambling prior to the age of two may cause the rigidity of thinking and lack of emotional development found in Kanner-type autism. These children partially recover the ability to understand speech between the ages of two-and-a-half and three. [Those] who develop normally up to two years of age, may be more emotionally normal because emotional centres in the brain have had an opportunity to develop before the onset of sensory processing problems. It may be that a simple difference in timing determines which type of autism develops (Grandin, 1996a, p. 50).

Differences in perception lead to development of different abilities and thinking styles, which are often not taken into account by those who live/work with those with ASDs. As more educators, doctors and parents understand these differences, more children with autism will be helped from their isolation and misunderstanding (which is tantamount to mistreatment) at younger ages. It is possible to help a child develop his or her potential if the carers work with autism, not against it. Learning does not end in childhood. The autistic brain may develop at a much steeper rate than is otherwise expected, even to the point of almost catching up with its non-autistic counterpart (Hawthorne 2002). The environment may either speed up the development or hinder it. In order to help them, we need to know how the senses of each individual work and what (voluntary or involuntary) strategies each individual has acquired to function in the environment (Bogdashina, 2005b). The recognition of sensory-perceptual problems is a new field and, unfortunately, many professionals are unaware or unknowledgeable about these problems, how to recognize them or what to do about them (Williams, 1996). Isn't it time at last to listen to those who live with autism and consider the problems they identify as the primary ones, instead of going in the opposite direction?

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Sensory perceptual issues in autism: why we should listen to those who experience them

Abstract

The paper challenges the way we think about how we analyse and interpret the behaviours we see in Autism Spectrum Disorder (ASD). The focus is on sensory issues, with the main argument being that many of the behaviours we observe may be logical responses to sensory stimulation (e.g., overload, delayed processing, fragmentation) and not attributable to other factors.

Problemy natury sensorycznej i percepcyjnej w autyzmie: dlaczego powinniśmy słuchać tych, którzy ich doświadczają

Streszczenie

Niniejsza praca podaje w wątpliwość nasz sposób myślenia dotyczący tego, jak analizujemy i interpretujemy zachowania obserwowane w ASD (zaburzenie ze spektrum autyzmu). Centralnym punktem zainteresowania są kwestie sensoryczne, za którymi przemawia główny argument, iż wiele z obserwowanych zachowań może stanowić logiczną reakcję na stymulację sensoryczną (np. nadmierne obciążenie, opóźnione przetwarzanie, fragmentaryzacja), a nie wynikać z innych czynników.

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