The Sensory World of the Autistic Spectrum:

a greater understanding

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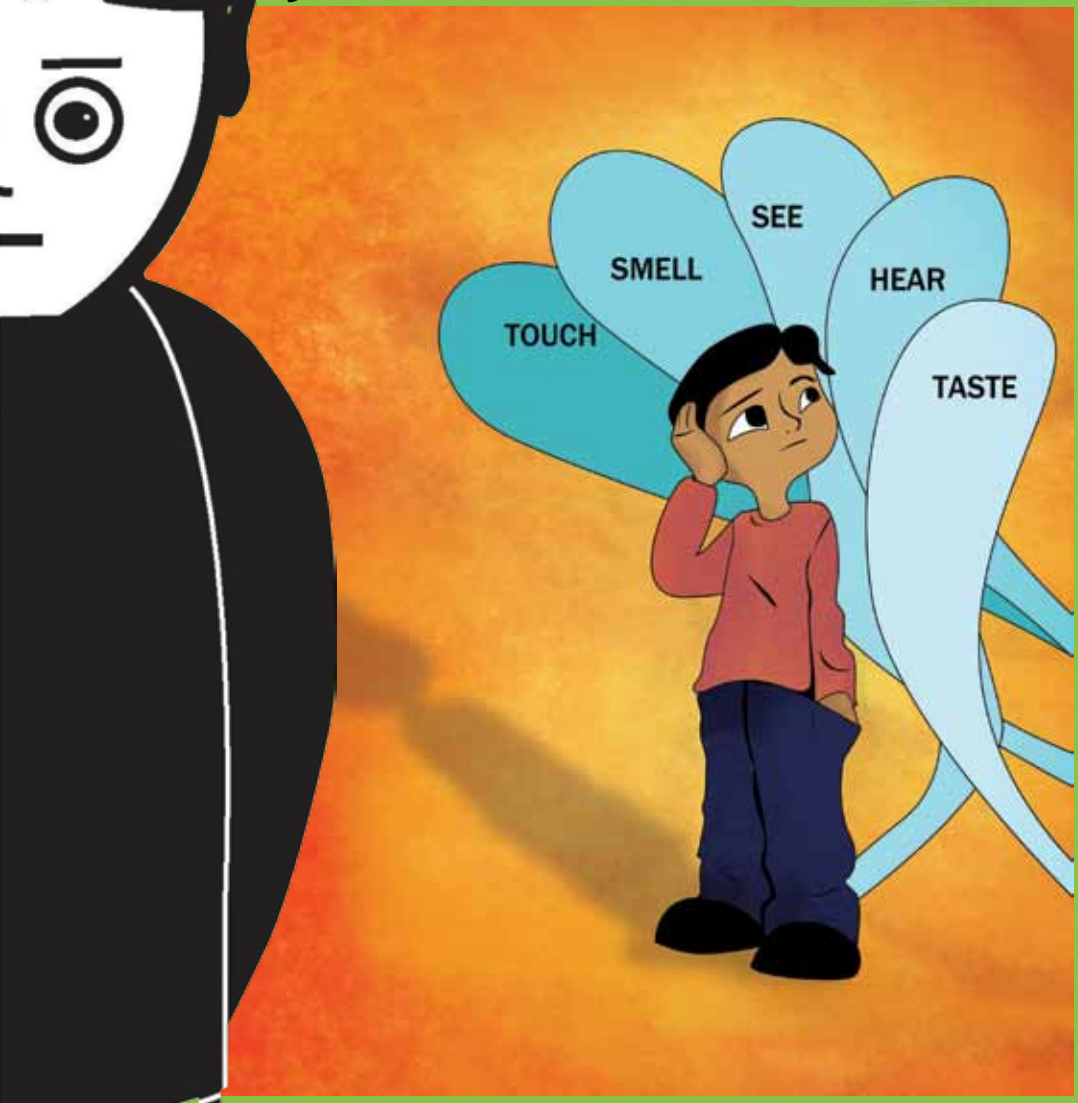
By Kate Wilkes



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INTRODUCTION

Many people on the autistic spectrum experience sensory difficulties or are particularly sensitive to certain sensations. These difficulties may result in behaviour which parents and carers find puzzling.

This booklet aims to give a basic understanding of sensory integration, explain possible difficulties individuals on the spectrum may have and offer strategies to help. It aims to provide people with an awareness of the sensory world of individuals with autism.

Throughout this booklet the term autism is used to include autistic spectrum disorders (ASD), autism and Asperger syndrome.

To function and participate in the world that surrounds us, we need to use our senses. Senses provide individuals with unique experiences and allow us to interact and be involved with the rest of society. They help us to understand the environment around us and respond within it. They play a significant role in determining what actions we take within a particular situation.

Imagine what happens when just one or all of the senses are intensified or are not present at all. This difficulty is often called sensory integration dysfunction and it is one that many individuals on the autistic spectrum experience.

There are several definitions of autism but they rarely state what an individual with autism feels. We can only get an insight through personal accounts of individuals with autism who can express and describe their unique and often painful sensory world.

Everyday experiences which the majority of non-autistic individuals take for granted can for autistic individuals be negative and upsetting experiences. Behaviours presented by someone with autism will often be a direct reaction to their sensory experience.

It is therefore understandable why individuals with autism create rituals or have self stimulatory behaviours such as spinning, flapping and tapping, because these make them feel that they are in control and feel safe in their unique world.

'If I get sensory overload then I just shut down… you get what's known as fragmentation... it's weird, like being tuned into 40 TV channels.'[1]

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SENSORY INTEGRATION

Dr A. Jean Ayres defines sensory integration as 'the organisation of sensation for use'.[2] Sensory integration involves turning sensation into perception.

The central nervous system (brain) processes all the sensory information sent from various sensory systems in the body and helps to organise, prioritise and understand the information. From this it is able to action a (behaviour) or a combination of these.

Throughout our bodies we have receptors, which pick up on sensory stimuli. Our hands and feet contain the most receptors. Most of the time the processing of sensory information is automatic.

The sensory systems can be broken down into six areas. These can be divided into two main areas hyper (high) and hypo (low) sensitivity. However, it is important to remember that the difficulties/differences may for some individuals fall into both areas.

This section makes extensive use of Brenda Smith Myles' excellent explanations on sensory integration in the following notes.[3]

BALANCE (VESTIBULAR) SYSTEM

Situated in the inner ear, this provides us with information on where our body is in space and its speed, direction and movement, all in relation to the pull of gravity. It is fundamental in helping us to keep our balance and posture.

For an individual on the autism spectrum, difficulties/differences may be:

Hypo

The need for rocking, swinging, spinning.

Hyper

Difficulties in activities which include movement – sport

Difficulties in stopping quickly or during an activity.

BODY AWARENESS (PROPRIOCEPTION) SYSTEM

Situated in the muscles and joints, this tells us where our bodies are. It also informs us where our body parts are and how they are moving.

For an individual on the autism spectrum difficulties/differences may be:

Hypo
Proximity – standing too close to others
Lack of awareness of personal body space
Difficulties in navigating rooms – avoiding obstructions
Bumping into people.

Hyper
Difficulties with fine motor skills; manipulating small objects (buttons, tying shoe laces)
Movement of the whole body to look at something.

SIGHT (VISUAL) SYSTEM

Situated in the retina of the eye and activated by light, our sight helps us to define objects, people, colours, contrast and spatial boundaries. For an individual on the autism spectrum, possible difficulties/differences include:

Hypo
May see things darker and lose features or lines
Some may concentrate on peripheral vision because their central vision is blurred. Others say that a main object is magnified and things on the periphery become blurred
Poor depth perception – problems with throwing and catching; clumsiness.

Hyper
Distorted vision occurs
Small objects and bright lights can jump around
Fragmentation of images as a consequence of too many sources
Focusing on particular details such as sand grains may be more pleasurable than looking at something as a whole.

'She was Mrs Marek, a face upon which light danced maniacally, turning her into more of a cartoon than a human being. Welcome to Toon town… I'd like you to enter this torture chamber I call my kitchen and meet my wife who is a 3D cartoon.' [4]

SMELL (OLFACTORY) SYSTEM

By processing through chemical receptors in the nose, this tells us about smells in our immediate environment. Smell is a sense that is often neglected and forgotten about. It is, however, the first sense we rely upon. For an individual on the spectrum difficulties/differences may be:

Hypo
Some individuals have no sense of smell and fail to notice extreme odours
Individuals may lick objects.
Hyper
Smells can be intensified and become overpowering
Toileting problems
Dislike of individuals with distinctive perfumes, shampoos.

'Smells like dogs, cats, deodorant and after shave lotion are so strong to me I can't stand it,and perfume drives me nuts.'[5]

HEARING (AUDITORY) SYSTEM

Situated in the inner ear, this informs us about sounds in the environment. It is the most commonly recognised aspect of sensory impairment. For an individual on the autistic spectrum, difficulties/ differences may be:

Hypo

Sounds may only be heard with one ear, with the other ear either only having partial hearing or none at all

The person may not acknowledge particular sounds

May enjoy crowded noisy places, kitchens, bangs doors and objects.

Hyper

Volume of noise can be magnified and surrounding sounds distorted and muddled

Inability to cut out particular sounds, leading to difficulties concentrating

May have a lower hearing threshold, which makes them particularly sensitive to auditory stimuli, for example hearing conversations in the distance.

Hearing impairment can have a direct effect on the ability to communicate and may also affect their balance.

'Do you hear noise in your head? It pounds and screeches. Like a train rumbling through your ears.' [6]

TOUCH (TACTILE) SYSTEM

Situated on the skin, the body's largest organ, this relates to touch, type of pressure and level of pain and helps us distinguish temperature (hot and cold).

Touch is a significant component in social development. It helps us to assess the environment we are in and enables us to react accordingly. For an individual on the autistic spectrum difficulties/differences may be:

Hypo

Holds others tightly

Has high pain or temperature threshold

Self harming

May enjoy heavy objects on top of them.

Hyper

Touch can be painful and uncomfortable and they will often withdraw from aspects of touch, which can have a grave effect on their relationships with others

Dislike of having anything on hands or feet difficulties in brushing and washing hair

Only likes certain types of clothing, textures.

'Every time I am touched it hurts – it feels like fire running through my body.' [7]

TASTE (GUSTATORY) SYSTEM

Processed through chemical receptors in the tongue, this tells us about different tastes – sweet, sour, bitter, salty and spicy. Individuals will often have restricted diets as a result of their taste buds being extra sensitive. For an individual on the spectrum difficulties/differences may be:

Hypo

Likes very spicy foods

Pica: eats everything – soil, grass, materials.

Hyper

Some flavours and foods are too strong and over-powering for them

Certain textures may cause discomfort. Some children will only eat smooth foods such as mashed potatoes or ice cream.

ADDITIONAL SENSORY DIFFICULTIES

Synathesia. This is a rare condition, separate from ASD, which some individuals on the spectrum say they experience. This is when confusion in the sensory channels occurs. A sensory experience goes in through one system and out through a different system. For example an individual hears a sound (auditory system) but sees colours (visual system).

POSSIBLE STRATEGIES

A greater understanding of the sensory world of individuals on the spectrum allows you to help them develop in a more comfortable environment.

The following strategies may help when trying to create a comfortable environment for an individual on the autistic spectrum to avoid their senses being overloaded.

GENERAL POINTS TO REMEMBER

Awareness

Remember that sensory dysfunction may be the reason for the problem and always examine the environment.

Be creative

Use your imagination to come up with positive sensory experiences and/or strategies.

Prepare

Always warn the individual of possible sensory stimuli they may experience – e.g. loud crowded places.

SENSORY INTEGRATION THERAPY

Sensory Integration Therapy involves gentle exposure to various sensory stimuli. The aim of this therapy is to strengthen, balance and develop the central nervous system's processing of sensory stimuli.

Carl Delacato, who developed the concept of Sensory Integration Therapy, focused the therapy on the five core sensory systems - vision, taste, smell, hearing and touch. Today, Occupational Therapists continue to focus on these areas, as well as incorporating the vestibular and proprioception systems, when creating and planning a schedule of activities for an individual.

BODY AWARENESS (PROPRIOCEPITION) IDEAS

Hypo

Position furniture around the edge of the room to make navigation easier
Put coloured tape on the floor to indicate boundaries
Use the arm's length rule to help with personal body space. When talking to people, hold out your arm to check you are not standing too close. Remember to put your arm down when you are talking.

Hyper

Threading activities, such as threading string through cotton reels or lace boards. Both develop fine motor movements.

BALANCE (VESTIBULAR) IDEAS

Hypo
Encourage activities which help develop the vestibular system, such as rocking horse, swing, roundabout and seesaws.
Hyper
Break down activities into small steps, use visual clues such as a finish line or prompts.

SMELL (OLFACTORY) IDEAS

Hypo
Use strong smelling products as rewards and to distract from possibly inappropriate strong smelling stimuli, e.g. faeces.
Hyper
Use unscented detergents or shampoos, refrain from wearing perfumes, make the environment as fragrance-free as possible.

SIGHT (VISUAL) IDEAS

Irlen lenses/orthoscoptics.
These methods are very similar and refer to perceptual processing difficulties in relation to the visual system. By using coloured overlays and tinted lenses, the aim is to improve and reduce environmental distortions, print distortions and sensory overload. A questionnaire is used to screen and identify specific difficulties and to establish the correct lenses for the individual.

Hyper
Reduce fluorescent lighting by using deep coloured light bulbs instead
Sunglasses
Use blackout curtains
Create a workstation in the classroom: a space or desk with high walls or dividers on both sides to block out visual distractions from the front and sides.

HEARING (AUDITORY) IDEAS

Auditory Integration Training (A.I.T.)

This is based on the theory that behaviours are a consequence of difficulties in the auditory system.

In the early 1980's Dr Guy Berard created a machine to test and exercise the individual's auditory system. By producing and altering various sounds the machine is able to use auditory filters to maximize the volume without causing discomfort. The aim is to train the auditory system and balance its input. Research into this approach is very limited.

Music therapy

The benefits of music therapy have been recognised, and it is often used with individuals on the autism spectrum. Music therapy provides individuals with a unique opportunity to communicate, interact and express themselves.

Hyper

Shut doors and windows to reduce external noise
Prepare the individual before going to a noisy place or crowded situations.
Ear plugs
Personal stereo
Create a work station – see above for help on how to do this.

TOUCH (TACTILE) IDEAS

Hypo

Weighted blankets
Sleeping bags.

Hyper

Warn the child if you are about to touch him. Always try to approach from the front.
Remember - a hug may be painful rather than comforting!
Gradually introduce different textures – have a box of materials available
Allow the individual to complete activities such as hair brushing and washing themselves, enabling them to regulate their sensitivity.

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Sensory rooms or multi sensory environments (MSE) aim to offer individuals with autism the opportunity to stimulate, develop or balance their sensory systems.

They are located mainly in specialist schools or hospitals so access is quite limited. However, many families have chosen to adapt a room in their home to create a space for sensory stimulation or reload.

Hulsegge and Verheul[8] developed the concept of the sensory room in the Netherlands, drawing from the work of Clark[8] who established the idea of 'SNOEZELEN' rooms. The name is a combination of two words: to 'smell' and to 'dose'. The terms more commonly used in the UK are sensory rooms or multi sensory environments.

Rooms or sensory spaces can take various forms or focus on different types of sensation. They may be white or dark rooms, contain different sounds or allow for interactive play. Water or softplay resources may be used. Sensory gardens appeal to the sense of smell, sight or touch. The main functions of MSE are therapeutic, educational and relaxation, all in relation to development.

Equipment used within the rooms varies depending on the type, function and needs of the individual using it. The following list gives examples of equipment to provide stimulation for all sensory systems.

Stimuli can include soothing music, vibrating cushions, fibre optics, mirror balls, bubble tubes, waterbeds, tactile walls, disco lights and projectors, to name just a few. The MSE can be set up with switches, pressure, sound and movement to activate a piece of equipment in the room. The child learns to recognise cause and effect.

Benefits of MSE at present rely mainly upon personal experiences and observations, as there is only a limited amount of research.

Problem	possible sensory reasons	ideas
Picky eater	sensitive to taste or texture, maybe unable to feel the food around mouth	slowly introduce different textures around the individual's mouth – flannel, toothbrush, foods, introduce small portions, change texture of the food, puree it. Encourage activities that involve the mouth – whistles, bubble wands, straw painting
Chews on everything – clothing and objects	may find this relaxing, enjoys the tactile input of the item	latex free tubes, straws, hard gums (chill in fridge)
Smearing	Smearing may like the texture in their hands or be hyposensitive to smells	try and introduce similar materials – jelly, cornflour and water.
Refuses to wear certain clothes	may dislike the texture, pressure on their skin	turn items inside out – so there is no seam, remove any tags or labels, allow them to wear clothes that they are comfortable in.
Difficulties getting to sleep	may have difficulty shutting down senses, in particular visual and auditory	use blackout curtains, allow child to listen to music to cut out external sounds, weighted blankets.
Finds concentrating in the classroom difficult	may have too many sensory distractions – too noisy (talking, bells, chairs scraping the floor), lots of visual stimuli (people, pictures on the wall), may also find holding a pencil uncomfortable (hard/cold)	Position them away from the doors and windows, use furniture in the room to create an area free from distraction or if possible an individual workstation, try different textures to make the pencil more comfortable.

PROFESSIONALS WHO CAN HELP

Occupational therapists (OT) – play a vital role in sensory difficulties by designing programmes and often making adaptations to environments to ensure individuals are able to live as independently as possible.
Sensory impairment teams – accessed through local social and health services, these teams specialise in sensory difficulties. Although they are not autism specific, some local authorities do cover individuals on the autistic spectrum.
Speech and language therapists – often use sensory stimuli to encourage and support the development of language and interaction.
Music therapists – use instruments and sounds (auditory stimuli) to encourage and develop the sensory systems, predominantly the auditory system.

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Autism South Africa has the following brochures available either as downloads from www.autismsouthafrica.org or as hard copies that may be requested from the Autism South Africa office.

The material contained in booklets numbered 1 through to 12, was provided by UK National Autistic Society under a Memorandum of Understanding with Autism South Africa.

1. Early Years and Autism Spectrum Disorders. By Christine Deudney and Lynda Tucker.
2. Going to the Shops: a guide for parents of children with autistic spectrum disorders. By Catriona Hauser
3. Bullying and how to deal with it: a guide for pupils with an Autism Spectrum Disorder. By Patricia Thorpe.
4. Going to the doctor: a guide for children with an Autism Spectrum Disorder. By Emma Jones.
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15. Sexuality Brochure – "I'm growing up". By Rebecca Johns. (Autism South Africa)
16. Thoughts of a young sibling. By Kim Stacey (Autism South Africa)
17. Dietary Intervention. By Paul Shattock and Paul Whitely. (Autism South Africa)