

Sensory processing

Atypical sensory processing is now considered to be a core feature of autism. For many people on the autism spectrum, living with atypical sensory processing can make it difficult to function effectively within a particular environment. Evidence indicates that every individual has a unique sensory profile, and the most effective treatment and coping strategies are those that seek to maximise each individual's participation in everyday life by accommodating their sensory differences and enabling self-regulation by the individual.

What is sensory processing?

Sensory processing is the way that a person perceives, processes and organises the information that they receive through their senses – hearing, sight, touch, smell, taste and movement. This sensory information comes from one's own body and the environment around you.

How common is atypical sensory processing?

Studies show that between 69% and 95% of individuals with an autism diagnosis experience sensory processing that is atypical. ^{1, 2, 3}

Sensory symptoms were first included as part of the ASD diagnosis in the most recent (2013) edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) and atypical sensory processing is now considered to be a core feature of autism.

Types of atypical sensory processing

The most common atypical sensory processing that observed and studied in people on the autism spectrum are challenges with sensory modulation, where atypical responses to sensory stimuli make it difficult for the individual to function effectively within a particular environment. ² There are three types of atypical sensory modulation:

Sensory over-responsivity describes when an individual has an exaggerated negative response to sensory input, often leading to avoidance and hypervigilance of the stimulus. For example, a person may be especially sensitive to tactile sensations associated with

particular items of clothing, textiles or with particular features, such as tags. This may lead the person to be extremely upset or anxious when wearing such an item, or to refuse to sit on certain furniture.

Sensory under-responsivity describes when an individual may seem to be unaware of, or slow to respond to, a stimulus that would typically be expected to elicit a response. For example, some people have been found to be under-responsive to pain, which can lead to injury when the person continues to engage in a behaviour that would normally elicit a strong pain response, such as touching a hot stove.

Sensory-seeking behaviour describes when an individual has an unusual craving for, or preoccupation with, certain sensory experiences. For example, a person may repeatedly sniff their fingers or put non-food items in their mouth.

Many people on the autism spectrum experience a combination of sensory under- and over-responsivity. In addition, their sensory-seeking behaviours are associated with both under- and over-reactivity.⁴

Atypical sensory processing can also include problems detecting and discriminating incoming sensory input, which can lead to poor motor planning and execution.⁵

Research studies investigating how people on the autism spectrum experience sensory stimuli shows that sensations that were expected, predictable, controllable and self-selected are more likely to be perceived as pleasant, whereas sensations that are unexpected and beyond the individual's control were perceived as unpleasant.⁶ This has led researchers to propose that the repetitive and stereotypical behaviours often seen in people on the autism spectrum may be adaptive responses aimed at ensuring that incoming sensory input is self-generated and therefore predictable.^{6,7}

The impact of living with atypical sensory processing

Issues faced by people on the autism spectrum in their everyday life that result from atypical sensory processing include anxiety⁸, fear and avoidance⁹, ritualistic behaviours and a tendency for sameness¹⁰ and functional difficulties such as self-care¹¹, behaviour¹² and school participation.¹³

The available research evidence indicates that for people on the autism spectrum, many sensory symptoms continue to occur commonly and cause significant issues throughout their entire life, from early in their childhood and through their adulthood. It has been suggested that improvements seen after childhood may be the result of individuals learning coping strategies for managing their symptoms.²

Research is showing that sensory processing is usually very different from person to person with various different environmental factors acting as triggers.

Help with sensory processing issues

Because every individual has a unique sensory profile, it is recommended that any treatment and coping strategies be tailored to address the specific needs and challenges of each individual,

including how sensory issues are affecting that individual's ability to participate fully and safely in his or her daily activities and routines.

While numerous remedial sensory interventions are available, they currently lack supportive evidence; they can also be challenging to implement for families and clinicians. As an alternative, other therapists propose that better outcomes can be achieved through strategies that focus on optimising the participation of an individual by accommodating their sensory differences and enabling self-regulation by the individual.¹⁴

The two main types of remedial interventions that aim to improve an individual's function by remediating the individual's underlying capacity to process and integrate sensory information are occupational therapies based on the theory of sensory integration.

- *Sensory integration therapy (SIT)* is a clinic-based, individual child-led intervention that aims to remediate sensory processing difficulties by providing enhanced sensation (such as swinging) in the context of a functional activity (such as throwing and catching). The aim is produce an adaptive response from the child that will in turn improve the child's ability to process sensory information. SIT is often intensive (up to three times per week) and involves a clinic setting, specially trained occupational therapist and the use of suspension equipment. Intervention conditions and dosing are very strict, making it unfeasible and unaffordable for many families.
- *Sensory-Based Interventions (SBI)* include a range of interventions based on the theory of sensory integration that can be delivered within a person's own environment. These interventions aim to enhance the individual's participation within the environment by considering the impact that sensory processing has on that person's ability to function and participate within their environment. Such interventions include weighted vests, sensory diets, sensory activity schedules and Wilbarger's brushing protocol.

Recent reviews report a lack of evidence to support such remedial interventions, with greater support for strategies that aim to optimise the participation of the individual through accommodating their sensory differences and enabling self-regulation by the individual.¹⁴

To date, there is only one published study related to the medicated management of sensory symptoms for people on the autism spectrum. Although the study showed modest improvement in some sensory symptoms following treatment with aripiprazole, the results cannot be interpreted as providing any reliable evidence for efficacy, because the study had a retrospective design, did not have a control group and had a small sample size of only 13 subjects.²

Other interventions for which there is no evidence to suggest effectiveness include therapeutic listening and sound therapies.

By adulthood, many people on the autism spectrum have developed their own strategies to cope with and manage their sensory processing. Some of these strategies are positive, while others can be maladaptive.


Coping strategies that are commonly used include avoidance of triggering environments and stimuli, through task avoidance, removal from the environment or stimuli, finding an alternate space or

blocking out; increasing predictability and control, and meta-cognitive strategies such as self-talk, focus, imagination adaptations and planning ahead. ⁶

Educating siblings, relatives, friends, classmates and workmates about an individual's sensitivities and unique sensory needs, including the need for personal space, can foster greater understanding and tolerance during daily interactions. ²

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