

THE AUTISM SPECTRUM

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The autism spectrum of disorders is characterised by a triumvirate of impairments that are essentially social:

- impairment of social interaction and reciprocity;
- impaired verbal and nonverbal communication (across all aspects, as depicted in figure 15.1);
- impairment of social imagination, flexible thinking and imaginative play (Cumine et al. 1998; Gillberg 2002; Keane 2004).

Because children with the autism spectrum fail to reference social events, they do not know how to react to novel items or occurrences, resulting in distress at changes of routines, circumscribed interests that are restricted to the non-social sphere, intense preoccupation with particular activities, and repetitive and stereotyped patterns of behaviour (Jordan 2004; Macintosh & Dissanayake 2004). Their accumulation of knowledge in their interest areas relies on rote memory rather than deep understanding (Gillberg 2002).

Children with autism commonly also have severe language disabilities such that many do not develop expressive speech at all; around 75 per cent also have an intellectual disability, with 40 per cent recording IQs below 50 (when the average IQ is 100 and intellectual disability is represented by scores below 70) (Howard et al. 2005). Across the spectrum, many also show severe inattention and impulsivity characteristic of ADHD (Gillberg 2002). Many also have delayed motor skills, with poor coordination or clumsiness, and delayed self-help or adaptive behaviours (Gillberg 2002; Macintosh & Dissanayake 2004).

Although not yet verified by research (Rogers & Ozonoff 2005), children with the autism spectrum can have acute awareness of sensory information (particularly of sounds), are tactile defensive and sensitive to the taste and texture of foods (Keane 2004). In other words, they have sensory integration difficulties (Siegel 2003). Although often depicted as over-reacting to sensory input by becoming distressed or covering their ears against noise, many children under-react and attempt to generate more sensory input (Rogers & Ozonoff 2005). Both over- and under-reactivity can manifest as spinning their bodies and twirling items or flapping fingers near their eyes (Siegel 2003). These sensory integration difficulties are not unique to the autism spectrum, but are certainly a common feature (Rogers & Ozonoff 2005).

One Danish nationwide study found an incidence of 8.7 in 10,000 children with autism (Lauritsen et al. 2005). The condition has a strong genetic component (Gillberg 2002), with siblings of children with autism being 22 times more likely to have it also (Lauritsen et al. 2005) and 95 per cent of identical twins both having the condition (Siegel 2003).

Children's overall cognitive abilities and language skills at age three predict outcomes at age seven although some children improve in the interim while others show increasing symptoms, leading to greater diversity in the

population of children with autism as they age (Charman et al. 2005). Adult outcomes for children with autism largely depend on their having an IQ above 70, useful speech in adulthood, low levels of ritualistic behaviours (or, put another way, high levels of adaptive behaviour), and adequate social supports (Howlin et al. 2004; Szatmari et al. 2003). Nevertheless, few are self-supporting, not least because of their lowered occupational status and thus low incomes (Howlin et al. 2004).

ASPERGER SYNDROME

There is a continuous spectrum of autistic features, with around two per cent of 7- to 9-year olds displaying some characteristics, although these are not necessarily clinically significant (Posserud et al. 2006). More severely affected are children with Asperger (with the *g* pronounced as in *get*, not as in *gem*). Some reports suggest prevalence rates ranging from 11 to 45 per 10,000 (Gillberg 2002), up to as many as 60 per 10,000, which amounts to one in 160 children (Jordan 2004; Keane 2004).

In the years prior to school, Asperger syndrome is distinguished from pure autism by children's better language skills and higher intellectual functioning. Children with the syndrome typically acquire language at around the usual age, although their language is pedantic or formal, with disturbed nonverbal behaviours such as eye contact (Cumine et al. 1998). Despite these differences across the spectrum, it now seems clear that Asperger syndrome is a milder form of autism, rather than being a distinctly different condition (Dissanayake 2004; Frith 2004; Macintosh & Dissanayake 2004; Ozonoff et al. 2000). Nevertheless, some argue for retention of its separate label on the grounds that it is more palatable to parents and is useful for practice by signalling a different constellation of need from pure autism (Leekam et al. 2000).

Asperger syndrome is commonly recognised later than pure autism, both because its symptoms are less severe and because the children's social impairments are not identifiable until they are being expected to engage in more complex social interactions (Jordan 2004). Children on the autism spectrum lack empathy. Their obsessive interests alienate their peers and adults alike, resulting in rejection and a four-fold elevation in victimisation from bullying (Attwood 2004). Those with Asperger syndrome may be more interested but no more able to establish and maintain friendships than children with pure autism (Macintosh & Dissanayake 2004). Both groups spend considerable time alone and their friendships are of a poorer quality, as a result of which they describe themselves as 'lonely' – but they do not report feeling sad about their isolation (Bauminger & Kasari 2000). In other words, they understand loneliness in a cognitive but not affective sense (Bauminger & Kasari 2000).

Many children with Asperger syndrome have high levels of anxiety. In some respects, these children can be the more disadvantaged than those with pure autism, as their relatively high levels of intellectual functioning mean that they seldom qualify for special education support in schools. Yet their anxiety and rigid or hyperactive behaviour can lead to isolation from peers, while their adaptive functioning can dissipate in novel or stressful situations (Frith 2004).

TREATMENTS

Although identification of the autism spectrum has vastly improved in recent decades, little is known about the most effective interventions (Siegel 2003). Those children with sensory integration difficulties need their educational setting to manage their 'sensory diet' so that they do not become overwhelmed by sensory input. This means providing a balance of alerting, organising and calming activities to match individual children's nervous system needs (Kranowitz 1998).

In addition, the children will need remedial education which would include special education for their learning difficulties, occupational therapy for self-help training and their sensory integration skills, and speech pathology for their language impairments, as long as their verbal skills fall below their intellectual level (as speech cannot exceed thought).

Those who are more intellectually able can benefit from specific training in social skills to facilitate everyday social interaction (Gillberg 2002).

Once of school age, some children are so anxious that specifically prescribed anti-anxiety medications, anti-depressants or other medications either separately or in combination can relieve some of their more distressing emotions.

Although rewards and punishments are the most common strategy for managing the disruptive behaviours of children on the autism spectrum, I am not convinced that these children respond any better than others to outside controls. Despite the severity of their difficulties, I advocate the guidance methods detailed throughout this book in combination with educational adjustments such as those suggested in Box 1.

Box 1

Teaching adjustments for children with a disorder on the autism spectrum

Cumine and colleagues (1998) make the following specific suggestions.

Give precise instructions because the children's literal interpretation of language can lead to confusion about what they are being asked to do.

Beginning activities. Their compulsivity, perseveration and perfectionism can mean that they find it difficult to get started on an activity. Use rehearsal to prepare them.

Stopping activities. Again, the children's obsessiveness can make it impossible for them to stop a task. Give them advance warning of an impending change, or circumscribe their compulsive interests to a specific time, location or number of repetitions. Be sure to schedule these activities to follow others, as that can motivate engagement in a less favoured activity or at least ensure that they do not become absorbed in their obsession and therefore fail to move on to other learning.

Adaptive behaviours. The children's perseverative qualities can be useful for drilling them in rituals for gaining an adults' attention, asking for help, or making social contact with peers.

Sensory hyperacuity. The children can become suddenly and inexplicably disorganised in reaction to sensory information such as the sound of a distant and almost imperceptible siren. Listen out for such possibilities.

Fatigue. The stress of coping in a world that they do not understand can lead to extreme fatigue and, therefore, relaxation exercises and rest periods can be vital.

SENSORY INTEGRATION DIFFICULTIES

The second most common disability after communication delays and impairments is sensory integration (SI) difficulties. Despite their prevalence, SI difficulties are often unrecognised because they span a bewildering array of symptoms (as listed in Box 2). Children with SI difficulties have problems processing or organising information that they receive through their senses and producing an efficient or meaningful response to that information (Kranowitz 1998). They have problems filtering out irrelevant sensory information and making sense of relevant input.

The affected senses can span a combination of hearing, vision, touch, taste, smell, the vestibular (the balance mechanism in the inner ear), and the proprioceptive sense (which provides information from our joints about our body position). Some children take in too much information and over-react to stimuli and therefore become alarmed or too alert (which is akin to the state we get into when we are already late for an appointment and have lost our keys). Other children take in too little information through their senses; therefore, they under-react to sensory information and seek more stimulation. A third group do either at various times or across the different senses. This last group of children can be very confusing, as sometimes they need more stimulation and sometimes less, or they might seek more stimulation but then be unable to handle it (Kranowitz 1998).

Box 2 Signs of sensory integration difficulties

Over-sensitive (over-reactive)

Touch

Avoid touching or being touched by objects or people
Fuss over clothing and footwear
Sensitive to slight bumps or knocks
Pull away from light touch
Avoid getting messy hands
Are distracted by touch sensations

Movement (vestibular sense)

Avoid moving, are fearful, hesitant
Anxious when tipped off balance
Cautious when climbing stairs with alternating feet (past the usual age)
Low activity levels
Get nauseated from movement
Feel vulnerable when their feet leave the ground, fearful of heights
Dislike active running games
Difficulty catching a ball
Easily fatigued
Difficulty learning new motor skills e.g. riding a push toy or tricycle
Difficulty using tools such as scissors, eating utensils, crayons, pencils
Walk on toes, to minimise contact with surfaces

Under-sensitive (under-reactive)

Unaware of touch, pain, temperature or how objects feel
Constantly hurt themselves or others without realising it
Touch objects constantly
Messy eater and dresser

Crave fast, spinning, bouncing and jumping movements
Constantly move and fidget
Use too much force with toys or when touching other children
Hang upside down constantly
Dart from one activity to another
Take foolhardy risks when climbing
Rock or bang their head when stressed
Move without caution or with poor coordination
Weak muscles (low tone)

Body position (proprioception)

Are physically rigid, tense, stiff.
uncoordinated
Anxious when tipped off balance

Movement is clumsy, inaccurate
Slump and slouch over table
Deliberately bump into objects
Deliberately fall over
Jump off unsafe heights
Difficulty dressing
Prefer tight bedding and clothing

Visual skills

Become overly-excited when there is a lot to look at
Shield eyes from visual input
Avoid eye contact
Over-react to bright light
Irritable in crowded, visually noisy places e.g. supermarkets
Look away from tasks

Touch everything to learn about it, as cannot interpret visual cues
May misread others' facial expressions and gestures
Difficulty coordinating eyes for following (tracking) moving objects
Stare intently at objects or people
Difficulty naming or matching colours, shapes and sizes
Difficulty completing puzzles

Auditory (listening) skills

Cover ears to close out sounds or voices
Distracted by sounds that go unnoticed by others
Distressed by noises

Ignore voices
Difficulty following verbal instructions
Uncertain of the source of sounds

Taste

Object to certain textures and temperatures of foods

Mouth inedible objects

Smell

Object to strong odours e.g. ripe bananas
Notice odours that are imperceptible to others

Ignore unpleasant odours

The behavioural and emotional effects of sensory integration difficulties are often misinterpreted as deliberate disruptions or emotional over-reactions. In fact, they are a reasonable response by the children to feeling overwhelmed or stressed. Affected children tend to be:

- excessively irritable;
- unable to calm themselves by the usual methods e.g. thumb sucking;
- inflexible and controlling;
- intolerant of changes in routines;
- uncomfortable with making transitions between activities;
- easily frustrated;
- impulsive and prone to accidents;
- susceptible to marked variations of mood;
- prone to emotional outbursts or tantrums;
- in need of extensive help to get to sleep.

Socially, because under-reactive children lack understanding of pain, they can have less empathy for others. At play, they tend to wander around aimlessly, without becoming engaged in purposeful activity or they engage in repetitive play for extended periods of time. They often prefer to play with objects rather than people. As a result, these children are often neglected or ignored by peers.

Over-reactive children also have difficulty getting along with peers, particularly in crowded conditions, when they become disorganised and therefore may choose to withdraw. This is interpreted as unfriendliness which leads to social neglect, while their alarm and resulting aggression when touched results in peer rejection.

The behavioural outbursts that result when children are overwhelmed by sensory input are an educational issue, not a behavioural one. The behaviours are not volitional. That is, they are not a failure of self-control, any more than children with a significant vision loss can control that they do not see obstacles. For children who are blind, we would remove the obstacles or teach the children where they were; so too for children with sensory integration difficulties, we need to adjust their sensory load (or 'diet') to make it less overwhelming and teach the children strategies for managing their emotional reactions to overload.

Calming activities

Those children who are too alert (who over-react to stimulation) need help to settle their nervous systems. Useful activities include rhythmical linear movement (as with swinging, or jumping forwards and backwards over a line, rope or on a trampoline); giving deep pressure massage; having the children perform heavy work tasks such as wheeling a laden wheelbarrow or sweeping; placing a wheat bag on their laps during quiet activities; or using earplugs or headphones for those who over-react to auditory input (Soden 2002). These activities can both calm children down and give them experience with benign sensations so they no longer interpret these as threatening and can cease over-reacting to them.

At times when children are required to sit still and listen at preschool or school, those who are overly alert will be able to achieve this only by repeatedly telling themselves to keep still. However, with this constant stream of self-talk going on, they will be unable to hear their teacher. To overcome this, you can give them a fidget toy. This will allow them to move subtly, thus stimulating an automatic response in their brain to limit their movement. The result is that they are free to listen. (If many children want such toy, you could give one to each child, or ask the children's suggestions for how to organise turns.)

To prevent these children's nervous system becoming too aroused during group activities, they need to sit on the outer edge of the group or, in line-ups, stand at either end of the group so they are not unexpectedly jostled. (There is very little justification for insisting that young children line up anyway, so that practice could be abandoned altogether.) Finally, if the children do become overwhelmed, they need permission to withdraw to a quiet area to calm themselves.

Alerting activities

Those who under-react to sensory input need extra exposure to a range of physical and tactile experiences so they learn to be aware of these and to discriminate various sensations. Appropriate activities include sucking thick liquid through a straw, identifying an unseen item in a feely bag, massage, messy play, swinging by their arms, trampolining and swimming (Soden 2002). Those children who are tactile defensive (who over-react to touch) can be helped to participate in finger painting or clay moulding by covering the substances with plastic wrap until the children become desensitised.

Occupational therapy

Sensory integration therapy from a specialist occupational therapist can be useful. Young children gain the most benefit from this therapy, as their nervous systems are still developing and thus are highly responsive to treatment.

Behavioural guidance

Children with sensory integration difficulties are not being deliberately disruptive. They simply *cannot* calm their nervous system by willpower alone. Of the strategies already mentioned throughout this book, the key ones include the following.

- Express your empathy for children's distress and courage at constantly having to deal with a frightening and confusing world of sensations (Kranowitz 1998).
- Provide structure and routines to help children with SI difficulties to organise themselves.
- If your relationship permits and the children appreciate it, give them some physical comfort such as a hug or hand holding when they become overwhelmed.

The children can benefit from activities such as being wrapped firmly in a towel or rug, having them squeeze into a small space, curling up under an A-frame with a blanket draped over it or into a large cardboard box. Relaxation activities can also be useful.

FURTHER READING

Cumine, V., Leach, J. & Stevenson, G. (1998). *Asperger syndrome: A practical guide for teachers*. London: David Fulton.

Gillberg, C. (2002). *A guide to Asperger syndrome*. Cambridge, UK: Cambridge University Press.

Kranowitz, C.S. (1998). *The out-of-sync child: Recognizing and coping with sensory integration dysfunction*. New York: Perigee.