SENSORY INTEGRATIVE DYSFUNCTION

All of us need well-integrated sensory systems in order to perform activities of daily living (e.g. work, play and self-care). Disorders in this domain can easily go unrecognized, especially in young children. Behaviours may be attributed to other causes or considered within the norms of the wide range of personality (e.g. stubborn, lazy, shy, spoiled or headstrong). However, it is important to identify and address sensory integrative dysfunction so that the child can function at optimum level and disruptions in family life can be minimised.

What is sensory integration?

Sensory integration is the ability to register information through our senses (i.e. touch, movement, smell, taste, vision and hearing), process it with prior memories and knowledge, and make a meaningful response. This occurs in the central nervous system, at the mid-brain and brain stem levels and influences coordination, attention, arousal, emotions, memory, autonomic functioning and also higher cognitive functions. Difficulty in processing and organizing sensory information causes dysfunction, whereby “certain parts of the brain do not get the sensory information they need to do their jobs” (Ayres, p. 51).

Characteristics of sensory integrative dysfunction:

Attention and Regulatory Problems

Children with sensory integrative dysfunction has difficulty screening out non-essential sensory information, background noises or visual information. They may frequently respond to or register sensory information and is considered distractible, hyperactive or uninhibited. These children are always “on the alert” and constantly orientating to sensory input that others ignore (e.g. air-conditioning, distant planes, and refrigerator motor). Other children may fail to register unique sensory stimuli and are unresponsive (e.g. may not turn around when name is called but responds to the sound of a computer next door).

Children with regulatory disorders often have difficulty establishing appropriate sleeping and eating patterns, calming or consoling themselves and may over-react to environmental stimuli. The infant or child who is very irritable, difficult to soothe, emotionally labile and hypersensitive to touch or other sensory input, may have regulatory problems.

Sensory Defensiveness

Sensory defensiveness is an over-activation of our protective senses and characterized by a “fight, flight or fright” reaction to sensation that is generally considered harmless by most people. The person with sensory defensiveness has a highly aroused nervous system and can exhibit aggression, avoidance, withdrawal and intolerance of daily routines.

1. **Tactile defensiveness:**
   Combing or shampooing hair and cutting fingernails can be exhausting and difficult for families of children who react defensively by acting out or throwing temper tantrums. Others may cope by being very rigid and only tolerate certain textures of clothing (e.g. cotton with all tags/labels removed) and can have limited social skills if the child withdraws or picks a fight as a result of unexpected touch.

2. **Oral defensiveness:**
   Some children dislike or avoid certain textures or types of food. They may be over or under-sensitive to spicy or hot foods. These children may either avoid putting objects into their mouths or put everything into their mouths. They may have an intense dislike for brushing teeth or washing their face.

3. **Auditory defensiveness:**
   This reflects over-sensitivity to certain sounds and fearful responses to noises like vacuum cleaner, hair-dryer, blender, motors, flushing toilet and fire-alarms. Some children are so fearful that parents will only use these appliances when the child is out of ear-shot. Others may cover their ears or make excessive noise to block out the sounds.

4. **Visual/Olfactory defensiveness:**
   The child with visual defensiveness may be hypersensitive to light or get easily distracted by visual stimuli. They may startle more easily and avert their eyes to avoid eye-contact with other people. Children with olfactory defensiveness (intolerance to odours) may gag or be distressed by certain smells that others do not notice or would not mind (e.g. bakery, balloons, shampoo).

5. **Proprioception/Vestibular defensiveness:**
   Children may have irrational fear of movement or change in position. They may refuse to walk on uneven surfaces and afraid of riding on escalators or elevators. These children may get motion sickness easily and would not go on the swings or see-saws at the playground.

Activity levels

By nature, young children are active and they do not have very long attention span. However, there are warning signals which may indicate sensory integrative dysfunction.

1. **Disorganized and lacks purpose in his or her activity:**
   This is the child who goes through the room like a tornado. He or she is easily distracted , lacks exploration or manipulation of the objects. He may dump things out of containers without creatively playing or visually examining them. On the playground, the child may run a lot but does not organize his activity to climb, swing or explore the environment.

2. **Does not explore the environment:**
   This is the “good” baby or toddler who in content to stay at one place and does not make many demands on his or her care-takers. He or she is happy just to watch things in the environment. The older child may use verbal skills to engage the adult in conversation as a way of avoiding manipulating with hands or actively engaging in activity.

3. **Lacks in variety in play activities:**
   These children are very repetitive or stereotypic in playing with toys. They may throw everything aside, tap on surfaces or put everything into their mouth. Some children may prefer only visual activities (e.g. watching T.V., looking at books) but avoids visual-motor play (e.g. drawing, building blocks). They may learn to interact with a toy in one way and are unable to generalize to other similar objects (e.g. line up toy cars but does not pretend they are going somewhere).

4. **Appears clumsy and has poor balance:**
   The child has excessive number of bumps and bruises. He or she always seems to be in a hurry, impulsive and don't "look where he is going". They do not catch themselves when they fall.

5. **Difficulty calming himself after exciting physical activity or after becoming upset:**
   The child cannot be consoled and tantrums can last for hours. He may become so excited after vigorous play that he continues high activity levels long after the event. He may be unable to engage in quiet activity and have difficulty falling asleep at bedtime.

6. **Seeks excessive amounts of vigorous sensory input:**
   The child may spin himself at the playground or around the room without experiencing dizziness. He may continually throw himself on the floor, deliberately hurl himself against people and things, or jump excessively.

Behaviours

Sensory integrative dysfunction can adversely affect many areas of a child's development, including emotional and social. Many children become discouraged or develop poor self-concept, especially if they become aware of differences in function and those of their peers. Sensory defensiveness can cause aggressive behaviours or the child to be a loner.

Sometimes, behaviour problems are the first indications that the child may have sensory integrative dysfunction. The child may be rigid, lack flexibility and so overwhelmed by stimuli that he is unable to adapt to the environment. Some families have to go to extreme lengths to accommodate these children to maintain peace at home.

Conclusion:

Any particular child who shows only a few of the characteristics described could be caused by something other than sensory integrative dysfunction. Parents and professionals are advised to look at the pattern of behaviours and how the problems interfere with the child's function in play, physical and emotion development, and ability to develop independence.

Resources:

Ayers, A. Jean, Sensory Integration and the Child, Los Angeles, Western Psychological Services, 1994.

Stephens, C. Linda, Sensory Integrative Dysfunction in Young Children, AAHBEI News Exchange, Vol. 2, No. 1, Winter 1997.

Prepared by:

Ms. Jaclyn Tan
Consultant Occupational Therapist
OzWorks Therapy Pte. Ltd.