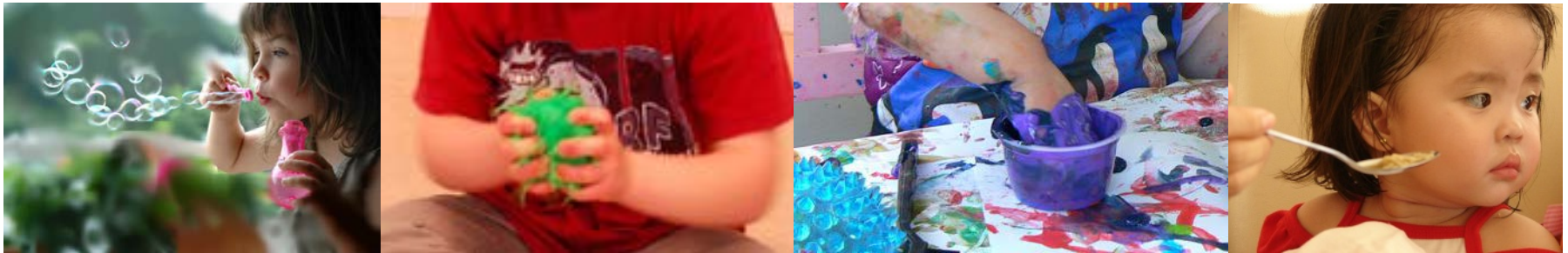


Sensory Processing



Children's Community Occupational Therapy

Aims:

1. Increased awareness of the 8 sensory systems.
2. Increased understanding of sensory processing.
3. To explore some practical ways to help children and young people with sensory difficulties.

What is Sensory Processing?

The ability to register, discriminate, adapt and respond appropriately, both physically and emotionally to sensory input from our bodies and the environment

8 Sensory Systems

- Olfactory (Smell)
- Gustatory (Taste)
- Auditory (Sound)
- Visual
- **Tactile**
- **Proprioceptive** (Body Position)
- **Vestibular** (Movement)
- Interoceptive (Internal)



Olfactory and Gustatory

Systems responsible for tasting and smelling
Identification of safe vs. harmful



Visual

This is the system that identifies sights, and understands what the eyes see and prepares for a response. Good ocular motor control is an essential skill for learning.



Tactile

Two Types Touch Receptors:

- 1) Protective
- 2) Discriminative

Receives sensations of pressure, vibration, movement, temperature and pain through the skin, and provides us with the sense of touch



Auditory

The system responsible for receiving and processing sounds and therefore the sense of hearing and understanding what is heard.



Vestibular

- The vestibular system is our balance and movement sense.
- It tells us where our body is in relation to gravity, where it is moving and how fast.
- The movement receptors are located in the inner ear and are important for body posture, muscle tone and bilateral integration.



Proprioception



- Our sense of Body Awareness
- Messages from muscles, joint capsules and tendons provide information about where our body is in space, how it is moving (direction, speed and force) without using vision.
- It is proprioception that allows us to move our hands carefully without having to observe every movement.

Interoception

- Sensation related to physiological/physical condition of the body
- Detects responses that guide regulation – hunger, thirst, heart rate, elimination, need for air, itch



Motor Learning and Skill Acquisition

BRAIN:

Automatic processing of
sensory information

SENSORY INTAKE:

Vision

Smell

Taste

Hearing

Balance

Touch

Proprioception

Interoception



ACTION:

Child makes meaningful
motor, language,
behaviour or emotional
response which enables
participation

Motor learning
process enhanced by

Cognition

Attention

Motivation

Sensory Processing Difficulties

- Difficulty responding appropriately to sensory input; “Traffic Jam” in the brain
- Inappropriate or problematic behavioural, motor, or adaptive responses after sensory stimulation
- At least 1 in 20 children have Sensory Processing Difficulties
- Not currently a medical diagnosis

What does SPD look like?

- The symptoms of SPD vary greatly depending upon what senses are affected, how those senses are affected, and the severity of the condition.
- 3 main categories

Sensory Modulation Disorder

Difficulty regulating or "fine tuning" sensory info (volume control)

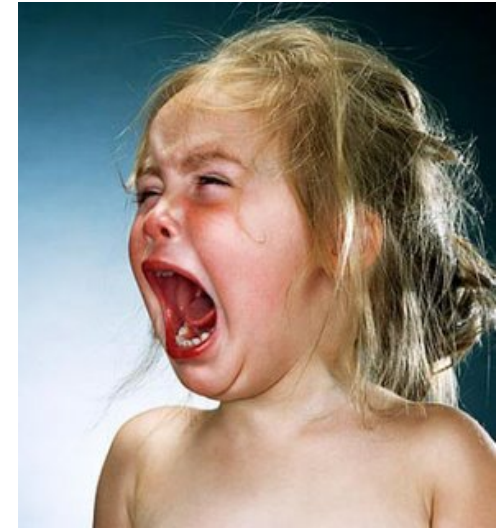
1- ***Over-responsiveness*** (hypersensitivity)

- Predisposition to respond too much, too soon, or for too long to sensory stimuli
most people find quite tolerable



SOR - behaviours

- Aggressive, impulsive or defiant when overwhelmed
- Avoids sensations
- Irritable, fussy, moody
- Unsociable, avoids group activities and has trouble forming relationships
- Excessively cautious, afraid of new things
- Upset by transitions or unexpected change









Sensory Modulation Disorders

2- *Under-responsiveness* (hyposensitivity)

Predisposition to be unaware of sensory stimuli, to have a delay before responding, responses are muted or responds with less intensity compared to the average person, not even to pain or extreme hot or cold.



SUR - behaviours

- Passive, quiet, withdrawn
- Difficult to engage in conversation or other social interactions
- Easily lost in own fantasy world
- Apathetic and easily exhausted
- Excessively slow to respond to directions or complete assignments
- Poor inner drive, uninterested in exploring





Sensory Modulation Disorders

- **3- Sensory Craving** - Driven to obtain sensory stimulation, but getting the stimulation results in disorganization; and does not satisfy the drive for more



SC - behaviours

- Constantly wants control over every situation
- Doesn't wait turn, constantly interrupts
- Angry or explosive when needs to sit still or stop activity
- Intense, demanding, hard to calm
- Prone to create situations others perceive as 'bad', 'dangerous' or disruptive.

ALWAYS on the go!

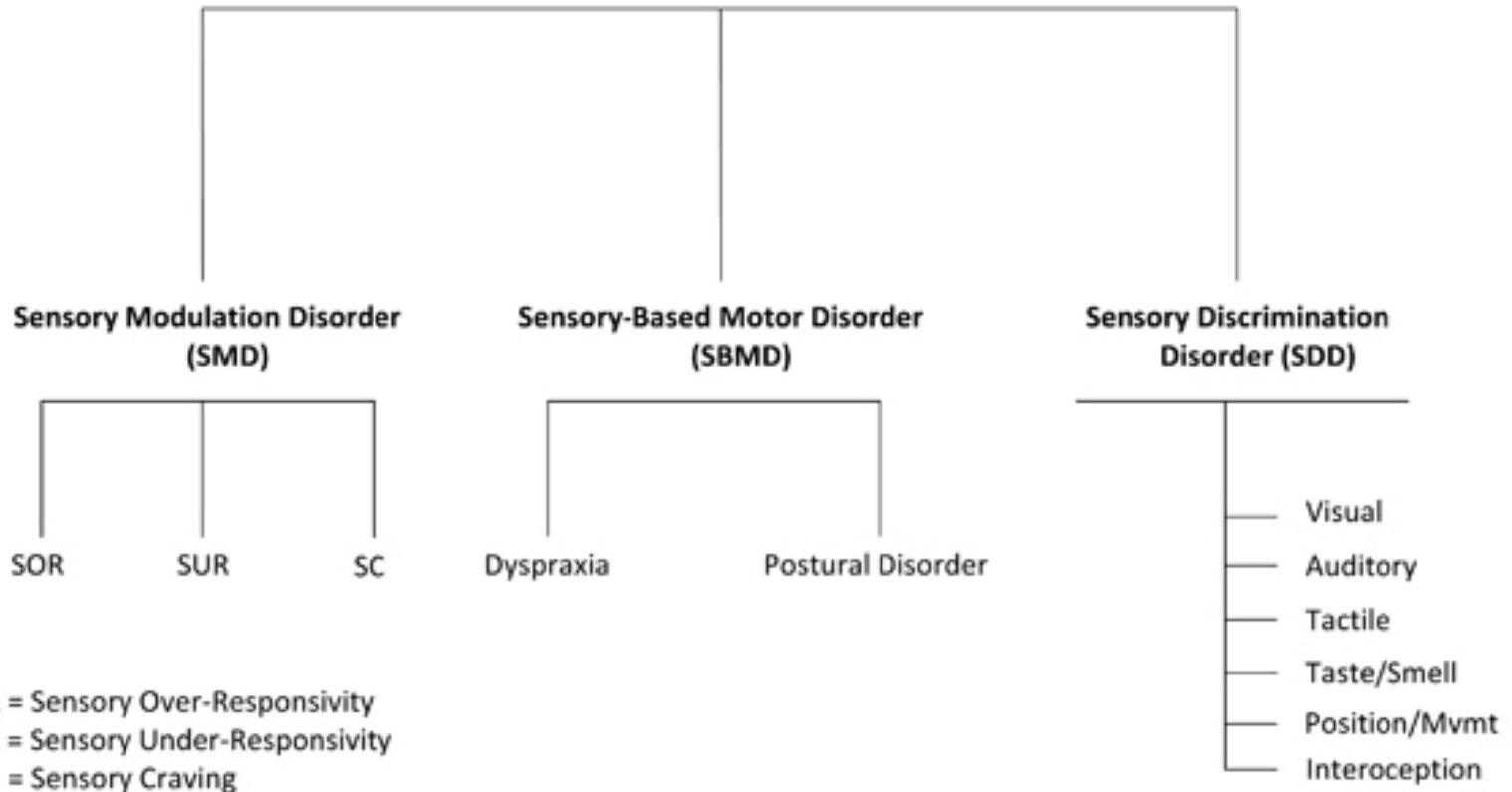




I LOVE messy play!



Sensory Processing Disorder (SPD)



© 2012

Miller LI et al., 2012

Sensory Discrimination

- Specific qualities of sensory stimuli are perceived and meaning given to them
- Understanding accurately what is seen, heard, felt, tasted, smelled
- Detection of similarities or differences amongst stimuli – do I hear “cat” or “cap”
- (tuning or clarity)

What Alerts or Calms You?

- Everybody is different
- What alerts or calms you may do the opposite to someone else
- Does it Really Matter?
- The key to providing the correct sensory environment is observation of what children seek and what they avoid.

What can you do to help

- Increase your knowledge of why your child is behaving the way they are
- Become a 'sensory detective'
- Try and increase child's self awareness of how they are feeling and why
- Help the child to self regulate
- Change the environment



Caution

The strategies we are about to discuss are based on a neuroscience theory base but currently do not have sufficient research evidence to support their effectiveness.

There is limited case by case evidence that some of these strategies work for some children.

Environment management

‘Predictable, structure and organisation are words that describe the environment in which children thrive. These children have difficulties organising themselves and recognising which aspects of the environment are important. They feel relaxed, comfortable and are able to function when they are in environments that provide structure and organisation’ (Murray-Slutsky, 2000)

PROPRIOCEPTION

- Activities that send strong messages to the brain about the child's body position (proprioception) have an "organising" effect on the nervous system.
- Proprioceptive input helps the child to reach a "just right" state of alertness so they can focus and learn.
- It is important to include regular proprioceptive activities for children with sensory processing difficulties.

Examples of Heavy work



If in doubt about which sensory approach always try Heavy work...



Deep Pressure Input

Stamping feet

Hat

Hug

Lift



Strategies - Auditory



- One-to-one teaching
- Preferential seating at front of classroom
- Provide proprioceptive deep pressure input before & after a noisy event as this is calming/ organizing.
- Wear snug/tight clothing which can have a calming effect

Auditory

- Chew gum, suck on sports water-bottle or eat chewy or crunchy foods to help increase concentration in noisy environment.
- If necessary remove child from sound or make a quiet corner that is away from the noise.



Auditory

- Verbal or visual warning before loud sounds occur (such as fire alarm drill)
- Rhythmic (white noise or quiet music with a steady beat)
- Head phones with no music in class, ear defenders



Teeth Cleaning

- Toothpaste and brush in mouth – 2 different textures
- Use minimal toothpaste, bicarbonate based – stop gagging
- Use an electrical toothbrush – provides deep pressure and vibration
- Apply deep pressure to cheeks with both hands on cheeks – blow up cheeks and squash flat –
- Play tongue games before brushing – e.g. count teeth on left side with tongue, put tongue in cheek etc
Blowing and sucking games



Dressing

- Heavy work/deep pressure before changing
- Use comfortable clothes – consider fabric, length of sleeves
- Tolerance of seams – wear undergarments e.g. leggings/vests
- Cut labels out
- Wash clothes in unscented products
- Seamless underwear/soft clothing
- [www. sensorysmart.co.uk](http://www.sensorysmart.co.uk)



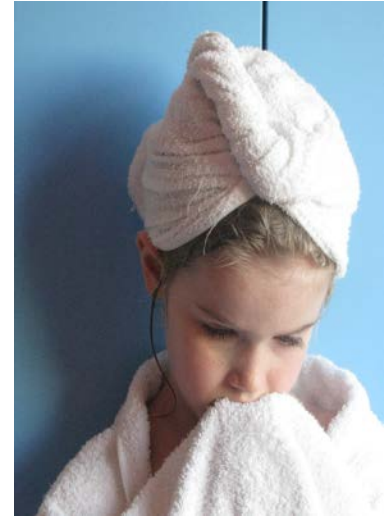
Hair Washing/Brushing/Cutting

- Sit child firmly on lap, squeeze child between your knees
- Place hands on head, apply gentle but firm pressure – wear a tight hat prior to help desensitise
- Counting whilst doing the task
- Get child to scoop and pour water
- Fold flannel over eyes
- Tip head back to pour water over
- Firm touch when massaging shampoo
- Soft hair brush- tangle teaser
- Hold top of hair whilst brushing out tangles



Child hates baths / showers

- Do resistive activities before to provide deep pressure
- Encourage child to wash own body / face
- Use large sponge and rub firmly
- Fragrance free soap
- Use hand held shower head – increased control
- Use large towel to wrap and firmly dry afterwards – pat firmly or leave to dry
- Firm massage if putting on cream
- Run bath before child enters the room



Toileting

- Moist toilet roll / wipes
- Keep visual and auditory stimulation to a minimum
- Toilet seat – might be too hard, padded toilet seats
- May feel unsecure if feet not touching the ground – use a step



Sleep Strategies

Before bed:

- Massage/ back rubs
- Bear hugs

In bed:

- Heavier blanket
- Bed tent
- Sleeping bag
- Swaddle



- Sleepwear – try out different pyjamas – all in one (without feet in), fleecy, silky, check for seam (wear inside out) remove labels
- High cotton count sheets for smoother surface
- Positioning of the bed – bed close to wall so child can squeeze their body against the wall

Wake up

- Alarm clocks – sounds, music, light
- Firm wake up hugs
- Use electric toothbrush to wake up mouth



Food

- Avoidance behaviours
- Overreaction to: Texture
Spice
Temperature



- Feel threatened on primal level (fight or flight)

Food

- **BEFORE** coming to table
 - Heavy work (carrying, pushing)
 - “hat”, hug, lift
 - Help preparing food
 - Squashing face
- **DURING** meals
 - Sucking through straw
 - Pulling
 - Chewy Food
 - Chair push ups



Food

- Play with food, smell it, touch it
- Serve small portions
- Plate with compartments
- Variations on food already tolerated
- Positive interaction with low pressure
- Offer choice
- Try having a shared plate

School Hot spots

- Cloak-rooms
- Group work
- Dinner time
- Toilets
- Fire drills
- PE
- Drama/Art
- Music
- Assembly

General CALMING Strategies

(for over-responsiveness)

- TACTILE – firm touch, large body surface contact (bear hug), few textures against skin
- VESTIBULAR – slow and rhythmical movements (rocking, swinging in one direction).
- VISUAL – reduce visual stimuli, dim lighting, muted colours, seat away from window
- AUDITORY – quiet environment, low intensity

- **TASTE** – mild flavours, rhythmical chewing and sucking, low intensity blowing games i.e. bubbles, few different food textures.
- **SMELL** – mild intensity and familiar smells, rose and vanilla scent.
- **PROPRIOCEPTION** – heavy work activities; steady and constant actions on the muscles, weight bearing, rhythmic motor activities.

General ALERTING Strategies

(for under-responsiveness)

- **TACTILE** – light touch, tickling, variety of textures, short duration i.e. tapping, splashing water, unpredictable, hot or cold temperatures, high frequency vibration.
- **VESTIBULAR** – fast-paced, changing speeds, changing direction, spinning, variety of movements. **USE WITH CAUTION!!**
- **TASTE** – strong tastes, sweet, sour, hot, cold, mixed consistency, chewy, crunchy.

Fiddle toy box



- **AUDITORY** – loud and variable noises, fluctuating tones, busy background noise
USE WITH CAUTION
- **SMELL** – strong smells (peppermint, citrus), variety.
- **VISUAL** – Bright and flashing lights, high contrast, variety of visual stimuli, busy background, bright and mixed colours
- **PROPRIOCEPTION** - changing body positions, quick stretching of muscles and constant shifting tension or load.

Sensory Lifestyle

It is important that children with sensory difficulties have frequent sensory opportunities throughout the day to help calm and organise or alert them



Useful Resources

<http://spdstar.org/>

<http://www.spdfoundation.net/> - incl research

<http://www.sensoryintegration.org.uk/>

Sensational Kids: Hope and Help for Children with Sensory Processing Disorder by Lucy Jane Miller and Doris A Fuller.

Raising a sensory smart child by Lindsey Biel and Nancy Peske