The Application of Sensory Integration within a Medium Secure Unit

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THE IDEA

- Developments in neuroscience add evidence to the theory of Sensory Integration (S.I) as developed by Jean Ayres more than 30 years ago.

- Prominent history and evidence base in Paediatrics.

- Of more recent years being explored more in Mental Health settings (particularly America)

- Could it be worthwhile exploring the application of Sensory Integration and effect on adolescents with high arousal (activity) levels, attachment and trauma histories.

- Could this understanding and approach be useful in looking at reducing the use of seclusion and restraint.

- Provide further options within a highly stimulating environment
SENSORY INTEGRATION

“Sensory Integration” is the organisation of sensation for use. Our senses give us information about the physical conditions of our body and the environment around us. Sensations flow into the brain like streams flowing into a lake.

Countless bits of sensory information enter our brain at every moment, not only from our eyes and ears, but also from every place in our bodies. We have a special sense that detects the pull of gravity and the movements of our body in relation to the earth’.

(J. Ayres)
‘The brain must organise all of these sensations if a person is to move and learn and behave normally. The brain locates, sorts and orders sensations – somewhat like a traffic policeman directs moving cars.’ (Jean Ayres 1979)
Three Major Senses affected by Sensory Dysfunction

- Tactile
- Vestibular
- Proprioceptive

They are interconnected

- They allow us to experience, interpret, and respond to different stimuli in the environment.
**TACTILE**

**Location:** Very pervasive! Receive touch from every part of the body

**Function:** Discriminatory and Protective role (i.e., Hot, cold, dangerous, sharp)

All occupational roles can be disrupted by inadequacies in processing tactile input.

Can interpret stimuli as 'threatening' (over-responsive/defensive to non-aversive stimuli) or 'under-respond' (or delay in response) to input.

With tactile processing problems - defensive to touch - a child/person may show avoidance, anger, frustration related to touch. They may get into trouble, yell at people to be left alone and tend to have a large personal bubble (body space).

**Deficits in Tactile Processing may effect:**

- Activity level
- Social skills
- Behaviour
- Body Awareness/Personal space (of self and others)
- Motor Planning (praxis)
- Oral-motor skill
- Self-care and other activities of daily living
VESTIBULAR SYSTEM

Location: Receptors are hair cells located in 2 structures of the inner ear: the semicircular canals and the Otolith organs-Utricle and Saccule.

Function: Provides information of head position in space (including acceleration and deceleration)

*Otolith organs*: respond to linear movement and gravity. Head tilt in any direction.

*Semicircular canals*: respond to angular movement of the head; best to transient, quick movements.

Deficits in Vestibular Processing may effect:

- Balance
- Co-ordination
- Speech and Language
- Muscle tone (movement drives muscle tone and muscle tone drives movement-input role in generating muscle tone)
- Levels of alertness (arousal)
- Bilateral Integration
- Auditory Processing
- Comfort in movement
PROPRIOCEPTIVE SYSTEM

**Location:** The receptors are primarily from muscle spindles and mechanoreceptors of the skin.

**Function:** Tells us where each part of the body is and how it is moving. Rate and timing of movements and the amount of force our muscles are exerting, incl. Determining the effort needed to grasp and lift objects.

**Deficits in Proprioceptive sensory Processing may effect:**

- Co-ordination (bull in china shop!)
- Awareness of body in space
- Motor planning
- Activities of daily living, esp. dressing and eating
- Performance at school
- Sleep

*Big bear hugs to get deep proprioceptive work. Stomping - heavy muscle work for the legs. Active muscle contraction against resistance.*
Related to You + Me
+ Everyday!

- **Vestibular** - riding a bike, spinning on an office chair, rock in a rocking chair, run, roll neck and head slowly, push chair back on 2 legs

- **Proprioceptive** - run / jog, walk, gym, massage, heavy duvet, hugs, chewing pencils, gum / mints, dance, exercise

- **Tactile** - shower or bath, fiddle with hair, clothing, light cuddles & touch, cool shower / bath, pet a dog, fidget
Sensory preferences amongst all of us –

- our clothes (scratchy wool jumpers!?)

- the textures of our food (crunchy food, lumpy food, chewing food?)

- the sheets on our bed / our towels

- liking or not liking the feel of sand or grass on our bare feet

- the sound of finger nails down the blackboard

- bear hug cuddles or light touch cuddles?

- Rollercoaster's??? Or gentle hammock swing?
Sensory activities we do to maintain our attention and concentration -

- we tap the pen
- we chew the pen
- we make a coffee so we can hang onto the warm mug
- we look for something to eat, to crunch, to chew
- we go for a walk
- fidget / doodle
- swing on our chair
- twirl our hair between our fingers
- humming / making weird sounds / clicking your tongue
Nature and Nurture

How our brains develop, learn, and grow depends on the vital interaction between Nature and Nurture.

Nature, or more accurately, genetic endowment, is directly affected by the environment, care, challenges, and teachings received (Nurture).

E.g. Plants growing in acidic soils
Healthy Development
And thus ……..

• Typically you and I would of developed adequate Sensory Integration – this is turn allows us to modulate our arousal levels without conscious thought.

• Not all the young people we work with have had the same or similar opportunities to do so…….
Sensory Integration Issues in Adolescence

- Problems in Sensory Modulation-screening sensory information to respond appropriately to task at hand
- Anxieties, phobias, or depression can result from continuous dealing with sensory overload and poor sensory modulation
- Emotional Dysregulation
SENSORY MODULATION

- The ability to regulate emotions and organise reactions to sensory input in a graded and adapted manner
Goals of Sensory Modulation

- Increase awareness of emotional arousal levels and effect of behaviours.
- Increase awareness of bodily responses.
- Challenge their ability to respond appropriately to sensory input.
- Learn ways to manage emotional dysregulation.
- Encourage a successful and more organised response through activities (develop neural networks).
- Develop alternative coping skills based on Sensory needs.
AROUSAL THEORY

• ‘AROUSAL’ - can be considered a state of the nervous system, describing how alert one feels. To attend, concentrate and perform tasks in relation to situational demands. We need to be in an alert state to function effectively.

E.g. being in a training session, drive home safely, go to work.
AROUSAL THEORY

• ‘SELF REGULATION’ – the ability to attain, maintain and change arousal appropriately for task or situation (Mercer and Snell, 1977)

  E.g. chewing pens, eating chewing gum, fidget, doodle, swing on our chair, go to the gym, eat sweets, go for a walk, have a bath.
Activities we CHOOSE to do to ‘Self Regulate’
The Application of SI within the Adolescent Service

- Using approach to reduce the use of seclusion and restraint, e.g. offering alternatives
- Intro. Sensory diets / care-plans
- Sensory Circuits
- Alert programme
- Individual SI sessions
- Intro. Sensory rooms / spaces
- Sensory Strategies being adopted within education & therapy
CONSIDERATIONS OF USING SENSORY INTEGRATION

• TRAINING
• RISK ASSESSMENTS. E.g Guidelines, Sensory Care Plans.
• ETHICAL CONSIDERATIONS. E.g Touch Policy
• ASSESSMENT TOOLS
• ENVIRONMENT
<table>
<thead>
<tr>
<th>Scale/Levels</th>
<th>How do I feel?</th>
<th>What to do/Action</th>
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</thead>
<tbody>
<tr>
<td>10+</td>
<td>‘Shutdown’</td>
<td>-Time on own (Low stimulus environment)</td>
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<tr>
<td>10</td>
<td>‘Shutdown’</td>
<td>-Watch TV</td>
</tr>
<tr>
<td>9</td>
<td>‘Shutdown’</td>
<td>-Listen to music (not too sad)</td>
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<tr>
<td></td>
<td>-Self harm</td>
<td>-Bouncing swiss ball</td>
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<td>-Refusing to eat and drink</td>
<td>-Hand Massage</td>
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<td></td>
<td>-Withdrawning from situations</td>
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<td>-Don’t talk to people</td>
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<td></td>
<td>-Sleeping more</td>
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<td></td>
<td>-Go to some sessions</td>
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<tr>
<td>8</td>
<td>‘Over Alert’</td>
<td>-Play with shaving foam</td>
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<tr>
<td>7</td>
<td>‘Over Alert’</td>
<td>-Listen to Music</td>
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<td></td>
<td>-Shouting and swearing</td>
<td>-Stress balls</td>
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<td>-Banging windows</td>
<td>-Hand Massage</td>
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<td>-Refusing medication</td>
<td>-Play with Bean Tray</td>
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<td></td>
<td>-Unable to concentrate in some sessions e.g BCA</td>
<td>-Chew on straws</td>
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<td></td>
<td>-Sometimes self harm</td>
<td>-Lavender smell</td>
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<td></td>
<td>-Get angry easily</td>
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<td></td>
<td>-Pace the ward</td>
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<tr>
<td>6</td>
<td>‘Calm and Alert’</td>
<td>-Delta sand</td>
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<tr>
<td>5</td>
<td>‘Calm and Alert’</td>
<td>-Going out for walks etc.</td>
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<tr>
<td>4</td>
<td>‘Calm and Alert’</td>
<td>-Going to sessions</td>
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<tr>
<td></td>
<td>·Think clearly</td>
<td>-Ring mum</td>
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<td>·Concentrate better</td>
<td>-Write letters to friends</td>
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<td></td>
<td>·Feel safe</td>
<td>-Go to gym</td>
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<td></td>
<td>·Attending sessions</td>
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<td></td>
<td>·Watch TV</td>
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<td></td>
<td>·Have a normal tone of voice</td>
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<td></td>
<td>·Smile more</td>
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<tr>
<td>3</td>
<td>‘Hypo responsive’</td>
<td>-Trampoline</td>
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<tr>
<td>2</td>
<td>‘Hypo responsive’</td>
<td>-Watch TV</td>
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<tr>
<td>1</td>
<td>‘Hypo responsive’</td>
<td>-Listen to R n B music</td>
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<tr>
<td>0</td>
<td>‘Hypo responsive’</td>
<td>-Look at photos</td>
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<tr>
<td></td>
<td>-Sleep</td>
<td>-Fizzy sweets</td>
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<td></td>
<td>-Pace the unit</td>
<td>-Play with Bean Tray.</td>
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<tr>
<td></td>
<td>-Cry</td>
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<tr>
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<td>-Unmotivated to do anything</td>
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<td></td>
<td>-Have difficulty talking to people</td>
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<tr>
<td></td>
<td>-Tone of voice is very quiet</td>
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<td></td>
<td>-Refusing medication</td>
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REFERENCES

• Brown C and Dunn W (2002) Adolescent / Adult Sensory Profile 2002


• [www.sensoryintegration.org.uk](http://www.sensoryintegration.org.uk)

• [www.sensoryproject.com](http://www.sensoryproject.com)