

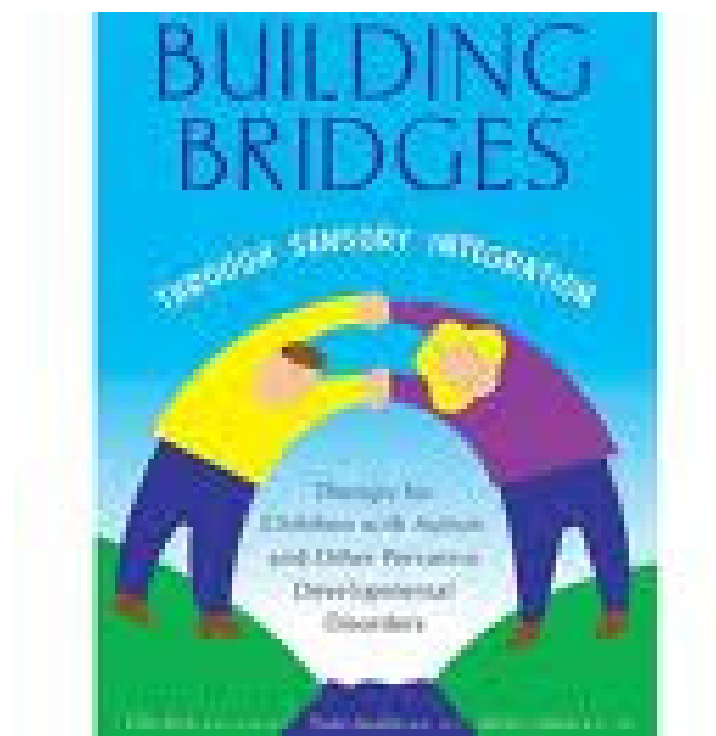
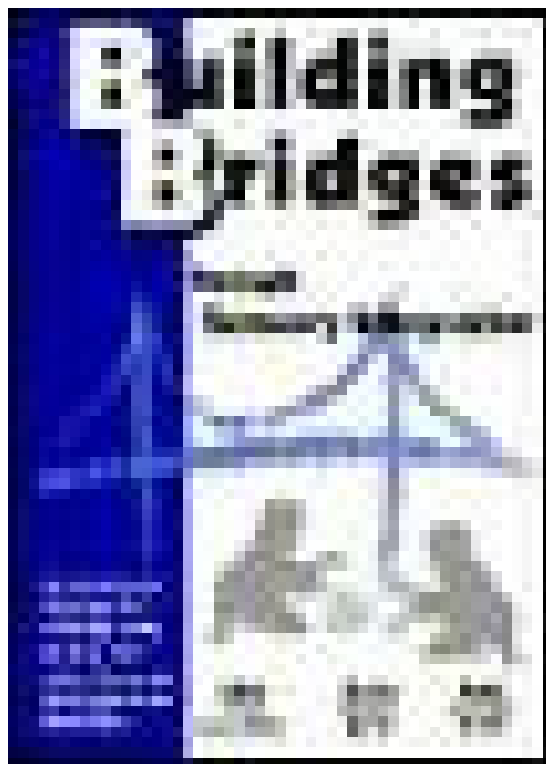
Adult Sensory Needs

Sponsored by
Kerry's Place Autism Services
March 2014
Shirley Sutton OT Reg.(Ont.)

AGENDA

- The story of recognition of sensory problems for individuals with ASD
- Why is it important ? Research on sensory strategies, what works, what's new
- How to Identify sensory triggers
- How to use multi sensory strategies/"sensory diets" to help modulate energy levels, emotions and improve quality of life
- Modify the environment to meet sensory needs does
- Choose from several easy to make, appropriate sensory strategies for "keeping in the calm alert state"
- See "hands-on" affordable sensory equipment
- “ Do it yourself” (DIY) equipment
- Resources and questions

Building Bridges Through Sensory Integration



Sensory Integration

*Definition – the process of
organizing
sensation for use in everyday life –
Jean Ayres 1972*

Newer term - Sensory Processing

- ✚ tolerate/enjoy many different sensations
- ✚ rely in the information we are getting, all our sensory systems work together
- ✚ use *many* sensory 'strategies' to self regulate (maintain attention and focus, stay calm and alert, modulated)

Sensory Integration - organization of our senses

- gives us a basic understanding of ourselves and what is going on in the world around us
- 7 senses;
- taste, touch, smell, hearing, vision, balance & movement, body awareness, are combined and organized by our brain to give us a clear "picture".
- Each of the 7 senses makes a piece of the puzzle that combines to form body awareness so we can move & interact etc.

Sensory Processing Disorder (SPD)

- It is not a medical diagnosis, it is a 'descriptive diagnosis'
- Defined as;
 - a complex disorder of the brain. People with SPD misinterpret everyday sensory information, such as touch, sound, and movement. This can lead to behavioral problems, difficulties with coordination, and many other issues (Miller 2004)
 - when sensory signals don't integrate to provide appropriate responses
- Individuals with ASD often have sensory differences, but to date, sensory symptoms do not differentiate autism from other developmental disorders (Rogers 2005)

Current Research on SPD

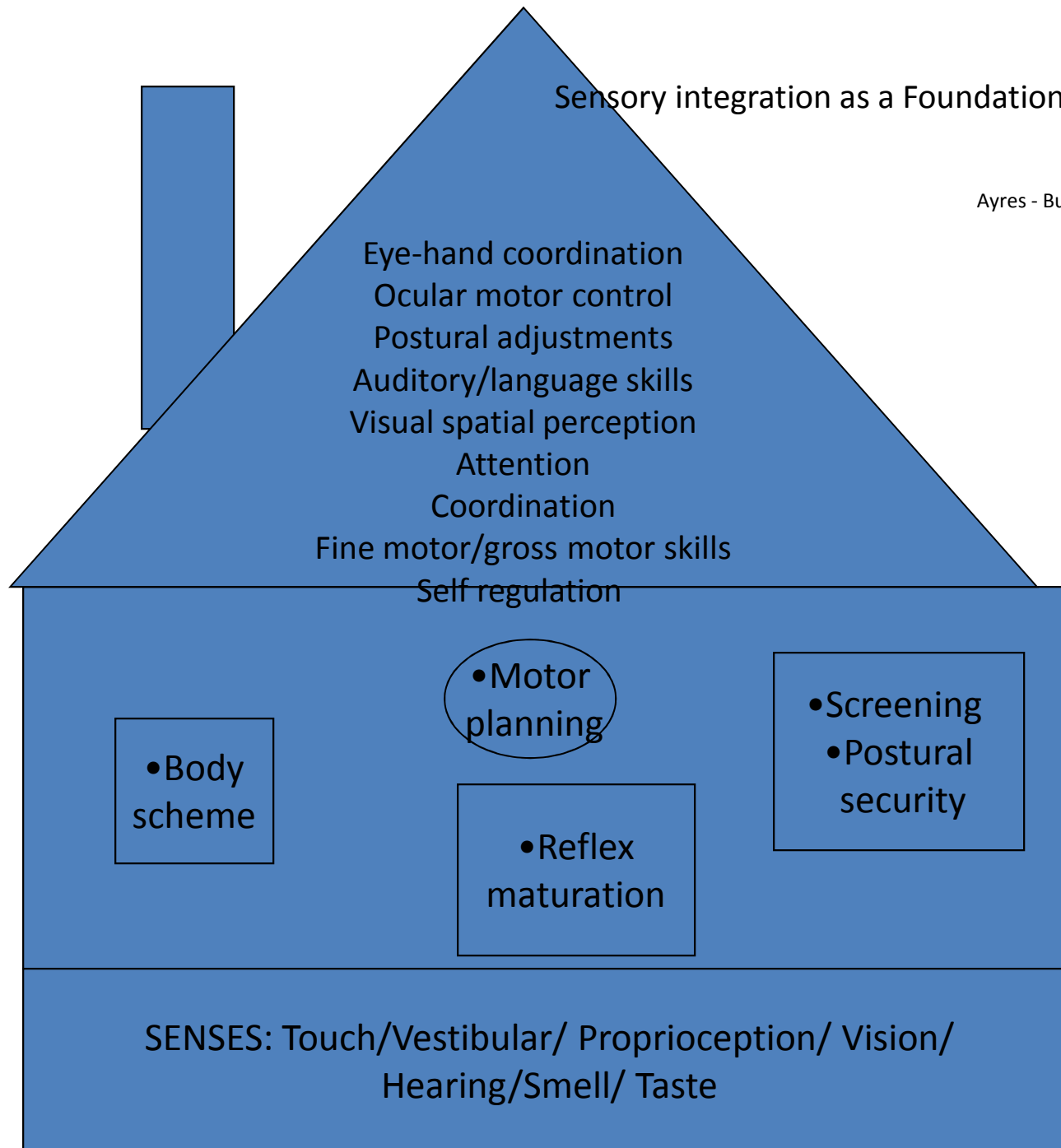
- Due to difficult of conducting double-blind research studies of sensory integration treatment, SPD not well recognized; 130 articles
- Lab Findings - less sensory gating (electrophysiology) than typical subjects (Davies, Kisley)
- Primate research - prenatal stress significantly increased tactile avoidance (Schneider)

Imaging Study cont.

- The abnormal microstructure of sensory white matter tracts shown by MRI in kids with SPD likely alters the timing of sensory transmission so that processing of sensory stimuli and integrating information across multiple senses becomes difficult or impossible.
- “... because people didn’t believe this existed,... This is absolutely the first structural imaging comparison of kids with research diagnosed sensory processing disorder and typically developing kids. It shows it is a brain-based disorder and gives us a way to evaluate them in clinic.” (Owen, Marco 2013)
- <http://www.sciencedirect.com/science/article/pii/S2213158213000776>

Sensory integration as a Foundation for Learning

Ayres - Building Bridges pg. 11



Brain Works

- “Basement “ lower, automatic, or *reactive* brain, dinosaur brain
 - The mid-brain and brain stem regions of the central nervous system are early centers in the processing pathway for multisensory integration.
 - These brain regions are involved in processes including coordination, attention, arousal, and autonomic function.

Reactive Brain Responses

- Fight
 - Flight
 - Freeze
 - Attach
- Widely studied (LeDoux)
 - Physiological, emotional and motor response to perceived physical danger, its instinctive,
 - Brain areas involved- amygdala, pre-frontal cortex etc. are part of a larger system that plays a role regulating emotional arousal
 - When stressed by negative emotions, incoming sensory input goes to the reactive brain- can ignore, avoid or FFF

Thinking Brain

- After sensory information passes through lower (primitive) centers, it is then routed to higher brain regions responsible for emotions, memory, and higher level cognitive functions.
- More conscious awareness

More Personal Accounts

- Famous adults with ASD – Temple Grandin
- Tito Mukhopadaya, 2003
- Most common reports
 - hyper and hyposensitivity, sensory distortion, overload, multi-channel receptivity, and processing difficulties

Low Arousal Approach

- UK psychologist Dr. Andrew McDonnell
- Arousal equilibrium is goal
- Recognise staff/parent contributions to high arousal, change OUR behaviour first
- www.studio3.org.
- - “cardiac exercise is more important than anxiety meds!”

Low Arousal Approach –takes a Sensory Integration Perspective

- “Generalised arousal is higher in an animal or human being who is;
 - (S) more alert to sensory stimuli of all sorts
 - (M) more motorically active,
 - (E) more reactive emotionally” (Pfaff 2005)

Shut Down Arousal State

- Goodwin et al (2006) reported lower sensitivity to environmental stimulation in five individuals with ASD compared to their controls; these individuals also had higher baseline heart rates than their controls.
- Theory - some individuals maybe less responsive to environmental stimuli due to higher levels of internal arousal, their internal arousal state becomes more dominant ?
- May lead to “stuck” behaviors which are observed in some individuals with autism
- Other individuals with autism may have low levels of physiological arousal which has a similar effect on movement

Sensory Approaches - Trauma Work

- Dr Perry (Texas) provide these brain areas patterned neural activation necessary for re-organization) such as
 - music, movement, yoga (breathing), and drumming or therapeutic massage
- *Once there is improvement in self-regulation*, the therapeutic work moves to more relational-related problems (limbic) using more traditional play or arts therapies and ultimately, once fundamental dyadic relational skills have improved, the therapeutic techniques can be more verbal and insight oriented (cortical) using any variety of cognitive-behavioral or psychodynamic approach

Sensory Processing linked to Self Regulation

“Sensory processing patterns are a reflection of who we are: These patterns are not a pathology that needs fixing” (Dunn 2001)

- So “feed the need” if sensory issues are not interfering
- Managing arousal mechanisms is more a Quality of Life issue, especially if there are challenging behaviours

Sensory Diet - 7 Senses +?

- Touching
- Moving (Vestibular and proprioception)
- Seeing
- Listening
- Smelling
- Tasting
- Internal senses e.g. hungry, full bladder, heart rate etc

The “Forgotten” Inner Senses

1. **Tactile system** includes receptors in our skin that give the brain information about touch, temperature, pressure, and pain
2. **Vestibular system** includes receptors in the inner ear that tell our brain about movement and balance as well as arousal levels;
3. **Proprioceptive system** which includes receptors in muscles and joints that tell our brain about what position our body is in

If you are not regulated, you are not
ready..... to engage, to play, to love

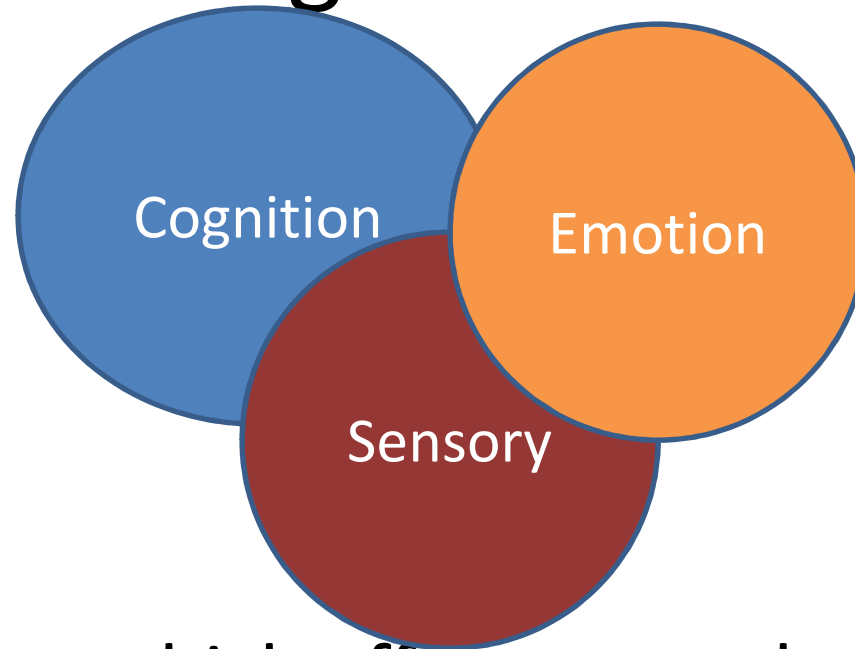
Medical Issues – Rule Out

- <http://www.autismspeaks.org/science/resources-programs/autism-treatment-network/tools-you-can-us>
- Sleep - Autism speaks many good resources
- Bowel /gut – huge topic, allergies
- Dental
- GAD – generalized anxiety disorder

Is Sensory the Big Issue?

- See Building Bridges
- <http://www.spdfoundation.net/library/checklist.html>
- OT has other checklists
- May use the Motivation Assessment Scale or something similar to determine if sensory issues are contributing to a problem

Self Regulation



- Emotion
 - Cognition
 - Sensory
-
- 3 main systems which affect arousal
 - Can lower arousal, anxiety with sensory techniques eg deep breathing , heavy work, pressure touch (*Kim Barthel OT*)

Sensory Diet /OT Program

- An OT P. Wilbarger developed the idea of sensory experiences to be made an integral part of an individual's daily life
- Many see it now evolving into a wellness model
- Commonly used at schools (as OTs are funded through CCAC, but not in the Adult population)
- Recognition growing through psychiatry and Behaviour support, funding for OT is an issue

Using Sensory Tools to Regulate

- Once a person is physically aroused, asking them to “calm down: may not be effective.
- A person may be unable to just think about calming down; they may need and opportunity to be physically engaged in an action to physically decrease their arousal level”
- <http://cpr.bu.edu/wp-content/uploads/2013/05/Emergency-Services-Conference.pdf>

Mental Health Survey of Sensory Tools (Adult in patient psych)

- Calming Room most popular
 - 30% – beanbag chair-----pressure touch
 - 26% -rotating light with music ----visual, auditory
 - 18% - rocking chair ----- motion
 - 15% stress ball ----- pressure touch
 - 11% weighted shawl ----- pressure touch

Proprioception

- Involves movement, compression, or stretch at a joint
- Information on where body parts are & motor planning
- Increased discrimination and body awareness, “puts you in the picture”
- Strongest feedback- when muscles contract against resistance
- Enhances (not increases) serotonergic system, makes system more responsive
- Increased stimulation of endorphins if input is strong and sustained
- Seekers - head banging, toe walking, teeth grinding
- Increased in standing & walking
- Strong input from *heavy work* and *exercise*

Proprioceptive Sensations

- Calming
 - Weightlifting, yoga, tai chi, bean bag tapping, walking & pacing , “heavy work”- list available on request
- Alerting
 - Jogging, step aerobics, Wii or Kinect fitness,
 - trampoline

Visual Sensations

- Calming
 - murals
 - pastel colours
 - slowly moving linear patterns (fish in an aquarium, objects (drop zone),
 - soft lighting, sunglasses, prism lenses, hats

Alerting

- modern art, bright colours & music videos

Vestibular Sensation

- **Balance and Motion Processing**
- *sense in the inner ear that responds to acceleration, deceleration, and rotation movement of the head in space: it also helps coordinates neck and eye movements*

Calming –

Alerting --

Touch

- Skin largest sense organ, formed at same time as nervous system
- Powerful effect on emotions & entire nervous system
- Harlow's monkey? - chose fuzzy surrogate over provider of food
- Light touch is alerting, fast response, may provoke avoidance
- Pressure touch - receptors deeper, slow response, cortical analysis, calms, invites approach response
- Brain needs lots of tactile input to maintain organization
- Enhances dopamine system, "makes limbic system purr", increased regulation

Deep pressure touch versus light touch

- Two different touch systems: light touch is there to "protect and defend" by telling you that someone is near by a light brush on the arm, a bug has landed on your skin
- This light touch system can cause a Sympathetic Nervous System response which results in a "Flight or Fright" response in the body and brain chemicals are released that may cause aggression, fear, anxiety, and stress.
- If an individual has Sensory Defensiveness, light touch system is heightened and they over respond
- They may touch you too firmly, or push, wrestle, or play hard (getting the deep pressure touch they crave)

Touch Sensations

- Alerting (light touch)
 - Tickling, fiddling with Koosh ball, certain clothes
- Calming (deep pressure touch)
 - Weighted blanket, shawl, lycra, hug or pressure vest, sitting in a beanbag chair, squeezing stress ball
 - Comfort touch – personal choice

Restraint- Deep pressure touch?

- Struggling releases and uses up stress related chemicals
- Restraint gives lots of deep pressure touch
- Some clients invite restraint as a means of external control
- Process helps to counteract dysregulation
- “When I am upset I skulk the unit looking for someone to pick a fight with, and then I end up in restraint.”

Oral Motor (Texture) Input

- Calming-
 - Hard candy, milkshakes slices of banana
 - Gum (“heavy work” for the jaw)
- Alerting:
 - Crunchy: e.g. Pretzels, popcorn and carrots

Taste Sensations

- Calm with –
 - chocolate hot tea, warm chicken noodle soup
- Alert with
 - Fireball candy, sour jellybeans, sour sprays, hot salsa, spicy chips, flavourful gum

Auditory Sensations

- Calming
 - Soft music, Ocean or waterfall sounds, iPad apps relax HD, meditation apps and tapes
 - Classical music with no lyrics
 - Headphones, podcasts
 - Personal choice
- Alerting
 - Loud and quick paced rock music, drumming environmental noise, fire alarms

Smelling Activity	Try something like.....
Change clothes/get dressed-	Laundry sheet
Bathroom finished	Hand lotion
Crafts/ seatwork	Scented makers
Baking tasks –	Spices
Mealtime –	Garlic? Onion? Fresh herbs growing in kitchen
Bathroom-	Baby powder or lotion
Outside	Evergreen
Bedtime –	Lavender sachet for under pillow
Outing e.g. /Tim Hortons	Coffee grounds
Van Ride	Air freshener in van
Clean up	Citrus cleaner

Crash Pad DIY

- Why? –safe proprioceptive body jarring, comfort touch , revel in the joy of their full body weight and contact on a forgiving surface
- How to & Materials:
 - * 2 – duvet covers or pieces of fabric the size you want your crash pad to be
 - * stuffing – old couch cushions, bean bag chair, stuffed animals, comforters, sleeping bags, stuffed toys, low cost pillows etc.

Weighted Modalities

- Research by Tina champagne 2004- weighted items offered the sensation of physical holding and containment and may facilitate self organisation. When an individual's capacity are tenuous
- provides deep pressure, body boundaries, assist with regulating arousal levels and brings them down to the “green zone”
- Protocols and precautions – available on request

Other DIY Weighted Calming Tools

- Blankets, lap pads
- Sand bags
- See my Pinterest Board for more DIY materials

Seating Equipment

- Office chairs for motion seekers (rock, move, spin)
- Hokki stool
- Theraband/ panti hose “leg kickers”
- Fitness store – airex cushions, core/balance discs for cushions, ball chairs
- Outdoor stores- hammocks, sling seats

Exercise

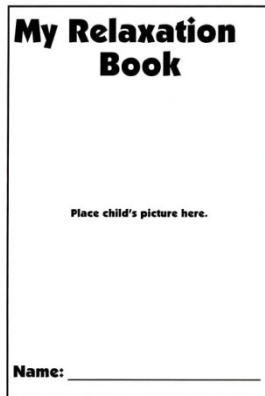
- Well known benefits of regular exercise in reducing anxiety
- Physical exercise may reduce arousal
- SI theorists promote “heavy work”, deep pressure touch and motion for calming

Sport & Sensory Style Match

- Look at factors- Routines, predictable repetitive?
- Gen avoider or seeker of sensation?
- Environment? Loud, echoing, indoors, outdoors ?
- Vestibular - horseback riding story Bryan
- Prop-= Hockey , wrestling

Relaxation – Visual Script

From Building Bridges



Many other versions

- How to fold the 8 page mini book
- Goggle
- <http://www.youtube.com/watch?v=xXkJnDJx2sUou> tube

Mindfulness/ Meditation

- Singh(2011) demonstrated that adolescents with autism are able to learn and utilise a mindfulness based strategy for self-management of aggressive behavior.
- *Mindshift App* from BC (free) , for teens with anxiety, includes *Chill Out Tools*- (auditory) Mindfulness Strategies - “Body Scan and Mindful Breathing” male or female voice

Multi -Sensory Rooms

- i.e. Snozelen. Limited research, some behaviours reduced
- Goal – “improve quality of life, ward off negative states associated with sensory deprivation”
- Happy people aren't presenting with challenging behaviour!
- <http://www.rompa.com/media/free-resources/stimulus-preferences-snoezelen-dementia.pdf>
- <http://www.multi-sensory-room.co.uk>

Why Modify Environment?

- If reduce environmental “noise”, this can decrease stress and anxiety

Other calming techniques include

- relaxation training (Grodén)
- cognitive behavioral therapy (Attwood)
- multisensory environments (Lancioni, Cuvo, & O'Reilly, 2002; Stephenson, 2002)
- *Zones of Regulation* may also increase an individual's ability to tolerate sensory stimuli

Environments

- Analyze the settings first (detective work)
- 3 Rs
 - Remove, reduce, relax
 - Promote calm
 - Avoid sensory stimuli that add to stress
 - Design living /work spaces (light and sound are often triggers)

More Go to Sensory Strategies

- Monitor your arousal states and “irritability index”
- Disclose to partners, etc.
- Think about career and living situation
- Alter daily routines eg. Grooming ,wear comfortable clothing etc.
- Join a FB group?
- Autism Discussion Pages (more for parents)

Sensory Processing Web Sites

Sensory experiences/differences article by Bogdashina

[www.autismtoday.com/articles/Different Sensory Experiences.htm](http://www.autismtoday.com/articles/Different_Sensory_Experiences.htm)

SI Focus magazine www.sifocus.com

SPD Foundation www.sinetwork.org

Sensory Profile www.sensoryprofile.com

Motivation Assessment Scale

www.Monacoassociates.com

[http://en.wikipedia.org/wiki/Sensory_processing_disorder#cite note-Little 2011-51](http://en.wikipedia.org/wiki/Sensory_processing_disorder#cite_note-Little_2011-51)

More Web Resources

- http://www.ot-innovations.com/pdf_files/dbt.pdf
- Beanbag tapping – no research!!
[`http://www.youtube.com/watch?v=udjIFF9GPwU](http://www.youtube.com/watch?v=udjIFF9GPwU)
- www.rejimathewphd-writer.com/uploads/1/2/8/2/12828243/sensory_diet_checklist_2007pdf.pdf
- http://www.ascd.org/ASCD/pdf/journals/ed_lead/el200912willis.pdf

Sports & Leisure- <http://asensorylife.com/sensory-benefits-of-sports.html>

Sensory Equipment & Book Suppliers

Avron – sensory sensations www.avronforyou.com

Autism Awareness Centre (Alberta) books, newsletter, workshops www.autismawarenesscentre.com

FDMT - weighted equipment etc www.fdmt.ca

Flaghouse www.flaghouse.ca

Spectrum – Newmarket www.education.spectrum-nasco.ca

Parentbooks – books, tests, videos, in Toronto 800 209-9182 www.parentbooks.com

TFH www.specialneedstoys.ca

www.schoolspecialty.ca

Further Reading Suggestions

Atwood – many !!

Doidge (2007) Brain that Changes Itself

Endow (2009) Outsmarting Explosive Behaviour

Grandin – many!!

Groden (2002) Coping with Stress through Picture
Rehearsal

Heller (2002) Too Loud, Too bright, Too fast, Too Tight

Kuypers (2011) Zones of Regulation

Stoddart, K (Ed.) (2005) Children, Youth and Adults with
Asperger Syndrome

Task Galore series- for visually structured tasks,

Sensory and ASD Researchers

- Dunn 1997, 2001
- Baranek, David, Poe, Stone, and Watson (2006) and Cheung and Siu (2009)
- Wiggins, Robins, Bakeman, and Adamson (2009)
- O'Brien et al. (2009)
- Lane, Young, Baker, and Angley (2010)
- Ben-Sasson et al. (2009)