Sensory Based Therapy, Teaching Self Regulation, Managing Stress

The term "Sensory Integration" has been used to describe different things, including specific interventions and activities. I believe that sensory integration is a process which occurs in all people, and I do not use this term to describe a theory or therapeutic approach.

We take in sensory information from our external environment: this includes visual, auditory, tactile, and vestibular information (as well as olfactory (smell) and gustatory (taste) input). We also receive sensory information from within our bodies: this includes proprioceptive (feedback from joints and muscles) and kinesthetic (relating to movement) information. All of this sensory input needs to be processed and organized, and the result is an "organized" awareness of one’s own body as well as of the environment. This information is shared with many parts of the brain and influences our position, muscle tone, emotional state, level of arousal, and, of course, awareness of the environment.

When we want to execute movement or change our posture, all of this sensory information is again crucial. The processes of planning and executing movement rely heavily on additional sensory input from both the environment and our own body. "Sensory integration" is the entire process, including the controlled motor output (adaptive response/purposeful activity). From this perspective, the following are examples of the end result of sensory integration: a shape cut out of paper, a mark or drawing on paper, hand clapping, a toss of a ball, or a hop.

Sensory modulation includes the ability to tune out extraneous sensory information. For example, if a child is cutting out a shape, performance is enhanced when the brain can ignore input from: the dog across the street, the smell of cookies, the hard seat, the tag on his shirt, etc.

When sensory input is being processed efficiently, a state of calm alertness is the result. The flood of sensory input is filtered and channeled, and the body makes postural and physiological adjustments so that there is a comfortable 'fit' between the self and the environment. Sensory processing is therefore essential to regulation of one’s alertness and level of arousal.

Self - regulation is the nervous system's ability to attain, maintain and change levels of arousal or alertness (Williams & Shellenberger, 1994). These levels change depending on the needs of specific situations and activities.

Arousal is our level of alertness. The ability to maintain appropriate states of arousal develops from our ability to balance (regulate or modulate) sensory input from our environment. A normal state of arousal is essential for the development of the following abilities:

- Attention to tasks
- Impulse control
- Frustration tolerance
- Balance of emotional reactions

Our state of arousal varies throughout the day. We all use various strategies to regulate our levels of arousal. For most of us, our state of arousal is fairly low when we wake up and start our morning routines. For some people, their state of arousal increases after a quick shower; some may need the caffeine boost of a first cup of coffee; some people feel more awake after an early morning jog.

You are on your way to work. Your level of alertness may be reduced if you are lulled by the slow rocking of the skytrain and may increase again as you step outside and are bombarded by the traffic's screeching brakes and blaring horns. After working at your desk for a couple of hours, you may experience trouble concentrating and instinctively know that a body stretch or quick walk to the water cooler will increase your state of arousal and increase your ability to concentrate on your work.

It is 2:30 p.m. and you are in a meeting. The person speaking has a low voice with little animation. He's been droning on for an hour. Your boss is present and you are starting to fall asleep. You begin using familiar strategies to keep awake - shifting slightly in your chair, popping a mint into your mouth or fiddling with your hair.

Strategies to enhance self-regulation take into consideration the effect that different sensations can have on the nervous system. Remember that certain types of sensations can excite the nervous system and others types of sensations can relax the nervous system.

Children with sensory problems often have difficulty achieving and maintaining normal levels of arousal. Normal levels of arousal are dependent on adequate sensory modulation. It is difficult to develop strategies to change arousal levels when an individual does not respond appropriately to sensory information. Arousal levels can be directly affected by reactivity to sensory input. Hyper-reactivity can increase arousal and hypo-reactivity can create insufficient arousal levels.

Joey is a 5-year-old boy who has Asperger's Syndrome. His kindergarten class just came inside from the playground and now it is circle time. Joey is highly aroused from his high level of activity outside but now he has to sit and attend to a story. The other children are initially slightly restless but they soon settle down and listen to the story. Some children calm themselves down by sitting in a teacher's lap, sucking their thumb or twirling their hair. Joey is not able to settle down. He remains highly aroused. He is distracted by all of the toys he sees in the classroom. He hears the teacher's aide preparing snack at the back of the room.

Marc Landry       occupational therapist      vanmarc98@yahoo.ca
He wonders what smells so good and wants to see what he is having for snack. Joey wants to hear the story but he frequently gets up from the circle, he bumps into the children sitting beside him, he continually adjusts his posture and he frequently speaks out loud.

Joey has poor sensory modulation. He cannot balance incoming sensory information. He cannot decide what sensory information is important and needs his attention. Joey is not able to determine what strategy he can use to improve his ability to sit in circle and listen to the story. To assist Joey with self-regulation, specific strategies that offer deep touch pressure can be incorporated into his routine. For example, Joey may benefit from playing tug of war when coming in from outside and he may be able to attend better during circle time if he wears a weighted vest. Williams and Shellenberger (1994) in their book “How does your Engine Run: A Leader’s Guide to The Alert Program for Self-Regulation” describe the excellent program that they developed to teach self-regulation strategies. The program teaches children and adults how to recognize their own varying levels of arousal or alertness and how level of arousal impacts on learning, behaviour and attention. Williams and Shellenberger provide a range of strategies that can be easily taught to children that can help to increase or decrease arousal.

Self regulation is the ability to attain, maintain and change levels of arousal. As internal and external stressors change, self regulation works to help us be calm and alert. Stress management is the ability to work with stressors as well as stress reactions to make self regulation easier. While it is good to teach self regulation, it is also important to learn to exert control over both stressors themselves and also our reactions to individual stressors.

We each have our own stressors. If you see escape or avoidance, there’s likely a stressor involved. Stress challenges us to cope and to adapt. Because stress induces physiological changes, this easily upsets our homeostasis. We often get caught in a cycle of avoiding things which we perceive as stressful, instead of addressing our own reaction to the stress, which is more under our control. How debilitating stress is for a person is totally dependent on that person’s reactions to the stress. When the stressor cannot be avoided, addressing the intensity of the stress reaction is most helpful in reducing how much it interferes with daily life.

**Stressors:**

- indecision
- anticipation
- having to communicate
- having to socialise
- interruption of ritual
- changing tasks
- having to wait
- fears
- noises
- punishment
- external control
- failure (real or perceived)
- seizures
- ear infections
- pain
- low reinforcement
- low cognitive skills
- isolation
- executive functions (i.e. inhibition, planning, flexibility, self monitoring)
- rituals

**Buffers to Stress Reactions** are situational or personal characteristics which assist in increasing our ability to self regulate in the presence of stressors.

**Buffers to Stress Reactions:**

- ↓↓ level of arousal
- expectations
- Sensory/Motor strategies
- internal control
- social supports
- optimism
- self esteem
- adequacy sleep
- positive self talk
- positive outlook
- physical fitness
- sense of humour
- schedules
- active use of strategies
- hardiness (ability to accept challenge, with commitment, confidence, and self control.)

**Building a Social Story with Buffers to Stress** is much more likely to be successful.
**Enhancing Buffers to Stress Reactions**

**Progressive Relaxation/Relaxation Strategies**
- Must be practiced often, initially.
- Spend time on the feeling of the relaxation in each area. Talk about this. Be insightful.
- Use sensory-motor strategies that affect level of arousal (deep calming input, fidget items, movement, heavy work, etc.).
- Use Breath Control with the relaxation response.
- Eventually shift the progressive relaxation techniques to be done in standing as well as sitting.

**Positive Self Talk**
- Making this a natural part of the child’s thinking should be your long term goal here.
- I am calm and relaxed.
- I remember what it feels like to be calm.
- I can do lots of things…I can do this!
- That’s OK, I can do that!
- I can…I can…I can do that!
- I can handle it!
- I feel good about myself for staying calm and...
- Build positive talk into your interactions.
- Do your own positive self talk aloud so the child can hear.
- Talk about the feeling of accomplishment and how it feels good to be done.
- Positive self talk should be honest, kids know that taking the garbage out is not fun, so positive self talk needs to focus on other aspects (having chores be done, getting allowance or a star, social reinforcement, or having a chance to do a preferred activity).

**Visual Imagery**
- Introduce after relaxation and after very enjoyable activities.
- Describe and explore in a calm, relaxed voice.
- Find that special place.
- Make it multisensory (add smell, sound, touch, movement, to visual).
- Try just before engaging in challenging activity, i.e. after relaxation and social story with picture rehearsal and positive self talk.

**Picture Rehearsal**
- Picture rehearsal is another word for a social story using pictures and incorporating positive self talk, relaxation, and visual imagery to build stronger buffers to stress reactions.
- Each picture rehearsal targets a specific thing or event which typically causes a significant stress reaction.
- The picture rehearsal/social story is used in advance to help prepare the child for the situation or event. It is also used just prior to facing the event or situation.
- When appropriate, a rehearsal/social story may also incorporate aspects of anapana meditation (breath awareness) or a martial art movement, etc. if this is calming/grounding.
- Include choices as possible.
- Have the child be the one to tell the story just before the event or situation. This will help the child to shape his or her own thinking to this outline.
- When proficient, encourage the child to do this without pictures.
- Eventually, the child should be able to do this naturally and spontaneously as things come up, just the way we do (or ought to).
Many children and adults appear to have difficulty with self-regulation (Siegel, 1996). Problems with self-regulation may be contributing to many of the behaviours observed in individuals within the Autism Spectrum, and other children with attentional and learning challenges. These behaviours include, disregard or exaggerated responses to sensory stimulation, inconsistent ability to attend to tasks, distractibility, poor impulse control, limited frustration tolerance and fluctuating emotional reactions.

Many children and adults also operate under high levels of anxiety that increases arousal. With increased arousal, sensory thresholds are lower and there is registration of an excessive amount of sensory input. It is important to try and determine if observable behaviours are related to sensory defensiveness or pre-existing anxiety. However, similar calming strategies may be useful in reducing anxiety and limiting sensory defensive responses.

Children can learn various strategies to assist with self-regulation. These strategies include; deep pressure, joint compression, movement, and tactile activities. Individuals have sensory preferences and sensory drives to satisfy those preferences. These may be exaggerated in many of our children who appear distractible and inattentive because their agenda is often very different than ours. We want them to perform tasks, and they want to have (or avoid) more sensory experiences. By learning a child’s sensory preferences and sensory drives, we can use this type of sensation to enhance performance. For example, we create a sensory diet which allows the child to satisfy sensory drives and free up more energy for task performance. An important component of sensory based therapy is to identify a child’s unique sensory profile and to find ways to use this to enhance performance and increase time on task. When we can begin to see the sensory aspects of our environments and our interactions, then we can use sensory input in a therapeutic way. Sensory-based therapy and sensory-based intervention are important components of our approach, and these are very different from what many people call “sensory integration”.

Working with picture rehearsal and social stories, and incorporating relaxation, positive self talk and visual imagery help us to develop greater stress buffers so that children can prepare themselves for some of the inevitable stressors of life while minimizing the intensity of their own reactions to stress.

_Life is a ‘social story’ with all the senses filled in._
**Teaching Self Regulation**

Using the principles from the Alert Program (alertprogram.com), we use engine language and a colour gauge. We talk about the gray zone as when we feel lethargic or tired. In the 'gray zone', our engine is running “slow” or “low”. The 'green zone' is when we feel calm and alert, ready to learn and to listen. Our engine is running “just right”. In the 'red zone', our engine is running “high” or “fast”, and we feel stressed. The 'red zone' is not always negative, but can be fun at a fair or playground. We do not speak of emotions with this gauge.

Using the visual gauge, bring up the subject (at the appropriate level) often, and always identify for yourself, as a model. Bring up the subject at different times and in different situations. Some people use a small portable gauge and a large one at home or school.

**Stage One: Identifying Engine Speeds**

1. Children learn engine words
2. Adults label their own engine levels
3. Children develop awareness of the feel of engine speeds, using adult’s labels as guides
4. Children learn to identify and label levels for themselves
5. Children label levels for themselves

**Stage Two: Experimenting with Methods to Change Engine Speeds**

6. Leaders introduce sensory-motor methods to change engine levels
7. Leaders identify sensory-motor preferences and sensory hypersensitivities
8. Children begin experimenting with choosing strategies

**Stage Three: Regulating Engine Speeds**

9. Children choose strategies independently
10. Children use strategies independently, outside of sessions
11. Children learn to change engine speeds when options are limited
12. Children continue receiving support

Marc Landry   OT

References:
Building Bridges Through Sensory Integration
Yack, Sutton, Aquilla 1998

The Out of Synch Child
Carol Stock Kranowitz 1998

*How Does Your Engine Run? A Leader’s Guide to the Alert Program for Self Regulation
Mary Sue Williams and Sherry Shellenberger 1996
Teaching Stress Management

The Groden Center, Inc. of Providence, Rhode Island has pioneered the Picture Rehearsal Program described in this handout. This approach addresses both the stressor and the stress reaction in a very open and up front manner. It is most important to recognize small gains and keep the progress coming. If a child is fearful of being in a bowling alley or roller rink, for example, standing at the door and watching must be considered a big step on the way to success. Success leads to more success.

Stage One: Identifying Stressors

1. Consider a survey such as *The Stress Survey Schedule for Persons with Autism and Developmental Disabilities* by The Groden Center, Inc.
2. Consider all sensory and environmental factors.
3. Respect the child’s communications and behaviours.
4. Need input from parent, OT, teacher, child, SLP ...

Stage Two: Building Buffers

5. Use sensory based therapy and sensory preference checklists. Reinforce self regulation. Reinforce or teach self awareness, in terms of what it feels like to be in different zones and also what it feels like to engage in a sensory motor experience.
6. Always teach progressive relaxation. Include breathing and meditation as indicated. Call attention to the feelings of relaxation after each muscle release or deep exhalation.
7. Use schedules to slow down thinking and make time more predictable
8. Practice using positive self talk throughout the day.
9. When possible, practice visual imagery during play sessions, closing eyes and talking about a special place and how it feels to be there.

Stage Three: Preparing to Face Major Stressors

10. Use social stories and picture rehearsal. Develop specific stories for major stressors. Review these stories during very safe and attentive times. Have the child retell the story in the same manner. Then use the same familiar social story just before facing the actual situation. Be sure social stories incorporate positive self talk, relaxation, and imagery.
11. Clearly schedule the target event or situation. When possible, practice on a smaller scale and build up to full participation in the actual target.
12. Model, praise, reinforce a positive, self confident approach.