

## HEY! My Brain Doesn't Work That Way!

**The Sensory Systems-** How Sensory Processing Works, Modulation, Neurological Threshold, Arousal

**Self Regulation** – How to Influence Level of Arousal, Teaching Self Regulation

Sensory Diet - Using Sensory Motor Strategies to prepare kids brains and bodies for learning

Arnie and His School Tools

Simple Sensory Solution That Build Success

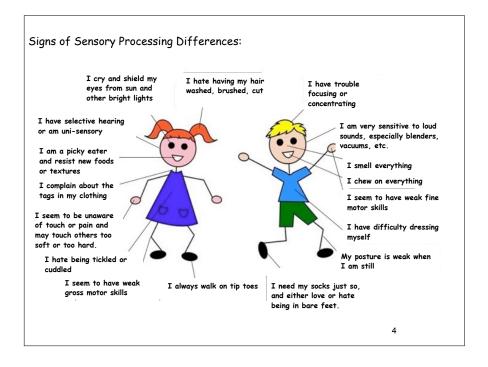
#### Strategies to Deal with Stress/Avoidance

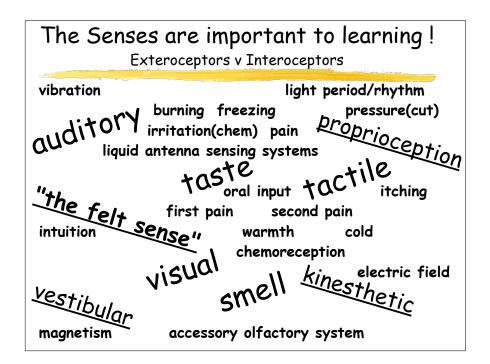
https://www.youtube.com/watch?v=D1G5ssZIVUw&index=82&list=WL





https://www.youtube.com/watch?v=bbnppZp6jxA





The Near Senses - respond to internal messages. They are really systems rather than organs. They are hidden, automatic, we are not aware of them and have little control over them.

### The Vestibular System - Balance/Gravity

Processes information about movement and the position of the head in relation to gravity. This enables us to maintain our balance while still or in motion. Information is processed via the tiny fluid filled semicircular canals in the inner ear, as well as utricle and saccule via the medulla. Vestibular nucleii communicate with reticular activating system, limbic system, as well as cerebellum, motor areas, visual cortex. Vestibular processing anomalies are common in persons with autism.

## The Proprioceptive System - Pressure/Force/Position

Processes information about body position through the muscles and joints. Application of regular proprioceptive feedback to the muscles through firm, deep pressure and heavy work, is recommended for many people, because it has been shown to have an organizing effect on the central nervous systems.

The Near Senses - respond to internal messages. They are really systems rather than organs. They are hidden, automatic, we are not aware of them and have little control over them.

### Kinesthesia - Movement

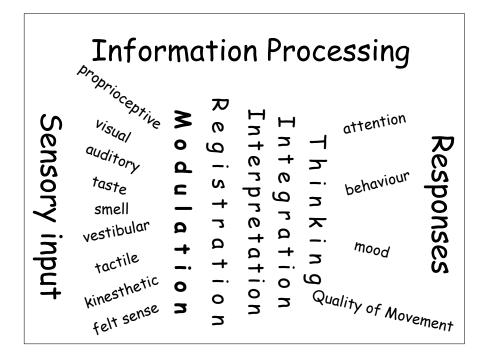
A sense built using information from vestibular and proprioceptive systems as well as stretch and touch receptors. Kinesthesia gives us a sense of what parts of our body are moving and how so. Function requires good proprioception, vestibular function, and felt sense (via arousal system).

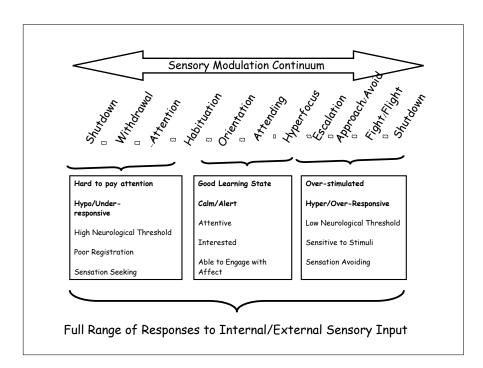
### The Felt Sense - State/whole of emotion/consciousness

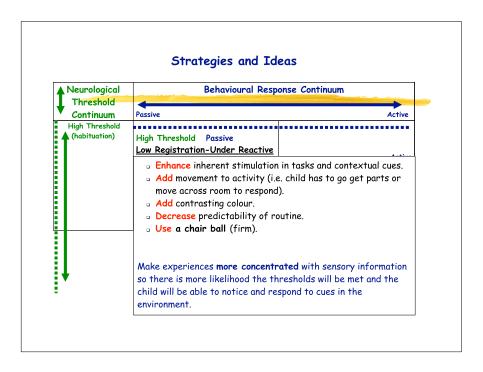
The Felt Sense is how we experience the fullness of sensation and knowledge about ourselves as an organism. This includes internal sensations and synthesis of different sensations. The felt sense unifies lots of scattered data and infers meaning. The felt sense (developed in insula?) communicates to my nervous system what is my overall experience in my environment. It is influenced by all sensory input as well as emotions, thoughts, intentions. It is always present, always changing, it is the most basic experience of being alive as an entity. Feeling comfortable, safe, nervous, anxious, happy, are examples. In some contexts (i.e. Eugene Gendlin), the felt sense can be perceived in the body and changes and moves.

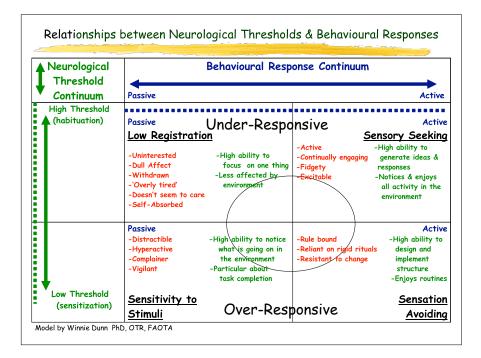
For more on the felt sense, see  $\underline{\text{Waking The Tiger}}\,$  by Peter Levine, pgs. 8, 66, 67, 68, 69

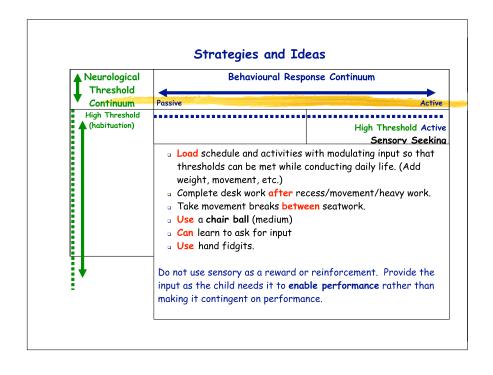
and Focusing by Eugene Gendlin

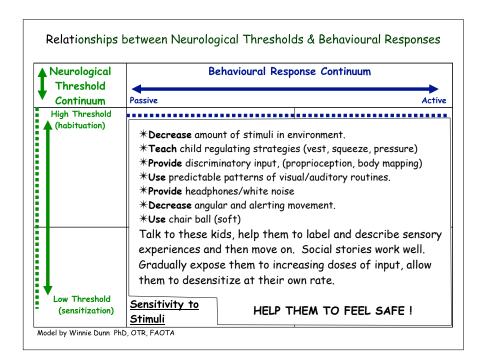


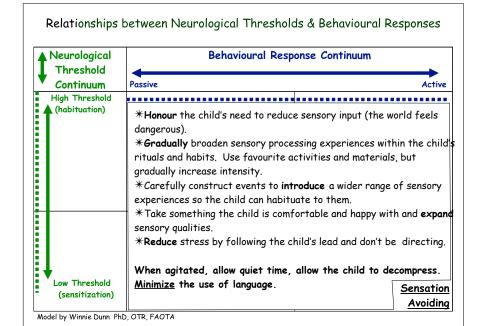












# We retrieve memories and formulate action plans according to the level of arousal of our body.



Gray zone level of arousal connects with memories and responses from other lethargic and mellow situations from the past.

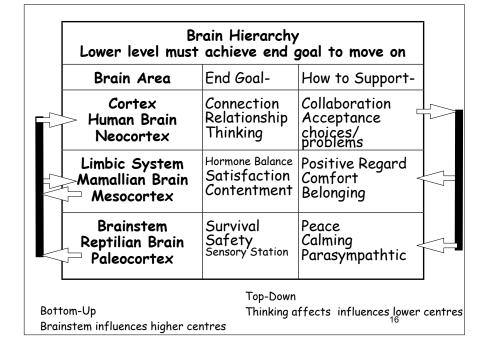
ast.

Green zone level of arousal connects with memories and responses from other calm and alert situations from the past.



Red zone level of arousal connects with memories and responses from other agitated and frazzled situations from the past.





#### Oetter's Stages of Self Regulation

First order - self regulation is dependent on the autonomic nervous system and its interconnections with the reticular formation and the limbic system. They function to regulate temperature, tone, sleep/wake, monitor for survival, etc. no conscious control over this area. Automatic

Second order - self regulation is reflected in sensorimotor strategies to achieve, maintain and change situation appropriate states. Sensorimotor input and feedback help organize states, ie. Foot tapping, rocking, thumb sucking, doodling. Using the body to lead the mind

Third order - emergence of higher level cognitive (cortical) skills. At this stage, problem solving abilities and the use of verbal and internal language for organization allow the individual to monitor, plan and evaluate regulatory strategies. "Just this much more and then I will treat myself to..." or "If I don't get it done, such and such will happen." Using the mind to lead the body. This can also be called Emotional Regulation, as it is referred to in psychological and educational jargon.

### What are Your Sensory Preferences?

· Chew gum ·Rock, spin on chair ·Twist hair · Avoid bright light ·sip water ·squirm/shift in ·fidget in pocket ·listen to calm or chair ·hard candy lively music? ·roll head · crunchies ·Sing or talk to self ·warm bath ·rock body ·bite nails gravitate toward ·rub fingers or rhythm ·run, jump clothes on skin ·smoke ·avoid loud noises ·tap objects or ·hands about mouth · popcorn body parts area ·more intense ·coffee reactions than others stretch ·play with ears. to unexpected · mints nails, necklace, · isometrics sensory input around sleeve, chin, pencil, ·sweets ·balance chair pocket contents ·rub tongue inside on 2 leas ·stare at movement mouth (fire, fish, rain, ·shake feet, etc.

etc.)

clouds, sand and oil

toys, spinning things,

·chew on pencil/

straw

### "Second Order" Self regulation = strategies a child uses:

to increase attention to a task. to self calm and. for impulse control.



During early development, the parent or caregiver provides sensory stimulation to the child. This sensory stimulation (touch, movement, visual and auditory) helps the child to develop control, to calm, to attend to salient stimuli and to organize his or her own body.

This then contributes to the child developing his or her own strategies to develop control, to calm, to attend to salient stimuli and to organize his or her own body.

This enables the child to develop internal regulation and to control his or her level of arousal and therefore voluntary behaviour as well.

Thus, self-regulation is the ability to achieve, monitor and change a state of arousal to match the demands of the environment or situation.

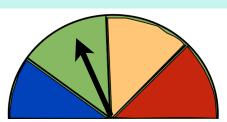
Input to midline structures give stability and comfort. Sensory rich - nose, mouth, genitals

You can't self soothe through the mind, the body must be involved to change internal chemistry

### "How Does Your Engine Run?" A Leader's Guide to The Alert Program™ for Self-Regulation



Mary Sue Williams Sherry Shellenburger



TherapyWorks Inc. www.alertprogram.com



Selosoft, Inc zonesofregulation.com

### Teaching Self Regulation (The Alert Program™)

Stage One: Identifying Engine Speeds

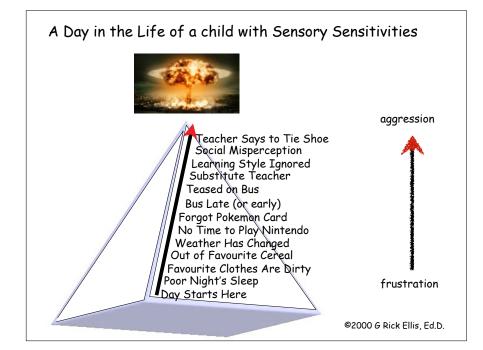
- 1. Child learns engine words or zone colours
- 2. Adults label their own engine levels
- Child develops awareness of the feel of engine speeds, using adult's labels as quides
- 4. Child learns to identify and label levels for himself
- 5. Child labels levels for himself

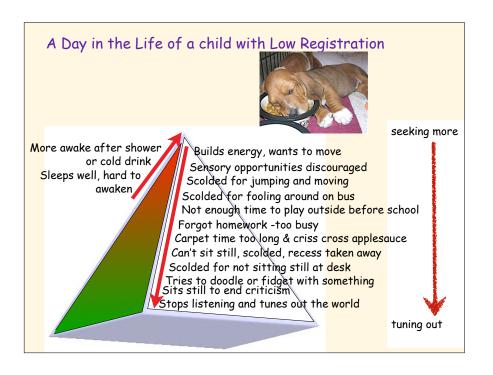
Stage Two: Experimenting with Methods to Change Engine Speeds

- 6. Adults introduce sensory-motor methods to change engine levels
- 7. Adults identify sensory-motor preferences and sensory hypersensitivities
- 8. Child begins experimenting with choosing strategies

Stage Three: Regulating Engine Speeds

- 9. Child chooses strategies independently
- 10. Child uses strategies independently, outside of sessions
- 11. Child learns to change engine speeds when options are limited
- 12. Child continues receiving support.







### Red Zone - How Does it Feel?



How does my head feel	How does my neck/shoulder feel?	How do my arms and hands feel?
How does my chest feel?	How does my stomach feel?	How do my legs feel?
How does my breathing feel?	What else do I feel?	What seems to be easiest to notice?

This is half of self regulation - noticing when I am leaving the green zone Sensory Supplement Working Forms at http://www.marclandry.ca/Marcs\_Sensory\_Oasis/Workshop\_Materials.html

#### When I want to keep my engine running "Just right"

What Works?	What Bothers
Mouth	Mouth
Move	Move
Touch	Touch
Look	Look
Listen	Listen
Smell	Smell
Pressure / Heavy Work	Pressure / Heavy Work

WHEN I WANT	TO KEEP MY ENGINE RUN	NING "JUST RIGHT"
What Works to be more alert?	What Works to be more calm?	What Bothers Me?
In the mouth	In the mouth	In the mouth
Move	Move	Move
Touch	Touch	Touch
Look	Look	Look
Listen	Listen	Listen
Combinations	Combinations	Combinations

The other half of self regulation - what will help and what will not Sensory Supplement Working Forms at

http://www.marclandry.ca/Marcs Sensory Oasis/Workshop Materials.html

## Sensory Diet

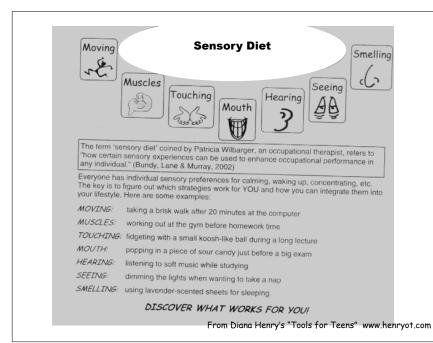
Calming

slow, rhythmical, pressure, warmth, sweet

Alerting

fast, changing, cold, sour, minty

Organizing deep, heavy, sustained, pulling, pushing



#### <u>Calming</u> activities help to decrease hyper-responsiveness to stimulation.

Deep pressure to head, trunk, shoulders, hands

Heavy work as in dragging and pushing or

Carrying a weighted backpack

Swinging slowly and rhythmically Slow controlled rocking

Cuddling & backrubs with pressure Mat sandwich or bean bag press

Heavy Work/Proprioception



Don't forget SENSORY REDUCTION!



Calming

is slow, rhythmical, pressure, warmth, sweet

<u>Self-Calming</u> activities can be initiated by the child or done independently Specifically asking for or initiating any of the above Calming activities

Sucking on a frozen fruit bar or spoon of peanut butter

Rubbing hands together Using Palms to press on the sides of the head

Wrapping self in a rug or blanket Hugging self (around knees and trunk)

Learning to use a rocking chair and swing

Going to a quiet area and hugging a blanket or stuffed animal

Snuggling into a beanbag chair

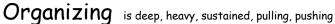
Brushing hands, sitting on hands



## Organizing activities help the child to attend

and to regulate responses.

Examples include:
Pushing or pulling heavy loads
Hanging from the hands
Being upside down
Longer periods of jumping on a trampoline
Heavy chewing (gum, fruit roll up, licorice)



## <u>Alerting</u> activities help the child to focus longer and be more alert.

Examples include:

Bouncing on the therapy ball

Brief jumping on a trampoline

Crunchy chewing

cold/sour in the mouth



Alerting is fast, changing, cold, sour

### Some Sensory Diet and Self Regulation Equipment

### Sensory TOOLS for grounding and regulating



Can improve listening, thinking, language functions, focus.

These only work when kept to the self.

They provide the body with movement and touch input.

Older students can create their own inventories.



### In Your Mouth!





Alerting Foods

cold, sour, tart, spicy, minty, crunchy

Calming Foods

warm, smooth, sweet

All Purpose Foods (deep pressure through jaw from chewing) chewy and crunchy foods may belong in this category

Non Foods: water, gum, straws to suck, blow or chew, bubble toys

aquarium tubing is great for sucking, blowing, and chewing. You can also get plastic hose for water cooler or hospital use that is high quality.



See oral motor section at www.fdmt.ca online store

"Our Chewable Jewels (right) are made from FDA approved food grade silicone and are Phthalate, BPA, PVC, Latex and Lead free products!"





## **MOVEMENT!!!!**





- Small movement, big movement, now and then movement, constant movement
- \*Up & down, back and forth, side to side, round and round (orbital and centrifugal)

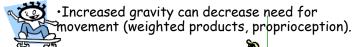




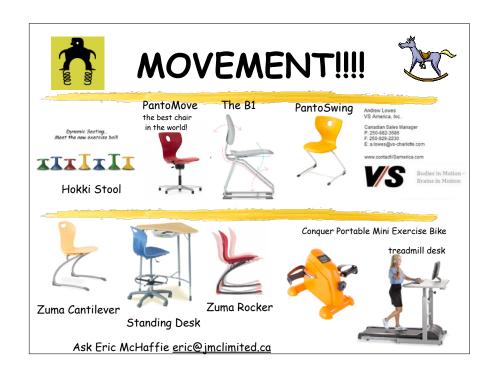
 Movement of mouth/hands/feet can happen/help when whole body movement is not an option. (mouth items, fidgets, exercise band)



•Dynamic sitting provides movement input (chair ball, move'n'sit cushion, t-stool, kneeling).



















https://www.youtube.com/watch?v=im9vlHAeULc

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From Diana Henry's Tool Book www.henryot.com

## SCHOOL RECESS







#### BENEFITS

Recess is fun! On the playground you can experiment with different ways to move your body. And recess gives your muscles the nutrition your brain needs to help you concentrate for school work.

#### TO BEGIN



- · Share with all staff members that:
  - 1. Recess is one of the most important sensory tools available in school.
  - 2. Playground equipment provides a sensory diet for students to help them perform at their best throughout the day.
  - 3. If students are deprived of recess they can become sensory starved.
- Provide children with free time on the playground.
- Giving children time to play actually helps their performance during quiet times in the classroom.





Involves Pressure/Force and provides a lot of calming sensory feedback from the body.

Also promotes core strength and stability, for increased strength and endurance.

We call these Heavy Jobs for kids who infer work as being negative.

Promote Heavy Work throughout the day, but direct a person to it:

#### When reaching overload

when s/he can't focus or be still,

when something challenging is coming,

when s/he needs a break from something challenging,

when s/he needs to wind down a bit.

Before, during, and after collaborative problem solving™ Ross Greene

Note what games and jobs work well for the person and when (in general).

DO the DETECTIVE WORK! Take cues from what the person's body is telling you.





## Heavy Work



#### Heavy "Jobs"

Haul groceries into the house and put things away. (include climbing and hands and knees) Sweeping, mopping, wiping boards, desks, raking, mowing, beating a rug

Dragging hose, leaf bags, wheelbarrow, cart of balls or playground supplies

Pull linens off of the bed and drag down stairs. Move the sofa or classroom furniture

Carry laundry basket, carry pots or buckets of water, sand, dirt

Move books, office supplies, boxes of paper, trash cans, recycling, lumber, firewood

Chopping, sawing, hammering

Heavy Play

Dragging out the box of books, toys

Magic Carpet - Kids pull each other on a piece of rug or blanket

Walk like different animals (include plenty of 4 leg creatures, i.e. bear, crab, etc

Jump on a mini trampoline or rebounder

2 people sit face to face and rock to "row your boat" with rope or inner tube around them Fall into a bean bag chair

Encourage hands and knees play with cars, animals (one hand plays, one hand holds you up) Sidewalk chalk, playing in a wet sandbox

Tug of war, Pushing games, medicine ball

Swinging from rings, bars, jungle gym, hockey

Broad jump, jumping off of platforms and playscapes





### **Doing the Detective Work**

#### When Reaching Overload:

- 1. Sensory Reduction
- 2. Heavy Work
- 3. Independent is better

#### For Homework and Focused Learning:

- 1. Observe, Observe, Observe...
- 2. Explore alternatives...different positions, places
- 3. Provide more movement opportunities
- 4. Provide more dynamic sitting or desk opportunities.

#### IF a person has difficulty sitting still:

- 1. Provide more movement and stimulation before the focused time.
- 2. Incorporate and end with Heavy Work, Proprioception, Pressure/Force.
- During sitting, put something heavy in lap, dress warm or heavy (puts some to sleep). Do some pulling/pushing while seated and quiet.
- 4. Try dynamic or unstable sitting.

## The Sensory Profile

By Winnie Dunn <u>www.sensoryprofile.com</u>



- Ocaregiver version vs. School Companion
- Sensory Processing High vs Low Threshold
- Modulation How it affects the child
- 🍚 Behaviour & Emotional Responses Related ?
- Sensory Temperament and Factors

See <u>www.marclandry.ca/Marcs\_Sensory\_Oasis/About\_Me\_Contact.html</u>

### Being the Detective

- \* When you observe a child seeking out certain input, take note of the sensory channel and think about other ways to satisfy this system. These can make great additions to the sensory toolkit.
- \*Take note of what was happening just before the sensory seeking or avoiding.
- \*Offer more of the sought after sensory input in the regular sensory diet, while including retreats from avoided inputs.
- \*Consider sensory components of starting environment and of the environment the child goes to, when free.



Common reactions to stress are ESCAPE and AVOIDANCE. These interfere with task performance and need to be worked on. Baseline cortisol levels set in first 6 years of life.

Stress challenges us to adapt or cope, and these are better strategies than avoidance. Stress that makes us stronger is usually moderate, predictable, and patterned, unless it happens when the individual/system is overloaded. Stress (cortisol) damages the hippocampus, involved in new memory/learning. Neurological reactions to stress and anxiety can be neurotoxic if not modulated.

Perceptions of what is stressful can change, and are often controlled by autonomic function (sensory processing) and emotional and cognitive factors.

Rather than avoiding a stressor, we can seek to reduce the reaction we generate to the stressor.

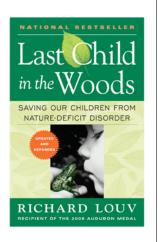
Learning to expect and accept stress can help to take the power away from our stress reactions.

- What is stressful for a child can be very different from what you might expect, and is very different for different brain types, different environments, families
- Stress factors: anxiety, demands, energy levels, illness, toxins, sleep, diet, love, movement

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### Nature - Healing and Grounding

- Invite native flora and fauna into your life. Maintain a birdbath. Replace part of your lawn with native plants. Build a bat house. For backvard suggestions, plus links to information about attracting wildlife to apartments and townhouses, see the National Audubon Society's Invitation to a Healthy Yard.
- View nature as an antidote to stress. All the health benefits that come to a child come to the adult who takes that child into nature. Children and parents feel better after spending time in the natural world-even if it's in their own backyard.
- Spend time along the beach, sea wall, park, trail, pond, stream
- Help your child discover a hidden universe. Roll over an old log in the woods and look at what's living there. Watch for a while. Return to this universe once a month, lift the log and discover who's new.
- Revive old traditions. Collect bugs, watch them, release them. Make a leaf collection. Keep a terrarium or aquarium. Explore streams and ponds.
- Nature experiences can be Calming, Alerting, or Organizing, and can incorporate every sensory modality.



## Self Awareness & Progressive Relaxation







http://www.marclandry.ca/Marcs\_Sensory\_Oasis/ Workshop Materials files/relaxation%20book-2011,pdf

Deep Breathing is the fastest way to clear adrenaline and activate the body's calming system (parasympathetic system).

I love MindUP! It is a way to focus your mind, calm down and reflect on a situation when you need to make a choice. Tyler G., Seventh Grade Student 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, fidgit items, movement, heavy work, etc.).

Mindfulness, breath control, Heart Math, Brain Gym, many areas may be worth exploring



https://www.heartmath.org/



**Fundative** 

### \* The Empathy Step

- Gather information to hear other's concern and perspective
- Neutral observation of what's going on ("So your concern is...")
- Add/explore sensory perspective
- Don't jump to conclusions WANT to understand

### Define The Problem Step

- Introduce YOUR concern or perspective ("My concern is..." or "The thing is...")
- Discuss don't force (both sides tend to rush past this step)

### ❖ Invitation Step

- Work TOGETHER brainstorm with ("Do you have any ideas?)
- Can't do this step if you need to control the outcome
- Options need to be realistic and mutually satisfactory



- Hear, clarify, understand, validate, address
- Prove that you are as invested in making sure his/her concern is addressed as you are in making sure that your concern is addressed.
- When a child/person can do better, he/she WILL!!

### Mental Rehearsal - The Social Story Enhanced

Neurons can be activated by mental rehearsal, just as by activity Imagine as many details as possible, with desired performance and outcomes Experience Thoughts and Feelings so the body perceives it as reality Rehearse in advance to build skill and confidence.

Rehearse (after difficult situations) what you would have done differently, to weaken negative pathways

### Positive Self Talk

I am calm and relaxed I can do this! I can! I can! I remember what it feels like to be calm I can handle it! Build positive talk into your interactions

Do your own positive self talk so the child can hear

Talk about the feeling of accomplishment and how it feels to be done. Positive self talk must be honest

### Visual Imagery "The Safe Place"

Introduce after relaxation and after enjoyable activities Find that special place (It does not have to be calming for YOU) Describe and explore in a calm, positive voice. Give it a simple name Make it multi-sensory (add smell, sound, touch, movement, visual) Reinforce and Practice. This is key in activating parasympathetic system and coming down from RED ZONE

## **The Sensory Treasure Chest**

- nature is best
- use many senses
- define & describe
- play guess what
- feel on different parts
- play without vision
- give hints
- use sensation words
- Builds sensory skills
- Builds relationship skills
- Builds language skills
- Builds Resilience



### http://spdfoundation.net/about-sensory-processing-disorder http://www.sensory-processing-disorder.com/

http://www.marclandry.ca/Marcs\_Sensory\_Oasis/Handouts.html HeartMath

#### **Brain Links**

zEaton-Arrowsmith School

z www.eatonarrowsmithschool.com

zQuantum Physics www.whatthebleep.com

zhttp://www.brainhighways.com

#### Sensory Web sites

http://www.johnratey.com

http://www.youtube.com/watch?v=hBSVZdTQmDs www.bokskids.org

### www.nognz.com NOGNZ brain fitness

#### Henry's Occupational Therapy Services. www.henryot.com

Diana Henry lists her strategies for occupational therapists, teachers and parents. Southpaw Inc. Sensory Integration Products www.southpawenterprises.com

www.incrediball.ca therapy balls, chair balls, etc

www.flaghouse.ca physical education and therapy supplies

Sensory Integration Resource Center, <a href="http://www.sinetwork.org/">http://www.sinetwork.org/</a>

Canada made quality Weighted vests and blankets www.innovaid.ca dianne@innovaid.ca Weighted vests/pressure vests/sensory supplies <a href="www.fdmt.ca">www.calmcomforts.com</a>

www.avalonmusic.com www.brookstone.com Sonic-Aid music to affect brainwaves

www.reiinstitute.com/ rhythmic entrainment institute

# See Lots more links

## Supporting Stress Management

#### Stage One: Identifying Stressors

- Get information from as many sources and perspectives as possible. Detective work pays off.
- Consider all sensory and environmental factors.
- 3. Respect the child's communications and behaviours.
- 4. Need input from parents, teacher, child, neighbour, SLP ...

#### Stage Two: Building Buffers

- 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.
- Always teach progressive relaxation. Include breathing, yoga, meditation as indicated. Call attention to 6. the feelings (felt sense) of relaxation after each muscle release or deep exhalation.
- Use schedules to slow down thinking and make time more predictable.
- Practice using positive self talk throughout the day.
- When possible, practice visual imagery "safe place" during play sessions, closing eyes and talking about a special place and how it feels to be there. Use as many senses as possible and talk about the felt sense, i.e. safe, relaxed, etc.

#### Stage Three: Preparing to Face Major Stressors

- 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.
- Clearly schedule the target event or situation. When possible, practice on a smaller scale and build up 11. to full participation in the actual target.
- 12. Model, praise, reinforce a positive, self confident approach.

@Marc Landry

## Sensory Bibliography/Resources

#### Building Bridges through Sensory Integration -

Occupational Therapy for Children with Autism and other Pervasive Developmental Disorders © 2002 Ellen Yak, Shirley Sutton, Paula Aquilla Future Horizons Inc. Arlington Texas

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(M. Williams, & S. Shellenberger, Therapy Works, 1994)

Take Five! Staying Alert at Home and School

(M. Williams, & S. Shellenberger, Therapy Works, 2001)

Making it Easy: Sensorimotor Activities at Home and School

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Sensational Kids: Hope and Help for Children with Sensory Processing Disorder (SPD) (©2006 Lucy Jane Miller)

The Out of Sync Child: Recognizing and Coping with Sensory Integration Dysfunction

(Carol Kranowitz, Skylight Press Book, 2005)

The Out of Synch Child Has Fun

(Activities for Kids with Sensory Integration Dysfunction © 2003 Carol Stock Kranowitz)