

Sensory Contributions to Young Children's Social-Emotional Development

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Objectives

- Introduce the process of sensory integration that occurs in all individuals;
- Understand the contributions of sensory integration and sensory processing disorder to social emotional development and self and co-regulation ;
- Introduce different types of sensory processing disorders;
- Begin to help families understand sensory contributions to behaviors and use that understanding to create better goodness of fit
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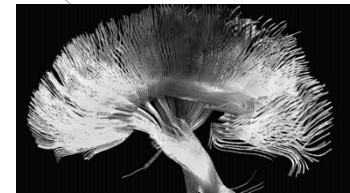
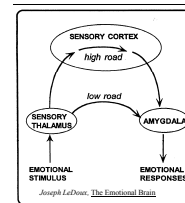
What is Sensory Integration

- Developed by A Jean Ayres in '70s
- If SI is the organization of sensory information for use...
 - > A process that occurs in all of us
 - > A way of understanding individual differences and dysfunction (SPD)
 - > A method of intervention
- A Brain Behavior Theory

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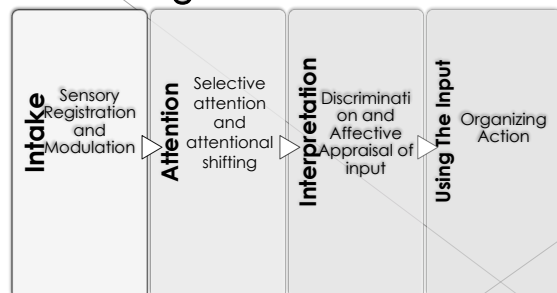
SI is a Brain-Behavior Theory

- Developmental Neuroplasticity
- Neurophysiology
- Top-Down vs Bottom Up

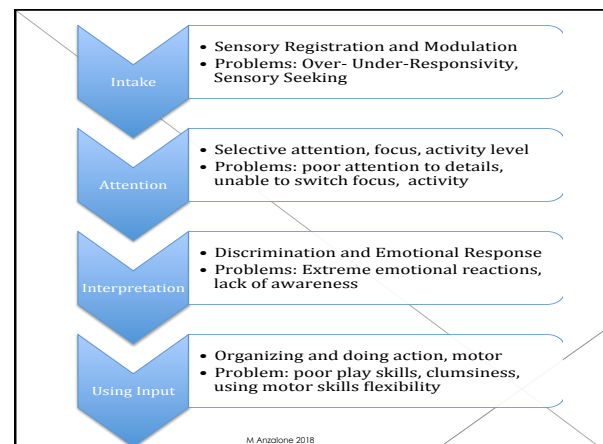


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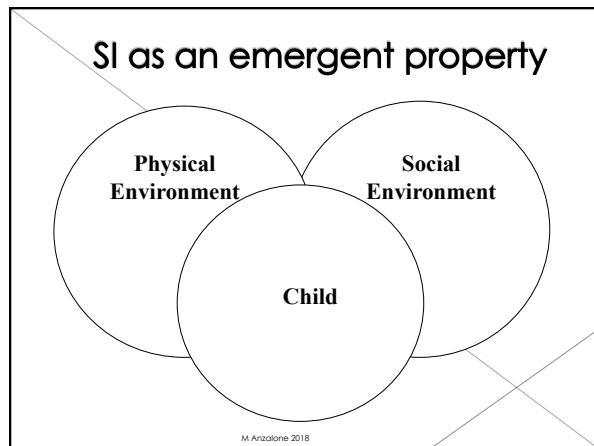
The Process of Sensory Integration ... We all do it



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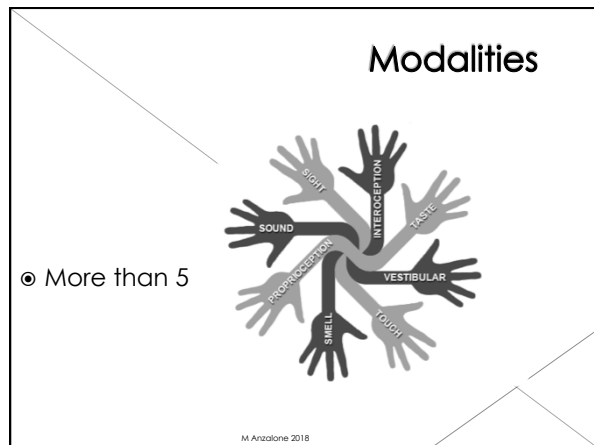
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SI and Individual Differences

- We all take in and experience sensation when interacting with our environments
- SI is temperament related (reactivity)
 - > ? changeable
- Registration is subjective and complex
 - > Modality, intensity, duration
 - > Preferences and triggers

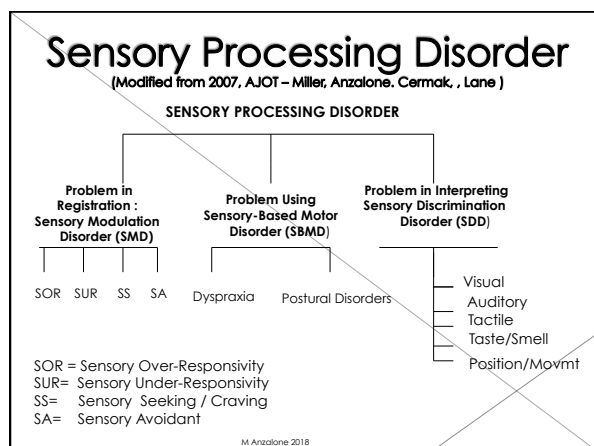
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There is more to sensation than modality...

- I think of it as sensory input vs sensation
- Modality
- Intensity
- Duration
- Location

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Sensory Link to Social Emotional Development: my perspective

- Babies are, by nature, social creatures
 - > But also somatic
- Individual differences are an integral component of babies' functioning
 - > Both infant and parents
 - > Multiple dimensions in infant (e.g., temperament, motor, cognition, vulnerabilities, etc)
 - > Meaning making
- Every individual exists in a particular context that affects function
- Wellness: The brain is CONSTRUCTED based on experiences (developmental plasticity)

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IMH is developing the capacity to:

- Experience, regulate, and express emotions
- Form close and secure interpersonal relationships
- Explore the environment and learn

So where does Sensory Processing fit in?

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Experience Regulate and Express Emotions

- Experience full range of emotions
- Self regulation
 - > Effortful control
 - > From reliance on adult to reliance on self
 - > 'by the self, not just of the self" (Vohs & Baumeister, 2004)
 - > Accommodation to expectation or norm

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Self Regulation

Development
What is 'regulated'?
How influenced by Sensory Input?

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Developmental sequence of Self Regulation (Kopp, 1982)

- Neurophysiological modulation (birth-3m)
 - > Physiology and Arousal
- Sensorimotor modulation (3-9+m)
 - > Attention and Motor
- Control (12-18m)
 - > Emotion
- Self-Control (24+m)
 - > Relationships

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Sensory-Based Self-Regulation is expressed through:

- Arousal
- Attention
- Affect
- Action

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Arousal

- Infant States
 - > Availability and transitions
 - > From deep sleep through crying
 - > Typical and atypical
- Physiological vs. behavioral arousal
 - > Or...what you see is not necessarily what you get
- State influences sensory processing
 - > (and vice versa)
 - > Importance of sleep to function
- Optimal learning and social interaction occurs in quiet alert

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Attention

- Attention is multi-dimensional
 - > Alertness
 - > Selection
 - > Allocation
- Developmental expectations
- Socially mediated attention – not just object
- Sensory preferences

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Affect

- Self regulation of sensation on a continuum with self regulation of affect
- Temperament, Attachment, Attunement
- Defensiveness (SMD) defined as affective response to sensation
- Stress and anxiety and SPD (SMD and praxis)
- Kid Power
- Social relationships are influenced by SPD (peer and attachment)
- Parental concerns with SPD

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Axis V : Functional Emotional Developmental Levels

- Shared attention
- Engagement
- Two-way purposeful interactions with gestures
- Two-way purposeful problem-solving interactions
- Elaborating ideas
- Building bridges between ideas (emotional thinking)

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Action

- Action vs Motor
 - > They aren't the same
 - > Goal directed behavior
- Communicative cuing and self regulation attempts as actions
- Praxis and play
 - > Ideation
 - > Motor planning
 - > Execution

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Yoli:

**a case study looking
at the 4 A's and
Goodness-of-Fit**

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Goodness of Fit

SI emerges from the interaction of the child and the environment

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Sensory Modulation

The ability to grade responsivity and reactivity to sensation

Response is consistent with perceived intensity of stimulus

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Sensory modulation relates to:

- Sensory input vs. Sensation
- Sensory threshold
- Arousability
- Behavioral regulation or coping
- Context (dynamic)

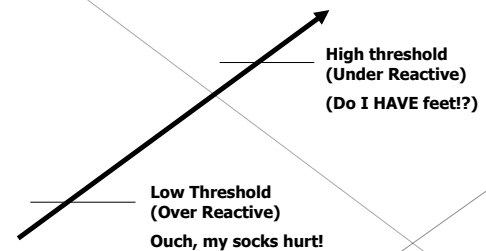
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Sensory Threshold

- Think about it as a central process (not specific to each modality)
- Sensation is summed (accumulation over time)
- Rate, intensity, and recovery
- Inconsistency is expected (and can help us)
- Interacts with arousal curve and arousability to produce modulation

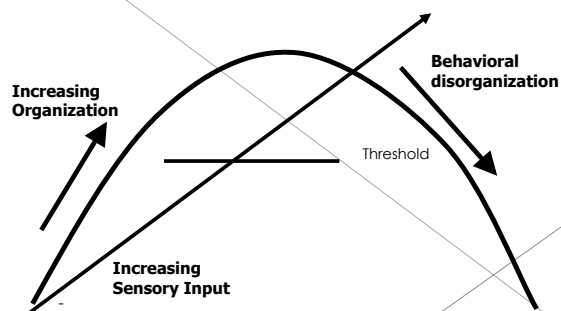
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Sensory Threshold is on a continuum



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Sensory Threshold Interacts with Arousal Curve



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Sensory Threshold

	(Increased Sensitivity)	(Decreased Sensitivity)
Acts in accordance with threshold	Hyperreactive (SOR)	Hyporeactive (SUR)
Attempts to compensate threshold	Sensory Avoider	Sensory Seeker (SS)

(Modified from W. Dunn, Ph.D., OTR, Department of Occupational Therapy, University of Kansas Medical Center)

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Hyper-Reactive or Sensory Over-Responsive

- High Arousal (over the zone of optimal organization)
- Inability to focus attention (everything is equally important)
- Negative affect
- Action appears impulsive (action is reactive)

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Sensory Avoiders (Low threshold – active coping)

- Able to modulate arousal (when successful at avoiding)
- Attention is hyper-vigilant (scanning for threats)
- Affect is fearful or anxious
- Action is constrained

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Hypo-Reactive or Sensory Under-responsive

- Arousal decreased – seem sleepy
- Latency to attention
- Affect restricted or flat
- Action passive

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Sensory Seekers

- Arousal heightened, but labile (if meet sensory threshold needs)
- Attention is poorly modulated and focused on sensory yield
- Affect is variable, limited empathy
- Action to increase sensory input, may appear impulsive and often risky

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Case Studies

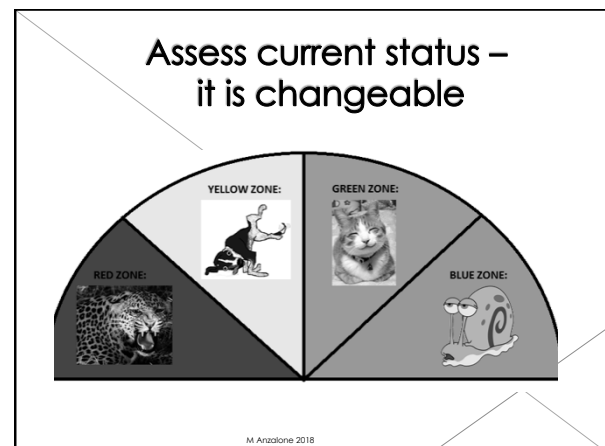
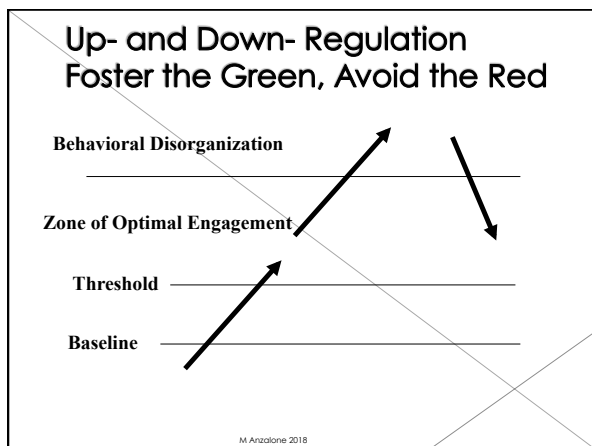
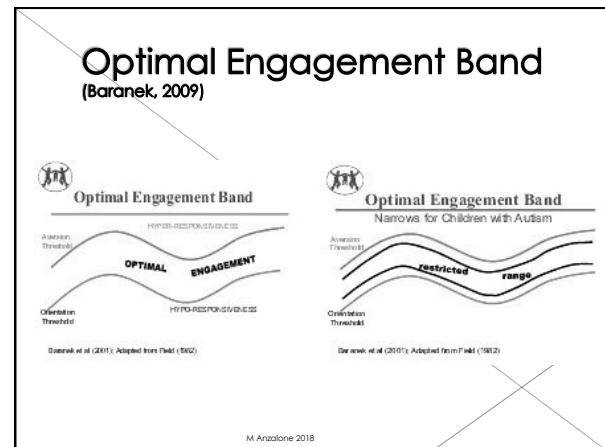
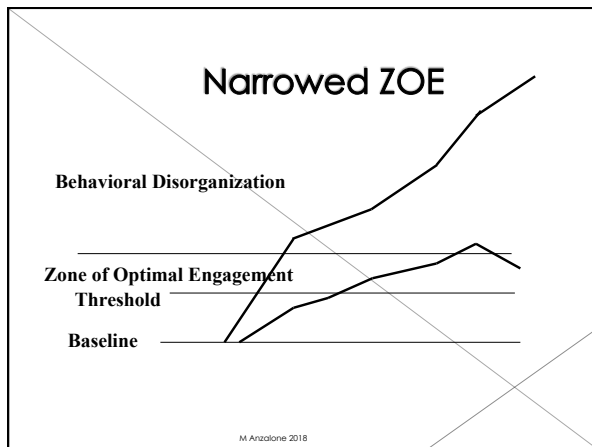
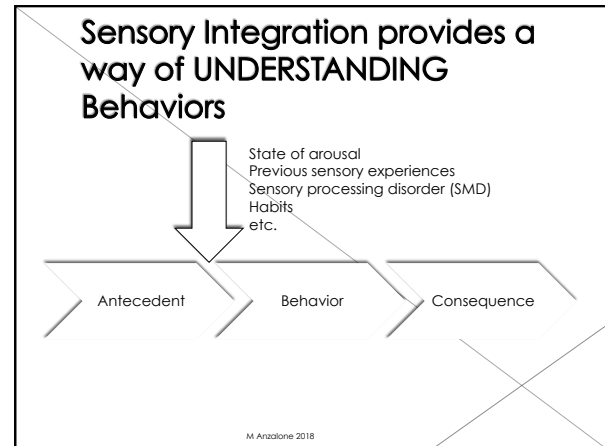
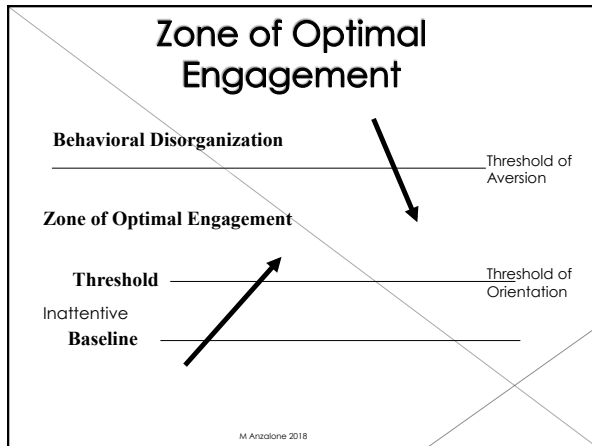
Christopher
Neal
Twins

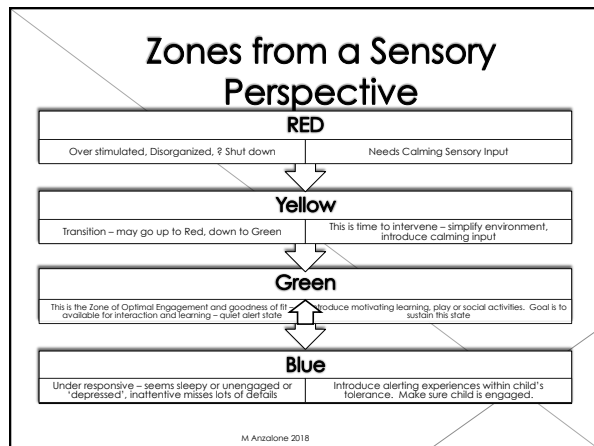
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Zone of Optimal Engagement (ZOE) (Green)

- There is an upper limit of organized behavior as well as the lower or threshold level
 - > Above that zone is behavioral disorganization
- Zone of Optimal Organization is also important
- Most of us have wide zone of optimal arousal to enable function
- Children with sensory modulation problems (especially those with autism) may have too narrow a zone

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Sensory Based Motor Disorder

Dyspraxia

Postural Disorder of Vestibular/Proprioception

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Praxis

- Motor vs. action
- Plan and sequence unfamiliar actions
- Praxis as an emergent property between child and environment
- Three components
 - > Ideation
 - > Motor planning
 - > Execution

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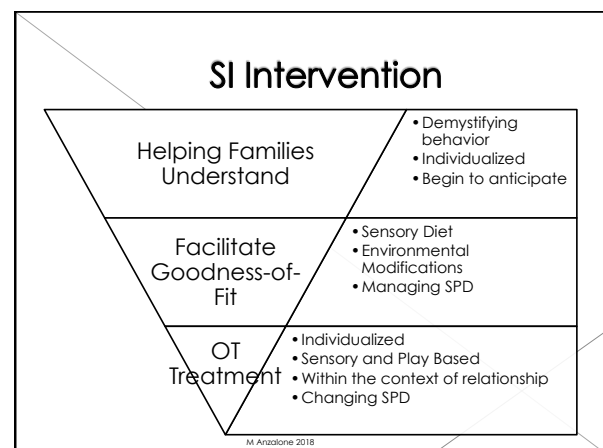
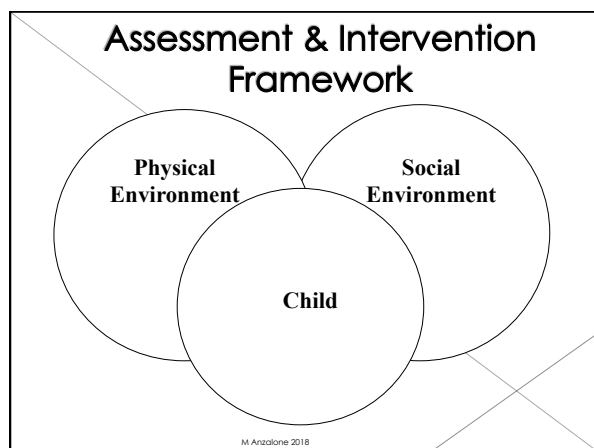
Sensory Based Postural Disorder

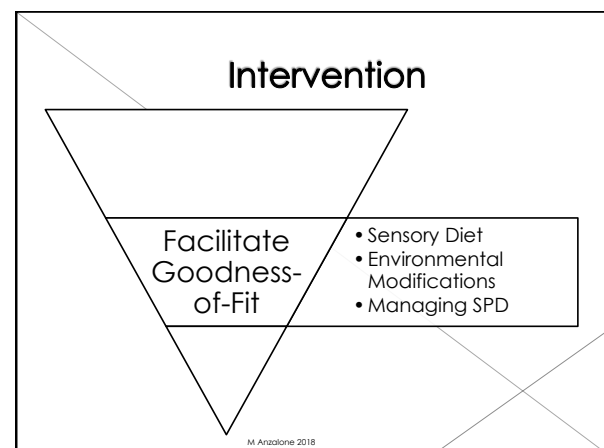
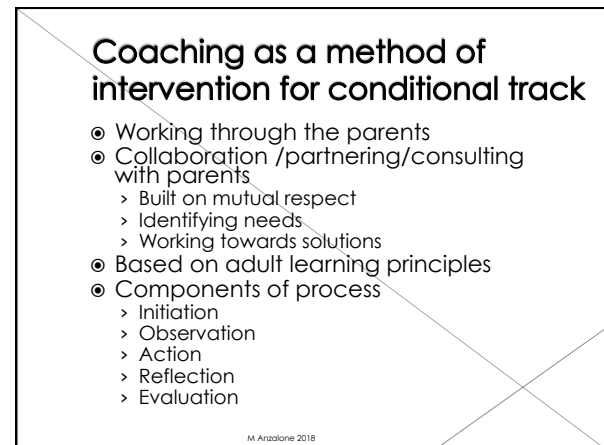
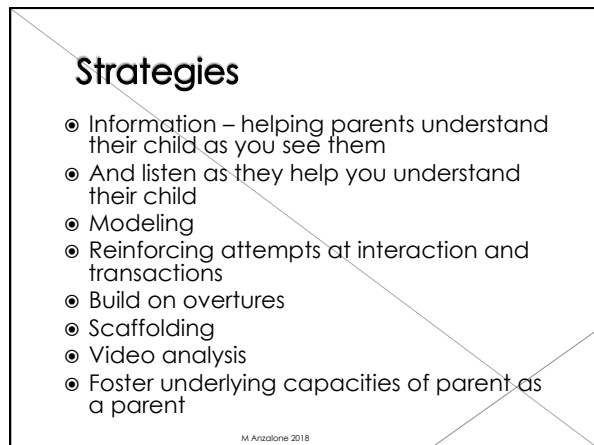
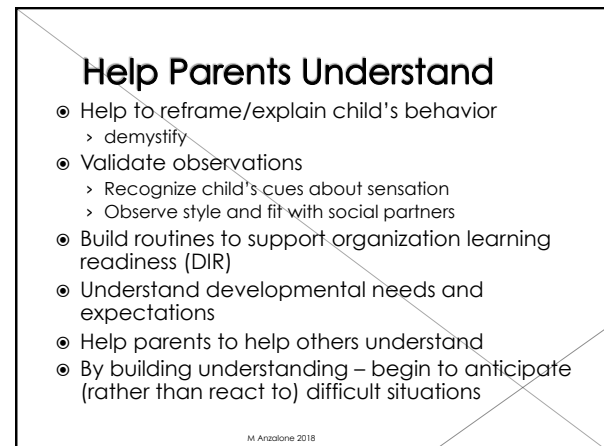
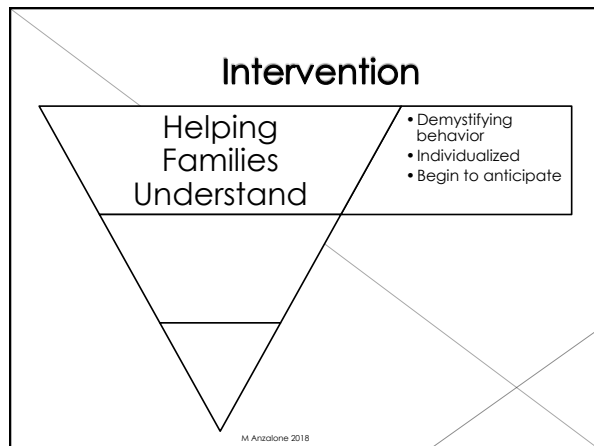
- Think Proprioception/Vestibular/Visual





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Managing SPD vs Changing SPD

Understanding the dynamic interaction between child and environment

Where are they now and how can I get them back into the Zone?

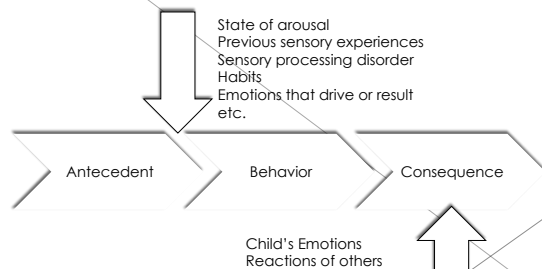
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Traditional Learning Theories



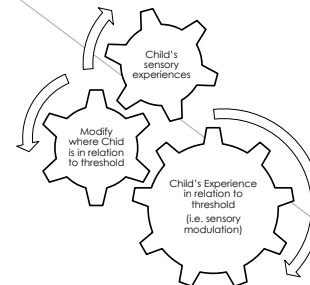
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Sensory Integration provides a way of UNDERSTANDING Behaviors



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A dynamic understanding of sensory threshold and sensory needs: not a static sensory diet



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Changing what the child experiences

- Environmental modification
- Changing routines
- Preparing all children for transitions
- Modifying events
 - > Helping care providers/teachers to think about novelty rather than just increasing intensity as a way of gaining attention
 - > Using the 'rheostat' (up and DOWN)

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Where the child currently is in relation to ZOE

Behavioral Disorganization

Threshold of Aversion

Zone of Optimal Engagement

Threshold

Threshold of Orientation

Baseline

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So what can we do about SMD?

- Act PROACTIVELY and REFLECTIVELY
- Modify Environment and ask about current state
- Prepare the CNS based on current needs– Goodness of Fit
 - Understand regulatory function of stereotypies
 - Sensory prep activities
 - Breaks – cool down space/time
- Look for cues
 - Milton: Eyes
 - Andre: escape
 - Walter: Scream/head banging
 - Fisher: Twirling
 - Christine: Scream, escape, throw,

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Try to Understand Behaviors

- ? Regulator Function
- ? Communicative Function
- Habit
- ?
- Carr (Functional Communication)
- If you are not getting at the root cause – mole behavior

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Based on Current assessment...

- Up or Down Regulate -- sometimes alternating depending on response
- NOT a static "Sensory Diet"
- UP regulate
 - Arousing activities
 - But not over stimulating
- DOWN regulate
 - Calming and or organizing inputs
 - Make sure input is USED

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Sensory Input can help Up or Down Regulate

To Organize or Calm	Modality	To Alert
Dim natural light	Visual	Strobe
Rhythmic	Auditory	Dissonant/loud
"Heavy Work"	Proprioception	"heavy work"
Slow Rocking	Vestibular	Spinning
Pressure Touch	Touch	Light Touch
Sucking, chewing	Oral or Taste	Crunchy, sour
Deep, slow, count	Breathing	Blow, suck

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Environmental Modification: Goodness of Fit

- Collaboration to redesign routines and Sensory Diet
- Goal: reduce immediate stress in recurring situations
- Consideration to each child's SI profile and where they are in terms of ZOO of any particular time
- Outcome is short-term change
 - MANAGEMENT of ZOE, not necessarily long term CHANGE

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To create a better G of F we can change...

- What the child experiences
- Where the child is in relation to ZOE
- How the experience is subjectively perceived

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