Regulatory Sensory Processing Disorders Workshop

Sensory, Motor, & Emotional Patterns Underlying Challenges in Relating & Communicating

Tailoring Your Interactions using DIR®/Floortime with Children Who Have Regulatory & Sensory Processing Disorders

Rosemary White OTR/L
DIR/Floortime Faculty

March 5 to May 15, 2011

Rosemary White, OTR/L

- Neurodevelopmental Therapy Certified
- Sensory Integration Certified
- DIR®/Floortime Certified
- DIR®/Floortime Senior Faculty
- Faculty ICDL PhD Program

Pediatric PT and OT Services
20310 19th Ave NE
Shoreline, WA 98155
206 367 5853

pedptot@comcast.net
www.pedptot.com

Regulatory Sensory Processing Disorders Workshop

2011 Orientation & Focus of the Course

Regulatory Sensory Processing Disorders
Sensory, Motor, & Emotional Patterns Underlying Challenges in Relating & Communicating.

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Understanding the Individual Profile of the child, including sensory processing and perceptions informs us of how to tailor our Affective Interactions to promote relationships and thus enables the child to progressively master their Functional Developmental Capacities.

Co-Regulation

- Co-regulation has been defined as the social process by which individuals dynamically alter their actions with respect to the ongoing and anticipated actions of their partner. (Fogel, 1993)
- When both partner’s actions are successfully anticipated and the altered actions of the individual produce continued interaction, communication about the relationship is interpreted by both. (Cortney A. Evans, Christin L. Porter, 2008)
- When this occurs within the rhythm of the interaction there is “shared pleasure”, where both the child and the caregiver are enjoying the interaction. (Cecilia Breinbauer, MD 2010)

AFFECT
Central to all learning!

Affective reciprocity allows children to find meaning and symbolize experience.
What is Affect?

Affect is....

• The emotional tone that is conveyed in an interaction

Affect comes from a variety of avenues from each and every individual -

• it is the tone of voice
• the gesture that you use
• the rhythm and pacing of your voice and action
• the sigh that conveys frustration
• the excitement that is conveyed with a "jump" or a "woop"
Affect in Interactions

• When interacting the most important thing is that I have "natural" affect
• Affect conveys the intent to interact with another person and the desire to sustain relationships
• Affect enables one to reflect on actions -your own or that of others
• Affect enables one to connect thoughts and ideas and to share them with others
• Affect enables one to convey to others how their actions impact the individual.

How Does This Video Clip Affect You?
When we take our understanding of motor control, sensory processing, sensory modulation and praxis and integrate it with the rich “emotional texture” of DIR®/Floortime we provide a treatment that addresses “the whole child” resulting in addressing the physical, the cognitive and the emotional development in a sensitive functional relationship with a significant other.

Relationships are the vehicle for creating learning interactions which are tailored to child’s individual processing differences and thereby enable child to progressively master functional developmental capacities.

The "I" of DIR®
- The unique skills of the OT in understanding the underlying neurobiology of the child’s sensory processing, postural control, praxis and related motor planning capacities is essential as it informs us how to tailor affective interactions and to coach the parent or “play partner” to engage in a manner that will support the child to strengthen their developmental capacities.
DIR®/Floortime

• The “D” of DIR®
  – The Functional Emotional Developmental Capacities provide a direction for supporting the emotional journey of the child in the context of a relationship.

Functional Emotional Developmental Capacities

• Co-regulation supporting the development of self regulation and shared attention
• Engagement
• Affect conveying Intent
• Behavioral Organization, Sense of Self and Shared Social Problem Solving with the Capacity to Stay in a Long Continuous Flow of Interaction
• Representational and Symbolic Thinking
• Building Bridges between Ideas and Emotional Thinking

DIR®/Floortime

Embracing & Guiding Work with children with Sensory Processing Challenges

In essence as an Occupational Therapist DIR®/Floortime has deepened the work that I do and as such has given a direction in which to integrate the many frames of reference that are core to my profession. This guides me in my work as a therapist as my understanding of sensory processing has a clearer direction to facilitate meaningful functional relationships that support the development of the child who has challenges in sensory processing. Of equal importance I have learned to support the parent in their vital role with their child and to put that relationship in the forefront.
Regulatory Sensory Processing Disorders Workshop

PART 1 - 2011_2008 Introduction to Regulatory Sensory Processing and the DIR®/Floortime Model

Regulatory Sensory Processing Disorders Sensory, Motor, & Emotional Patterns Underlying Challenges in Relating & Communicating.

Tailoring Your Interactions using DIR® Floortime with Children Who Have Regulatory & Sensory Processing Disorders

Rosemary White OTR/L
DIR®/Floortime Faculty

DIR® / Floortime
– Greenspan and Wieder

- Developmental Functional Emotional Developmental Levels - The essential foundation for interacting
- Individual-Difference Developmental Challenges Related to Processing and Regulation
- Relationship Based Approach Relationships organize the child’s experience and support all domains of development.

DIR®
Developmental, Individual Difference, Relationship Based Model

“R” Relationships

“ID” Individual Differences

“E” Emotional Level

---
"R" Affective Interactions
Develop relationships - child/caregiver interactions, family positions, child/peers
Emotional range, symbolic capacities, abstract thinking and creativity relative to self & others.

"I" Biologically Based Individual Differences
Sensory Processing/Sensory Modulation, Postural Control/Muscle tone/Primitive Reflex, Planning & Sequencing, Executive & Memory, Communication - Capacity to make a gesture, vocabulary, tone of voice & language to communicate, Visual Spatial - Ability to visually attend, share visual attention, figure-ground & integrate visual with other sensory stimuli, Bio-medical differences

"D" Functional Emotional Developmental
• Shared attention - Capacity to take in sights/sounds & share
• Engagement - joys and for success
• Affect to show intentions - false beginnings
• Behavioral Organization - Join of self. Spaced Capable of going to a Long Continuous Flow - Abstract
• Representational Capacities
• Emotional Thinking
**DIR® Developmental, Individual Difference, Relationship Based Model**

**“R” Relationships**

- Affective interactions
  - Develop relationships - child/caregiver interactions, family patterns, child/peers
- Emotional range, Symbolic capacities, Abstract thinking and Creativity relative to self & others.

**“I” Individual Differences**

- Biologically Based Differences
  - Sensory Processing/Sensory Modulation, Postural Control/Muscle tone/ Praxis (Ideation, Planning & Sequencing, Execution & Adaptation.
  - Communication - Capacity to read & use gesture, vocalization, tone of voice & language to communicate.
  - Visual Spatial - Ability to visually attend, share visual attention, assess visual figure-ground & integrate visual with other sensory stimuli
- Bio-medical differences

**“D” Emotional Level**

- Functional Emotional Developmental Capacity 1 Shared attention and Regulation
  - Physiological & Emotional Regulation and Shared Attention – calm and focus to take mutual interest in the sights and sounds; social referencing
  - The infant learns to tolerate the intensity of arousal with the help of the mother while gaining pleasure from it (Sroufe, 79)
  - Keeping regulated across a range of emotions and experiences
  - Be aware of synchrony of sensory processes as it supports physiological and emotional regulation. (Rosemary White 2010)

- Functional Emotional Developmental Capacity 2 Emotional Engagement & Relatedness
  - Spans from first smiles - crawling.
  - Forming attachments and engaging in relationships with warmth, trust and intimacy – later staying related across full range of emotions
  - Synchrony and timing develop when parent uses their senses, motor system and affects to resonate with the infant (Ainsworth et al ’74)
Functional Emotional Developmental Capacity 3
Two-way Purposeful Back and Forth Communication
Opening and Closing Circles of communication
Affect Conveys Intentions

- Intentional, non-verbal communication or gestures
- Includes affective communication, facial expressions, arm and leg movements, and sounds which conveys intentions that start “conversations” to participate actively in the world.
- Infant can discriminate caregivers, and differentiate his actions from their consequences
- The stage represents the child’s ability to establish and carry out causal events.
- Ongoing Shared-meanings

Sheri Cawn, SLP
Mari Caulfield, SLP

Functional Emotional Developmental Capacity 4
Behavioral Organization, A Sense of Self
Shared Social Emotional Problem Solving Interactions

- Children learn more about how to interact with the world with their new ability to move, use their hands and use complex gestures and words to get what they need or want. With this comes “power” and the emerging sense of self.
- The ability to string together many circles of communication and problem solving into a larger pattern of back and forth co-regulated interactions. This is the stage where the child begins to develop a sense of themselves as a being able to influence the actions of others.

Sheri Cawn, SLP
Mari Caulfield, SLP
(Rosemary White, 2010)

Functional Emotional Developmental Capacity 4
Behavioral Organization, A Sense of Self
Shared Social Emotional Problem Solving Interactions

- Children begin to attune to the affect cues of the caregiver which leads them to “put on the breaks” and developing impulse control. Initially this may be seen with stopping touching plug outlets as mommy’s warm smile is more rewarding than touching.
- As the child matures he/she stops grabbing or seeking individually driven satisfaction as the pleasure of interaction with others is more emotionally rewarding.

Sheri Cawn, SLP
Mari Caulfield, SLP
(Rosemary White, 2010)
**Functional Emotional Developmental Capacity 4**

**Behavioral Organization, A Sense of Self**

**Shared Social Emotional Problem Solving Interactions**

- When the child is unable to achieve success with his movement or to reach his goal he will seek others to "solve the problem." The child realizes that there is a "bigger person" who can help me achieve my goal with shared social problem solving.
- Complex gestures involve sequences - all the steps needed to communicate and solve problems - first through actions and then with words as well.
- Comprehension of words: persons, objects, events, actions.

*Sherri Cawn SLP, Mari Caulfield SLP, Rosemary White (2010)*

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**Functional Emotional Developmental Capacity 5**

**Elaborating Ideas and Islands of Symbolic Thinking**

- Initially play is representational of a child’s own life experience and then it progresses to what he/she imagines.
- As imaginative play emerges it may be scripts of favorite books, stories, movies and then it develops into the child’s own unique story.
- In essence a child communicates what he/she imagines through role play, dress up, dolls, action figures, which represent experiences from real life as well as those learned from other sources.
- These become his/her own as he/she projects her feelings into the character and actions.

*Greenspan & Wieder*

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**Functional Emotional Developmental Capacity 6**

**Building Bridges between Ideas/Emotional Thinking**

- The child’s ability to make connections between different internal representations or emotional ideas. This is the foundation for higher level thinking and abstract thought.

*Greenspan & Wieder*
Level Six – Symbolic Emotional thinking

• The child can connect their ideas successfully planning, sequencing, executing and adapting throughout both representational and symbolic play.
• Play often has a beginning, middle and end, with clear motives and anticipated consequences, taking time and space into account.
• As logical bridges between ideas are established, reasoning and appreciation of reality grow, including distinguishing what’s pretend (and magical thinking) from what’s believed to be real, what’s right and wrong, and learning to deal with conflicts.
• The child can now also abstract and reflect on various feelings and lessons to be learned.

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Regulatory Sensory Processing Disorders Workshop

PART 2 - THE SOCIAL BRAIN

Regulatory Sensory Processing Disorders
Sensory, Motor, & Emotional Patterns Underlying Challenges in Relating & Communicating.

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The Social Brain

• The link between the brain and social abilities range from the simple motor skills that allow people to stand a proper distance from an acquaintance to the highest function that sustain moral decisions.
• Even though we typically think of emotional, psychological, or moral capacities as learned, the existence of a social brain indicates that our social skills also have a partly biological basis.

John Ratey, 2002

The Social Brain

• Humans evolved as social animals;
• When we interact with others we need:
  – Attention, perception, and memory to recognize another person and recall what we know about them and past dealing with them.
  – Emotion to interpret the feelings and intentions of others.
  – Motor skills and language to respond in socially appropriate ways.

John Ratey, 2002

The Social Brain

• In the social brain lower and higher functions are equally important for successful behavior as we have to pay attention to many stimuli and respond to many actions all at the same time.
  – Chatting at the water cooler requires maintaining the right distance, a neutral posture, appropriate body language, good/flexible eye contact, a balance of listening and speaking - all physically lower skills that have nothing to do with intellect but weigh heavily on social success.

John Ratey, 2002
The beauty of development of the social brain is that it can be approached from so many different angles, and the richer and more varied the experiences, the stronger the neural connections will become.

The social brain is not a single entity found in any one place. Rather it comprises of a combination of different structures and systems working together in harmony.

This is interpreted as the mother supporting the infant emotional regulation, which is imprinting on the baby’s developing anterior temporal cortex.

The mother and infant are in a positive feedback loop of sensory, motor, affective interaction in which the child is learning about emotional expression as the mother and infant synchronize their emotional states.

At this stage the mother and infant are so closely tied that the infant cannot distinguish between his own internal states and his mother’s influence.

While it is important to learn about emotions and emotional regulation through this period of intense closeness, it is also important for both mother and child to develop boundaries, to learn how to individuate.

When there is too much physiological arousal in the infant and he may become uncomfortable and he will look away.

The mother can effectively maintain an interaction with her infant by knowing when to pay attention and when to withdraw.

This provides the foundation for the rhythms of social communication.
Development of the Social Brain
Shared Attention

- The infant begins to demonstrate capacities for shared attention in the first year of life.
- Alternating gaze is present when the infant engages in attending and then gazes at the parent to see if they are sharing the same focus of attention. At this stage in development the infant is focused on self.
- The infant later points to indicate to the parent his focus of attention.
- Later, the infant follows the parent’s gaze, point and then verbal comments to share attention around the parent’s focus of attention.

Development of the Social Brain
Shared Attention

- Alternating gaze between object and person (child initiates)
- Responding – follow the gaze of someone else (child responds)
- Initiating coordinated attention to elicit aid in attaining an object or event (9-24 mths)

Joint attention is initiated with
Gaze ->pointing -> vocalizations -> words.

Peter Mundy, November 2006

Development of the Social Brain
Shared Attention

- Self Monitoring – Once you can look back and forth you have
  - Your own perception of the object and your representation of self
  - Other Monitoring
  - Awareness of the other person looking at the object and representing that
Integration
  - They are putting both those things together.

Peter Mundy, November 2006
Development of the Social Brain
Joint Attention

Breaking that down to skills involves
– Self monitor
– Other monitor
– Integrate that together and in order to do that you have
to be able to switch your attention between self and
other – fast in time – so you have to disengage, flexibly
switch attention to other, then switch back – you have to
be able to remember things and represent them, you
have to self monitor and other monitor.

Peter Mundy, November 2006

The Social Brain

• Joint attention involves interconnectivity within various brain areas:
  Frontal area, temporal and orbital areas function in synchrony –
  interconnectivity. (Peter Mundy)

• Ventral Social Brain (Geraldine Dawson)
  – Orbital frontal cortex
  – Amygdala
  – Fusiform
  – Superior Temporal Cortex
  – Corpus Collusum – interconnects the hemispheres
  – Above the Corpus Collusum is the Anterior Cingulate Gyrus –
    connects the cortex with the lower emotional areas – the Anterior
    Cingulate Gyrus is involved in switching back and forth, self
    regulating emotions.

• Cerebellum - “rhythm and blues” center keeping
  actions, emotions, language, and memories, running
  smooth and seamless. It is crucial for enabling us to
do the social dance gracefully.

• Limbic System - Especially the amygdala and
  hypothalamus, gives us the pressure to seek others
  and helps add intensity to social bonds through
  hormones and direct neuronal input. The amygdala
  plays a crucial role in face recognition, connecting
  with the hippocampus and arousal system to tie
  together memory and behavioral response to tell us
  how to respond to that particular face.

John Ratey 2002
The Social Brain

• Anterior Cingulate Gyrus (part of the Limbic System) - Receives more input from the thalamus (sensory filter) than any other cortical region and has many connections to other brain areas. It directs our inner response to others and keeps us willing an interested in being with them.
• Orbital Frontal Cortex - Error catcher and with its partners, the anterior cingulate gyrus and the ventromedial cortex of the frontal lobe, is crucial for empathy and evaluation of genuineness of the words and intentions and comments of others.

John Ratey, 2002

The Social Brain

• Right Hemisphere - Helps pick up on non verbal cues in speech and gesture as well as in facial expressions. Emotional prosody, or the tone of voice - the emotional content of speech which gives cues as to other people’s moods and intentions.
• The right parietal lobe is involved in attention, music, body image, body scheme, face recognition and the physical act of dressing. It is crucial in giving an overall picture of ourselves in space and how we relate physically to another person.
• Left Hemisphere - Deciphering the content of language.

John Ratey 2002

The Social Brain

• As social development continues facial expression, tone of voice and body language are all important social cues that the child must learn in order to navigate the environments in their life (home, grandparents, neighbors, daycare, school, playground)
The “R” - Relationships

The foundations for life is built on the ability to attain and sustain a co-regulated interaction.

**Primary Principle**
Relationships are the vehicle for creating learning interactions which are tailored to child’s individual processing differences and thereby enable child to progressively master functional developmental capacities.

Regulatory Sensory Processing Disorders Workshop

**PART 3 - SOCIAL RELATEDNESS AND AFFECT CUEING**

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SOCIAL RELATEDNESS AND AFFECT

Social relatedness:
• Reciprocity
• Anticipation

Affect cueing system:
• Social referencing
• Joint attention

REFERENCES: Mirror Neurons (Rizzolatti), Immaturity of Cell development in Limbic System and Cerebellum (Bauman); Joint Attention (Mundy, Dawson, Courschasne)
Co-Regulation

• Co-regulation has been defined as the social process by which individuals dynamically alter their actions with respect to the ongoing and anticipated actions of their partner. (Fogel, 1993)
• When both partner's actions are successfully anticipated and the altered actions of the individual produce continued interaction, communication about the relationship is interpreted by both. (Cortney A. Evans, Christin L. Porter, 2008)
• When this occurs within the rhythm of the interaction there is "shared pleasure", where both the child and the caregiver are enjoying the interaction. (Cecilia Breinbauer, MD 2010)

Regulatory Sensory Processing Disorders Workshop
PART 4 - SENSORY PROCESSING

Regulatory Sensory Processing Disorders
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Regulatory Capacities - Reactivity

• Response to sensory stimuli (hyper/hypo/mixed)
  – Visual
  – Auditory
  – Tactile
  – Vestibular
  – Proprioceptive
  – Taste
  – Odor
• Dominant Functional Profile -
Arousal & Sensory Modulation

- Sensory Processing
- Sensory Modulation
- Salient Landscape and Emotional Response

How do we bring our understanding of this individual difference into our affective interaction?
Is it more than sensory diet?

Sensory Processing Profile

The child’s ability to process and synchronize through affective interaction the input from their sensory systems

- Proprioceptive - muscles & joints,
- Vestibular - movement in space & relationship to gravity,
- Tactile - sense of touch, the body’s ear,
- Gustatory - taste,
- Olfactory - smell,
- Auditory - sound
- Visual - vision

CONTRIBUTES TO HOW THE CHILD EXPERIENCES THE WORLD, INTERACTS WITH OTHERS & LEARNS.

Interconnectivity

Each sensory system does not function alone but is an expression of interconnectivity at all levels of the CNS
Dual Coding

• Sensory experiences are dual coded for affect
• Affective experiences are perceived as sensation
• Neither experience occurs without the other.

Osten, 2006

Sensation-Affect-Regulation-Perception-Cognition

• Inter-connectivity of the visual, auditory and somatosensory aspects of a sensory experience in concert with affect supports meaningful and comprehensive perceptions
• Comprehensive perceptions sets the foundation for cognitive capacities

Rosemary White 2010

Sensory Modulation Continuum
(Range of Response)

{Table}
Sensory Modulation Continuum
Synchrotny of Sensory Processing
2011 - Current Thoughts on Sensory Processing_Part 4d

<table>
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<tr>
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<th>Synchrony</th>
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<td>Habituate</td>
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Remember No Sensory System Functions Alone
We have to think about how Sensory Systems Relate to One Another
And Give Meaning to Every Experience

**RANGE OF RESPONSE – APPROPRIATE ATTENTION**

- Attentive (homeostasis) > focused attention to salient stimuli with habituation to extraneous stimuli - Synchrony of Sensory Processing

**RANGE OF RESPONSE – DECREASED REGISTRATION**

ACT IN ACCORDANCE WITH THRESHOLD

- Shutdown > Extremely low registration in which the child usually acts in accordance to his threshold
- Under Responsive > Lack of attention, low registration, hypo responsive, excessive habituation – to body, to environment; to cues from those around him (mild to moderate low registration).
RANGE OF RESPONSE – DECREASED REGISTRATION

ACT TO COUNTERACT THEIR THRESHOLD

• Sensory seeking – hyper active
• Shifting attention

RANGE OF RESPONSE – INCREASED REGISTRATION

SENSITIVITY TO STIMULI

• Hyperfocus > overattentive (mildly heightened response)
• Defensive > Escalated – giggle; talkative; tangential; intense play; lack safety (heightened response)
• Defensive > fight and flight; approach/avoidance (extremely heightened response)

RANGE OF RESPONSE – INCREASED REGISTRATION

SENSATION AVOIDING

• Defensive > Protective - fright or freeze,
• Defensive > Withdrawn (extremely heightened response)
SENSORY PROCESSING - REACTIVITY

- Salience Landscape Theory
  - Typically a child will respond to a stimulus in the visual cortex and information will be relayed to the amygdala which then leads an appropriate emotional response to the stimulus.
  - Children with autism present with an altered connection between the visual cortex and the amygdala which distorts the child's response, the amygdala then triggers autonomic nervous system raising heart rate. The child then looks away to reduce distress.

- Research of Interest
  - CAN (Cure Autism Now)
  - Lucy MNer (SPD Foundation)

Regulatory Sensory Processing Disorders Workshop

PART 4d - 2011 Current Thoughts on Sensory Processing

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Synchrony of Sensory Processing

No Sensory System Functions Alone
Sensory Input Occurs Simultaneously

Sensory Systems Communicate & Contribute to Perceptions
Sensations are Connected in Meaningful Ways in Concert with the Emotional Texture and Affective Tone that Occurs with the Sensory Experience

THE OUTCOME OF THIS IS UNIQUE TO EACH INDIVIDUAL’S EXPERIENCE & NEUROBIOLOGICAL PROFILE
Sensory Processing Profile

The child’s ability to process and synchronize through affective interaction the input from their sensory systems

- Proprioceptive - muscles & joints,
- Vestibular - movement in space & relationship to gravity,
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CONTRIBUTES TO
HOW THE CHILD EXPERIENCES THE WORLD, INTERACTS WITH OTHERS & LEARNS.

Dual Coding

- Sensory experiences are dual coded for affect
- Affective experiences are perceived as sensation
- Neither experience occurs without the other.

Osten, 2006

Interconnectivity

No sensory system functions alone but is an expression of interconnectivity at all levels of the CNS
Sensory Perception

- **Sensory Perception**
  - Perception is the integration of sensory impressions into psychologically meaningful information. (Shumway-Cook and Woollcott, 2002)
  - Perception requires a form of expectation, of knowing what is about to confront us and preparing for it. (Ratey, 2002)
  - Perceptions develop from interactions
    - The sensations that come in from the environment (interactions with people and the physical environment) are fitted into categories or constructs that we have experienced.
    - We are constantly priming our perceptions, matching the world to what we expect to sense, and this making it what we perceive it to be. (Ratey, 2002)

Sensation-Affect-Regulation-Perception-Cognition

- Inter-connectivity of the visual, auditory and somatosensory aspects of a sensory experience in concert with affect supports meaningful and comprehensive perceptions
- Comprehensive perceptions sets the foundation for cognitive capacities

Engagement

- Intimacy,
- Trust
- Attunement,
- Being in a dance together,
- Synchronous rhythm,
- Anticipation,
- Sense of knowing,
- Predictability,
- Joy and pleasure (which implies a whole drama of shared affective sharing with build up of anticipation and then shared release of tension),
- Ability to comfort.

*All in greater and greater variety of ways.*

Diane Callimamo, MD 2010
When there are Constrictions in Co-Regulation and Engagement

Observe and Reflect on

The Rhythms of Interaction

What May Contribute to the Constrictions

**SENSORY PROCESSING - EMOTIONAL REACTIVITY**

- Salience Landscape Theory
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Implications for Treatment

Scientific American, November 2006

Mirror Neurons and Autism
SENSORY PROCESSING - EMOTIONAL REACTIVITY - 2011

- Registration of Simultaneous Multisensory Stimuli delay in children with sensory processing disorder (over reactive group) and children with autism.
  - Typically developing children and children with a diagnosis of autism were exposed to multisensory stimuli (tactile and auditory; auditory and vibratory.) When compared research demonstrated that the control group had robust multisensory integration (simultaneous registration) in the cortical structures as measured by EEG while children with sensory processing disorder and those with autism had a delay. They are still integrating but it is slower and not synchronized.

Miller and Green, SPD Foundation, Moldholm, PhD, Albert Einstein College of Medicine of Yeshiva University, published 2010.

Implications for Treatment

Sensory Modulation Continuum
Synchrony of Sensory Processing
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<th>Over Orienation</th>
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<td>Delay in Interconnectivity</td>
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Remember No Sensory System Functions Alone
We have to think about how Sensory Systems Relate to One Another And Give Meaning to Every Experience

Synchrony of Sensory Processing
No Sensory System Functions Alone
Sensory Input Occurs Simultaneously

Sensory Systems Communicate & Contribute to Perceptions
Sensations are Connected in Meaningful Ways in Concert with the Emotional Texture and Affective Tone that Occurs with the Sensory Experience

THE OUTCOME OF THIS IS UNIQUE TO EACH INDIVIDUAL’S EXPERIENCE & NEUROBIOLOGICAL PROFILE
Regulatory Sensory Processing Disorders
Workshop

PART 5 - SENSORY AFFECTIVE
EMOTIONAL REGULATION

Regulatory Sensory Processing Disorders
Sensory, Motor, & Emotional Patterns Underlying
Challenges in Relating & Communicating.

Tailoring Your Interactions using DIR® Floortime
with Children Who Have Regulatory
& Sensory Processing Disorders
Rosemary White OTR/L
DIR/Floortime Faculty

REGULATION REFLECTS PHYSIOLOGICAL & EMOTIONAL MATURATION OF THE CHILD

• Sensory/affective/emotional regulation.
• Affect cues to regulate -> impulse control.
• Social awareness and regulation of behavior relative to the social environment.

How do we address this
– In the flow of a co-regulated interaction
– Symbolically
– In reality

Regulation Reflects Physiological and Emotional Maturation of the Child

• Regulation is facilitated by the caregiver providing comforting stimulation to the infant in response to the infant’s unique sensory profile.
  Synchrony between caregiver’s handling and the child’s calming behaviors enables the child to develop internal regulation and control of his or her behavior.

• The caregiver continues to provide support for regulation through sensory stimulation in the first years of life but the intensity of their support diminishes as the infant, toddler and child develop their own strategies.

• As the child matures the caretaker role shifts from sensory support to affect and verbal cues. This is particularly evident around regulation of behavior in relation to the social environment.
**Regulation Reflects Physiological and Emotional Maturation of the Child**

- As the child matures his regulation of behavior shifts from the external guidance of the caretaker and those intimate to the child, to the child developing his own internal control and an inner voice.

**As a result of regulation the child develops**
- Capacity to increase attention to task and to self calm.
- The ability to curb or monitor behavior in response to environmental cues.
- Impulse control, flexibility and a decreased need for structure and predictability.

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**Regulation Reflects Physiological & Emotional Maturation of the Child**

- Self-regulation is the ability to achieve, monitor and change a state of attention and behavior to match the demands of the environment or situation.
- Self regulation enables the individual to initiate and cease activities in relation to the task and situational demands and to comply with a request of another.
- Self regulation provides the foundation of ones ability to function in society.

DeGangi (2000)

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**Regulatory Sensory Processing Disorders Workshop**

**PART 5 - INTENT TO COMMUNICATE**

Regulatory Sensory Processing Disorders
Sensory, Motor, & Emotional Patterns Underlying Challenges in Relating & Communicating,

Tailoring Your Interactions using
DIR® Floortime with Children Who Have Regulatory & Sensory Processing Disorders

Rosemary White OTR/L
DIR/Floortime Faculty
INTENTION TO COMMUNICATE

- Attuning to play partner
- Referencing
- Mirroring
- Gestures
- Vocalizations
- Words
- Phrases
- Sentences in a back and forth purposeful interaction

REFERENCES - SCERTS Model (Prizant and Wetherby), Visual Reality (Sima Gerber), DIR®/Floortime (Greenspan and Wieder)

Response to Sound, Gesture & Verbal Communication

- Observations of the child’s ability to attune and orient to the auditory environment, to affect and gesture and to comprehend words (w) (with benefit of signs/gestures (s) and/or visual (v) strategies)
- Orient to the auditory source in the environment (auditory figure ground)
- Attune to the key tones and prosody in another’s vocalizations
- Responds to key gestures in another’s interaction
- Switches auditory attention back and forth between self and others (self monitor, other monitor, integration)
- Responds to key words in another’s vocalizations
- Understands questions (how, what, where, who, what… if, if… then)
- Engage in conversations with abstract ideas

Use of Vocalizations, Gestures, Words & Language for Communication

- The child
  - mirrors vocalizations and gestures with intent to communicate
  - intentional use of unique non-verbal gestures to convey intentions.
  - affective tone and sounds to convey intentions.
  - single meaningful words to convey actions and desires.
  - two word phrases meaningfully.
  - sentences meaningfully.
  - phrases and sentences in back and forth exchanges

The child organizes vocalizations for the communicative dance, then developing organization of oral motor structures for meaning, then developing words to convey ideas and intentions.

(Remember we need to think of language in the context of interaction)
Response to Visual Environment

The child can –
• observe and focus on desired person or object,
• alternate gaze
• follow the gaze of another to determine the object of their and their intent
• flexibly shift gaze from object to person and back
• differentiate salient visual stimuli from background stimuli
• explore the environment freely and stay regulated
  • actively search for an object she sees hidden
  • explore two areas of the room and search for desired object
• explore more than two areas
• coordinate visual system with their body as they move through space
• coordinate visual system with fine motor coordination around an object

Visual/auditory/physical integration is the foundation for interaction. Mirror neurons, interconnectivity contribute to visual processing. Cerebellar function supports attuning, visual rhythm and visual spatial perception.

Regulatory Sensory Processing Disorders Workshop

PART 6 - PRAXIS

Regulatory Sensory Processing Disorders
Sensory, Motor, & Emotional Patterns Underlying Challenges in Relating & Communicating.

Tailoring Your Interactions using
DIR® Floortime with Children Who Have Regulatory & Sensory Processing Disorders

Rosemary White OTR/L
DIR/Floortime Faculty

PRAXIS

Praxis is the moment from which one faces the future with the resources gained from the past experiences.

Executive Function is the Core of Praxis - with the Pre-Frontal Cortex Orchestrating Information for function.
**PRAXIS**

- **Contributes to ORGANIZATION of self in interactions with people and with objects.**
- Praxis is the ability to conceive of an idea, plan the necessary steps and organize the sequence of steps, then execute the plan and finally and most importantly adapt the plan when there is a disruption.
  - Depends on mirror neurons, shared attention, anticipation, cross modal integration and intact prefrontal cortex, efficient sensory processing and reactivity, efficient motor control.

**PRAXIS**

- Efficient praxis enables the child to -
  - take in the sights, sounds and action in the environment and develop ideas about what to do (intentions)
  - organize their body relative to their ideas (mirror, imitate, organize)
  - sequence purposeful gestures and actions,
  - execute actions to convey ideas and obtain desires,
  - master physical skills and problem solve physical actions to lead to independence (body power, play skills and self help)
  - seek help when one realizes that they cannot solve the problem
  - adapt a plan when the environment changes or in response to another’s actions and words
  - “mental manipulation” – thinking, planning and organization becomes more than the physical action

**Postural Control for Function**
*(physical organization of praxis)*

- Can sequence purposeful gestures and actions,
  - to mirror others (emotionally driven physical interactions)
  - to indicate desires (simple physical actions and interactions - a gaze, a reach)
  - to obtain desires (simple bat and reach with a purpose)
  - to initiate others gestures and actions (focus on physical action)
  - to problem solve motor steps with their body to move successfully in space to interact with people and objects in their environment
  - for exploration and then functional use of toys.
  - for help
  - for back and forth interaction with family and peers

*Depends on “mirror neurons”, sense of body scheme, interconnectivity, persistence.*
*(Remember we need to think more comprehensively about praxis as this encompasses more than just motor planning and sequencing.)*
**PRAXIS**

*When there is a challenge in praxis we have to determine the contributing areas of difficulty and address them in an affective thinking relationship.*

---

**THIS IS NOT SENSORY ALONE**

Addressing sensory concern is not the “bullet”!

It is the combination of supporting synchrony of sensory processing in concert with emotional support & cognitive function.

All that is within us as individuals has to be addressed harmoniously.

Supporting Human development is not best addressed in a segmented or hierarchical approach.

Integration of Every Aspect of Interaction is Essential for Development

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**The Case for Affect**

- Intent provides the purpose and the direction to organize the various parts of our mind.
- Emotion is a process that integrates distinct entities into a functional whole (Siegel and Hartzwell, 2003)
- Children with special needs have processing challenges that interrupt their ability to use affect.

Osten, 2006
AFFECT

Affective interactions at each of the 6 levels facilitate the development process:

• Affective interactions help the child regulate around sensory experiences
• Affective interactions and experiences allow the child to draw meaning from sensory events
• Affect helps the mind create connections between different developmental domains, like memory, motor, cognitive, visual spatial, etc.
• Affect drives the development of functional adaptive responses.

Osten, 2006

Assessment

DEVELOPMENTAL HISTORY;
OBSERVATION OF FAMILY PATTERNS;
OBSERVATIONS OF CHILD-CAREGIVER INTERACTIONS

– Functional Emotional Developmental Levels
  – Shared attention and regulation
  – Engagement
  – Affect to Intent
  – Behavioral Organization and Shared Problem Solving
  – Elaboration of Ideas
  – Building Bridges between Ideas

Range of Capacity
  – At age level (7)
  – Achieves Capacity Independently but vulnerable to sensory and co-emotional factors (6). Not at age level and cyclical (sensory or emotional)
  – Needs Caretaker Support – With affect and support child expands (4); islands (3); In and out (2); Barely reached (1).

ASSESSMENT OF THE UNIQUE INDIVIDUAL PROFILE

– Regulatory capacities, sensory processing and sensory modulation;
– Postural control for function;
– Response to sound, gesture and verbal communication;
– Use of vocalizations, gestures, words and language for communication;
– Response to visual environment;
– Praxis – Ideation, planning, sequencing, execution and adaptation.
**Functional and Social Challenges Reflecting Individual Differences**

- Sensitivity - emotionally and physically
  - Can contribute to anxiety, defensive behavior.
- Challenges in regulation - emotionally and physically
  - Can contribute to impulsivity, shifts of attention, misinterpretation of social cues - gesture, affect and language of others.
- Challenges in Praxis - ideational or ideomotor
  - Can contribute to lack of focus, rigidity, expression of boredom.
  - Can contribute to difficulty in following another's lead.
  - Can be interpreted as the child "marches to their own drum", or is "non compliant" or "stubborn".

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**HOW DO WE “TAILOR” OUR INTERACTIONS TO SUPPORT “INDIVIDUAL DIFFERENCES”?**

The developmental capacities that emerge during the child’s early years.

THE ESSENTIAL FOUNDATION FOR INTERACTION.
Functional Emotional Developmental Capacity 1
Shared attention and Regulation

- Physiological & Emotional Regulation and Shared Attention – calm and focus to take mutual interest in the sights and sounds, social referencing

- The infant learns to tolerate the intensity of arousal with the help of the mother while gaining pleasure from it (Sroufe, '79)

- Keeping regulated across a range of emotions and experiences

- Be aware of synchrony of sensory processing as it supports physiological and emotional regulation. (Rosemary White, 2010)

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Functional Emotional Developmental Capacity 2
Emotional Engagement & Relatedness

- Spans from first smiles - crawling.

- Forming attachments and engaging in relationships with warmth, trust and intimacy – later staying related across full range of emotions

- Synchrony and timing develop when parent uses their senses, motor system and affects to resonate with the infant (Ainsworth et al '74)

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Functional Emotional Developmental Capacity 3
Two-way Purposeful Back and Forth Communication
Opening and Closing Circles of communication
Affect Conveys Intentions

- Intentional, non-verbal communication or gestures

- Includes affective communication, facial expressions, arm and leg movements, and sounds which conveys intentions that start “conversations” to participate actively in the world.

- Infant can discriminate caregivers, and differentiate his actions from their consequences

- The stage represents the child’s ability to establish and carry out causal events.

- Ongoing Shared-meanings
Functional Emotional Developmental Capacity 4
Behavioral Organization, A Sense of Self
*Shared* Social Emotional Problem Solving Interactions

- Children learn more about how to interact with the world with their new ability to move, use their hands and use complex gestures and words to get what they need or want. With this comes "power" and the emerging sense of self.

- The ability to string together many circles of communication and problem solving into a larger pattern of back and forth co-regulated interactions. This is the stage where the child begins to develop a sense of themselves as a being able to influence the actions of others.

Sherri Cawn SLP
Mari Caulfield SLP,
(Rosemary White 2010)

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Functional Emotional Developmental Capacity 4
Behavioral Organization, A Sense of Self
*Shared* Social Emotional Problem Solving Interactions

- Children begin to attune to the affect cues of the caregiver which leads them to "put on the breaks" and developing impulse control. Initially this may be seen with stopping touching plug outlets as mommies warm smile is more rewarding than touching.

- As the child matures he/she stops grabbing or seeking individually driven satisfaction as the pleasure of interaction with others is more emotionally rewarding.

Sherri Cawn SLP
Mari Caulfield SLP,
(Rosemary White 2010)

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Functional Emotional Developmental Capacity 4
Behavioral Organization, A Sense of Self
*Shared* Social Emotional Problem Solving Interactions

- When the child is unable to achieve success with his movement or to reach his goal he will seek others to "solve the problem." The child realizes that there is a "bigger person" who can help me achieve my goal with shared social problem solving.

- Complex gestures involve sequences - all the steps needed to communicate and solve problems - first through actions and then with words as well.

- Comprehension of words: persons, objects, events, actions.

Sherri Cawn SLP
Mari Caulfield SLP,
(Rosemary White 2010)
Elaborating Ideas and Islands of Symbolic Thinking

• Initially play is representational of a child’s own life experience and then it progresses to what he/she imagines.
• As imaginative play emerges it may be scripts of favorite books, stories, movies and then it develops into the child’s own unique story.
• In essence a child communicates what he/she imagines through role play, dress up, dolls, action figures, which represent experiences from real life as well as those learned from other sources.
• These become his/her own as he/she projects her feelings into the character and actions.

Building Bridges between Ideas/Emotional Thinking

• The child’s ability to make connections between different internal representations or emotional ideas. This is the foundation for higher level thinking and abstract thought.
• The child can connect their ideas successfully planning, sequencing, executing and adapting throughout both representational and symbolic play.
• Play often has a beginning, middle and end, with clear motives and anticipated consequences, taking time and space into account.
• As logical bridges between ideas are established, reasoning and appreciation of reality grow, including distinguishing what’s pretend (and magical thinking) from what’s believed to be real, what’s right and wrong, and learning to deal with conflicts.
• The child can now also abstract and reflect on various feelings and lessons to be learned.
• Debates! Verbal problem solving
• Logically articulates an opinion
• Higher and higher levels of abstract thinking

Functional Emotional Levels and Individual Differences - Putting it All Together so that Relationships Thrive

REMEMBER AMID THE SCIENCE AND THEORY

This is not sensory alone, but we have to consider the whole child - the sensory, affective, emotional, motor development in the context of their relationships with others and with their world.

• RHYTHM AND RECIPROCITY
• RELATIONSHIP
• CO-REGULATION

BUT ABOVE ALL
HAVE FUN WITH ONE ANOTHER
WHAT DOES TREATMENT LOOK LIKE ?

Treatment is relationship driven.

Focus is on both the parent and the child in their relationship insuring that you are guiding them to sustain a back and forth interaction.

Taking into account -
- Shared Attention and Engagement
- Sensory Processing and Reactivity
- Emotional Responses
- Intention to communicate
- Praxis and Adaptation

The goal is to achieve a co-regulated interaction.

INTERACT WITH RHYTHM & RECIPROCITY
- THE KEY TO SUPPORTING DEVELOPMENT

- Affect (facial expression, tone of voice, physical action and gesture) is the “glue” for functional emotional development
- Sensory input, including proprioception, touch and movement in our physical interaction and visual and auditory in our affective interaction, is the “glue” for the neurological organization.
- Pacing in relation to the interactive partner to take into account prediction, anticipation, planning and adaptation is essential to support the interaction.
- Focus on cross modal integration at the cortical level is essential to support development in the relationship.

To treat the whole child one has to address all areas simultaneously.

The goal is to achieve co-regulated interaction with many circles of communication.

Comfort Zone Chart
Rick Solomon MD - PLAY Project
Adapted by Rosemary White 2007
Comfort Zone Chart
Rick Solomon MD - PLAY Project
(Adapted by Rosemary White 2007)

COMFORT ZONE
FOLLOW CUES IN INTERACTION
→ Direction of Intervention
→ Perseverative Play

→ Sensory Play
→ Attunement
→ Games
→ Power
→ Language
→ Imagination

COMFORT ZONE 
FOLLOW CUES OF THE COMFORT ZONE AS THIS LEADS YOU IN YOUR INTERACTION WITH THE CHILD

SENSORY PLAY (SIMPLE RELATIONSHIP)
ATTUNEMENT (SIMPLE RELATIONSHIP)
GAMES (SIMPLE RELATIONSHIP)
POWER (SIMPLE RELATIONSHIP)
LANGUAGE (COMPLEX RELATIONSHIP)
IMAGINATION (COMPLEX RELATIONSHIP)

The Affect Piece -
Affect is the “glue” for functional emotional development.

- The child responds to the caregiver who engages in the affective dance.
  - The child who is under responsive is drawn into the relationship when the caregiver is equally engaging, up regulating and brings meaning to the child’s every action. The interaction can be very “vibrant.”
  - The child who is over responsive is drawn into the relationship when the caregiver is equally engaging but their actions and voice are down regulating. The interaction is often at a whisper, with slow, predictable movements drawing the child into a safe and secure relationship.
The Dance -

- Affective interaction
- Sensory Modulation and Attention
- Regulation (caretaker support -> self regulation)
- Interaction at all the Functional Emotional Levels of Development

The Interactive Piece

- Always interact with the goal to embrace the child’s idea
- Treat every action as purposeful
- Build on the child’s ideas by watching his actions and listening to his ideas and then, by joining the child’s intentions with gesture and words, try to stretch the idea.

Build on the Child’s Ideas

- Embrace the child’s learning style – is he visual, auditory, does he need demonstration or to be physically supported to facilitate success with his ideas and his actions. Build on the child’s ideas.
- Your goal is to keep the relationship going (increasing the circles of interaction)
- With every action or interaction with the child use affect, gesture and tone to impart to the child that you expect a response.
PRINCIPLES OF DIR® / FLOORTIME:

• Extend the interaction - the relationship is in the forefront (circles of communication)
• Broaden the child’s range of interactive experience
  – Deepen the thematic and the emotional range
  – Broaden the range of processing or motor capacities used in interactions
• Simultaneously attempt to mobilize the six functional developmental levels.
  (Greenspan and Wieder)

SOME PRINCIPLES FOR INTERACTION

Principles of Interaction in DIR®/Floortime

• Mobilize affect - the child’s emotions, feelings and expression of emotional response.
• Ask yourself: what is the child’s wish? Avoid a “pop quiz” or “20 questions” Join the child!
• Look for intent- how do you know what the child has in mind?
• Facilitate enactment - how can you help the child do what he/she wants to do?
• Use the sensory environment to “woo” the child, entice him and foster ideas and imagination.

• Add a sound or action to the child’s action so that your interaction makes his experience bigger and broader than he can achieve from solitary play.

• Focus on integrating engagement & affect into your interactions
  • Referencing
  • Mirror neurons
  • Six layers of the cortex - use your affect to enhance the child’s ability to predict, anticipate and adapt.

  Marie Caufield, 2006

• Treat all vocalisations with care...affective range influenced by different frequencies...
• Watch your own affect and note it’s effect on regulation
• Be aware of the power of your gestures.

  Marie Caufield, 2006
• Take every action as intentional and purposeful.

• BUT - Do not take the child’s ignoring as intent to “hurt” you - consider his individual differences

Stretch Every Interaction
(Taffy Pulling - Circles of Interaction)

• Be PLAYFULLY obstructive
• Play dumb
• Make opening a cupboard take five minutes as you use gesture and affect to maintain the co-regulated interaction
• Throw “curve balls”

• Comment
• Question
• Break directions into fewer parts

AT THE SAME TIME

• Keep your language simple
• Ensure the children see what they hear
• Use a moderate rate of speech, sometimes slow rate
• 10-Second Rule allows child longer to respond
• Language is an auditory stimulus that moves through space - gesture and affect lasts longer and give meaning

WAIT !
Address the Physical Experience and Play in the Context of the Emotional Experience of the Child

• Acknowledge and reflect to increase awareness
• Acknowledge that the emotional experience gives meaning to the sensation
• Focus on process not product
• Functional use of language for the social context

• Clarify the child’s intent through gesture, affect and language.
• Challenge the child’s closure - through gesture (psst, finger wiggle) or words (are you finished?) In this way you are also supporting the child to have a completion of their plan without flight.

• Get into the spirit of the child’s imagination
• Follow the child’s lead embracing the full emotional range
• Avoid asking questions that require a “Yes” or “No” answer.
• Bring in choices, and if the child always uses the last choice then throw in a “curve” ball or decrease the language and increase affect and gesture around the engagement.
• Build on the child’s ideas by listening to his ideas and then with gesture and words try to stretch the idea.

• Become the character BUT
  – avoid asking for permission for your character to play, such as, “Can I get in the car”, rather
  – state what your character wants and desires, such as, “I want to get in the car, I love red cars!” or “I want a cup of tea it smells delicious!”

• Embrace the child’s learning style – is he visual, auditory, does he need demonstration or to be physically supported to facilitate success with his ideas and his actions.
• Think not only of the sensory experience but also how the child is organizing this experience in the cortex. How can you use yourself and your interaction to support cross modal integration. For example, use auditory to make the visual information more meaningful.

• Challenge him to PREDICT what is going to happen – will the cushion go “down or up” when you get on it; “will the king attack from the ship or the land”, “how do you know” (projected action sequences)
• Challenge his choices “why do you want this red car?” when he says “I don’t know” -> “why not?”

• Challenge the child to convince you - “How are you going to convince me to give you an extra cookie?”

Always Think about the Emotional Experience
• Although you may want to move the drama along you also need to bring in emotional depth
  – nurturing and caring
  – child power (behavioral organization a sense of self)
  – partnership and power
  – adversaries
  – resolution
  – reality

COMMON PITFALLS AND STUCK MOMENTS
IN DIR®/FLOORTIME
Stuck!
• The child retreats or withdraws.
• Trying to keep it going, the play facilitator gets more intense (louder, bigger affective expression, more physical), increasing the child’s withdrawal.

Try -
• This is the time to join in low and slow.
• Give the child a short break from the demands of interaction, then join in a soft voice.
• Try something funny or unexpected when the child is calm.

Stuck!
• The play facilitator gets so carried away playing that he/she forgets to focus on the child’s initiation of ideas.

Try -
• Wait the painful extra moments and observe what the child is initiating, then connect and expand on his/her idea.

Stuck!
• The child becomes excited with aggressive themes in play; and we don’t play with guns.

Try -
• Don’t back away from aggression. Learn to modulate it.
• Aggressive play is how we learn to modulate and regulate the impulses that allow us to take positive initiative.
Stuck!
• Telling the child “good job” and the interaction ends.

Try -
• Keep the continuous flow going.
• Only make comments that open a new circle of communication and interaction.

Stuck!
• Responding too quickly to a child’s request

Try -
• Expand on the flow of interaction
• Get more information, play dumb, be confused
• Use every highly motivated moment

ABOVE ALL HAVE

FUN

INTERACTING WITH YOUR

CHILD
My thanks to Stanley Greenspan, MD, and Serena Wieder, Ph.D., & Georgia DeGangi, Ph.D., OTR in helping my work with children and their families.

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Most importantly my thanks to all parents and children with whom I have worked, as well as my own children, you have taught me more than anything in the world.

Rosemary

WEB SITES

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- www.stanleygreenspan.com
- www.celebratethechildren.org
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