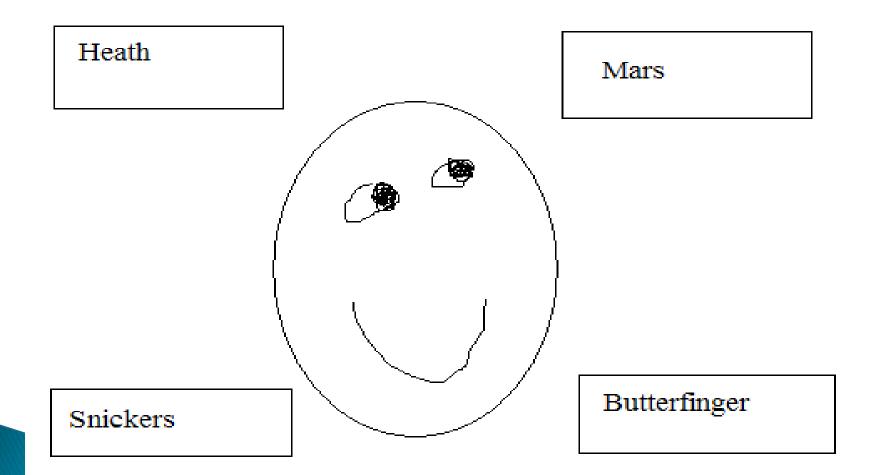
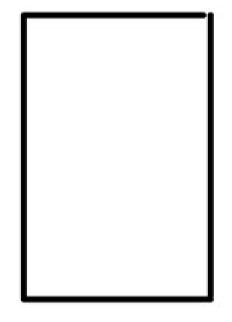
Beyond Social Skills: Using Experience to Enhance Social Competency

Joseph Falkner, MST/CCC-SLP Midwest Autism Conference October 11, 2010

Charlie Test



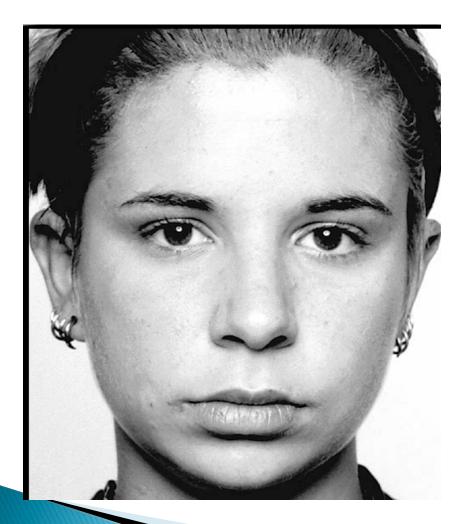




() Camtasia Studio Tip

Press P9 to pause,hexume recording. Press F30 to stop recording.

Emotion Recognition



- SAD
- ANGRY
- SURPRISE
- ► FEAR
- DISGUST
- CONTEMPT
- HAPPY

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Emotion Recognition

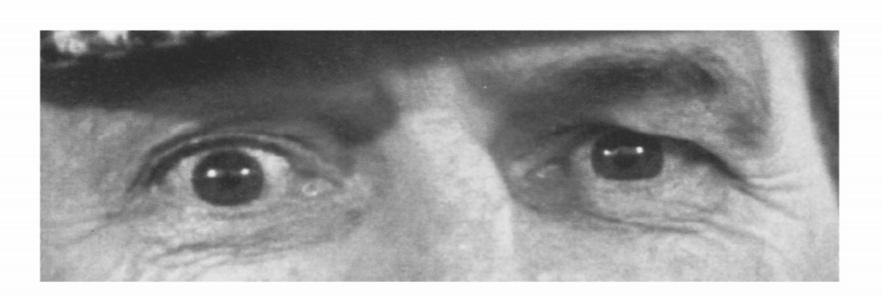


- SAD
- ANGRY
- SURPRISE
- FEAR
- DISGUST
- CONTEMPT
- HAPPY

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Eyes Test

panicked



arrogant

hateful

terrified



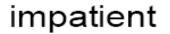


arrogant

annoyed

fantasizing





alarmed







preoccupied

Social Competence: Definition

- Social competence refers to the social, emotional, and cognitive skills and behaviors that children need for successful social adaptation (Welsh & Bierman; 2001).
- The (socially) competent individual is one who is able to make use of environmental and personal resources to achieve good developmental outcome (Waters & Sroufe, 1983).

Social Competence

(Welsh & Bierman, 2001;

- Social competence is by its very nature an elusive concept to define.
- Social competence can depend upon:
 - The age of the individual
 - The context of the situation
 - Place (setting)
 - People involved (characters)
 - Activity (plot)
 - Social awareness of the child
 - Self-confidence of the child

The Problem with Focusing Solely on Social Skills

• Winner, 2008

"The concept of teaching 'social skills' misrepresents the dynamic and complex process that is at the heart of social skill production."

Social Competency vs. Social Skills

- Social Competency
 - More dynamic
 - More "We" focused
 - Focused on the effectiveness of child's social interactions
 - Tends to imply something that is more open-ended
 - More "process" oriented

- Social Skills
 - More static
 - More "I" focused
 - Focused more on the child's knowledge and ability
 - Tends to imply something that is more closed/finite
 - More "product" oriented

Social Skills Programs and Approaches

- Boys' Town Curriculum
- Cognitive Behavioral Therapy
- Comic Strip Conversations
- Connecting with Others
- The Eclipse Model
- Floortime
- The Hidden Curriculum
- Pivotal Response Training
- Power Cards
- Relationship Development Intervention
- Room 28
- SCERTS
- Skillstreaming
- Social Thinking
- Super Skills
- Teaching Your Child the Language of Social Success

- Dialectical Behavioral Therapy
- Direct Instruction
- > Drama Therapy
- Incredible 5-Point Scale
- Mindreading
- Modeling
- Play Therapy
- Peer Mentoring/Modeling
- Priming
- Prompting
- Reciprocal Reading
- Role Playing
- Social Scripting and Script Fading
- Social Autopsies
- Social Review
- Social Stories
- Video Modeling

Some Areas of Social Challenge for Individuals with ASD

- Difficulty with use and interpretation of nonverbal information (i.e., eye gaze)
- Difficulty making and maintaining peer relationships
- Social withdrawal or avoidance—preference for solitude
- Social anxiety
- Difficulty with perspective taking
- Out of synchrony/ harmony

- Lack of social and emotional reciprocity
- Difficulties with joint attention
- Communication is vague
- Overly talkative, candid, or detailed
- Restricted interests/topics
- Topic maintenance difficulties
- Overly formal or informal communication style
- Odd humor

Social Functioning in Explicit vs. Naturalistic Situations (Klin, Jones, Schulz, & Volkmar; 2003)

- One of the most intriguing puzzles posed by individuals with autism is the great discrepancy between what they can do on explicit tasks of social reasoning (when all the elements of a problem are verbally given to them) and what they fail to do in more naturalistic situations (when they need to spontaneously apply their social reasoning abilities to meet the momentto-moment demands of their daily social life). This discrepancy is troublesome because, while it is possible to teach them better social reasoning
 - skills, such new abilities may have little impact on their real-life social or communicative competence.

National Standards Project (National Autism Center, 2009)

- National Standards Project (National Autism Center, 2009)
 - Established practices
 - Emerging practices
 - Unestablished practices

Established Practices

- Antecedent package
- Behavioral package
- Comprehensive Behavioral Treatment for Young Children
- Joint Attention Intervention
- Modeling
- Naturalistic Teaching Strategies
- Pivotal Response Treatment
- Schedules
- Self-Management
- Story-Based Intervention Package

Emerging Practices

- Augmentative and Alternative Communication Device
- Cognitive Behavioral Intervention Package
- Development Relationshipbased Treatment
- Exercise
- Exposure Package
- Imitation –based Interaction
- Initiation Training
- Language Training (Production)
- Language Training (Production & Understanding)
- Massage Therapy/Touch
- PECS

- Multi-component Package
- Music Therapy
- Peer-mediated Instructional Arrangement
- Reductive Package
- Scripting
- Sign Instruction
- Social Communication Intervention
- Social Skills Package
- Structured Teaching
- Technology-based Interventions
- Theory of Mind

Unestablished Practices

- Academic Interventions
- Auditory Integration Training
- Facilitated Communication
- Gluten- and Casein-Free Diet
- Sensory Integrative Package

Experience-Dependent Brain Plasticity

Development of Connection

(Cozolino, 2006; Schore, 2003; Siegel D. J., 1999; Sroufe, 1995; Greenspan, 2006)

- Babies are born hard-wired for social interaction (amygdala)
 - One of the first ways newborn babies interact with others is by matching rhythms of movement, emotional expression, and vocalization with the caregiver (Greenspan, 2006)
 - Infants use eye gaze to scan for the caregivers' availability to meet their needs—facial expressions, orientation of the face
- From the beginning of life, our social worlds are filled with caregivers tuning into the external expression of internal states of the baby (Siegel, 2010)
- Mother and child's interactions subtly modify the nervous system of the other, leading to greater bonding
- Over time, the child's social and cognitive abilities modify as brain develops

Development of Connection (cont.) (Cozolino, 2006; Schore, 2003; Siegel D. J., 1999; Sroufe, 1995)

- As the child's capabilities change, mother allows for greater independence and autonomy within structured interactions which further allows for brain growth
- As the child gets older, the child's developing cognitive capabilities, emotional regulation, and social competencies allow the child to start to interact and develop relationships with others
- The child will initially use their parents as a "secure base" for these interactions, but will over time develop new attachments that will further inspire changes in ability and brain structure

What is Experience-Dependent Brain Plasticity?

- "...refers to structural and functional changes in the brain that are brought about by training and experience." (Mundkur, 2005)
- Processes of neurogenesis, synaptogenesis, and myelination that occur in the brain and nervous system.

Plasticity: Developing the Mind (Siegel, 2001)

- The infant is born into the world genetically programmed to connect with caregivers.
- "Experience-expectant"
 - There is a genetically driven overproduction of neurons prior to birth and of synapses during the first three years of life.
 - As the child grows, this neural substrate will serve as the structure from which early experiences will "carve out" the neural connections governing basic processes.

"Experience-dependent"

- New neural connections induced by experience.
- Experience can alter brain structure by leading to either the maintenance and strengthening of existing synapses or by the experience driven creation of new synaptic connections.

"Learning changes the brain." (Richard, 2001)

"...when learning occurs in a way consistent with the laws that govern brain plasticity, the mental "machinery" of the brain can be improved so that we learn and perceive with greater precision, speed and retention." (Doidge, 2007)

Plasticity: Three Types of Patterns

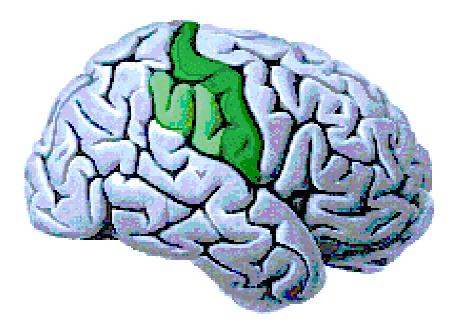
(Neville & Bavelier, 2002)

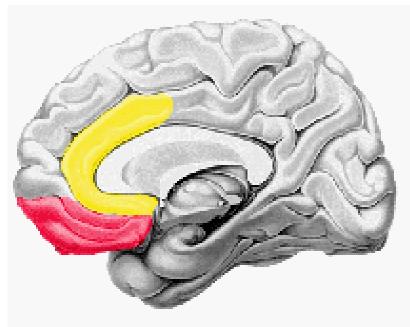
- Some systems appear strongly determined and change very little even under extreme alterations of experience, e.g., complete deafness or blindness
- Other neural systems do change considerably when experience is different but only during certain, limited "sensitive" time periods and these times differ for different systems
- A third type of neural system appears modifiable by experience throughout life. Neural structures related to social interaction appear to be part of just such a system.

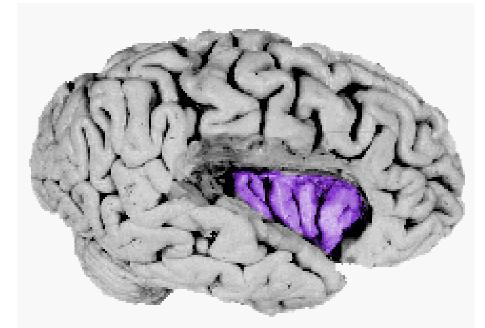
**Structural and physiological findings support the view of different maturational time-tables for distinct brain structures and suggest mechanisms whereby environmental input may affect different brain systems to different degrees and at different times. Structures in the Brain Important for Social Interaction that Can Undergo Experience-Dependent Changes

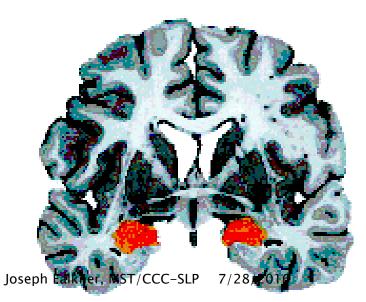
- Neurologic Structures
 - Amygdala
 - Hippocampus
 - Hypothalamus
 - Prefrontal Cortex
 - Anterior Cingulate Gyrus

- Hormones and hormonal expression
 - Oxytocin
 - Vasopressin
 - Cortisol
 - Endogenous opioidsendorphin

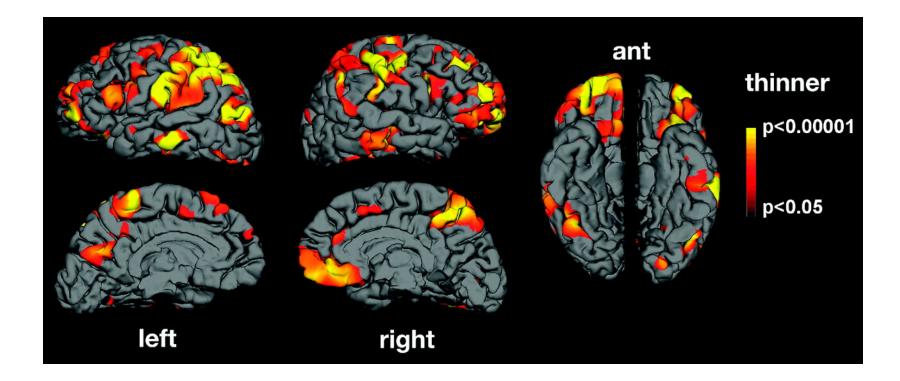








Mean thickness difference significance maps.



Hadjikhani N et al. Cereb. Cortex 2006;16:1276-1282

С Cerebral T Cerebral CORTEX х

Amygdala

- The amygdala is a brain structure that directly mediates aspects of emotional learning and facilitates memory operations in other regions, including the hippocampus and prefrontal cortex." (LaBar & Cabeza, 2006)
- Important in fear learning, emotional memory, emotional arousal, attachment, determining whether a stimulus is affectively relevant, and processing social information
- Fast activating—information reaches the amygdala early in processing; below the level of cognitive awareness

Amygdala and Autism

- Hyper-reactivity of the "fight or flight" mechanism in autism (Hirstein, Iversen, Ramachandran; 2001)
- Decreased activation in the amygdala when judging what other person might be thinking or feeling from the expressions of the person's eyes (Baron-Cohen et al., 2000)
- Fewer neurons in the amygdala overall (Schumann & Amaral, 2006)
 - Initial overgrowth followed by reduced number of neurons
- Overgrowth in early childhood followed by decreased amygdala volume in individuals with autism from late childhood though adolescence—does not increase with age as does that of neurotypical individuals (Joseph & Tager-Flusberg, 2009)
 - Related to hypersensitivity and chronic social stress initially
 - Lack of stimulation from decreased eye fixation impacts over time related to experience

Superior Temporal Sulcus

- Important in knowing where others are gazing, knowing where others are directing their emotions, main area of audiovisual integration, biologic motion perception, mentalizing (theory of mind)
- Decreased gray matter concentration, rest hypoperfusion and abnormal activation during social tasks noted in individuals with autism (Zilbovicius et al., 2006)
- Abnormal white matter architecture noted in individuals with autism in the STS (Lee et al., 2007)

Prefrontal Cortex

- Orbitofrontal neurons show connectivity with regions associated with emotional processing (amygdala), memory (hippocampus), and sensory processing (inferior temporal visual association regions). (Wood, 2003)
- Dorsolateral prefrontal neurons show connectivity with regions associated with motor control (premotor cortex, supplementary motor area, basal ganglia), performance monitoring (anterior cingulate), and sensory processing (parietal cortex, association areas). (Wood, 2003)
- Important in such functions as: theory of mind, social decision making, social perception and judgment, attitudes and stereotypes, control of aspects of aggression and violence, relational information, affect regulation, and regulation and control of behavior to respond to environmental stimuli.
 - Orbitofrontal cortex important in interpreting emotional prosody
 - Prosody also detected in right inferior frontal lobe

Prefrontal Cortex and Autism

- Volumetric alterations in the orbitofrontal cortex of individuals with autism—smaller (Girgis, Minshew, Melham, Nutche, Kethavan, Hardan; 2007) {may relate to difficulties with theory of mind tasks}
- Decreased activation in medial prefrontal cortex (related to difficulties with theory of mind tasks)
 - Reduced dopaminergic activity in medial prefrontal cortex
- Cortical thinning/decreased grey matter noted in the lateral, medial, and ventral prefrontal cortexof individuals with autism (Hadjikhani, Joseph, Snyder, Tager-Flusberg; 2006)

Cingulate Cortex

- One influential theory proposes that this brain region detects the need for control, for example where there is competition between two or more ways of behaving in a certain situation, both of which may be triggered by events in our environment, requiring top-down input to resolve the conflict. (Bownds, 2008)
- Primitive association area of visceral, motor, tactile, autonomic, and emotional information (Cozolino, 2008)
- Involved in: evaluating emotional stimuli (determining emotional salience), episodic encoding, associating smells and sights with pleasant memories, regulation of aggression, subjective experience of emotions, and emotional reaction to pain
- Cortical thinning found in the anterior cingulate cortex of individuals with autism (Hadjikhani, Joseph, Snyder, Tager-Flusberg; 2006)
 - Reduced glucose metabolism in the anterior cingulate cortex (Hadjikhani, Joseph, Snyder, Tager-Flusberg; 2006)
- Differences in Anterior Cingulate Cortex in individuals with autism may relate to repetitive behaviors and difficulty monitoring own behavior (Thakkar et al., 2008)

Hypothalamus

- The hypothalamus translates many of our social interactions into bodily processes via the hypothalamus-pituitary-adrenal (HPA) axis. (Cozolino, 2006)
 - Involved in the expression/body manifestations of emotions
 - Involved in association with rewards and drives
 - Also has a preponderant role in neuroendocrine functions (including oxytocin)—when dysfunctional is associated with a wide variety of mental disorders (including depression (Fellous, 1999)
- Decreased serum oxytocin levels noted in individuals with ASD (Green et al., 2001)

Hippocampus

- The hippocampus organizes explicit memory and conscious learning in collaboration with the amygdala, the cerebral cortex, and other structures. (Cozolino, 2006)
 - Important in retrieval of events for autobiographical memory
 - Has reciprocal relationship with amygdala for emotional memory storage (Phelps, 2004)
 - The amygdala can modulate both the encoding and the storage of hippocampal-dependent memories.
 - The hippocampal complex, by forming episodic representations of the emotional significance and interpretation of events, can influence the amygdala's response when emotional stimuli are encountered
- Reduced neuronal cell size, increased cell packing density, and decreased complexity and extent of dendritic arbors (Bauman & Kemper, 2005)

Striatum (Ochsner & Gross, 2004)

- The striatum plays an essential role in learning which stimuli predict rewards and, more generally, which sequences of stimuli predict the presence or absence of reinforcing stimuli.
- Differentiated striatal responses occur during receipt of rewards, punishments and pleasant sensations, as well as stimuli with acquired reinforcement value.
- Anticipating a reward activates the striatum.
- Volume increase noted in the caudate nucleus in individuals with autism as opposed to neurotypicals—May relate to increased repetitive behavior (Langen et al., 2009)

Insula

- "Limbic integration cortex" because of its massive connections to all limbic structures and its feed-forward links with the frontal, parietal, and temporal lobes (Cozolino, 2006)
- Damasio-mapping visceral states that are associated with emotional experience; body representation and subjective emotional experience (http://en.wikipedia.org/wiki/Insular_cortex, 2008)
- In tandem with the anterior cingulate, the insula allows us to be aware of what is happening inside our bodies and reflect on our emotional experiences (Cozolino, 2006)
- The anterior insula is involved in interoceptive, affective, and empathic processes, and is part of a "salience network" integrating external sensory stimuli with internal states. (Uddin & Menon, 2009)
- Hypo-activity in anterior insula in individuals with ASD (Uddin & Menon, 2009)

Fusiform Gyrus

- Faces are among the most important visual stimuli we perceive, informing us not only about a person's identity, but also about their mood, sex, age and direction of gaze. The ability to extract this information within a fraction of a second of viewing a face is important for normal social interactions and has probably played a critical role in the survival of our primate ancestors. (Kanwisher & Yovel, 2006)
- A region in the lateral aspect of the fusiform gyrus (FG) is more engaged by human faces than any other category of image. It has come to be known as the 'fusiform face area' (FFA) (Schultz et al., 2003)
- Identified as being hypoactive in some individuals with autism—not an absolute deficit

Right Hemisphere

- Important for comprehension of emotional prosody, gestures, and facial expressions
- Appears biased toward more negative/withdrawal behaviors (Cozolino, 2006)
- Right hemisphere bias for self-recognition (Keenan, Wheeler, Gallup Jr., & Pascual-Leone, 2000)
- Emotional valence effects are strongly right lateralized in studies of prosody (Kotz, Meyer, & Paulmann, 2006)
- Becomes increasingly integrated with the left hemisphere throughout childhood and into adolescence through continued development of the corpus callosum—allows for increased integration between functions of both hemispheres, as well as increased ability to tie language and reasoning into emotional experience (Cozoliino, 2006)
- Decreased connectivity between right and left hemispheres in individuals with autism

Resonance System: Mirror Neurons

(Rizzolatti & Craighero, 2004; Cozolino, 2006; Keysers, et al., 1993; Rizzolatti & Arbib, 1998; Miall, 2003; Kohler, et al., 2002; Iacoboni, 2008; Heiser, et al., 2003; Montgomery & Haxby, 2008)

- * "A particular class of ... neurons, originally discovered in area F5 of the monkey premotor cortex, that discharge both when the [individual] does a particular action and when it observes another individual doing a similar action." (Rizzolatti & Craighero, 2004)
- Facial expressions and hand gestures cause activation of the mirror neuron system (Montgomery & Haxby, 2008)
- May be important for imitation, action understanding, the evolution of gestural and verbal language, empathic attunement, and theory of mind.
- Cortical thinning/decreased grey matter noted in the Mirror Neuron system of individuals with autism Hadjikhani, Joseph, Snyder, Tager-Flusberg; 2006)

Factors Impacting on Experience-Dependent Brain Plasticity

- National Scientific Council on the Developing Child, 2007
 - Genetics
 - Environment
 - Experience

Experience-Dependent Brain Plasticity and Social Interaction

- The origin of the development of "social competency" IS the interaction of the individual with meaningful individuals in his/her environment
 - Parents
 - Grandparents
 - Teachers/Therapists
 - Others

This is the source of the

"experiences" that change the structure and function of the brain

Principles of Experience-Dependent Brain Plasticity and Social Interaction (Kleim & Jones, 2008; Elbert & Rockstroh, 2004)

- Use It or Lose It
- Use It and Improve It
- Fire Together, Wire Together
- Specificity
- Repetition Matters
- Intensity Matters
- Timing Matters
- Salience Matters
- Transference Matters
- Interference Matters

Social Competence Model at Lionsgate Academy

- Components to focus on
 - Relationship Development
 - Basic Social Skills
 - Social Perception
 - Social Thinking/Cognition
 - Social Communication—Abstract and Inferential Language
 - Co–Morbid and Related Areas

Applying the Principles of Experience-Dependent Plasticity to Intervention with Social Interaction Skills

- Establish environment for social interaction--avoid overstimulating environment
 - Limit scope of environment that individual has to attend to
- Establish adult role in social interaction as partner, mentor (Gutstein, 2007), and interpreter (Jacobsen, 2003)
 - The adult is more than a conveyer of facts/information about social interaction.
 - Interaction with the adult is the "experience" that changes the child's brain.
 - The adult 'scaffolds' the "experience" with the child modeling salient points and modifying the expectation for the child's responsibility in the social interaction as the child's skills develop.
- Establish child role in social interaction as partner, mentee (Gustein, 2007), and learner (Jacobsen, 2003)

The "Adult" Role: Partner, Mentor, Interpreter

- The adult is not separate from the child in the interaction. The adult is an equal partner in the interaction, serving a different/unique role.
 - The adult assumes a role both within the interaction/system as a partner in the interaction and outside as an observer, interpreter, and mentor to the child.
- The adult helps to interpret those situations and interactions that the child has difficulty with.
 - Interpretation is scaffolded depending on the child's skills, arousal, needs at the moment, etc...
 - Interpretation does not take the place of the child's role in the interaction
 - Interpretation helps the child to more fully realize his/her role in the interaction
 - Interpretation is offered to the child; child is given opportunity to accept or reject interpretation

The "Adult" Role and Attunement

- "Attunement is how we focus our attention on others and take their essence into our inner world" (Siegel, 2010)
- Attunement is the way we pay attention to where the child is at and grade/scaffold our interactions to help the child gain social success. It relates to:
 - Being aware of the signals from the child, both verbal and nonverbal
 - The resonance of energy and information between the child and adult
 - The matching of rhythms between the adult and the child (Greenspan, 2006)
 - When focusing on attuning to another, we need to put aside our own preoccupations and presuppositions because they limit the information that we can take in (Siegel, 2010)

The "Adult" Role: Partner, Mentor, Interpreter

- The adult is able to maintain the dual roles as:
 - The authority--creating the boundaries and the barriers that some children need to maintain a coherent, regulated, sense of self
 - The nurturer—creating the space for the child to explore and develop autonomy in interaction
- The adult models the skills for the child
 - We often violate the very rules that children are working on (i.e., when working on personal space we stand over the child at his/her desk; playing to "win" a game rather than to enjoy the experience of playing together)
 - We need to explicitly model flexibility, ability to repair mistakes, ability to recover from dysregulation, etc..., so that the child receives "permission" to use these skills
- The adult 'scaffolds' the learning process, so that the child's role in the interaction/experience expands as his/her skills grow

The "Adult" Role: Partner, Mentor, Interpreter

- The adult overtly teaches the meaningfulness of social cues
 - Teach the meaningfulness of the eyes
 - Mindreading
 - SETT/METT—iPad software (FaceReader, ME Trainer)
 - Provide opportunities and reason to reference the face for emotion/intention
 - Encourage "prediction"
 - Video-modeling (Bellini, 2006)
 - Limits the amount of stimuli that the individual needs to focus on , allowing focus on salient/meaningful information
 - May be combined with other strategies (coaching, social problem solving, self-monitoring, perspective taking, etc...)

The "Child" Role: Partner, Mentee

- The child utilizes the adult's more mature, developed nervous system as a template for development of his/her nervous system.
- The child is actively involved in the interaction
 - Children can impact on the nervous systems of the adults who interact with them
 - Children can modify and change the nature of the social interactions of the adults interacting with them
- The child partners with the adult in the interaction
 - I have experienced many times where the "lesson" and "therapy" that the child develops is more meaningful than the social skill instruction I had planned

Applying the Principles of Experience-Dependent Plasticity to Intervention with Social Interaction Skills

To make an experience "meaningful" :

- Create a common point of reference
 - "Joint attention"
- Do something novel—novelty provides a reason to pay attention
- Do something interesting—areas of interest to the child serve as motivation for the child to develop and maintain relationships
- Balance novelty and predictability to maintain arousal at optimal level
 - The experience must provide a means for the individual to regulate/modulate their mental/emotional arousal
- Associate reward/motivation with attachment/social interaction
- Maintain focus on "goal" of activity—social interaction

Making Experiences Meaningful: Saliency

- Experiences must be "authentic"
 - The experience must contain the opportunity for the individual to genuinely interact with the mentor/partner/interpreter
- Experiences must be meaningful to the individual
 - Experiences must be motivating
- Experiences need to "practice" social skills, social interactions, and social skills
- Experiences need to "light up" the brain
- Important in the process of experience that the mentor/interpreter's is able to "match rhythms"/attune with the child (Greenspan, 2006)

"Strive for quality social experiences, not just quantity." (Schueuermann & Webber, 2002)
Want to make sure that we are practicing the "specific" skill in a competent fashion, not repeating the same poor pattern over and over

Authenticity

- The adult's words and actions are in harmony with one another
- Determine the goal of working with the child on social interaction
- If the ultimate goal is that the child develop meaningful, reciprocal relationships then the adult must:
 - Seek to understand the child's perspective
 - Seek to develop a connection with the child
 - Understand how his/her own biases, stereotypes, preconceptions interfere with connecting with others
 - Model and demonstrate connection with others to the child in a fashion that the child understands

D_____ and Experience-Dependent Brain Plasticity

- Adolescent struggling with rigidity, perseveration, agitation/anxiety, explosive outbursts, difficulty taking the perspective of others, paranoid
- Limited positive peer or staff interactions

Focus on:

- Developing a connection
- Establishing a common point of reference around which we did therapy (i.e., cooking, donuts, Lexia)
- Adults established roles becoming D___'s partners, mentors, and interpreters in social interactions
- Interpreted D's behavior for other staff and family members in terms of those factors which interfered with social interaction
- Scaffolded interaction, until D____ took over more of the responsibility for the social interaction