

Caregivers Register and Reciprocate Feelings



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- Orbitofrontal neurons fire in response to caregiver's face (Schore, 1994)
- Mirror neurons create reciprocal arousal
- Learn to understand and regulate emotions
- Mind, behavior, perception, and action are wholly integrated (Jonassen & Land, 2012)
- Right amount of cortisol is protective—too much associated with impairments to memory, attention, learning, behavior, and peer relationships
- Boredom = activation of the amygdala = stress state

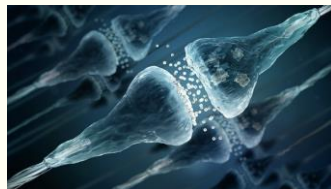
The Social Synapse (Cozolino, 2002)



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Energy dancing around in the social synapse connects us and changes our brains.

We can feel it; it's palpable. But, communication is implicit and occurs below conscious awareness.

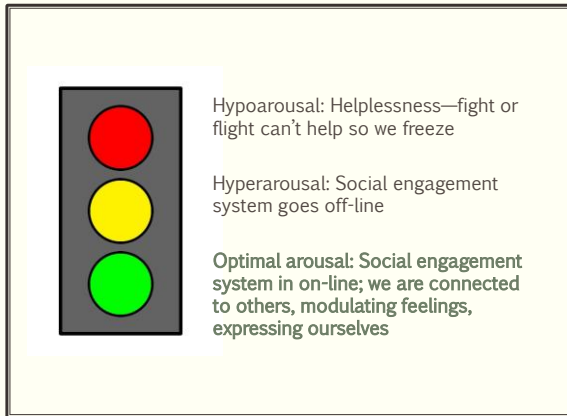


Mirror neurons allow us to experience our social partner—vicarious experience is felt as self experience.

Our histories (pain and relational success) influence how we receive energy coming from others.

RESONANCE

Polyvagal Theory (Porges, 2011)



Kestly, T. (2014). The interpersonal neurobiology of play: Brain-building interventions for emotional well-being. New York, NY: W. Norton.

- System shifts rapidly from one state to another for protection
- Parasympathetic
 - Ventral vagal: calming, braking
 - Dorsal vagal: freezing
- **Play (green light)—mobilizes SNS without losing social connections**

Play & Self-Regulation

- Play modifies the neural circuitry that regulates emotional responses
- Allows children to scaffold learning for themselves—and regulate nervous system—by choosing activities that fit their needs
- Desire to stay engaged in play forces acceptance of restrictions on behavior and emotion that would not ordinarily be accepted (Vygotsky, 1978)
- Social pretend play especially powerful
 - Players have to observe and restrain themselves
 - Inhibit behaviors that are not part of the role
 - Plan and coordinate the play
 - Practice socially desirable behaviors



Play & Emotion-Regulation (e.g., Carlson & Beck, 2009)



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- Develops frontal lobe inhibitory circuits
- Builds regulatory circuitry through arousal/calm cycle
- Affords psychological distance from content—top down control over impulses
- Self-dosing of moderate degrees of fear & dealing with the unexpected
- Tests boundaries—expands window of tolerance for strong emotions
- Practice modulating nervous system w/natural anti-stress effects (release of strong opioids)
- Allows material stored in the right brain to bubble up

Play & Executive Functioning (e.g., Herwig, 2009; Kelly & Hammond, 2011)

- Making, following, altering plans
- Adjusting to new circumstances & regulating behavior
- Controlling and focusing attention
- Inhibiting & controlling impulses
- Considering new information in decision making
- Solving problems
- Delaying gratification
- Developing private speech

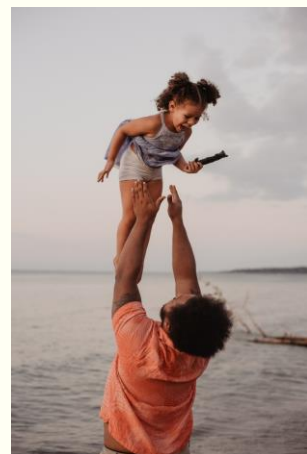


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Play Across the Life Course



- Free play opportunities has been declining continually since 1955 (Gray, 2011)
 - Media
 - Unsafe neighborhoods
 - Less contact with extended family
- Quality of play has declined too (Russ & Dillon, 2011)
- Declines in play correspond with declines in mental health and well-being
- **Abundant happy social play will allow children to “thrive by five”**
 - Happier, more stress resistant
 - More productive citizens

PLAY!



“We don’t stop playing because we grow old; we grow old because we stop playing.”—George Bernard Shaw

“Almost all creativity involves purposeful play.”—Abraham Maslow

“The creation of something new is not accomplished by the intellect but by the play instinct.”—Carl Jung

“Play is the highest form of research.”—Albert Einstein

“A child’s play is not simply a reproduction of what he has experienced, but a creative reworking of the impressions he has acquired.”—Lev Vygotsky