THE DEVELOPMENT of EMPATHY and the RELATION to DELINQUENCY

George E. Davis, MD
**DEFINITIONS**

- **EMPATHY**—the ability to understand another’s perspective and feelings and respond to them with a visceral or emotional reaction

- **PSYCHOPATHY**—antisocial values and behaviors that are based upon the failure to recognize and respond to the feelings of another

- **CALLOCUS/UNEMOTIONAL**—Research terminology for construct of low empathy, low pro-social commitments and actions, and low emotionality
Mother–Child Attachment—safety and neurodevelopment
Pair–Bonding—mating and childrearing
Social Affiliation—friends and neighbors: decreased aggression and increased social coherence
Survival—of the species
Quality of Life—the most human of traits
THEORIES OF EMPATHY

- **Simulation**—We understand the minds of others by using our own mind as a model—the emotional model.

- **Theory–Theory**—We understand others through *mentalizing*, a more cognitive form of grasping another’s perspective that requires a *Theory of Mind*. 

Theory Of Mind—Cognitive ability to attribute mental states—beliefs, intents, desires, pretending, etc.—to oneself and others and to understand that others have beliefs perspectives that are different from one's own.

By preschool age (4–5 years), children are generally capable of taking another’s perspective in “false belief” tasks (Wellman et al., 2001).
THE EMPATHY SEQUENCE

- Recognition of the feelings/distress of others through the *Mirror Neuron* system
- Activation of the emotional distress signal—with varying degrees of intensity
- The signal follows a sequence of neurocircuitry (the “social brain”) eventually including the stress response system
- Attribution of the other person’s feelings to ourselves—and vice versa—through theory of mind
- Prosocial empathic behaviors
Neurons that fire during both the performance and the observation of an action.

Not only imitate movements and detect intention, but simulate mental, emotional and physical states of others.
Originally found to function in motor behavior—including facial expressions
Lacking in children with autism who fail to imitate emotional expressions (*Dapretto et al., 2006*)
Not only imitate movements and detect intention, but simulate mental, emotional and physical states of others
The mirror neuron system is especially linked to pain—both physical and emotional.
Witnessing pain or distress activates the same brain locations as actually experiencing.
The primary difference is the intensity of the activation rather than the location or quality (Jackson, Brunet et al., 2006).
Non-conscious neural mirroring allows us to vicariously experience the emotional states of others and enable affective sharing (Decety and Jackson, 2004).
“The brain can distinguish at the cortical level whether the self or another is experiencing emotion or pain; yet at some core level it is difficult to distinguish personal from socially relevant cues (Decety and Lamm, 2006).
THE DEVELOPMENT OF EMPATHY

- While mirror neurons are part of the equipment given to all newborns, the meaning of the action is based upon previous experience.

- The safety and the goodness of perceived human actions and emotions requires the early secure attachment of a primary caretaker.
ATTACHMENT AND REGULATION

- The primary mechanism for early childhood neurodevelopment is the attachment relationship
- The primary caretaker supplies the neurological stimulation for development
  - Movement
  - Touch
  - Hearing
  - Vision
  - Interpersonal interactions
- And the child initiates
BASIC REGULATORY FUNCTIONS are NORMALLY ESTABLISHED in INFANCY and EARLY CHILDHOOD

- Through the protection of the infant from environmental and interactional stressors
- By the external regulation of the infant who is not initially capable of self-regulation
Co-regulation is a right brain event

- It is an implicit, non-verbal, bottom up communication schema that relies on affect recognition, facial matching, attunement and accurate contingent communications.
- It communicates the most basic elements of safety and security and mutual affect coordination.
MIRRORING: Affect
Synchrony

MIRROR SYSTEMS: Areas in the premotor cortex and Broca’s area are activated during observation, imagination, empathy and execution of motor movements. The mirror system also extends to insula, amygdala, basal ganglia and cerebellum.
ATTUNEMENT:
The parent must be attuned not so much to the child’s overt behavior as to the reflections of the rhythms of his or her internal state, enabling the dyad to create “mutual regulatory systems of arousal.” To regulate the infant’s arousal, she must be able to regulate her own arousal state. (Alan Schore 2006)
CO-REGULATION

CONTINGENT COMMUNICATION

- Transaction that involves:
  - Perception of the child’s signals
  - Making sense of the signals in terms of what they mean for the child
  - A timely and effective response
REPAIR
When there is the inevitable rupture in the ideal attuned, contingent communication, repair is an acknowledgement of the disconnection and the attempt to reconnect.
Mothers with history of abuse themselves responded to a video of a smiling but not a crying infant with arousal.

Mothers with their own history of abuse demonstrate an insensitivity and lack of attunement to infant’s emotional cues (Casanova & Domanic, 1994)
In the absence of crucial early regulatory attachment experiences, normal set points for self-control and aggression may be missing, and yet not be evident until age appropriate developmental standards are required.

The deficits manifest eventually in aggression and hypervigilance and blunted or absent empathy.
The most fundamental behavioral definition of attachment is “proximity seeking by a child when she/he senses discomfort or danger.”

Individual responses to stress are variable, based upon temperament and prior experience, but if there is a secure attachment they always involve proximity seeking toward an attachment figure.

If there is not a secure attachment the proximity seeking differs in kind and quality.
Of the four categories of attachment (Main and Solomon, 1990) maltreated children represent as much as 82% in the Disorganized Attachment category (Carlson & Cicchetti, 1989).

Compared to 19% in the non-abused group.

The intrusion of fear into the attachment-comfort equation. The source of security is also the source of danger.

The unresolvable dilemma.
THE DEVELOPMENT OF EMPATHY

- Learned components
- Genetic contributions
- Temperamental factors
- Parenting quality
- Attachment
GENETIC CONTRIBUTIONS

- Young children’s responses to simulated distress were measured in monozygotic (identical) and dizygotic (fraternal) twins at 14 and 20 months of age. (Zahn–Waxler et al. 1992b)
- At 20 months, empathic concern and unresponsive–indifferent behavior continued to have a greater correlation between monozygotic than dizygotic twins.
- By 24 and 36 months of age, heritability was associated with one third to almost one half of the variation in children’s empathy (Knafo et al. 2008)
TEMPERAMENTAL CONTRIBUTIONS

- Fearfulness in infants predicted parent reported empathic concern when the children reached school age. *(Rothbart et al., 1994)*
- Similarly, behaviorally inhibited, or shy, preschool aged children were rated by their parents as higher in empathy and guilt than other children *(Cornell & Frick 2007)*
Mother–infant synchrony measured in the first year of life (3 and 9 months) was directly associated with empathy level in childhood and adolescence (6 and 13 years).

The more mothers and infants matched and influenced each others’ behaviors during face-to-face play in infancy, the more empathy was expressed by the child during middle childhood and adolescence (*Feldman*, 2007)
THE DEVELOPMENT OF EMPATHY

PARENTING QUALITY

In general, maternal warmth has been found to be an important factor in promoting empathy development. Toddlers and children who had parents who were observed to display more warmth toward them during a variety of interactions in their home and in a laboratory setting tended to be more empathic (Robinson et al. 1994; Zhou et al. 2002).
PARENTING QUALITY

- The degree to which parents direct their children to label emotions is associated with children’s emotional concern for others; the degree to which parents provide explanations concerning the causes and consequences of emotions is associated with more attempts by the child to understand others’ emotions (Garner 2003)
Kochanska has explored a specific quality of parent–child relationship, termed mutually responsive orientation (MRO), which is associated with the development of child conscience, including empathy.

MRO was found to have a direct effect on moral emotions, with maternal responsiveness during infancy predicting higher empathic distress in toddlers at 22 months of age.

**MRO predicting later guilt reactions in children at 45 months of age (Kochanska et al., 2005)**
ATTACHMENT SECURITY

- Securely attached preschoolers engaged in more empathic responding than insecurely attached children (Kestenbaum and Sroufe, 1989)

- Likewise, in a social psychological study, priming of attachment security strengthened empathic reactions and inhibited personal distress (Mikulincer et al. 2001)
Eisenberg and Miller (1987) found that higher levels of empathy in children were associated with more cooperative and socially competent behavior.

Other researchers have also found that children with higher empathy for positive and negative emotions are more social competent (Saliquist et al. 2009; Zhou et al. 2002)
A multitude of studies have provided evidence that very young children are, in fact, capable of displaying a variety of rather sophisticated empathy related behaviors (Zahn-Waxler et al. 1979; Zahn-Waxler et al. 1992).

As early as 18 to 72 hours following birth, newborns who were exposed to the sound of another infant crying often displayed distress reactions, a phenomenon referred to as reflexive or reactive crying, or emotional contagion (Martin & Clark 1982; Sagi & Hoffman 1976; Simner).
Researchers measured different manifestations of empathic responding, including concern (sad look, “I’m sorry”), hypothesis testing (“What happened?”), prosocial behavior (hugs, “Are you ok?”), as well as precursors to empathy such as personal distress and self-referential behaviors (i.e., “trying on” another’s experience).
Many of these behaviors underwent significant development over the second year of life, with age related increases in empathic concern, hypothesis testing, and prosocial behavior between 14 and 24 months of age (Knafo et al. 2008; Zahn–Waxler et al. 1992a).
The youngest infants’ responses were comprised of primarily physical actions, whereas by 18 to 20 months, toddlers were capable of a wide variety of helping behaviors, such as verbal comfort and advice, sharing, and distracting the person in distress (Zahn–Waxler et al. 1992a). By the third year of life, young children were capable of a variety of empathy related behaviors, including expressing verbal and facial concern and interest in another’s distress, and continued to engage in a variety of helping behaviors.
THEORIES OF PSYCHOPATHY

- Intact mirror neuron system—*partially*?
- Working theory of mind
- Underactivation of emotional distress signals
- Under–responsivity down regulates the rest of the system, including HPA stress response
- Low activation of pro–social actions
- Learned antisocial behaviors
- Arousal disturbance—aggression and impulse
- Low reward for attachment and affiliation
Psychopathy is a spectrum of multiple variables, not a diagnosis, a designation or a fixed state of mind.

- The low form of distress responsivity does not imply antisocial behaviors.
- Context dependent.
- State dependent.
- Developmental and age appropriate.
Hare PCL–R contains two parts, a semi-structured interview and a review of the subject's file records and history, and a score between 0–40. 30 or above gives psychopathy diagnosis. Average offender scores 22. Average non-criminal scores around 5. Factor 1 captures traits dealing with the interpersonal and affective deficits of psychopathy (e.g., shallow affect, superficial charm, manipulativeness, lack of empathy). Factor 2 dealt with symptoms relating to antisocial behavior: (e.g., criminal versatility, impulsiveness, irresponsibility, poor behavior controls, juvenile delinquency).
Hare Psychopathy Checklist

1. glib and superficial charm
2. grandiose estimation of self
3. need for stimulation
4. pathological lying
5. cunning and manipulativeness
6. lack of remorse or guilt
7. shallow affect
8. lack of empathy
9. parasitic lifestyle
10. poor behavioral controls
11. sexual promiscuity
12. early behavior problems
13. lack of realistic long-term goals
14. impulsivity
15. irresponsibility
16. failure to accept responsibility for own actions
17. many short-term marital relationships
18. juvenile delinquency
19. revocation of conditional release
20. criminal versatility
Some researchers propose that amygdala hyporesponsivity to emotional stimuli is the hallmark of psychopathy (Blair, 2007).

Youth with high levels of CU showed reduced amygdala activation when confronted with faces of fear and anger (Marsh et al., 2008).

Psychopathy is developmental—the inverse relationship between empathy and antisocial behavior is not evident early in development, but increases over time (Hastings et al., 2000).
NEUROBIOLOGY OF PSYCHOPATHY

THE MULTIPLE CONNECTIONS TO CORTISOL

- End point of the HPA stress response system
- The brain is the major target organ for cortisol (Gunnar and Quevado, 2007)
- All information considered, cortisol is a key component both for the generation of empathy and the deficits in emotional memory and learning in psychopathy (Shirtcliff et al., 2009; Taylor et al, 2000)
THE MULTIPLE CONNECTIONS TO CORTISOL
- Cortisol activity alters physiology for hours to days primarily in the limbic emotion circuitry
- Cortisol can directly and permanently alter gene expression (Gottlieb, 1001; Salekin and Frick, 2005)
Consistent literature links low basal cortisol in children and adolescents with antisocial behavior (Oosterlaan et al., 2005).

On the other hand, anxious children tend to have elevated levels.

One of the most noteworthy causes of dysregulated HPA function and disrupted levels of cortisol is early abuse.
Girls express more empathy than boys across the developmental course (Lahn-Waxler et al., 2008)

Boys show more CU, Conduct Disorder and antisocial behaviors (Maughan et al., 2004)

Girls are more reactive to social stressors and display a different biological and behavioral stress response the involves tending and befriending than boys (Stark et al., 2006)
PRISON POPULATIONS—The prevalence of psychopathy at a cut off score of 30 was 7.7% in men and 1.9% in women prisoners in England and Wales. (Coid, Hare et al., 2009)

OTHER ESTIMATES—Between 20% and 30% of the prison population are psychopaths. (Decety, 2009)

COMMUNITY 1% females and 3% males in a 2001 study could be diagnosed as psychopathic (Decety, 2009)
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