

Cognitive Aspects of Interpersonal Aggression

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PSYC-8237-2

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August 2009

## ABSTRACT

Interpersonal aggression is a serious social problem that is at epidemic proportions around the globe. Research demonstrates that interpersonal aggression fits within the context of interpersonal neurobiology, an emerging field of interest among scientists and clinical specialists interested in human cognition, affect, and behavior. Attachment theory and practice, grounded more firmly in social, cognitive, and affective neuroscience provides us with new tools to understand the origins of interpersonal aggression. Recent advances in attachment theory provide insight into interpersonal aggression as a bio-psycho-social-cultural regulation problem. Advances in cognitive science provide helpful hints and suggestions for understanding, preventing, and treating this social problem.

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## INTRODUCTION

### Interpersonal Neurobiology, Cognition, and Aggression

Siegel (2001) stated, “This ‘interpersonal neurobiology’ (Siegel, 1999) presents an integrated view of how human development occurs within a social world in transaction with the functions of the brain that give rise to the mind” (p. 67).

Interpersonal neurobiology is an emerging area of interest for psychologists and others interested in a scientific approach to understanding human thoughts, feelings and behaviors (Siegel, 2001, 2006, and 2008). Siegel’s theory of mind is dynamic and integrative and includes energy and information flow within a single brain and between brains involved in social interaction. It consists of the patterns of energy and information flow involving persons as wholes, which includes the environment and culture (Smorti, 2008). The patterns of information developed within interpersonal relationships during the first few years of life influence how the brain structures itself and regulates cognition, affect, and bodily states. The patterns of energy and information influence how we perceive the world and its inhabitants, and in particular, interpersonal relationships. These patterns, knowledge representations, help us construct meanings from sensory perceptions of environmental stimuli. Brain systems develop to make us who we are through genetically programmed unfolding and interactions within early environments.

#### *Interpersonal Aggression*

Interpersonal aggression is a serious social problem around the globe and research indicates it is at epidemic proportions (Edens & Douglas, 2006; Waters et al., 2004).

Aggression consists of intentional infliction of harm on other living beings. This general definition includes individuals, families, groups, states, nations, and other collective

entities. The World Health Organization (WHO) reported interpersonal aggression, "...to include violence between family members, and intimate partners and violence between acquaintances and strangers that is not intended to further the aims of any formally defined group or cause" (Waters et al., 2004, p. ix). Types of interpersonal aggression include child abuse and neglect, intimate partner violence, sexual violence, workplace violence, youth violence, elder abuse and neglect, and guns, drugs, and gang violence. Interpersonal violence is expensive, but evidence indicates that the study and prevention of violence is less expensive. For each person murdered in developed countries the costs exceed a million dollars. Waters et al. stated, "Miller, Cohen, & Wiersema (1996) estimated a total annual cost to victims of personal crime in the USA ... \$507 billion. This estimate, which included psychological costs of pain and suffering, was equivalent to 6.5% of the gross domestic product" (p. 13).

Some forms of interpersonal aggression are socially acceptable, encouraged, and complicate the problem. For example, the growing trend of violent sports perpetrated by the media and bullying in some of our schools (Edens & Douglas, 2006). This complicates a true representation of aggression in developed areas of the world and causes problems studying it. For the developing nations and the poorest countries, understanding the severity of interpersonal aggression presents methodological problems that social scientists have difficulty operationalizing (Edens & Douglas). However, as noted, understanding the etiology of interpersonal violence, preventing it, and treating aggression is less expensive than ignoring the problem (Waters et al., 2004). Early relationships are often the source of interpersonal aggression and aggressive mental models too often pass from one generation to the next.

### *Cognitive Development*

Paschall and Fishbein (2002) stated, “A large body of research from diverse fields suggests that impaired executive cognitive functioning (ECF) may play an important role in the etiology of aggression and violent behavior (AVB)” (p. 215). Evidence suggests that executive functioning is important to impulse management (Hoaken, Shaughnessy, & Pihl, 2003). Children’s cognitions in educational settings influence peer relationships and interpreting aggression in others can lead to hostile interactions (Peets, Hodges, & Salmivalli, 2008). Empathy develops early during the life span in the context of contingent and congruent social bonding with primary caregivers and is an important aspect of executive cognitive functioning. The neural structures that anchor cognition and memory are also responsible for interpersonal competence (Tronick, 2007). Interactionist models of personality development indicate that cognitive processing influences behavior based upon the convergence of persons and situations. Solomon (1981) stated, “Whether working with self-report and peer nomination data within the trait psychology traditions, these studies have all yielded important factors of dominance-submissiveness and of affiliativeness-hostility. ...observers/perceivers seem to employ these dimensions in the construals of interpersonal situations” (p. 16). Early relationships matter because these relationships influence the development of knowledge representation approximating ineffaceable later in life.

Researchers distinguish dispositional empathy as multidimensional and related to heritability. The first dimension, empathy as emotional concern for the feelings of others contains feelings of sympathy and compassion. The second dimension, empathy experienced in personal distress when seeing suffering in others who are less fortunate

suffering. The third dimension, empathy is understood as psychological perspective taking. The third dimension of empathy is conceptualized as a cognitive emotion based in understanding (Davis, Luce, & Kraus, 1994). This distinction allows it to be an important inhibitor of interpersonal aggression. Richardson, Hammock, Smith, Gardner, and Signo (1994) stated, “An investigator who is interested in the control of aggressive behavior must determine how to improve cognitive functioning in order to enhance the probability of aggression inhibition” (p. 276).

Empathy is a complex skill that increases competency in peer relationships as children become adolescents and grow into adulthood. Failure to develop this skill can lead to interpersonal disasters throughout the lifespan. de Wied, Branje, and Meeus (2007) asserted that dispositional empathy develops during adolescence to help with problem solving, conflict management, and positive communication. Dispositional empathy as a trait develops within the framework of early primary attachment relationships. This paper seeks to examine empathy as a cognitive prosocial neurologically encoded skill with degrees of heritability and learning. Aggression is based in our biology, is a core primary emotion that serves evolutionary goals for survival (Panksepp, 1998). Evidence supports the development of interpersonal aggression, as maladaptive, in mental representations learned within early attachment relationships and culture (Smith, Fischer, & Watson, 2009).

## ATTACHMENT ORGANIZATION and COGNITIVE DEVELOPMENT

### Secure Attachment and the Developing Mind

Siegel (2001), "Attachment is considered a basic, in-born, biologically adaptive 'motivational system' that drives the infant to create a few, selective attachments in his life" (p. 69). These attachments can be with the mother, the father, or others involved in providing safety, nurturance, and comfort to the growing child. If all goes well and the caregiver provides consistent, congruent, and coherent care the child will develop a sense of safety and well-being in the world outside the womb. Within the culture of this primary relationship, the caregiver and the child help regulate one another. The brain of the infant is not a passive computer like device that only operates by stimulus-driven input. It is an active participant in dynamic processes with other brains and the environment. Engel, Fries and Singer (2001) asserted:

The main task of cognition is the guidance of action; so, the criterion for judging the success of cognitive operations is not the 'correct' representation of environmental features, but the generation of actions that are optimally adapted to particular situations. (p. 704)

The infant enters the world with biologically based systems to seek proximity to an attachment figure for safety and comfort. This energy and information flow between the infant and attachment figure(s) meaningfully becomes knowledge representation pattern(s) within the mind. This pattern then influences neurological development in the direction that serves the inborn needs of safety and comfort. Failure from the infant through genetic, developmental, or environmental deprivations interfere in the

development of healthy socially congruent neural structuring significant for the developing mind in non pathogenic forms.

### *Mastering Interpersonal Relationships and Regulation*

Early relationships set the tone for how we manage interpersonal interactions throughout our life span. Affect regulation is one of the main tasks evolving from the interaction of early relations. Infants enter the world without the ability to fend for themselves. They need caregivers to attend to safety and nurturance requirements. Safety and nurturance includes psychological attunement. Research indicates that for individuals to exert efficient problem solving skills for real life experiences they first need to become proficient at mastering the art of intersubjective relationships. Early primary relationships provide the first significant opportunity for healthy biopsychological development. The infant enters the world with an affective core primed for bonding. Successful attachment bonding requires good enough parenting that meets the needs of the infant's first tasks in the post-natal world. Contingent and congruent mental, affective, and physical care enables the infant's early sensitive periods of developmental processes to occur for optimal regulation. The internalization of infant-mother dyadic patterns of energy, information, and states of consciousness influences self-regulatory capacities during the early months and years (Schoore and Schoore, 2008).

### *The Mother-Infant Dyad*

Cozolino (2006) stated, "Well before birth, the fetus engages in spontaneous activity that stimulates the mother to think about her new child. Newborns continually move all parts of their bodies, allowing them to discover their hands and feet as they attract attention" (p. 42). These movements may seem random, but they provide the

interactive priming for the caregiver to respond to the infants needs for safety, nurturance, and emotional regulation. Infant's emotions and bodily movements are well organized and responsive to environmental stimuli. When children do not receive contingent and congruent feedback from primary caregivers, they become angry, frustrated, distressed, or withdrawn and apathetic. Tronick (2007) asserted, "No less dramatic are the exuberant smiles and giggles of infants and children when they feel connected to others ... Feeling disconnected is painful, and in the extreme there may be terrifying feelings of annihilation" (p. 477).

#### *Secure-Autonomous Knowledge Representation*

Cognitive development includes conscious and non-conscious processes between the developing mind and the environment. Research indicates that humans develop multiple memory systems for encoding information relevant to functions of everyday life. The explicit memory system and the implicit memory system develop differentially during the first few years of life (Rovee-Collier & Cuevas, 2009). The explicit memory system includes structures within the medial temporal lobe, hippocampus, and the amygdala. Healthy, well integrated, brains encode knowledge representations through perceptual systems that are consistent, congruent, and coherent with the needs for safety, security, and connectedness. The explicit memory system develops somewhere near the end of the second year, and follows the highly sensitive implicit memory system. The implicit memory system includes different medial temporal lobe processes and is highly active before birth and during the early stages of post-natal life. As the infant's brain develops neurons during early implicit memory formation, experiences with the

environment become hardwired into the brain and influence cognition, feelings, and behavior throughout the lifespan.

(Schoore and Schoore 2008) stated, “The essential task of the first year of human life is the creation of a secure attachment bond of emotional communication between the infant and the primary caregiver” (p. 11). This bond involves the co-regulation of the autonomic nervous system (ANS) and the central nervous system (CNS) within the mother-infant dyad. Through processes of consistent, congruent, and coherent attunement to infant needs, the infant gradually learns to manage stress, frustration, and other forms of arousal. The securely attached, regulated, infant develops resilience in the face of stress and novelty. The dyadic regulation system of secure attachment encodes mental representations that lay the foundation to secure autonomous functioning throughout the life span.

### *The Healthy Mind*

The task of the early relationships between the infant and primary attachment figures is to encode mental representations that support optimal functioning. The internal implicit cognitive affective regulation system organizes neural networks into functional processes for adaptive behavior. Encoded knowledge representations are nonverbal vocalizations, visual stimuli, and somatic tactical energy and information derived from states of consciousness from the interactive mother-infant dyad. Shore and Shore (2008) stated, “Attachment experiences are thus imprinted in an internal working model that encodes strategies of affect regulation that act at implicit nonconscious levels” (p.12). This early right brain encoding builds the secure architecture for later neuropsychological higher cognitive development. These early experiences can promote a secure autonomous

regulated self or an insecure dysregulated self. Through early imprinting of good enough parenting, emotional regulation is an intersubjective state in which the primary caregiver provides the necessary external support that co-structures the infant's development aimed at integrated neuropsychological integrated self-regulation. Thus, recent discoveries in neuroscience allows a clearer window into the mind/brain/body and healthy cognitive development as self-regulation (Cozolino, 2006; Schore and Schore, 2008; Siegel, 2001, 2006, 2008).

#### Cognitive Development, Insecure Attachment, and Aggression

Early relationships allow scientists to predict interpersonal attachment that influences regulation of the intrapersonal self and interpersonal relationships later in life. Studies conducted provided evidence that parental attachment regulation between mother-child dyad we stronger predictors of interpersonal relationship strategies than father-child dyads (Cummings-Robeau et al., 2009). Relational style between mother-child also had significantly greater influence on child peer relations for attachment sensitivity and attachment aggressiveness. Attachment sensitivity and aggressiveness scores were remarkably higher for insecure attachment between mother-child dyads later in life. Cummings-Robeau et al. (2009) stated, "Results indicated that parental and adult attachment security scores were moderately intercorrelated" (p. 364). These studies also indicate that parental and adult attachment style correlate to sensitivity and aggressiveness scores.

This section of the paper will discuss the findings regarding attachment style and interpersonal aggression later in life. Early experiences of insecurity encode cognitive representations, internal working models, which influence cognitive development,

emotional regulation, and interpersonal functioning in distinct ways. On the other hand, secure attachment representations produce low anxiety, low avoidance, and few interpersonal problems (Cummings-Robeau et al.)

### *Insecure/Avoiding*

Insecure dismissing organization of knowledge representation carries features of relating in distinct ways. This mental representation influences relational perceptions and ideations regarding interpersonal closeness in peer relationships. This attachment style is characterized by emotional deregulation in intimate interpersonal relationships. This, in turn, causes avoidance of emotional intimacy, lack of rejection sensitivity, and blaming others for their problems. Avoidant attached individuals deny negative emotions in themselves, thus downplay their own anger states. However, they experience high physiological arousal levels. Avoidant individuals lack emotional skills for managing aggression tendencies and problem solving within intimate interpersonal relationships. They avoid close emotional relationships to maintain homeostasis at low levels of arousal and tend to use aggression to maintain distance and self-control (Cummings-Robeau et al., 2009)

### *Insecure/Pre-Occupied*

Preoccupied individuals present with high levels of anxiety and high demands for closeness with others. However, they tend to be aggressive and controlling, interpersonal communications tend to be overly expressive because they are fearful of interpersonal loss and lack self-regulation skills. Interpersonal relations are marked by unbalanced dependence and seeking approval. These tendencies indicate lack of self-respect and ambivalent communication styles. Ambivalent communication styles fit within the range

of passive-aggressive behavior and the others often wonder what the person is really wants. Preoccupied attachment seeks closeness, but becomes overly dependent. They have tendencies toward interpersonal aggression.

### *Insecure/Disorganized*

The insecure disorganized attachment style is marked by high levels of intrapersonal anxiety and high levels and avoidance. Their intersubjective relational style is passive because of their inability to establish a healthy self-regulating core. These individuals seem frightened and tend to avoid intimacy, lack interpersonal assertiveness, and are targets for exploitation by others (Cummings-Robeau et al., 2009; Leaseburg, Bull, and Salyer, 1990). Anxious fearful disorganized attachment schemas lack neural integration between higher cognitive cortical regions of the brain. Early loss and severe trauma cause persons with this style of attachment dys-regulation to be easily overwhelmed with early implicit memories and dissociative states. Studies show that these individuals suffer severe intrapersonal and interpersonal problems. They are highly vulnerable to aggressive outbursts associated with posttraumatic stress disorder (PTSD).

Interesting to note, is the study by Nye et al. (2008) providing evidence that disorganized/unresolved attachment style individuals were more susceptible to severe forms of PTSD in combat zones than others were and that screening of these individuals for attachment style could help improve their overall functioning and reduce further insult to their biopsychological processes.

## CONCLUSION

### Toward an Interpersonal Cognitive Science

#### *Social, Cognitive, and Affective Systems*

There has been a general convergence of many scientific endeavors over the past couple of decades that allows a more integrated understanding of human nature. This new understanding of animal and human nature would have not been possible without advances in neuroscience technologies. We now have ways of integrating observational, computational, statistical, and imaging studies about human perception, learning, and memory. Panksepp (1998) stated, “For the discipline of affective neuroscience, the most important issue in emotion research for the foreseeable future will be the accurate specification of the underlying brain circuits, in anatomical, neurochemical, and neurophysiological terms” (p. 17). Basic drives influence cognitive, social, and affective human and animal systems that affect thoughts, feelings, and behaviors. However, these inherited systems must interact with an environment that sculpts them into functional systems for action in the world. One of the basic drives experienced is aggression and, as we have seen, intersubjective interactions shape this important regulatory system.

#### *Neuroplasticity*

Micheline and Stern (2009) stated, “It is well established that brain plasticity is an inherent property not only of the developing but also of the adult brain” (p. 947). Interpersonal neurobiology studies contend that the human brain is capable of change throughout the life span (Siegel 1999, 2001, 2006, 2008). Throughout this paper, evidence presented strongly supports early development of cognitive capacities for developing secure attachment schema. Cognitive capacities depend upon memory

functions and the cortical and neocortical brain structures important to these functions are the amygdala and the hippocampus. These two areas of neural processing are of special interest to scientist interested in neural plasticity (Siegel 2006). Implications for restructuring a dys-regulated brain into a more integrated whole that allows the development of secure attachment schemas to develop later in life is promising. Psychotherapy based upon attachment principles of attuning to early developmental attachment neural networks offers hope for dys-regulated individuals with insecure attachment styles that interfere with intimacy and foster interpersonal aggression (Cozolino, 2006; Schore & Schore, 2008; Siegel, 2006, 2008).

#### *Prefrontal Cortex and Interpersonal Aggression*

Healthy development fosters balanced right-brain, left-brain, top-down, and bottom-up integrated neural functioning. Insecure attachment schemas interfere with individual personal self-regulation and influence behavior toward aggression. Hoaken, et al. 2003 documented that impaired executive cognitive functioning leads to aggression. Through attuned caregiving in a safe environment, psychotherapy can help the mind restructure the brain through developing new knowledge representations. The prefrontal cortex is important to executive functioning and self-regulation.

#### *Empathy as Integration*

This paper examined the role of empathy as important in modulating aggression. Empathy as a cognitive emotion involved in perspective taking has the strongest correlation to aggression control and impulse management. This characteristic skill development can be learned later in life and requires empathic attunement perspective taking from a significant other such as a therapist or intimate partner. Cummings-Robau

et al. (2008) provided evidence that individual involved in intimate relationships modulated aggressive behavior when the felt securely attached.

### *Psychotherapy*

Siegel (2006) stated, “An interpersonal neurobiology approach to psychotherapy draws on the basic framework of this interdisciplinary view in exploring the ways in which one individual can help others alleviate suffering and move to well-being” (p. 247). Many different therapists from different disciplines can use this approach. Therapy includes empathic attunement, mirroring affect, paying attention to the nonconscious aspects of intersubjective relating. It is not simply the words reflected back in a left brain fashion, but the whole person being present with the other as they struggle to make sense of their lives through the construction of narrative, mindsight, and affective awareness. The therapist provides for the other the consistent, congruent, contingent, and coherent care and safety that the other did not receive during the early years.

### Mindsight and Metacognition

Metacognition is thinking about thinking and the control of thought processes through conscious effort. It helps us to break old habits of thinking and restructure our minds as well as to process energy and information as we progress through life.

Metacognition is important for memory development and problem solving. Critical thinking skills involve metacognitive strategies and help persons become aware of limited views, heuristic thoughts, feelings, and behaviors.

Siegel (2001) stated, “One form of neural map is the way in which the brain creates images of other minds. I have used the term ‘mindsight’ to refer to this representational process” (p. 82). The parts of the mind that can be seen are thoughts,

feelings, attitudes, intentions, and states of consciousness. Mindsight is the conscious intention of paying attention to the other as occurs in romantic relationships and psychotherapy. This can be classified as a metacognitive process and is important in the therapeutic culture of the consulting room. It facilitates interactive intra-subjective repair of harmful early implicit knowledge representations.

#### Future Research

This paper addressed the early development of knowledge representations from attachment figures and their influence upon interpersonal aggression. A step for future research might include the influence upon personality development, intellectual functioning, language development, and other factors involved in cognitive scientific approach to understanding human dynamics. Neuroscience technological innovations helped us gain greater insight into cognitive functioning. How will they continue to make positive contributions on our thoughts about thinking?

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