

The Interface Between Attachment and Intersubjectivity:
Perspective from the Longitudinal Study of Disorganized Attachment

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Running Head: Attachment and Intersubjectivity

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Abstract

This paper considers the interface between the concepts of attachment and intersubjectivity in light of accumulated research on infant development. Both Tomasello (1999) and Hobson (2002) have argued persuasively that the flexible human capability for sharing mental states with others reframes and revolutionizes our older, more highly channeled great ape biological heritage. In contrast to this emphasis on discontinuity from ape to human evolution, attachment theorists have stressed the continuities between human attachment and attachment in other primates. The implications of new work on infant intersubjectivity for reframing aspects of attachment theory is first explored. The extent to which the infant - caregiver attachment relationship functions to maintain positive engagement and regulate the infant's fearful arousal will also have escalating consequences over development for the organization of intersubjectivity. Therefore, attachment research has much to offer in understanding the development of joint attention and the sharing of mental states under conditions of increased emotional arousal. The potential contributions of attachment research for understanding the development of intersubjectivity are discussed in light of the author's recent work on forms of young adult symptomatology associated with deviance in the early intersubjective dialogue between mother and infant. The clinical implication emerging from these diverse areas of research is that fostering more collaborative forms of communication may lie at the heart of evolutionary change, developmental change, and changes resulting from psychodynamic psychotherapy.

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Rethinking Mechanisms of Attachment during the First Year: Evolution and Intersubjective Awareness

A lot has been written recently about a shift in the basis of evolutionary change from biologic to what I will call dialogic mechanisms, or from “genes to memes.” For example, Tomasello (1999) has pointed out that with the relatively recent emergence of *homo sapiens* as a species, more complex cultural innovations have been introduced in the past 200,000 years than were introduced in the previous 6 million years. He theorizes that a biological change occurred that shifted the basis for evolutionary change from the biological evolutionary mechanisms that had governed change for 6 million years to cultural evolutionary mechanisms that are many orders of magnitude faster than those of biologic evolution. He, as well as Hobson (2002), assigns this shift to the increased ability of humans, relative to other primates, to share in the thoughts and feelings of others. As Hobson (2002) puts it,

Those psychologists who believe that humankind became unique by acquiring language are not altogether wrong. But they are not altogether right, either. Before language, there was something else – more basic, in a way more primitive, and with unequalled power in its formative potential, that propelled us *into* language. Something that could evolve in tiny steps, but suddenly gave rise to the thinking processes that revolutionized mental life. Something that (unfortunately) no fossil remains can show us. That something else was *social engagement with each other*. The links that can join one person’s mind with

the mind of someone else – especially, to begin with, emotional links – are the very links that draw us into thought. (p. 2)

This capacity for social engagement is manifest first at the level of affective sharing and later at the level of explicit teaching and learning. In contrast to other primates, the human infant does not have to acquire first-hand all the knowledge and experiences necessary to survival. Instead, the infant needs to develop the skills for sharing affective evaluations and intentional states with others. This allows the infant to participate in the cultural learning processes of human society.

In contrast to the emphasis on discontinuity in evolutionary processes that is highlighted by Tomasello, Hobson, and others, attachment theorists have stressed the continuities between human attachment and attachment in other primates. As we all know, John Bowlby thoroughly documented the similarities in attachment behaviors seen across primate species and human cultures. However, at the time Bowlby (1969) was writing, little was known about the capacities of the very young human infant for establishing intersubjective communication with a caregiver. Therefore, in discussing the attachment behavioral system during the first year of life, Bowlby located the human attachment system within the context of primate evolution. He identified the more visible human attachment behaviors shared with other primates, such as clinging, following, and crying, as the infant's contribution to the attachment relationship during the first year.

However, not until the end of the first year of life do these more visible behaviors take on the goal-oriented pattern described by Bowlby of maintaining physical closeness to the primary caregiver and protesting separation. Therefore, studies of the infant attachment system have focused on behaviors from 12 months onward and neglected infant behaviors over the first year of life.

In his ground-breaking volume on Attachment, Bowlby introduced the critical concept of an attachment motivational system, a behavioral system that functions to keep the infant near to the caregiver. This maintaining of physical proximity promotes both the infant's actual safety and the infant's psychological experience of "felt security" in the environment. Bowlby asserted that infants are biologically predisposed to become attached to their caregivers, and that early disturbances in primary attachment relationships could lead to emotional insecurity and to later disturbances in the development of meaningful relationships (Bowlby, 1969, 1973, 1980).

Mary Ainsworth then developed a means of classifying the quality of a child's attachment to a caregiver at 12 to 18 months of age, referred to as the Strange Situation procedure. This laboratory procedure mildly stresses the infant by including two brief separations from and reunions with the caregiver. In Ainsworth's early studies, which have been consistently replicated, the mother's sensitivity to the infant's communications in the home predicted a secure attachment strategy on the part of the infant in the laboratory. In contrast, mild maternal rejection of close contact in the home predicted an avoidant attachment strategy, and maternal inconsistency in responding to infant cues predicted an ambivalent attachment strategy (Main, 2000).

Although Bowlby stressed the continuity between the human attachment behaviors of following, crying, and clinging, and similar attachment behaviors in other primates, I would argue that the organization of human attachment is radically different from the organization of attachment in all other species. This is because of the unique capacities of the human infant for intersubjective exchange with others.

Both Tomasello and Hobson have summarized the large body of work comparing the social thinking capacities of humans and of other primates. Both Tomasello and Hobson argue that only humans develop the capacity to attribute to others a mental life similar to one's own. However, Hobson, goes further than Tomasello in assigning the origins of intersubjective forms of thought to primary forms of emotional relatedness evident at the beginning of life. He points out that "what [chimpanzees] do not do is to spend time gazing into each other's eyes, or engaging in the kinds of intense face-to-face interpersonal communication that we see in human infants.... They never (or almost never) show things to each other, nor do they appear to share experiences of the world with others" (p. 270). Hobson also presents a wonderfully detailed picture of the evolution of the infant's capacities for entering into the emotional experiences of others.

From the work of Harriet Oster and Paul Ekman (1978), we also find that only the human face has over 25 separate facial action patterns to signal gradations of affect, much more than any other species. Recent neuroscience findings have further underscored the evolutionary preparedness of the infant brain to engage in finely-tuned face-to-face affective communications from birth (e.g. Tzourio-Mazoyer, De Schonen, Crivello, Reutter, Aujard, & Mazoyer, 2002).

As the explicit sharing of intentional states became a more powerful force in human evolution, I would argue that this shift also affected the infant-parent attachment system, moving the center of the attachment relationship from the more visible behaviors emphasized by Bowlby, such as clinging and following, to primarily intersubjective processes, such as the exchange of affective cues. This intersubjective basis for attachment was implicitly recognized in Mary Ainsworth's (1978) emphasis on the importance of the mother's sensitivity to infant communications, and it was also implicitly recognized in much of Bowlby's later work.

However, at the time, much less was known about the infant's capacities for relatedness. Therefore, the infant's capacity for intersubjectivity has never been well integrated into Bowlby's earlier emphasis on behaviors shared with other primates.

In contrast to primate attachment behaviors, then, the human attachment system is filtered through and mediated by the increasingly complex intersubjective processes that emerge from birth onward. The importance of the primate attachment behaviors of clinging, following, and close bodily contact are partially displaced by the sharing of emotional cues.

Intersubjectivity, Positive Affect, and the Regulation of Physiological Arousal

While earlier phases of attachment research equated attachment processes with the more observable proximity-seeking behaviors of the infant, more recent work on the regulation of fearful arousal in the infant assesses the less obvious physiological responses associated with fearful arousal in the hypothalamic–pituitary–adrenal system. This HPA axis, as it is called, is a complex stress response system that regulates the body's levels of the stress hormone cortisol. Research suggests that cortisol is released when an individual is confronted with a stressful challenge but cannot find a coping response that is effective.

The human newborn demonstrates a highly reactive cortisol response to stressors at birth (Gunnar, 1992). However, this reactivity of the HPA system gradually dampens over the first year of life, which appears to be partly a function of the quality of caregiving (Gunnar & Donzella, 2002, Gunnar, Mangelsdorf, Larson & Hertzgaard, 1989; Gunnar & Nelson, 1994; Spangler & Grossmann, 1993). For example, the absence of an available and sensitive caregiver leads to significant elevations in cortisol levels to stressors in infancy, larger than those observed in older children and adults (Gunnar & Donzella, 2002). The emerging findings on caregiver regulation of stress responses in human infants is supported

by elegantly designed controlled studies with both rats and monkeys (e.g. Liu, Diorio, Tannenbaum, Caldji, Francis, Freedman, Sharma, Pearson, Plotsky, & Meaney, 1997; Francis, Diorio, Liu, & Meaney, 1999; Coplan, Andrews, Rosenblum, Owens, Friedman, Gorman, & Nemeroff, 1996; Weaver & Meaney, 2000). These experimental studies underscore the importance of early nurturance by the caregiver for regulating the expression of a large array of genes involved in neurotransmitter and glucocorticoid function and for setting up enduring features of the stress response system that persist into adult life and are passed on to succeeding generations.

We also know that in infants who have a temperamental predisposition toward heightened stress responses, the caregiver's sensitivity to infant cues can override those genetic predispositions. For example, one study found that infants with anxious, inhibited temperaments did not show cortisol elevations to a series of novel events in the laboratory, if they were accompanied by a caregiver with whom they had a secure relationship. However, they did show cortisol elevations if they were accompanied by a caregiver with whom they did not have a secure relationship (Nachmias, Gunnar, Mangelsdorf, Parritz, & Buss, 1996). Similar overrides of genetic predisposition by the quality of maternal nurturance have also been shown in the abovementioned studies of rats and monkeys.

It appears that a sensitive and responsive caregiving system can provide a buffer for stress responses in the human infant and toddler. Spangler & Grossmann (1999) have demonstrated that a securely attached infant possesses appropriate stress-reducing behavioral strategies for communicating with the caregiver, and therefore displays negligible increases in cortisol levels when presented with a challenge. In contrast, insecurely attached infants, and even more importantly, disorganized infants, who we will be discussing next, carry a

double burden. They must cope with increased physiological responses to stress and they have inadequate behavioral strategies for achieving soothing in relation to the caregiver. This body of research on the infant's developing physiological stress responses makes clear that regulation of fearful arousal in the infant must involve ongoing second-to-second intersubjective communications between caregiver and infant from birth onward, rather than only intermittent activations of more visible attachment behaviors.

The importance of these continuous intersubjective communications in regulating fearful arousal in the infant leads to one additional needed adjustment in older attachment theory. Previous approaches to understanding attachment have viewed the attachment motivational system as activated by fear-arousing situations and as terminated by closeness to the caregiver. I would argue that the human infant's new capacities for continuous intersubjective exchanges means that the regulation of fearful arousal in infancy cannot be understood primarily in terms of mechanisms of the termination or soothing of already aroused fear.

As Dan Stern (1985), Colwyn Trevarthen (1980), and others have pointed out, the earliest phases of intentional sharing also involve the exchange of positive affects, with the goal of developing and maintaining a predominately positive shared state between infant and parent. This maintenance of an ongoing, positively-toned engagement with the infant is foundational to the reduction of fearful physiological reactivity in the first year of life, and therefore is foundational to the infant's overall sense of felt security and stress-modulation. While much more research is needed in this area, we know that social affiliation reduces stress hormones such as cortisol, and enhances hormones of well-being such as oxytocin, so there are potential biological mechanisms to support the stress-reducing effects of positive engagement with the attachment figure (e.g., Taylor, Klein, Lewis, Gruenewald, Gurung, & Updegraff, 2000).

Porges (2005) has also elaborated a model of how positive social engagement may decrease sympathetic arousal, mediated through the ventral vagal components of the parasympathetic nervous system. Therefore, there is now a convergence of developmental, behavioral, biological, and evolutionary arguments for enlarging our model of the attachment motivational system to include positive components of the infant–caregiver relationship, components that also serve to down-regulate fearful arousal in early life.

For example, in one of the home videotapes from our high-risk longitudinal study, we see a 17-year-old single mother who is doing very well with her 9-month-old infant. She is engaging her preverbal baby in a constant dialogue of affectively inflected sounds and gestures, she is following into his focus of attention, she is responding sensitively to his cues, and she is assisting in the elaboration of his initiative. He responds by entering enthusiastically into the positive rhythms of the relationship, and we see little distress in our lengthy home observations at 6, 12, and 18 months of age.

In summary, I would argue that current attachment research needs to be expanded in three critical directions: first, from an emphasis on mechanisms of physical proximity and protection to an emphasis on mechanisms of intersubjective exchange; second, from an emphasis on processes of comfort and soothing to an equal emphasis on processes involved in maintaining the baby's positive engagement with others; and, finally, from an emphasis on separation and loss events to an equal emphasis on the more continuous relational processes that regulate both positive engagement and the baby's fearful responses to challenging events.

Considering The Relation Between Attachment and Intersubjectivity

So how do we conceive of the relation between the uniquely human predisposition for intersubjectivity and the attachment motivational system that has been described in great detail

from 12 months of age onward? One possibility is to view the attachment system and the intersubjective system as separate motivational systems, each with their own goals and goal-corrected organizations of behavior. For example, Giovanni Kugiumutzakis (1988), a Greek researcher, has said that infants are endowed with an intersubjective motive system, “a motive system that is seeking another emotional being with whom to play together a cooperative, complementary, intersubjective game” (p. 80).

My own thinking, though, takes a different turn. I would view the human capacity for intersubjectivity as a condition of our humanity and as an essential function of mind. We could not voluntarily inhibit the development and functioning of our awareness of other minds any more than we could voluntarily inhibit our capacity for abstraction. I would not view intersubjectivity as a goal-corrected motivational system that becomes activated under certain conditions and deactivated under others. Instead, I would view intersubjectivity as a parameter of human mental functioning that cannot be deactivated. The human brain cannot develop and sustain itself without relatedness, which is a continuously active condition of mental life. Cultural training, which is itself intersubjective in origin, can lead us, over time, to turn our attention away from consciously focusing on the mental states of others, but the basic intersubjective flow of reading others’ states and sharing aspects of our mental lives through the exchange of affective and intentional cues is a condition of our existence and cannot be switched on and off.

The language of motivational systems, in large part, refers back to an older evolutionary heritage, prior to the emergence of homo sapiens.. While such earlier-evolved motivational systems are certainly preserved in the human species, all of these motivational systems, including our most basic survival instincts, may be overridden by the cultural and social

imperatives that arise from our later-evolved capacity for intersubjectivity. Like other thinking and problem solving capacities, we are drawn intrinsically to engage in relatedness to others and to understand that others have a mind like our own. I would not view these capacities as waxing and waning in their intensity or as existing in a hierarchy of basic survival needs. Instead, I would view the capacity to care about and participate in the emotional lives of others as a “design feature” of the human being (Hobson, 2002).

While older evolved motive systems are carried into human functioning (adolescence does exist, dominance status does exist), these older motive systems will never account for the cultural innovations of human life. The limitations of Freud’s theory are nowhere more evident than in its motivational theory. Adding yet another motive system of “intersubjective sharing” is inadequate to capture or model the influence of this new capacity on older evolved systems. As Tomasello’s and Hobson’s arguments make clear, the more flexible adaptive mechanism of sharing mental states with others reframes our older, more highly channeled biological evolutionary heritage. This reframing requires a radical shift in our theories of human functioning to a more pervasive view of how the sharing of mental states from birth onward catalyzes socially-distributed learning processes so that each generation stands on the shoulders of the previous generation in a way that older-evolved motive systems and capacities did not produce. Just as this capacity for intersubjective sharing recontextualizes and subordinates Darwin’s principle of biological evolution as it applies to human evolution, so also does the capacity for intersubjective sharing recontextualize and subordinate the biologically grounded human motive systems, Freud’s included, within a context of more flexible socially created imperatives for human behavior (see also Mitchell, 1997).

To this point, I have emphasized the implications of work on the intersubjective capacities of the infant for reframing aspects of attachment theory. However, by the same token, attachment research has much to offer in understanding the development of intersubjectivity. The history of the evolution of forms of intersubjective communication in human history is still to be told. This should be a fascinating history, however, because many strands of evidence suggest that our “biological” heritage is continually remodeled by the effectiveness of our shared communication. Witness the “Flynn Effect”, the finding that human IQ has increased by 5 points every decade since testing was initiated at the turn of the century, requiring the continual renorming of the tests (Daley, Whaley, Sigman, Espinosa, & Neumann, 2003). However, our gene pool cannot have evolved in this time span.

The reframing of attachment strategies as strategies of human sharing around the need for security opens one small window onto such a potential historical account. While discontinuous innovations like the printing press, mass media, and the internet will frame the larger outlines of this history, the affectively intense forms of interchange encouraged or discouraged within the family in various cultures and historical epochs will also shape how individuals participate in socially distributed learning. How attachment-related communications are organized within the family around the most intense and survival-related affects, and how those organizations are represented and transmitted intergenerationally will have important implications for the particular ways that intersubjectivity is elaborated at both individual and societal levels.

What developmental studies of attachment processes have revealed is that across cultures studied to date (which overrepresent, but are not limited to, Western societies), attachment strategies of collaborative communication are associated with more flexible and

hence more adaptive ways of relating to others, both over early development and in the context of committed romantic relationships (Grossmann, Grossmann, Spangler, Suess, & Unzner, 1985; Crowell, Fraley, & Shaver, 1999). Strategies of sharing that are collaborative from the point of view of attachment theory are strategies that are truthful and sensitive to the states of mind of both parties (with adjustment in early development for the imbalance in developmental capacities of the two partners) (see Lyons-Ruth, 1999, for more elaboration).

Since other people are the primary sources of stressful arousal in human life, the child's ability to flexibly explore the human environment, and specifically the human mind, through sharing with others, is particularly important in human development and evolution. More collaborative strategies of parent-child communication are associated with more effective regulation of the child's stress hormone levels in early development, as noted earlier. Such effective stress regulation is conceptually linked to greater ability to dampen excessive arousal in the service of exploring the environment and learning. Freedom from overwhelming fearful arousal, in turn, is foundational to turning one's attention to exploring and learning about the social world, particularly the world of intimate, intersubjective relationships. Therefore, how well the infant - caregiver relationship maintains positive engagement and regulates the infant's fearful arousal will have escalating consequences over development for the organization of intersubjectivity.

Less collaborative strategies of sharing within the family, as also documented by attachment research, are more restricted or onesided, in that they privilege one person's voice over the other's (e.g. the parent's emotional needs, as in ambivalent strategies), or certain forms of "truth" over other forms of truth (e.g. happy affects over sad or angry affects, as in avoidant strategies). Such restricted or one-sided strategies of intimate communication are

also likely to lead to particular types of restrictions in participating in socially distributed learning processes, at both the individual and historical- societal levels, though these relations between intimate communication and broader historical patterns of cultural sharing have barely been explored to date.

Attachment Disorganization and Disrupted Intersubjective Processes

The evolutionary shift to an intersubjective basis for attachment regulation allows for far more subtlety and variety in the quality of relatedness between parent and infant than occurs in other primates. This evolutionary shift also opens the way for a wider variety of non-lethal dysfunctions in the parent-infant attachment relationship.

As the study of attachment was extended to more highly stressed families than those studied by Mary Ainsworth, investigators found that the infant attachment behaviors observed in high risk environments did not fit into any of the three organized attachment strategies that were reviewed earlier. In response to these findings with high risk families, Main and Solomon (1990) developed a fourth category of infant responses to separation and reunion called a disorganized/disoriented attachment strategy. These infants exhibited an array of odd, disoriented, and overtly conflicted behaviors in the presence of the parent. Main and Hesse (1990) then speculated that, for these infants, the caregiver had become both the source of comfort and a source of alarm. In their view, these infants when stressed experienced a simultaneous need both to approach the parent for comfort and to flee their parent in fear.

In our own work, we have expanded this framework somewhat because we have noted that absence of caregiver responses will also lead to infant disorganization. A wide array of primate research also supports this conclusion (e.g. Kraemer, 1992). Therefore, the

more general caregiving mechanism related to disorganization may be the lack of effective caregiver regulation of fearful arousal, rather than explicit fear of the caregiver herself (Lyons-Ruth, Bronfman, & Parsons, 1999).

Consistent with the idea that particular forms of caregiver behavior are significant contributors to infant disorganization, studies have indicated that 83% of abused or neglected infants display disorganized attachment behaviors toward the parent (Carlson, Cicchetti, Barnett, & Braunwald, 1989). It is important not to equate disorganization with maltreatment, however, because approximately fifteen percent of infants in low-risk samples also demonstrate disorganized attachment patterns (van IJzendoorn, Schuengel, & Bakermans-Kranenburg, 1999). Therefore, caregiver behaviors less extreme than overt maltreatment are also involved in the development of disorganized infant attachment responses.

Parental Affective Communication Patterns Related to Infant Disorganization

If evidence suggests that the intersubjective communications of the caregiver are important to attachment disorganization, what have we actually learned about the kinds of caregiver – infant interactions that occur among infants displaying disorganized attachment responses? Only in the past few years have we begun to explore the intersubjective communication processes associated with disorganized forms of attachment behaviors. And there is still very little work prior to one year of age.

In our own work we have assessed five broad aspects of disrupted parental affective communication with the infant. These five aspects include a.) parental withdrawing responses, b.) negative-intrusive responses, c.) role-confused responses, d.) disoriented responses, and, e.) a set of responses we termed affective communication errors, which included both the mother's giving

simultaneous conflicting cues to the infant and her failures to respond to clear affective signals from the infant.

Both in our own work and in the work of three additional laboratories, these disrupted affective communication processes at 12 to 18 months of age are related to the extent of the infant's disorganized attachment behavior. They are also related to the mother's unresolved trauma or loss on the Adult Attachment Interview. These associations between maternal behavior and infant outcomes occur in both low-risk and high-risk families (Goldberg, Benoit, Blokland, & Madigan, 2003; Grienberger & Kelly, 2001; Madigan, 2002). When these same categories of maternal behavior are coded during face-to-face interactions at four months of age, they also predict infant disorganization at one year (Kelly, Ueng-Hale, Grienberger, & Slade, 2003).

Hostile or Helpless Profiles of Parenting

One additional aspect of the data on mother-infant interaction is very important for understanding intersubjective communication within disorganized attachment relationships. This aspect of the data is the diversity of profiles of mother and infant behavior within the disorganized spectrum. To simplify the picture somewhat, two broad subgroups are immediately evident in the data.

The first subgroup of mothers, whom we termed "helpless/fearful regarding attachment," was particularly difficult to identify. However, this group is quite clinically important. These mothers exhibited significantly higher rates of apprehension, hesitation, or withdrawal in the face of infant attachment behaviors (Lyons-Ruth & Spielman, 2004; Lyons-Ruth, Melnick, Bronfman, Sherry, & Llanas, 2003). These mothers appeared more fearful and inhibited, in general, and sometimes appeared particularly sweet or fragile. They were very unlikely to be overtly hostile or intrusive and they usually gave in to the infant's concerted efforts to make contact. However, they also often failed to take the initiative in greeting or approaching the infant, and they often hesitated, moved away, or tried to deflect

the infant's requests for close contact, before giving in. The infants of helpless/fearful mothers all continued to pursue their mothers for contact. They all expressed their distress, approached their mothers, and attempted to gain some physical contact with them, even though they also displayed disorganized behaviors, including signs of conflict, fear, uncertainty, helplessness, or depressed mood.

The second subgroup of mothers of Disorganized infants displayed significantly higher rates of self-referential behaviors and negative-intrusive behaviors, than did other mothers. We termed this parenting profile "hostile/self-referential regarding attachment." Negative-intrusive and self-referential behaviors were strongly correlated, so these mothers were often displaying a contradictory mix of rejecting behaviors and behaviors that sought attention from their infants. The infants of these mothers displayed both disorganized conflict behaviors and high rates of avoidant and resistant behaviors, such as backing away from the mother, continued distress, or heightened angry behaviors in the presence of the mother.

These disorganized infant attachment strategies, including their defensive and conflicted components, are examples of what Christopher Bollas has called the "Unthought Known". By this, I mean the non-conscious, implicit, procedural representations of interactive processes that are developed in infancy, before the explicit memory system associated with consciously-recalled images or symbols is available (Lyons-Ruth, 1999).

Even in our highly stressed, low-income sample, infants whose mothers displayed non-disrupted affective communication patterns had a low rate of disorganized attachment behaviors. Infants whose mothers displayed fearful or withdrawn interaction patterns and infants whose mothers displayed more hostile-intrusive or role confused profiles had a rate of disorganization up to 5 times higher.

We view these two maternal profiles, hostile and helpless, as complementary stances in a two-person dyadic system, a dyadic system where one person's needs

predominate and the other person feels helpless to exert initiative. We think, then, that the diversity in maternal profiles occurs because different parents identify more strongly with one or the other pole of this unbalanced dominant-submissive dyadic pattern. However, theoretically we view these different stances as related aspects of a single internalized representational model.

Consistent with this view that dyadic models are internalized, many parents display mixed patterns of behavior that include both hostile/self-referential elements and helpless/fearful elements in interaction with the child. These highly unbalanced, dominant – submissive relationship models lead to contradictory hostile-helpless responses toward the infant, responses that both heighten and reject the infant's attachment behaviors. Such contradictory combinations of maternal behaviors, in turn, arouse contradictory and competing responses from the infant in the form of disorganized behaviors toward the parent.

The Emergence of Controlling Attachment Strategies

As this confused and increasingly defeated and disorganized infant acquires more capacity to represent and respond to the parent's states of mind, a dramatic reorganization of attachment behavior takes place among many formerly disorganized infants. By the ages of three to five, many formerly disorganized children have given up turning to the parent to help regulate their security and stressful arousal. Instead, they become immersed in attempting to maintain the parent's attention and involvement on the parent's terms, by employing controlling strategies of attachment.

These newly emerging controlling strategies also take at least two forms. Some formerly disorganized children find a way to exert some control over the parent's attention and involvement by caring for the parent, that is by organizing, entertaining, or nurturing the parent. This is termed a controlling-caregiving strategy of attachment. Other children control the parent's attention and

involvement by entering into angry, coercive, or humiliating interactions with the parent. This is termed a controlling-/punitive attachment strategy.

Infant Disorganization, Parental Affective Communication, and Adolescent Borderline, Conduct, and Dissociative Symptoms

I will return to the topic of controlling strategies at the end of the paper. But first, it is important to complete the developmental trajectory into early adulthood. Attachment studies have now followed several cohorts of families from infancy to young adulthood. In our own longitudinal study, we have now reevaluated 53 high-risk adolescents at age 19 who have been followed from the first year of life. The findings from this late-adolescent phase of our longitudinal study further underscore the long-term importance of early disruptions in affective communication between parent and infant.

In the first series of analyses, we looked at early caregiving predictors of borderline symptoms at age 19, as measured by the Structured Clinical Interview for Diagnosis (SCID). Three independent measures of the quality of care in the first year and a half of life were available from the infancy phase of the study.

The first measure was clinically observed risk in infancy, which indexed whether or not the family was referred for infant services during the first nine months of life based on concerns about caregiving. The second measure was maternal involvement or hostile-intrusive behavior toward the infant at home, as represented by factor scores derived from coding 40-minute videotapes of naturalistic interaction in the home at 18 months of age. The third measure was the already-mentioned measure of maternal disrupted affective communication with the infant, assessed in the lab at 18 months.

All of these measures were reliably related to the incidence of borderline or conduct symptoms at age 19. To our knowledge, this is the first report to confirm the

relation between quality of infant care and adolescent borderline symptoms, using prospective observer-based methods rather than retrospective self-report.

Given these results, we took a closer look at the types of maternal disrupted communications associated with later borderline symptoms. We expected that negative-intrusive behaviors would be the best predictors, given links between abuse and borderline symptoms. Instead, to our surprise, maternal withdrawal in infancy was particularly strongly related to borderline symptoms in late adolescence.

It is also important to note that there are genetic effects on borderline symptoms evident in our study. The short form of the serotonin transporter genotype that has been associated with increased incidence of depression in other studies (Caspi, Moffitt, Morgan, Rutter, Taylor, et al., 2004) and is also associated in our emerging data with a fourfold increase in the incidence of borderline symptoms. However, these effects are independent of the effects associated with the quality of early care, so that one type of effect does not explain the other.

In the second set of analyses, we looked at the prediction of later dissociative symptoms (Lyons-Ruth, 2003). Dissociative symptoms have been of particular interest to students of attachment. First, as just reviewed, fear has been prominent in theorizing about the dynamics of disorganized attachment. Second, Giovanni Liotti (1992) has pointed out similarities between the unintegrated nature of infant disorganized behavior and the lack of mental integration characteristic of child or adult dissociative symptoms. Therefore, disorganized infants were thought to be more likely to exhibit dissociative symptoms as these infants approached adulthood.

In the analyses of predictors of dissociative symptoms, we first looked at whether a variety of other factors, such as poverty or single parenthood, early history of maltreatment, or the mother's dissociative symptomology up to age seven could predict the incidence of dissociative symptoms in the

adolescent. However, we found no prediction from any of these factors. When assessments of the quality of the early mother-infant relationship were examined, the findings were quite different.

Maternal disrupted communication at 18 months made a strong contribution to the prediction of dissociative symptoms at age 19. There was no direct prediction of dissociative symptoms from either mental development scores in infancy or verbal reasoning scores in adolescence. This prediction from the quality of early interaction to adolescent dissociative symptoms could not be mediated or "carried forward" by the occurrence of abuse during the first 6 years, because early maltreatment was not a predictor of dissociation, as noted above.

We have not yet examined other aspects of the data being collected in adolescence. Therefore, it is possible that aspects of the adolescent environment, such as the quality of parent-adolescent interaction or abuse events occurring in later childhood and in adolescence, will play a role in accounting for or "carrying forward" the prediction over time from infant disorganization to adolescent dissociation. Whatever later mediators do emerge, however, the direct links that occur over 19 years between the quality of early care and later symptomatology are striking and indicate that something is already different in infancy for those young adults who later become symptomatic. Our results also converge well with similar data on predictors of dissociation from the University of Minnesota longitudinal study (Ogawa, Sroufe, Weinfield, Carlson, & Egeland, 1997).

Clinical Implications

In summary, patterns of parent-infant intersubjective communication, particularly more subtle interactions like parental withdrawal, play an important role in the genesis developmental trajectories that culminate in dissociative, borderline, and conduct symptoms in late adolescence. Why are these subtle interactions so influential? To point us to potential answers to this question, I will

describe the observations of one parent-child dyad, interacting first at six months of age and then at seven years of age, an intermediate point in the developmental pathway from infancy to adolescence.

In the 6-month face to face observation, there is little interaction between mother and child. Even though mother is facing the infant, she cannot use her own affective repertoire to relate to the infant. She does not smile, lean forward, make eye contact, or use “baby talk” (i.e. heightened vocal contour) to create emotional involvement with her infant. Her infant responds by alternately looking at her mother and then fussing and averting her gaze and self-soothing. The only interaction comes at a point where the mother takes the plastic rattle from the baby and teasingly says “My rattle, my rattle.” She then hands it back to the infant and takes it again, saying, “My rattle, my rattle.” This is clearly a role-confused behavior in which the mother is emphasizing her own need for attention and resources in competition with the needs of the baby.

By the time of the age 7 observation we see an almost perfectly role-reversed relationship. The formerly sad and scowling infant has become a sparkling, entertaining child, who willingly gives over the etch-a-sketch to her mother to play with, who deftly turns her mother’s hostile teasing into cause for laughter, and who does her best to be an attentive and supportive presence, following into her mother’s focus of attention on manipulating the etch-a-sketch dials and praising her mother’s success.

These observations underscore how disrupted forms of parental responsiveness can lead to a profound overriding of the child’s voice and initiative around their own attachment needs and to role-reversal in the parent –child dialogue. We see in these observations the power exerted by the quieter forms of parental teasing, withdrawal, and self-referential behavior in infancy and childhood. The parent’s withdrawal from a parental role and need to find nurturing resources for herself can redirect the agency of the child and “write over” whatever developmental directions the child might have pursued on her own.

The very unbalanced dialogue between them, which is dramatically skewed in favor of addressing the parent's needs and facilitating the parent's directions, provides little support for the child's elaboration of her own subjectivity and initiative. Her self-development becomes subordinated to maintaining her mother's mood and averting and managing hostile undercurrents in the relationship.

While a variety of biological and psychological mechanisms could be discussed in relation to the developmental trajectories from early disrupted forms of intersubjective communication to late-adolescent borderline and dissociative symptoms, the model of most interest in this paper is one in which implicit procedures for communicating with others are organizing mental processes. In this view, the organization of mind comes to mirror, in part, the organization of earlier communicative processes. In this view, dissociative defenses and affective splitting, as well as other defenses, do not originate primarily as intrapsychic inhibitions but represent in procedural format the inhibitions in the dialogue structure available to the child over time. The infant internalizes affectively-charged distortions and deletions as they occur in the two-person dialogue and makes those distortions and deletions his own. In this view, the child will develop unintegrated and, ultimately, dissociated or 'split' mental representations to the extent that the caregiver does not engage in an "integrated enough" affective, symbolic, and interactive dialogue with the child. If the parent cannot acknowledge and respond to basic attachment affects and if the parent is fearful or hostile toward integrating those aspects of the child's experience into the affective exchange with the child, the lack of integration of mental states evident in dissociative experiences or in features of borderline personality disorder are more likely to occur.

The final, and perhaps most controversial, clinical implication of these data on intersubjective communication patterns around attachment needs has to do with

psychotherapeutic technique. From an attachment perspective, collaborative communication with the caregiver offers the infant the best opportunity for internalizing a dialogue structure that continues to foster optimal regulation of stressful arousal and flexible exploration of the mental worlds of self and other. From this perspective, then, the overriding goal of psychodynamic treatment would not be that of increasing reflective understanding per se but instead would focus on establishing and expanding areas of collaborative communication in the interactions between patient and therapist.

References

- Ainsworth, M. D. S., Blehar, M., Waters, E., & Wall, S. (1978), Patterns of attachment. Hillsdale, NJ: Erlbaum.
- Bowlby, J. (1969), Attachment and loss: Vol. 1. Attachment. New York: Basic Books.
- Bowlby, J. (1973), Attachment and Loss, Vol. 2. Separation: Anxiety and anger. London: Hogarth Press.
- Bowlby, J. (1980), Loss: Vol. 3. Attachment. New York: Basic Books.
- Carlson, V., Cicchetti, D., Barnett, D., & Braunwald, K. (1989), Disorganized/disoriented attachment relationships in maltreated infants. Developmental Psychology, 25, 525-531.
- Caspi, A., Moffit, T.E., Morgan, J., Rutter, M., Taylor, A., Arseneault, L., Tully, L., Jacobs, C., Kim-Cohen, J., & Polo-Tomas, M. (2004), Maternal expressed emotion predicts children's antisocial behavior problems: Using monozygotic-twin differences to identify environmental effects on behavioral development. Developmental Psychology, 40(2), 149-161.
- Coplan, J.D., Andrews, M.W., Rosenblum, L.A., Owens, M.J., Friedman, S., Gorman, J.M., & Nemeroff, C.B. (1996), Persistent elevations of cerebrospinal fluid concentrations of corticotropin-releasing factor in adult nonhuman primates exposed to early-life stressors: Implications for the pathophysiology of mood and anxiety disorders. Neurobiology, 93, 1619-1623.
- Crowell, J.A., Fraley, C., & Shaver, P.R. (1999), Measurement of individual differences in adolescent and adult attachment. In J. Cassidy & P.R. Shaver (eds.), Handbook

- of Attachment: Theory, Research, and Clinical Applications (pp. 434-465). New York, NY: The Guilford Press.
- Daley, T.C., Whaley, S.E., Sigman, M.D., Espinosa, M.P., & Neumann (2003), IQ on the rise: The Flynn effect in rural Kenyan children. Psychological Science, *14*(3), 215-219.
- Francis, D., Diorio, J., Liu, D., & Meaney, M. (1999), Non genomic transmission across generations of maternal behavior and stress responses in the rat. Science, *286*,: 1155-1158.
- Goldberg, S., Benoit, D., Blokland, K., & Madigan, S. (2003), Atypical maternal behavior, maternal representations and infant disorganized attachment. Development and Psychopathology, *15* (2), 239-257.
- Grienenberger, J. & Kelly, K. (2001), Maternal reflective functioning and caregiving links between mental states and observed behavior in the intergenerational transmission. Presented at biennial meeting of the Society for Research in Child Development, April, Minneapolis.
- Grossmann, K., Grossmann, K.E., Spangler, G., Suess, G., & Unzner, L. (1985), Maternal sensitivity and newborns' orientation responses as related to quality of attachment in northern German. In I. Bretherton & E. Waters (eds.) Growing points in attachment theory and research. Monographs of the Society for Research in Child Development, *50*(1-2, Serial No. 209), 233-256.
- Gunnar, M. (1992), Reactivity of the hypothalamic pituitary adrenocortical system to stressors in normal infants and children. Pediatrics, *90*, 491-497.

- Gunnar, M. R., & Donzella, B. (2002), Social regulation of the cortisol levels in early human development. Psychoneuroendocrinology, 27(1-2), 199-220.
- Gunnar, M., Mangelsdorf, S., Larson, M., & Hertsgaard, L. (1989), Attachment, temperament and adrenocortical activity in infancy: a study of psychoendocrine regulation. Developmental Psychology, 25, 355-363.
- Gunnar, M., & Nelson, C. (1994), Event-related potentials in year-old infants: relations with emotionality and cortisol. Child Development, 65, 80-94.
- Hobson, P. (2002), The cradle of thought: Exploring the origins of thinking. London, MacMillan.
- Kelly, K.M., Ueng-McHale, J., Grienberger, J., & Slade, A. (2003, April), *Atypical maternal behaviors at 4 months of age and their relation to infant attachment disorganization*. Paper presented at the biennial meeting of the Society for Research in Child Development, Tampa, FL.
- Kraemer, G.W. (1992), A psychobiological theory of attachment. Brain and Behavioral Sciences, 15, 493-541.
- Kugiumutzakis, G. (1988), Neonatal imitation in the intersubjective companion space. In S. Braten (ed.) Intersubjective Communication and Emotion in Early Ontogeny. London: Cambridge University Press.
- Liotti, G. (1992), Disorganized/disoriented attachment in the etiology of the dissociative disorders. Dissociation, 4, 196-204.
- Liu, D., Diorio, J., Tannenbaum, B., Caldji, C., Francis, D., Freedman, A., Sharma, S., Pearson, D., Plotsky, P. M., & Meaney, M. J. (1997), Maternal care, hippocampal

- glucocorticoid receptors, and hypothalamic-pituitary-adrenal responses to stress. Science, 277, 1659-1662.
- Lyons-Ruth, K. (1999), The two-person unconscious: Intersubjective dialogue, enactive relational representation, and the emergence of new forms of relational organization. Psychoanalytic Inquiry, 19, 576-617.
- Lyons-Ruth, K. (2003), Dissociation and the parent-infant dialogue: A longitudinal perspective from attachment research. Journal of the American Psychoanalytic Association, 51, 883-911.
- Lyons-Ruth, K., Bronfman, E. & Parsons, E. (1999), Atypical maternal behavior and Disorganized infant attachment strategies. Frightened, frightening, and atypical maternal behavior and disorganized infant attachment strategies. In J. Vondra and D. Barnett (Eds.) Atypical patterns of infant attachment: Theory, research, and current directions. Monographs of the Society for Research in Child Development, 64, (3, Serial No. 258).
- Lyons-Ruth, K., Melnick, S., Bronfman, E., Sherry, S., Llanas, L. (2003), Hostile-helpless relational models and disorganized attachment patterns between parents and their young children: Review of research and implications for clinical work. In L. Atkinson and K. Zucker (Eds.) Clinical Applications of Attachment, (in press). New York: Guilford.
- Lyons-Ruth, K., & Spielman, E. (2004), Disorganized infant attachment strategies and helpless-fearful profiles of parenting: Integrating attachment research with clinical intervention. Infant Mental Health Journal, 25(4), 318-335.
- Madigan, S. (2002), *Anomalous Mother-Infant Interaction, Unresolved States of Mind*,

and Disorganized Attachment Relationships, Unpublished M.A. thesis,
University of Western Ontario, London, Canada.

Main, M. (2000), The organized categories of infant, child, and adult attachment: flexible vs. inflexible attachment under attachment-related stress. Journal of the American Psychoanalytic Association, 48, 1055-96; discussion 1175-87.

Main, M., & Hesse, E. (1990), Parents' unresolved traumatic experiences are related to infant disorganized attachment status: Is frightened and/or frightening parental behavior the linking mechanism? In M. Greenberg, D. Cicchetti, & E.M. Cummings (Eds.), Attachment in the preschool years: Theory, research and intervention (pp. 161-184). Chicago: University of Chicago Press.

Main, M., & Solomon, J. (1990), Procedures for identifying infants as disorganized/disoriented during the Ainsworth Strange Situation. In M. Greenberg, D. Cicchetti, & E. M. Cummings (Eds.), Attachment in the preschool years: Theory, research and intervention. Chicago: University of Chicago Press.

Mitchell, S.A. (1997), Influence and autonomy in psychoanalysis. Hillsdale, NJ: The Analytic Press, Inc.

Nachmias, M., Gunnar, M., Mangelsdorf, S., Parritz, R. H., & Buss, K. (1996). Behavioral inhibition and stress reactivity: the moderating role of attachment security. Child Development, 67(2), 508-522.

Ogawa, J.R., Sroufe L.A., Weinfield, N.S., Carlson, E.A., & Egeland, B. (1997), Development and the fragmented self: Longitudinal study of dissociative symptomatology in a nonclinical sample. Development and Psychopathology, 9, 855-879.

- Oster, H. & Ekman, P. (1978), Facial behavior in child development. In A. Collins (Ed.), Minnesota Symposia on Child Psychology, *11*, 231-276.
- Porges, S.W. (2005), Social engagement and attachment: A phylogenetic perspective. In S. Carter, L. Ahnert, et al. (eds.), Attachment and Bonding: A New Synthesis. Dahlem Workshop Report 92. (in press). Cambridge, MA: The MIT Press.
- Spangler, G., & Grossmann, K. E. (1993), Biobehavioral organization in securely and insecurely attached infants. Child Development, *64*, 1439-1450.
- Spangler, G. & Grossmann, K. (1999), Individual and physiological correlates of attachment disorganization in infancy. In J. Solomon & C. George (Eds.), Attachment disorganization. (pp. 95-124). New York: Guilford
- Stern, D. (1985), The Interpersonal World of the Infant: A View from Psychoanalysis and Developmental Psychology. New York: Basic Books.
- Taylor, S.E., Klein, L.C., Lewis, B.P., Gruenewald, T.L., Gurung, R.A., & Updegraff, J.A. (2000), Biobehavioral responses to stress in females: tend-and-befriend, not fight-or-flight. Psychological Review, *107*, 411-429.
- Tomasello, M. (1999), The Cultural Origins of Human Cognition. Chapter 6: Discourse and Representational Redescription. Cambridge, MA: Harvard University Press.
- Tzourio-Mazoyer, N., De Schonen, S., Crivello, F., Reutter, B., Aujard, Y., & Mazoyer, B. (2002), Neural correlates of woman face processing by 2-month-old infants. NeuroImage, *15*, 454-461.
- Trevarthen C. (1980), The foundations of intersubjectivity: Development of interpersonal and cooperative understanding in infants. In D. Olson (Ed.) The Social Foundations of Language and Thought. (pp.382-403). New York: Norton.
- van IJzendoorn, M. H., Schuengel, C., Bakermans-Kranenburg, M. J. (1999),

Disorganized attachment in early childhood: Meta-analysis of precursors, concomitants, and sequelae. Development and Psychopathology, *11*, 225-249.

Weaver, I., & Meaney, M. (2000), Mothering affects gene expression. Paper presented at the annual meeting of the Society for Neuroscience, New Orleans, LA.

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