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## CONTRIBUTIONS OF THE MOTHER-INFANT RELATIONSHIP TO DISSOCIATIVE, BORDERLINE, AND CONDUCT SYMPTOMS IN YOUNG ADULTHOOD

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### Abstract

Recent high-risk longitudinal studies have documented a unique contribution of the quality of the early mother-child relationship to diverse forms of psychopathology in young adulthood, even with family economic status, later traumatic experiences, and some genetic factors controlled. In addition, measures of attachment-related deviations in caregiver-infant interaction predict more than measures of infant attachment behavior alone. This article reviews those findings in the context of cross-disciplinary thinking on the importance of shared subjectivities in human evolution and development and in the context of recent studies beginning to map the intersection between processes of interaction and the development of the child's propensities to share mental states with others.

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Evolutionary theorists have recently pointed to a shift in the basis of evolutionary change from biologic to what I would call *dialogic* mechanisms, or from “genes to memes.” Michael Tomasello (1999) noted that more complex cultural innovations have been introduced in the past 50,000 years than were introduced in the previous 6 million years. He, as well as others, theorized that a biological change occurred that shifted the basis for evolutionary innovation 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 biological evolution. He assigns this shift to the increased ability of humans, relative to other primates, to share in the thoughts and feelings of others. As Hobson (2004) stated in his recent book,

Before language, there was something else—more basic, in a way, and more primitive, and with unequalled power in its formative potential . . . Something that could evolve in tiny steps, but suddenly give rise to the thinking processes that revolutionized mental life. Something that (unfortunately) no fossil remains can show us. That something was social engagement with each other. (p. 2)

This capacity for social engagement is, of course, manifest first at the level of affective sharing and only later at the level of explicit language, teaching, and learning. The important point here is that in contrast to other primates, the human infant does not have to acquire firsthand all the knowledge and experiences necessary to survive. Instead, to participate fully in the cultural learning processes of human society, the infant needs to acquire the skills for sharing affective valences and aligning with the intentional and mental states of others.

In this article, I will discuss first some of the recent longitudinal findings in our 20-year study of infants at social risk. Then I will circle back to infancy to look at how these processes of

social risk might intersect with the infant's emerging steps in sharing mental states and joint attention with others.

## **PARENTAL AFFECTIVE COMMUNICATION, INFANT DISORGANIZATION, AND ADOLESCENT BORDERLINE AND DISSOCIATIVE SYMPTOMS**

Clinically, there is a strong developmental/causal model of factors associated with the emergence of borderline and dissociative psychopathology in young adulthood (see Figure 1). This model is one in which difficult family environments are associated with exposure to trauma and abuse. Trauma and abuse, in turn, are thought to precipitate defensive mental processes, including borderline, antisocial, and dissociative symptoms, designed to prevent us from constantly reexperiencing these traumatic events.

The Harvard Family Pathways Study is a study of 116 young people, aged 18 to 22 years, exploring the contributions of caregiving, trauma, and genetic factors to overall adaptation and psychiatric symptomatology in early adulthood. The study includes two cohorts: one group of 56 families followed from infancy and one group of 60 families recruited in young adulthood.

In the longitudinal cohort, 100% met federal poverty guidelines in infancy, and 45% were single parents. Fourteen percent had active maltreatment charges. Twenty-nine were originally referred for clinical home-visiting services by a variety of community service providers, such as nurse practitioners; 27 were socioeconomically matched, low-income community families. In young adulthood, borderline and antisocial features were assessed using the Structured Clinical Interview for Diagnosis II (SCID II; First, Gibbon, Spitzer, Williams, & Benjamin, 1997). Dissociative symptoms were assessed via the Dissociative Experiences Scale (DES; Bernstein & Putnam, 1986).

In the first series of analyses, we looked at early caregiving, trauma, and genetic factors as predictors of borderline and antisocial symptoms at age 19. The features of borderline and antisocial behavior that most characterized these young people were impulsive self-damaging behavior, unstable relationships, illegal acts, and aggressiveness. Two independent measures of the quality of care in the first 18 months of life were available from the infancy phase of the study, including clinical referral for parent-infant services during the first 9 months of life and disrupted mother-infant interaction in the lab as assessed using the AMBIANCE coding system at 18 months. We also collected three measures of the severity of abuse: protective services involvement from birth to age 7 years, self-report of later abuse on the Conflict Tactics Scale (CTS; Strauss, 1990), and examiner-rated traumatic experiences on the Childhood Traumatic Experiences Scale-Revised, coded from narratives of the Adult Attachment Interview (Lyons-Ruth & Block, 1996). Genetic stress vulnerability was indexed by genotyping participants for the serotonin transporter polymorphism (5HTT; see Lyons-Ruth et al., 2007).

First, there were genetic effects on borderline personality disorder and antisocial personality disorder traits (two or more features) evident in our study. Impulsive self-damaging behavior constitutes a core feature of borderline personality disorder while impulsive other-damaging behavior is the criterion for antisocial personality disorder (American Psychiatric Association, 1994); however, their underlying phenotypic commonalities are acknowledged in that both borderline and antisocial personality disorders are grouped together as part of Cluster B "dramatic/erratic" personality disorders. These two variants of impulse disorders are strongly associated with gender, with males more likely to be diagnosed with antisocial disorder and females more likely to be diagnosed with borderline disorder. Therefore, the combined borderline/antisocial phenotype may describe a common core predisposition to engage in dysregulated and destructive behavior when under stress, a phenotype that is expressed somewhat differently by males and females. The short form of the 5HTT has been associated

with greater stress reactivity of the amygdala and cortisol systems (Barr et al., 2003; Hairiri, 2002), and disruption in the serotonin neurotransmitter system has been linked to suicidal behavior and impulsive aggression towards others by a variety of methods (Brown, 1982; Linnoila & Virkkunen, 1992; Stanley, Molcho, & Stanley, 2000).

Among our low-income, young adult sample, the short form of the 5HTT was associated with an increase in the incidence of borderline and antisocial symptoms (Lyons-Ruth et al., 2007). The odds ratio indicated that the relative risk of antisocial or borderline traits was increased by a factor of 2 for each short allele in the genotype, so that those with two short alleles had a fourfold increase in risk for borderline or antisocial traits as young adults. This genetic effect was independent of depressive diagnosis. The genetic effect also was independent of effects associated with the quality of early care, so that one type of effect did not explain the other.

We also examined the relation between the quality of early caregiving and later borderline and conduct traits. Infants who were referred for early clinical home-visiting services because of concerns about the quality of care also were more likely to display borderline or conduct disorder traits in young adulthood, after controlling for gender and the presence of the short serotonin transporter allele (Lyons-Ruth, Holmes, & Hennighausen, 2005). Conduct and antisocial traits, which were more frequent among boys, displayed the same set of significant caregiving and genetic predictors as did borderline symptoms, which are more frequent among girls.

Given the predictive power of early referral for later personality disorder traits, we also examined whether a reliable and validated laboratory assessment of parent-infant interaction also would be related to later outcomes and possibly account for the predictive power of early referral. To index the quality of early care, a measure of disrupted maternal affective communication was used that was assessed from videotapes of the Strange Situation (AMBIANCE; for validity meta-analysis, see Madigan et al., 2006; see Table 1). The level of disrupted affective communication at 18 months of age also was a significant predictor of later borderline or conduct symptoms.

Given these results, we took a closer look at the *types* of maternal disrupted communications associated with later borderline or conduct symptoms. We expected that negative-intrusive behavior would be the best predictor, given links between negative-intrusive behavior and abuse (e.g., Lyons-Ruth, 1992; Wolfe, 1985) and between abuse and borderline features (e.g., Blanz, Schmidt, & Esser, 1991; Zanarini et al., 1997). Instead, maternal withdrawal to the baby's attachment cues had by far the greatest impact, and the extent of the mother's withdrawing behavior in the attachment assessment accounted for the relation between clinician referral and later borderline or conduct features.

In further analyses, traumatic experiences also were significantly related to later borderline or conduct traits; however, the extent of later abuse did not account for the independent effect of the quality of early care. Therefore, we need an etiological model of young adult self- and other-damaging behavior that includes both quality of early care and extent of abuse as independent contributors.

In a second set of analyses, we looked at the prediction of later dissociative symptoms both in relation to quality of early care and later trauma (Dutra, Bureau, Holmes, Lyubchik, & Lyons-Ruth, 2008; Dutra & Lyons-Ruth, 2005; Lyons-Ruth, Dutra, Schuder, & Bianchi, 2006). Dissociative symptoms have been of particular interest to students of attachment. First, fear has been prominent in theorizing about the dynamics of disorganized attachment (e.g., Main & Hesse, 1990). Second, Liotti (1992) noted similarities between the unintegrated nature of infant disorganized behavior and the lack of mental integration characteristic of dissociative symptoms. Therefore, theorizing about the likely long-term consequences of disorganized

attachment strategies has focused in part on the potential for exhibiting contradictory and unintegrated mental processes as these infants approach adulthood (Main & Hesse, 1990).

In infancy, quality of early care was indexed by infant attachment disorganization, quality of mother-infant interaction at home at 12 months, and quality of interaction in the lab at 18 months (AMBIANCE scale). Abuse experiences in childhood were indexed by early protective services involvement, young adult self-report on the CTS (Strauss, 1990), and interviewer ratings of overall severity of abuse from the AAI [Childhood Traumatic Experience Scales-Revised (CTES-R): Dutra, Jenei, Long, Holmes, & Lyons-Ruth, 2005; Lyons-Ruth, & Block, 1996]. In Grade 2, teachers reported on child internalizing behavior problems. A variety of other potentially contributing factors were examined, such as poverty, single parenthood, and the mother's earlier psychopathology. None of these factors predicted extent of dissociative symptoms in young adulthood (for maternal psychopathology variables, see Table 2).

The young adult's history of maltreatment also was examined using the three measures described earlier. On the CTES-R, 13% of the participants were rated as experiencing moderate to severe childhood sexual abuse, 44% physical abuse, 52% verbal abuse, and 40% witnessed violence. Only extent of self-reported verbal abuse predicted later dissociative symptoms (see also Teicher, Samson, & Polcari, 2006).

However, the findings were quite different when assessments of the quality of the early mother-infant relationship were examined. Both maternal involvement at home at 12 months, maternal flatness of affect at 12 months, and maternal disrupted communication in the lab at 18 months made strong contributions to the prediction of dissociative symptoms at age 19 years. The prediction from infant disorganization to later dissociative symptoms did not reach significance. Again, as was the case for borderline or conduct traits, this prediction from the quality of early care to adolescent dissociative symptoms was not mediated or "carried forward" by the extent of abuse, whether the abuse occurred during the first 6 years of life or later.

Finally, results revealed that children who experienced lack of early maternal involvement in infancy were exhibiting internalizing symptoms of sadness, anxiety, and withdrawal by Grade 2 that were notable to teachers. Furthermore, a mediation analysis demonstrated that many of these symptomatic children went on to report high scores on the DES by 20 years of age. Thus, the appearance of internalizing behavior problems by school age opens the way for earlier identification and intervention with young children at risk for dissociative outcomes.

These findings in relation to borderline, antisocial, and dissociative symptoms underscore the long-term importance of early disruptions in affective communication between parent and infant. Our results also converge well with similar data on predictors of dissociation from an attachment-focused longitudinal study at the University of Minnesota. In that study as well, when predictors of dissociative symptoms were examined, a broadly coded index of maternal emotional unavailability during the first 2 years of life, as well as infant disorganization of attachment during the first 2 years, predicted dissociative symptoms in young adulthood (Ogawa, Sroufe, Weinfield, Carlson, & Egeland, 1997). Other factors, including abuse experiences, did not explain additional variability in dissociative symptoms once prediction from the quality of early care was accounted for.

In addition, both the findings from our own study and the data from the Ogawa et al. (1997) study have demonstrated that the influence of maternal behavior is both *stronger than* and *partially independent of* the prediction from infant disorganization itself. So we need a broader framework for understanding the power of these early communication processes than their influence on disorganization of attachment processes, per se.

We have not yet examined other aspects of the data being collected in middle childhood and adolescence. Therefore, it is possible that aspects of the childhood and adolescent environment, such as the quality of parent-child and parent-adolescent interaction, will play a role in accounting for or “carrying forward” the prediction over time from the quality of early care to adolescent borderline and dissociative symptoms. Whatever later mediators do emerge, however, the relation that occurs over 19 years between quality of early care and later outcomes is striking.

## **MATERNAL DISRUPTED AFFECTIVE COMMUNICATION WITH THE INFANT**

These longitudinal findings indicate that disruptions in early mother-infant communication are clearly important to long-term prediction of some forms of psychopathology. Thus, it is important to examine what is being coded as a disruption of communication. The most important aim of the AMBIANCE coding system, as initially developed in 1991 (Bronfman, Parsons, & Lyons-Ruth, 1991-2004), was to operationalize the extent to which the parent failed to follow into the intentional or affective direction of the baby’s communications by engaging in contradictory responses to infant cues or failing to respond to infant cues altogether. These failures and contradictions took five broad forms.

The five broad aspects of disrupted parental affective communication assessed by the system are illustrated in Table 2. A recent validity meta-analysis of all studies using the AMBIANCE showed an effect size of  $r = .35$  ( $N = 384$ ) in relation to infant attachment disorganization, whether maternal behavior was coded in the Strange Situation or in a separate laboratory assessment (Madigan et al., 2006) (see Figure 2). The AMBIANCE codes also showed a stability coefficient of  $.56$  ( $N = 203$ ) over time periods from 8 months to 5 years. Finally, when these same categories of maternal behavior were coded during face-to-face-interaction at 4 months of age, they were predictive of infant disorganization at 1 year (see Figure 3) (Kelly, Ueng-McHale, Grienberger, & Slade, 2003). The accumulated studies have indicated that we now have a foothold on reliably capturing central aspects of disturbance in parental sharing with the infant.

In addition, disrupted affective communication is more strongly related to infant disorganization than are more global ratings of overall sensitivity (Madigan et al., 2006; van IJzendoorn, Schuengel, & Bakermans-Kranenburg, 1999). We believe that this difference in prediction stems from the contradictory cues inherent in maternal behavior that is disorganizing. A global sensitivity rating is not differentiated enough and is not adequately descriptive of the unusual combinations of cues that are associated with disorganization. For example, role confusion, disorientation, and withdrawing behavior, as well as failure to provide structure and containment for the infant around fear-arousing experiences, are often combined with gentle behavior, tender and sympathetic affect, and attempts to comfort. Likewise, negative or rejecting behavior towards the infant’s cues is often combined with simultaneous attempts to involve the infant. It is these more subtle and contradictory organizations of parental behavior that are indexed by the AMBIANCE. At a theoretical level, we have related such contradictory cues to the parent’s competing unbalanced hostile and helpless representations of relationships (Lyons-Ruth, Bronfman, & Atwood, 1999; Lyons-Ruth, Melnick, Bronfman, Sherry, & Llanas, 2004).

## **THE INFANT’S SIDE OF THE SHARING PROCESS**

Why is the parent’s inability to consistently follow into the infant’s affective and intentional direction by role reversing, withdrawing, or other unbalanced forms of communication so important to the child’s developmental trajectory? Obviously, many mechanisms, at many different levels of biological, relational, and cognitive process, are likely to be involved in how such disrupted communication processes impact the infant’s later development. For example,

in animal models, deviant early care resets the stress response system and alters the expression of hundreds of genes related to neural development, as shown in the recent work of Michael Meaney and colleagues (Francis, Diorio, Liu, & Meaney, 1999; Weaver & Meaney, 2000). Clinicians also have rich theoretical models of the intrapsychic structures, including defensive processes and cognitive meanings, forming around these interpersonal dynamics. Additionally, attachment research has recently documented the association between maternal behavior and infant attachment disorganization (Madigan et al., 2006).

My interest here, however, is to return to the introduction to the article and ask how these communication disruptions might intersect with the infant's developing propensity to align with the intentional and mental states of others? What do we know about the baby's emerging capacity to share with others when there are deviations in maternal sharing processes such as those indexed on the AMBIANCE? There is surprisingly little research on how social risk factors affect the infant's moving into the intentional states of others, despite a rich tradition of research regarding the steps in self-other understanding occurring under more normative conditions. For example, studies by Tomasello, Hobson, Mundy, and others have focused in detail on the coordination of infant and adult joint attention to a third object or event (Hobson, 2004; Mundy, Kasari, & Sigman, 1992; Tomasello, Carpenter, Call, Behne, & Moll, 2005). However, there has been relatively little integration of this normative work on joint attention with work on the quality of parent-infant affective sharing, especially under conditions of risk.

In fact, Tomasello et al. (2005), in a recent article in *Behavioral and Brain Sciences*, noted that there has been almost no research that establishes a solid relationship between any particular social experience in infancy and individual differences in the unfolding of the developmental pathway towards understanding others as having intentions or goals. They tentatively concluded that this is a very robust, heavily genetically channeled developmental capacity in humans that emerges in all "normal" human environments.

However, the larger evolutionary argument made by Tomasello et al. (2005) depends not simply on understanding others as displaying goal-directed behavior but on understanding others as having mental states like one's own that can be shared (see Hobson, 2004). Given that few studies have explored how disturbed social environments impact the child's understanding of and sharing with other minds, any conclusion that these broader processes are highly evolutionarily channeled would be premature. What do we know about configurations of sharing of mental states over the first 3 years under conditions of risk?

### **Three to 6 Months: Sharing Changing Affective Valences With Another**

There is very little research relating face-to-face sharing of pleasurable affect and eye-to-eye contact from 3 to 6 months to later forms of joint attention to the larger world (although for a theoretical perspective, see Reddy, 2003). However, a reasonable hypothesis would be that the quality of early dyadic sharing would affect the infant's propensity to enter into more complex forms of sharing of attention to the larger world by 1 year of age (in addition to influencing the infant's ability to use the parent as a secure base when stressed). To the extent that the parent takes the lead in moving into the infant's intentional direction, the infant also would have increasing experiences of sharing an affective and intentional direction with another by participating in the smoothly orchestrated process of moving into and out of states of shared interest and pleasure, focused at this point within the dyad rather than on the external world.

In contrast, in cases of disrupted early communication where there is little or no joining of the affective directions of parent and infant, we would expect that such joining would not become a part of the beginning identifications of the infant (see Hobson, Chidambi, Lee, & Meyer, 2006); that is, an identification *with a person*, and *as a person*, who shares emotional orientations with others. In addition, there would be no incipient skills emerging for how to

coordinate affective/intentional directions with another by connecting gaze and following changes in the affective valence of the other's cues toward the self. The infant's initial capacity and propensity to mirror and respond to the states of others in ongoing interaction would not be shaped into a realized social skill.

### **Twelve Months: Sharing Orientations and Influencing Joint Attentional Focus Towards Objects in the World**

The classic work on social referencing has taught us that by 12 months of age, the infant can take on the parent's affective orientations toward objects or events outside the dyad itself and use those orientations to guide his or her own actions. The related body of work on emerging vocal and gestural communication at this age has indicated that strategies for affecting the parent's focus of attention also begin to emerge at about the same time. Both new capacities are thought to be due to a more general emerging understanding that the other has a mental orientation that can be elicited, joined with, and perhaps influenced (for a review, see Hobson, 2004). Wariness to strangers also consistently appears over this period from 9 to 12 months, as do organized forms of attachment strategies, and elsewhere we have argued that such attachment phenomena also may be structured by emerging concepts of mind (Hennighausen & Lyons-Ruth, 2005).

A few studies have begun to examine how the quality of the parent-infant relationship by 12 months of age impacts the infant's sharing of a focus of joint attention with others towards things of interest in the world. In the first study by Claussen, Mundy, Mallik, and Willoughby (2002), 12- and 18-month-old infants with and without disorganized attachments were evaluated for their propensity to initiate joint attention with a lab assistant under controlled conditions. They found that at 12 months, infants with disorganized attachments were just as likely to initiate shared attention with a lab assistant as were nondisorganized infants, even though the affective quality of the interaction was more negative (but see below for 18-month-olds). In a recent series of studies involving infants of mothers with borderline personality disorder, again, 12-month-old infants of mothers with borderline personality disorder were just as likely to initiate shared attention with their mothers as were infants of nonborderline mothers (Meyer, Hobson, Beck, & Lyons-Ruth, 2006). This occurred even though these infants also were more likely to be disorganized in their attachments (Hobson, Patrick, Crandell, García-Pérez, & Lee, 2005) and the borderline parents were found to be more intrusive on a structured play task (Hobson, Patrick, Crandell, Perez, & Lee, 2004). In addition, the quality of affect in the dyad was more negative among those who did not initiate joint attention.

In the Meyer et al. (2006) study, borderline and nonborderline mothers also were coded for disrupted communication on the AMBIANCE at 12 months. With this more finely grained measure, the baby's decreased propensity to initiate a focus of joint attention with mother was moderately negatively related to disruptions in parental communication at 12 months ( $r = -.33, p < .07; N = 33$ ) (Meyer et al., 2006). Thus, more process-oriented measures of parent-infant communication may offer a more powerful window on the factors that disrupt the sharing of a focus of attention with others, in comparison to the more molar variables of maternal diagnosis or infant attachment classification.

Note, however, that the 12-month-old disorganized infant is still seeking to share orientations with the parent and with others, at much the same rate as infants in more collaborative relationships. Clinically, then, it is important to note that the infant's seeking of joint attention at 12 months is not a good index of the quality of the parent-infant relationship.

## **Eighteen Months: Sharing Experiences of Self-With-Other, Parent Experienced as Agent of Frustration or Distress?**

What happens by 18 months? We know from a variety of work that the period from 12 to 24 months is a period of major conceptual change in the infant's emerging awareness of other minds. In addition to new forms of self-awareness, new forms of other-awareness also appear. We might term this period the period of self-with-other awareness or third-order intersubjectivity to capture its distinctiveness in relation to earlier forms of intersubjective exchange.

Hobson (2004) captured the essence of this new form of awareness well.

As she emerges from infancy, the child comes to appreciate the force of the world-according-to-the-other with a new kind of sharpness and definition. She does not simply react to a person's perspective as shown in the person's bodily actions and expressions. She seems to understand what a perspective, and even what a particular individual's perspective, really amounts to . . . [Other people] are seen to have their own motives to acquire, possess or persuade. They are recognized to have feelings of their own about the world as they experience it. (p. 79)

By 18 months, then, the toddler has accomplished a complex mental odyssey and is able to conceive of the parent-as-agent; that is, as a separate person with orientations of his or her own that are distinct from those of the toddler's. The older toddler also is able to hold in mind as separable objects of thought both his own orientation and the orientation of the parent. However, we have yet to delineate how this new level of self-with-other awareness in toddlerhood shapes and is shaped by risk-related variations in early communication.

What might this imply for the infant at risk? We have recently advanced the view that by 18 months of age, but not before, the infant becomes able to conceive of the parent as an agent of his own distress. With this new awareness of the parent's agency *in relation* to the infant, a new personalization of the negative interactions between them can begin to emerge on the part of the toddler. The parent is held responsible in a new way for the quality of his or her interaction with the infant. A clinical example is offered to illustrate this hypothesis of the emerging, more personalized response of the toddler:

Twenty months ago, a couple became the grandparents of a new infant by their 18-year-old son and his 20-year-old girl friend, Erin. The young parents both had very difficult developmental histories, and their relationship with one another had always been intense and unstable. Nevertheless, the first year with the baby, Caitlin, appeared to go well. By family accounts, Erin, the young mother, was attentive to Caitlin, and Maddy, the grandmother, took care of Caitlin 1 day a week.

Recently, however, with the baby nearing 20 months of age, there was a major family crisis. Erin melted down into screaming, inconsolable tears while picking up her daughter at grandmother Maddy's house. Erin was distraught because she could see, as could everyone else, the increasing indications that Caitlin did not want to interact with her and preferred the company of her grandmother. In fact, Caitlin also preferred the company of her other grandmother and the company of Melissa, her mother's best friend, to being with her mother.

The family had not reported problems in the mother-baby relationship before, so the therapist asked if the baby had always preferred others, and grandmother Maddy said "Oh no, Erin is a good mother and things had been going well." So the therapist asked when this change began to be noticeable to the family, and she said "Well, we've just been noticing it getting worse over the last few months, maybe since Christmas." The baby would have been around 14 months old at Christmas time.



While we might first assume that this shift in the baby's responses occurred in response to some major family change, the past 12 months had been an unusually stable and productive period for the entire family, including the two young parents. But for baby Caitlin, at some point after 14 months of age, this preference for someone other than her emotionally unstable mother began to be increasingly clearly expressed and was experienced by her mother as a very painful and personalized rejection. We have termed this increasing aversion to interacting with a misattuned parent as the baby's "shunning of sharing" with her.

We have only scattered research results to inform this hypothesis of a proposed shift from 12 to 18 months in "shunning of sharing" among at-risk infants. There are three sets of empirical findings I would point to, however. First, in the study of joint attention mentioned earlier by Claussen et al. (2002), there was a shift from 12 to 18 months in the disorganized infant's propensity to initiate episodes of joint attention with the lab assistant. At 18 months, infants with disorganized attachment strategies were significantly less likely to recruit the examiner's shared attention to things that interested them than were nondisorganized infants. They also displayed more negative affect during the interaction, as had the 12-month-old disorganized infants.

Second, disorganized responses to the parent are not stable in high-risk samples over this age range. In an earlier report from our high-risk cohort, we documented an increase in particular forms of disorganized behavior in our sample from 12 to 18 months of age (Lyons-Ruth, Repacholi, McLeod, & Silva, 1991). The forms of disorganized responses that became significantly more frequent by 18 months combined angry and avoidant responses with disorganized behavior toward the parent. These responses look more actively directed at the parent compared to the more disoriented, hesitant, or contradictory responses that constitute the majority of disorganized attachment behavior at 12 months of age (see Main & Solomon, 1990). Therefore, in work with Gwendolyn Kelso and Anna Lock, we have begun to examine whether this shift in the degree and quality of disorganization is part of a larger developmental shift in the infant's propensity to share interest and other vulnerable states with the parent.

Finally, converging with the clinical anecdote reported earlier, a variety of researchers have reported indiscriminate attachment behavior to relative strangers among young children reared in institutional care as well as among maltreated, home-reared children (Boris et al., 2004; O'Connor et al., 2003; Zeanah et al., 2004; Zeanah, Smyke, Koga, & Carlson, 2005). To further explore how such indiscriminate attachment behavior might present among high-risk, home-reared infants, a behavioral rating scale was developed for coding indiscriminate or nonselective attachment behavior towards the stranger in the Strange Situation procedure (Ainsworth, Blehar, Waters, & Wall, 1978; Lyons-Ruth, Bureau, Riley-Kokonezis, & Atlas-Corbett, in press).

By 18 months, but not at 12 months, preferentially sharing interest and attachment behavior with the stranger compared to the mother was strongly predictive of aggressive and hyperactive child behavior in kindergarten, accounting for variability in later problem behavior not accounted for by attachment insecurity or disorganization, per se. Extent of stranger engagement also was independently associated with clinically judged risk and extent of disrupted affective communication between parent and infant. This preferential engagement with the stranger was characterized by greater levels of joint attention, affective sharing, and close physical contact when alone with the stranger than when interacting alone with the parent.

Developmentally, however, our hypothesis is that the shifts from 12 to 18 months in the propensity to initiate joint attention and engagement with the caregiver in the face of disturbed interactions reflect an emerging sense of the parent as an independent agent in relation to the self, an agent who is a potential source both of pleasurable joint directions and of misaligned

and distressing interactions. This level of awareness of other-in-relation-to-self would not be available at 12 months of age. At 12 months, we would interpret the infant's stance towards the parent's affective cues as one of simply attempting to read and accommodate to the parent's attitudes toward the world at large. We would see this world as including the parent's attitudes toward the infant's own behavior, as in social referencing, but does not include self and other as separately represented, but related, agents. The new level of self-with-other awareness emerging at 18 months, in contrast, may generate an increased propensity for representing the parent-as-agent-in-relation-to-the-self and responding to a disturbing parent with increased shunning of sharing and preferential engagement with others. This shunning of sharing by the infant, in turn, is likely to be painful to the parent and adds a new and more personalized element to the emerging dynamic of risk between them.

This hypothesis does not account for when such shunning of sharing would be generalized to an unfamiliar adult or when the new adult would become a preferred partner. We suspect that the extent of shunning versus preference may have to do with the extent to which the new adult actively elicits and scaffolds positive affective engagement with the infant, rather than relying on the infant to initiate the affective engagement. The degree of shunning versus preference also may be related to how emotionally aroused or distressed the infant is at the time. This would be another topic for future work.

In summary, we have found across longitudinal studies that the quality of the early parent-infant dialogue has important predictive power over a 20-year period. In our work, the long-term predictive power of early parental behavior outweighs prediction from infant attachment classification itself. This predictive power is not due to overlap with particular socioeconomic circumstances such as single parenthood or parental education nor is it explained by the relation between the quality of the early dialogue and the occurrence of later abuse. Quality of the dialogue makes its own contribution, independent of demographic factors or abuse history. Some of this predictive power of the early dialogue may come from long-term continuity in the quality of the dialogue over many years rather than from the infancy onset of these dialogues. We are currently examining such continuity in relation to our adolescent-parent interaction data.

However, these disrupted interactive processes are present early in infancy and are demonstrably impacting early steps in the developmental processes related to disorganized and indiscriminate forms of attachment, and possibly also to broader processes of sharing joint attention and interest in the world with other minds. It is now time to knit these strands together to chart, from the baby's side, which aspects of the baby's development of sharing are highly channeled and robust, even in the face of major parental disruptions, and which are redirected or derailed by aspects of early care. Answering these questions would move us to a more dyadic and dynamic systems view of understanding the development of relatedness. Particular deviations in early communication may catalyze a series of further deviations in the infant's understanding of other minds, changes that put the infant on a fundamentally different course of human relationship over time.

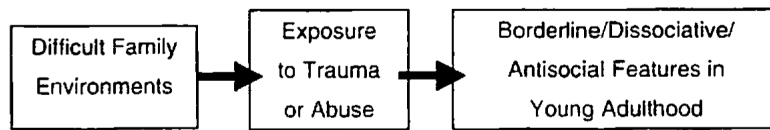
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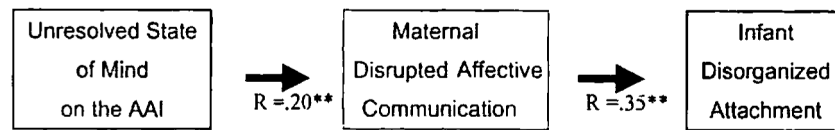
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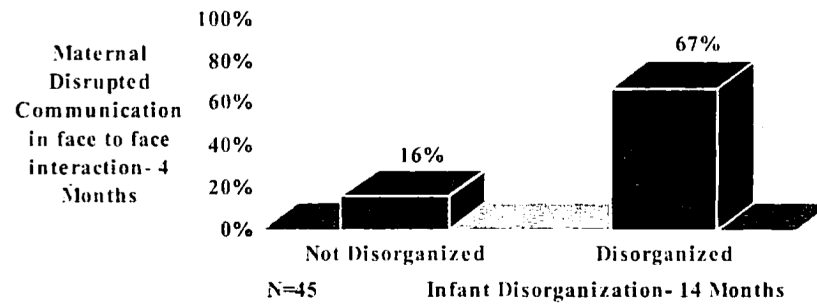
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**Figure 1.** Hypothesized developmental model of early family environment and later borderline, dissociative, and antisocial features.



**Figure 2.** Disrupted maternal communication, infant disorganization, and maternal unresolved state of mind: Meta-analytic results (Madigan et al., 2006).



**Figure 3.** Disrupted communication in early face-to-face interaction and infant disorganization. From: "Atypical Maternal Behaviors at 4 Months of Age and Their Relation to Infant Attachment Disorganization," by K. Kelly, J. Ueng-McHale, J. Grienberger, & A. Slade, 2003, Paper presented at the biennial meeting of the Society for Research in Child Development, Tampa, FL. Reprinted by permission of the authors.



**TABLE 1**  
**Dimensions of Maternal Disrupted Affective Communication**

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Affective Communication Errors (e.g., talks in inviting voice, but physically blocks infant's access)  
Role Confusion: (e.g., draws attention to self when infant is in need)  
Disorientation: (e.g., appears confused, hesitant, or frightened with infant; incongruous affect)  
Negative-Intrusive Behavior: (e.g., mocks or teases infant)  
Withdrawing Behavior: (e.g., fails to initiate interaction, does not greet infant after separation)

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**TABLE 2**  
**Maternal Psychopathology and Adolescent Dissociative Symptoms**

Mother's Psychiatric Symptoms	Young Adult Dissociative Symptoms <i>r</i>
Any <i>DSM-III-R</i> Dx (DIS, 18 months)	-.14 to .13
Early Chronicity of Depression (CES-D, child age 1-5 years)	.09
Current Depressive Symptoms (CES-D, child age 19 years)	.17
PTSD Symptoms (Mississippi Scale, 9 years)	-.17
Dissociative Symptoms (Dissociative Experiences Scale, 9 years)	-.05

DSM-III-R = Diagnostic and Statistical Manual of Mental Disorders (3rd ed., revised); DIS = Diagnostic Interview Schedule; CES-D = Center for Epidemiologic Studies Depression Scale.