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From Infant Attachment Disorganization to Adult Dissociation: Relational Adaptations or Traumatic Experiences?

Karlen Lyons-Ruth, PhD^{a,*}, Lissa Dutra, EdM, MA^b, Michelle R. Schuder, PhD^a, and Ilaria Bianchi, MA^c

a Harvard Medical School, Cambridge Hospital, Department of Psychiatry, 1493 Cambridge Street, Cambridge, MA 02139, USA

b Department of Psychology, Boston University, 648 Beacon Street, 4th Floor. Boston. MA 02215, USA

c Department of Psychology, Catholic University of the Sacred Heart, Largo Gemelli I, 20123 Milan, Italy

In 1997, Putnam [1] pointed out that relatively little was known about the etiology and development of dissociation other than the presumed etiologic role of trauma; however, the fact that nontraumatized individuals sometimes demonstrated dissociation and that not all trauma survivors dissociate suggested that there may be more to the etiology and development of dissociation than trauma alone. Putnam [1] explored the role of various potential moderating variables including age, sex, culture, genetic factors, and education/intelligence in the development of dissociation, and although moderating trends were found for some of these variables, existing research has not convincingly demonstrated that any of these variables significantly influence dissociation.

Family environmental factors, however, are the one set of factors that have been most consistently related to dissociation. Factors such as inconsistent parenting or disciplining, [2–4] level of family risk [5], and parental dissociation, as measured by the Dissociative Experiences Scale [6], have been shown to be associated significantly with higher levels of dissociation in adulthood. Most available research on dissociation, however, has focused on trauma, leaving many unanswered questions regarding how other family factors intersect with familial abuse in the developmental trajectories leading to dissociative disorders.

Barach [7] was one of the first theorists to connect dissociation with attachment theory. In his article, Barach [7] suggested that multiple personality disorder (now known as dissociative identity disorder) was a variant of an “attachment disorder.” He pointed out that individuals who had this disorder tended to demonstrate the extreme detachment, or emotional unresponsiveness, experienced by children faced with a loss of their primary caretaker, as described by Bowlby [8]. Barach [7] further suggested that children of unresponsive caretakers were also likely to engage in dissociative or “detached” behaviors. As one offshoot of attachment studies, developmental theorists and researchers have begun to explore the role of early childhood attachment and parenting in the etiology and development of dissociative symptomatology.

Liotti’s [9] theorizing has more specifically implicated disorganized patterns of infant attachment behavior as potential precursors to the development of dissociation later in life. He pointed out that there are parallels between infant disorganization and dissociation. Both phenomena reflect a pervasive lack of behavioral or mental integration. This primary failure of integration in infancy may result in vulnerability to dissociative organization of mental life

*Corresponding author. E-mail address: klrulh@hms.harvard.edu (K. Lyons-Ruth).

in the developing child and grown adult. Liotti's view might be best conceptualized as a vulnerability model in which early dyadic processes lead to a "primary breakdown" or lack of integration of a coherent sense of self. Liotti's model offers an alternative to the theory that the primary function and etiology of dissociation is as a defense against trauma. Although Liotti [9] did not suggest that disorganized attachment is the only etiologic factor in dissociation, he hypothesized that disorganized attachment patterns constitute an initial step in the developmental trajectories that leave an individual vulnerable to developing dissociation in response to later experiences of trauma.

Bowlby [8] first suggested that infants may internalize unintegrated internal working models of their relationships with primary caregivers and of themselves in relation to those caregivers. Main and Hesse [10] further hypothesized that parents of disorganized infants may engage in frightened or frightening interactions with their children, thereby presenting the infant with the paradox that the parent is a source of threat and a source of protection. Under these paradoxical conditions, during times of stress when the attachment system is activated, contradictory internal working models of self and other may become evident. These seemingly incompatible models of the parent as a source of fear and a source of protection from fear are similar to Barach's [7] model of an abusive parent causing a child to be faced with the incompatible notion that his parent is his protector and his persecutor.

Main and Hesse [10] further theorized that when the parent appears frightened in his or her interactions with the infant, the infant may infer that there is something threatening in the environment that should be feared. Although such a perceived environmental threat would lead a securely attached infant to approach his parent for protection, a frightened parent may communicate apprehension to the child. Under these conditions, the infant may sense the helplessness of the parent in the face of threat and demonstrate conflict about approaching him or her for protection by displaying contradictory simultaneous or sequential approach-avoidance behaviors typical of disorganized detachment. Alternatively, the parent's frightened stance may cause the child to infer that he, himself, is frightening the parent, again leading to conflict in approaching and further threatening an already frightened parent. Lyons-Ruth and colleagues [11,12] demonstrated that parental withdrawal from the infant's attachment overtures at times of infant arousal is also associated with infant disorganization, whether or not the parent's behavior is directly frightened or frightening to the infant. Thus, the infant's internalization of contradictory models of the self as frightened or threatening and of the parent as hostile or helpless/withdrawing can be conceptualized in terms of contradictory models that generate incompatible behavioral and mental tendencies. This primary lack of integration around basic strategies for seeking comfort and protection under stress is what Liotti [9] suggested may confer vulnerability to dissociative processes later in life.

Liotti [9] further speculated that there are three pathways that disorganized infants might take toward (or away from) the development of dissociative symptomatology. In the first pathway, there is no further trauma, and interactions with the parent become less fear imbued and more consistent over the childhood years. Regardless of whether this consistency is positive or negative, Liotti [9] posited that this would result in the child's eventually choosing one of the available incompatible working models of attachment relationships and developing in accordance with that working model. The second pathway, in which parent-child interactions continue to be inconsistent and contradictory but the child does not encounter severe trauma, would lead to infrequent dissociation during times of extreme stress. In this scenario, although the child is viewed as vulnerable to the development of dissociative symptoms, there are not sufficient environmental stressors to potentiate this vulnerability, leaving the child asymptomatic or displaying only mild or fleeting dissociative symptoms. In the third pathway, the disorganized/disoriented infant is predisposed to dissociation, has ongoing severe stressors, and vulnerability is potentiated. Here, the child experiences continued reinforcement of

increasingly unintegrated simultaneous/sequential contradictory internal working models of self-other relatedness and repetitive severe trauma. This child is likely to move toward the extreme of developing dissociative identity disorder.

Liotti's model of early difficulties in achieving an integrated set of behavioral and mental responses to fear or threat offers a strong hypothesis for why it is that some people exposed to trauma develop dissociation, whereas others do not. This model suggests that disorganized attachment negatively impacts the onset of early individually based processes of mental integration that become the basis for later dissociation. Although Liotti's model sets forth the notion that infant disorganization lays the groundwork and acts as a key precursor for the development of dissociation, experiences of significant trauma remain an important and necessary factor in this diathesis-stress model.

Does infant attachment disorganization contribute to the development of adult dissociative symptoms?

Aspects of Liotti's model have recently been empirically supported by longitudinal studies. Ogawa and colleagues [13] tested Liotti's model in a sample of 126 children from low-income environments followed from birth to age 19 years. Dissociative symptoms were assessed at age 19 years with the standard Dissociative Experiences Scale [14]. From a trauma-based model of the etiology of dissociation, one might expect trauma to be the strongest predictor of adult dissociative symptoms—and trauma did correlate with later symptoms. Specifically, chronicity of abuse, severity of abuse, and age of onset of abuse were highly intercorrelated, and prediction from overall chronicity, severity, and age of onset of abuse to clinical levels of dissociation at age 19 years (Dissociative Experiences Scale-taxon scale) was modest (canonic $r = 0.25$; 6% variance explained). Prediction from maternal psychologic unavailability and disorganized attachment in the first 24 months of life, however, was much stronger (canonic $r = 0.58$; 34% variance explained). In addition and most important, trauma history did not significantly add to the prediction of dissociation in young adulthood after accounting for maternal psychologic unavailability and disorganized attachment in the first 24 months of life. Although concurrent abuse made a contribution to the prediction of dissociation-like behaviors judged by teachers during the school years, even at this age, the effects of early care and attachment continued to be independent predictors of dissociation, unmediated by concurrent abuse.

A secondary but less powerful analysis was also reported by Ogawa and colleagues [13] that appeared to establish a role for traumatic events in potentiating the relationship between disorganized attachment and later dissociation. The independent influence of early caregiving on dissociation was not included in that analysis, however, making it difficult to integrate that partial analysis with the results of the more powerful and inclusive multivariate regression analysis also presented.

These findings support the conceptualization of disorganized attachment as one key precursor in the development of dissociation; however, contrary to Liotti's model, the findings also suggest that disorganization of attachment may be more central to the development of dissociation than the trauma itself. Furthermore, infant disorganized attachment behaviors and parental emotional unavailability made separate and independent contributions to prediction. Therefore, Ogawa and colleagues [13] study also demonstrated that parental factors beyond those that overlapped with disorganized attachment in infancy predispose children to the development of dissociation: however, the measure of parental emotional unavailability used in the study was based on global clinical ratings and has not been further defined or replicated outside the original laboratory [15]. Further, the evidence indicates that such parent-child communication processes may produce dissociative symptoms even when the infant's

attachment strategies are not disorganized during the first 2 years of life, suggesting that infant disorganization may be a sufficient but not necessary component in the development of dissociation. Instead, something in the parent-infant dialog itself may independently influence the development of dissociation. The word *dialogue* is used here in the broadest sense to encompass all meaningful verbal and affective communications between the child and the parent because early in life, the parent-infant dialog primarily involves exchange of affective signals.

Dutra and Lyons-Ruth [16] also investigated the association between infant attachment and the later development of dissociative symptoms in a second prospective longitudinal sample of 56 infants at social risk followed from birth to age 19 years. Participants were low-socioeconomic status, at-risk families and, as in the Ogawa and colleagues' [13] study, adolescent dissociative symptomatology was measured by the Dissociative Experiences Scale [14] at age 19 years. Results of this second longitudinal study confirm and extend Ogawa and colleagues' [13] findings. Analyses indicated that five measures of infant, childhood, and adolescent maltreatment failed to predict adolescent dissociative symptomatology. Maternal post-traumatic stress disorder, depressive symptoms, and depressive and anxiety disorders also failed to predict adolescent dissociation. Only concurrent maternal dissociative symptoms were related to dissociative symptoms in the adolescent. In contrast, infant disorganization, maternal lack of involvement with the infant at home at 12 months, and disrupted maternal affective communication in the laboratory at 18 months contributed significantly to the prediction of dissociative symptoms at age 19 years.

As in the Ogawa and colleagues' [13] study, when all predictors were considered together, only the measures of early care were independent predictors of later symptoms. In contrast to the Ogawa and colleagues' [13] study, however, and somewhat in contrast to the Liotti hypothesis, the maternal care measures were stronger predictors of dissociation at age 19 years than the measure of infant disorganization itself. When the quality of early caregiving was accounted for, infant disorganization no longer added to the prediction of dissociation. The difference between these results and those of Ogawa and colleagues' [13] is likely due to the more comprehensive measures of maternal care in infancy that were included in these analyses. The pathway toward adult dissociative symptoms seems more heavily influenced by the potentially enduring context of disrupted forms of parent-child communication than by the early vulnerability to mental segregation indexed by the infant's disorganized attachment behaviors.

These two sets of findings indicate that the pathways from infant disorganization to adult dissociation may be more dynamic and complex than they seem at first glance. Liotti's "first pathway" of development represents disorganized infants who experience more stability with their parent later in life and manage to "escape" becoming vulnerable to dissociation by settling on one of their contradictory models of self and other. This pathway offers a model for why not all disorganized infants develop dissociative symptomatology later in life. Disorganized infants who later show dissociative symptoms may be on a different pathway, however, in that the continuation of what Liotti termed "inconsistent interactions with their parents" may serve to reinforce or crystallize their vulnerability to developing dissociation in the face of stressors. In fact, the Ogawa and colleagues' [13] study indicated that deviant parenting may lead to the experience of serious dissociative symptoms (taxon symptoms on the standard questionnaire [14]), even in the absence of traumatic stressors. This population, however, is under-represented in inpatient settings and neglected in dissociation research. Thus, a more nuanced exploration is warranted of enduring patterns of disrupted parent-child communication processes, processes that may act to continually reinforce the child's segregated and contradictory mental processes. Such exploration might facilitate a better understanding of the population of non-abused individuals who have serious dissociative symptoms and help fill in

some of the theoretic gaps inherent in the models of dissociation that have been reviewed thus far.

These results also begin to offer hypotheses regarding the specific aspects of the parent-infant dialog that may be linked to later dissociation. Liotti [9] posited a link between infant disorganization and later dissociation based on the concept of multiple, unintegrated working models of the parent. This hypothesis, however, mostly stems from the contradictory behavioral tendencies observed in the disorganized infant, not from theory regarding parental characteristics. In contrast, the parental behaviors hypothesized to relate to infant disorganization have been parental behaviors that are frightened, frightening, or disrupted in overall affective communication patterns. Parental inconsistency per se has not been a part of the theorizing regarding predictors of infant disorganization. Instead, parental inconsistency has been linked in earlier theory to organized but ambivalent/resistant infant attachment strategies. Lyons-Ruth and colleagues [12] hypothesized that hostile/frightening and helpless/fearful parenting stances are alternate aspects of a single hostile/helpless internal working model, but to date no study has attempted to isolate the role of contradiction in maternal behavior compared with consistent frightening or other disrupted behavior patterns in the etiology of infant disorganization or later dissociation.

The caregiving predictors related to later dissociation in these two longitudinal studies converge in underscoring aspects of the mother's unavailability to respond to the infant's attachment cues as key precursors to dissociative symptoms. Although Ogawa and colleagues [13] did not examine a variety of features of the early parent-infant dialog, their analysis highlighted one aspect that they termed "psychologic unavailability." In addition, neglect in the first 2 years of life contributed to clinically significant dissociative symptoms at some ages in that study. In the Dutra and Lyons-Ruth [16] study, a similar measure of lack of responsive involvement with the infant was the strongest predictor among the four dimensions of maternal home behavior coded from videotapes.

Maternal hostile/frightening behavior was another dimension that was expected to relate to dissociation because of the central role of maternal frightening behavior in theories of infant disorganization and the central role of abuse in theories of dissociation. Maternal hostile or intrusive behaviors coded at home or in the laboratory, however, were one of the weakest predictors, even though these hostile behavior codes included codes for frightening maternal behaviors and were related to other negative child outcomes in the study. Therefore, the "quieter" caregiving deviations such as withdrawing from emotional contact, being unresponsive to the child's overtures, or displaying contradictory, role-reversed, or disoriented responses when the infant's attachment needs are heightened appear to be the maternal responses most implicated in pathways toward dissociation.

It is important to note that both of these studies examined the relative influence of infant disorganization and maternal care with respect to moderate levels of dissociation. These data do not rule out the possibility that traumatic experiences are influential in the genesis of the more severe forms of dissociation captured by the diagnosis of dissociative identity disorder. These findings suggest that the caregiving context is likely to play more of a major role in all forms of dissociation than previously thought and needs to be conceptualized and assessed separately from traumatic events. Accordingly, the potential relative contribution of these variables with respect to the development of dissociative disorders remains an area for future research. In addition, other factors in childhood and adolescence are yet to be examined as mediators of these effects and, thus, it is possible that experiences other than trauma during childhood and adolescence, such as the development of behavior problems or the quality of later parent-child interaction, may be critical in mediating the association between early deviations in care and later dissociation. The existence of such later mediators, however, do

not discount the importance of the finding that pathways to dissociation begin in infancy and are grounded in aspects of parent-infant interaction.

Redefining stress and trauma in infancy: the hypothesis of hidden trauma

As discussed by Schuder and Lyons-Ruth [17], the traditional perspective on trauma views trauma from the perspective of the traumatic event and its characteristics. According to the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition* [18], a traumatic event involves threat to the physical integrity of oneself or another person. In human infancy, however, experienced threat is closely related to the caregiver's affective signals and availability rather than to the actual degree of physical or survival threat inherent in the event itself. Equipped with limited behavioral and cognitive coping capacities, the infant cannot gauge the actual degree of threat. Instead, primary experiences of threat in infancy include the threat of separation from the caregiver and the threat of having little caregiver response to the infant's signals of distress.

Thus, the relevant traumas of infancy most often result from the "hidden traumas" of caregiver unavailability and interactive dysregulation. These hidden traumas are woven into the fabric of interaction between caregiver and infant and do not necessarily stand out as salient events to the observer. Physiologic evidence reviewed later reveals that these more subtle traumatic events during infancy engender physiologic consequences similar to threat events salient for older children and adults. Hidden traumas of infancy seem to contribute to the early hyper- or hyporegulation of stress responses mediated through the limbic hypothalamic-pituitary-adrenocortical (LHPA) axis.

The role of fearful arousal

The attachment system was considered by Bowlby [19] to be a preadapted behavioral system for combating and reducing fearful arousal and maintaining a sense of felt security. Contrary to general clinical usage, from a theoretic perspective, the attachment system is only one of a number of goal-corrected behavioral/motivational systems that operate within relationships, and all or most of the interactions between parents and children are not integral to the attachment system, even in infancy. For example, interactions around play, teaching, or even routine caregiving do not necessarily engage emergency attachment motivations or affects.

Under normal conditions, an adequately functioning attachment relationship in which the infant can openly signal discomfort and receive a sensitive response from the caregiver serves to buffer the infant against extreme levels of fearful arousal. The attachment system itself, however, may also malfunction. Based on accumulated research findings, disorganized and controlling forms of attachment behavior are now thought to represent a malfunction of the attachment relational system in infancy and childhood that exposes the infant to excessive unmodulated stress [20,21]. In addition, sometime between age 18 months and 6 years, with the cognitive developments of the preschool period, many formerly disorganized infants reorganize their attachment behaviors into what are termed "controlling" attachment behaviors toward the parent. These controlling behaviors can take two very different forms: controlling through punitive, hostile, or humiliating behaviors or controlling through more solicitous, directing, caregiving behaviors. These controlling strategies are seen as strategies for maintaining the involvement and attention of the caregiver by organizing or directing the behavior of the parent or by engaging in provocative or hostile behavior that creates parental engagement [20]. There is striking discontinuity in the shift from disorganized behavior in infancy to a controlling strategy in the preschool period, in that the surface behaviors and the apparent emotional tone of the attachment-related interactions become different from the hesitant, apprehensive, or conflicted behaviors observed in infancy. Because extensive longitudinal data have not been available to chart this process of reorganization over time, little

is understood about when these changes typically occur, what proportion of disorganized infants are able to make this developmental shift, and what strengths or vulnerabilities are associated with the transition to controlling forms of attachment. Both groups of controlling children, however, show deviations in fantasy play and elevated rates of behavior problems with peers in school [20].

Although the attachment relational system is viewed as only a single circumscribed motivational system among other systems, it is also regarded as pre-emptive when aroused because it mobilizes responses to fear or threat. In that sense, the quality of regulation of fearful affect available in attachment relationships is foundational to the developing child's freedom to turn attention away from issues of threat and security toward other developmental achievements, such as exploration, learning, and play.

A large body of earlier research on fearful arousal has documented the range of individual coping responses to pain or fear, captured by the summary label "fight or flight." In addition, Seligman [22] and others described "freezing" and "learned helplessness" as responses occurring when more active responses are unavailable or ineffective. Recently, Taylor and colleagues [23] advanced an alternative "tend or befriend" hypothesis regarding primary responses to threat among social primates, arguing that fight or flight may be more relevant to male stress responses, whereas various forms of affiliative responses may be more common in female stress responses. From an attachment point of view, however, affiliative responses to threat would be expected to be important to all social primates without regard to sex because it is a basic system for regulation of early arousal, and no major differences between the sexes have emerged in the research literature to date.

This entire array of coping or defensive responses to the arousal of fear appears, in some form, in the behaviors associated with the disorganized/controlling spectrum of attachment behaviors. These behaviors are often brief and seem puzzling or contradictory. It is unfortunate that their significance was not recognized during the first 15 years of attachment research. The formal criteria for defining disorganized behaviors are summarized in Box I. These sequences of behavior are often considered disorganized when evidence of two or more contradictory behavioral tendencies appear to be competing for expression. This conflict at the level of behavioral tendencies in infancy is thought to foreshadow later, more internalized forms of conflict in childhood and adolescence, including dissociative phenomena.

Another form of a typical attachment behavior distinct from disorganization may also be relevant to dissociation. This behavior is the indiscriminate attachment behavior seen among infants reared in institutional settings with very poor care and with no selective attachment figure available [24]. A lack of selectivity in attachment behavior is also noted clinically among high-risk home-reared infants and can be observed in the standard attachment assessment in the infant's tendency to accept comfort from an unfamiliar laboratory assistant even though actively distressed. In recent work, such indiscriminate attachment behavior was also associated with disrupted affective communication between parent and infant, particularly disoriented behaviors on the part of the parent, and strongly predictive of later behavior problems in the child [25,26]. Indiscriminate attachment behavior may also be relevant to later dissociation, given its relation to unresponsive care. This form of attachment behavior has not yet been studied in relation to dissociation.

Box 1. Indices of disorganized-disoriented infant attachment behavior

1. Sequential display of contradictory behavior patterns, such as strong attachment behavior suddenly followed by avoidance, freezing, or dazed behaviors

2. Simultaneous display of contradictory behaviors, such as strong avoidance with strong contact-seeking, distress, or anger
3. Undirected, misdirected, incomplete, and interrupted movements and expressions; for example, extensive expressions of distress accompanied by movement away from rather than toward the mother
4. Stereotypies, asymmetric movements, mistimed movements, and anomalous postures such as stumbling for no apparent reason and only when the parent is present
5. Freezing, stilling, and slowed “underwater” movements and expressions
6. Direct indices of apprehension regarding the parent, such as hunched shoulders and fearful facial expressions
7. Direct indices of disorganization and disorientation, such as disoriented wandering, confused or dazed expressions, or multiple, rapid changes in affect

Adapted from Main M, Solomon J. Procedures for identifying infants as disorganized/disoriented during the Ainsworth strange situation. In: Greenberg M, Cicchetti D, Cummings EM, editors. Attachment in the preschool years: theory, research and intervention. Chicago: University of Chicago Press; 1990. p. 121–60.

Attachment quality, the limbic hypothalamic-pituitary-adrenocortical axis, and hidden trauma

A growing body of literature suggests that hypothalamic-pituitary-adrenocortical axis activity in infants and young children varies with characteristics of the caregiving environment and the quality of the child's relationship with the caregiver [27–29]. As noted by Spangler and Schieche [27], research on infant adrenocortical function in response to separation from the parent indicates that infants classified as securely attached do not demonstrate elevations in cortisol levels [21,30]. The pattern typically observed is one of decreasing cortisol levels from the beginning to 30 minutes after the end of the procedure. In contrast, studies examining disorganized patterns of attachment behavior have found that disorganized children produce larger increases in cortisol in response to separation and reunion than children classified as securely or insecurely attached [21,31]. In related work, Ashman and colleagues [28] presented evidence that a mother's depression in the first 2 years of the child's life is the best predictor of cortisol elevations at age 7 years. Similarly, in a study of 282 4,5-year-old children, Essex and colleagues [32] reported that maternal depression beginning in infancy was the most potent predictor of children's cortisol levels at 4,5 years of age.

As is also the case in other species [33,34], it appears that a sensitive and responsive caregiving system can provide an LHPA axis buffer for the human infant and toddler. When the caregiving system functions adequately, the young child appears to be able to experience conditions that elicit behavioral distress and that produce inhibition of approach or fearfulness without producing increases in glucocorticoids. This point is elaborated by Spangler and Grossmann [30] who argued that securely attached infants possess appropriate stress-reducing behavioral strategies in relation to the caregiver and therefore exhibit negligible increases in cortisol levels when aroused.

Other work that may be relevant to the hypothesis of hidden trauma in the early caregiving system, with specific reference to the emotional unavailability of caregivers are studies of orphanage-reared children. Children reared in orphanages in Romania have been the focus of several studies of the relation between environmental regulation and LHPA axis activity. Ten years ago, Romanian orphanages were described as grossly depriving: that is, lacking in social

stimulation, physical stimulation, and opportunities for attachment relationships [35]. Carlson and colleagues [36,37] assessed salivary cortisol levels among toddlers in Romanian orphanages over several days at wakeup, noon, and late afternoon/evening in a group of 2-year-olds who had lived in the orphanage for most of their lives. Compared with home-reared two-year-old Romanian children, the orphanage-reared children showed no evidence of the expectable daily rhythm in cortisol levels (a peak in the morning, at half of morning levels by late afternoon, and negligible levels by midnight) over the daytime hours. Moreover, many of the orphanage-reared children appeared to have lower than expected morning levels of cortisol compared with family-reared children. In addition, as reported by Gunnar and colleagues [29], Russian children under age 4 years living in orphanage settings evidence a similarly absent daily rhythm in cortisol production [38].

These findings from orphanage-rearing studies are consistent with reports of daytime cortisol patterns for neglected infants reared in their families of origin [38] and for preschool-aged children in foster care [39]. Gilles and colleagues [40] investigated daytime cortisol levels in family-reared infants who were characterized as low risk for neglect, high risk for neglect, or neglected. Salivary cortisol was assessed in the morning, at noon, and in the evening. The neglected and high-risk groups had a flatter and lower pattern of day-time cortisol production than the low-risk infants. Neglected infants demonstrated the lowest early morning levels and had the flattest pattern of daytime cortisol production.

In sum, the evidence suggests that the organization of LHPA axis activity during infancy is substantially under the influence of caregiver regulation. The infant whose caregiver has been unable to provide basic regulation around fearful arousal fails to develop a coherent attachment strategy for reducing physiologic arousal in the face of moderate stress, leading to under- or overactivity in the stress-response system.

The disrupted parent-infant dialogue

If disrupted parental affective communication in infancy is one of the most powerful predictors of early disorganization and later dissociative symptoms, what do those responses look like? First, surprisingly, parental behavior that is coded as insensitive, using the standard but very global rating scale for sensitivity, has been only weakly correlated with infant disorganized attachment behavior [41]. This failure of parental sensitivity to relate to disorganization is most likely due to methodologic factors such as the diversity of parental profiles within the disorganized group and the lack of detailed behavioral descriptors in the most widely used scale for rating sensitivity.

Statistically, 15% of infants in relatively advantaged and apparently low-risk samples display disorganized attachment strategies [41]. Given the role of fearful arousal and physiologic stress responses in the theory and data on disorganization, it is tempting to equate disorganized attachment strategies with clearly maltreating relationships because maltreatment is associated with infant disorganization [42]. That criterion for problematic parental behavior, however, is too extreme to account for the range of parental behaviors observed to be associated with disorganized strategies. How, then, do we capture the parental behaviors most important to the infant's stress regulation?

The measure of disrupted affective communication used in the Dutra and Lyons-Ruth [16] study coded five aspects of parental behavior that included all indices of Main and Hesse's frightened or frightening behavior inventory (M. Main and E. Hesse, unpublished data, 1992). These five aspects included (1) a set of responses termed "affective communication errors," which included simultaneous conflicting affective cues to the infant and failures to respond to clear affective signals from the infant; (2) disoriented responses; (3) negative-intrusive responses; (4) role-confused responses; and (5) parental withdrawing responses. All five

classes of behavior could be coded reliably: intraclass r values ranged from 0.73 to 0.84. Box 2 gives examples of each type of disrupted communication.

Higher levels of disrupted maternal behavior in the separation procedure were associated with infant disorganized attachment strategies in the laboratory and with increased infant distress at home. It was also important that the infant's sex or cumulative demographic risk was not significantly related to maternal disrupted behavior [11]. Three additional laboratories have applied this coding system to mother-infant cohorts across a broad socioeconomic range outside the separation procedure and replicated the link to infant disorganization [43–45].

Hostile or helpless profiles of parenting

The most clinically interesting and unexpected finding regarding the parental affective communication patterns within the disorganized group was that mothers of disorganized infants were even more different from one another than they were from other mothers whose infants were not disorganized. In other words, two polarized types of behavioral profiles were observed within the group of mothers whose children had been classified as disorganized. The authors assigned the summary labels of “hostile/self-referential” or “helpless/fearful” to these two subgroups of mothers and infants. Elsewhere, Lyons-Ruth and colleagues [12] reasoned that these differing constellations of behavior can be meaningfully explained as alternate behavioral expressions of a single underlying hostile/helpless dyadic internal working model of attachment relationships.

Parents who displayed the parenting profile labeled hostile/self-referential had significantly higher rates of role confusion (self-referential behavior) and negative-intrusive behavior than the helpless/fearful subgroup of mothers. Negative-intrusive and role-confused behaviors were also strongly correlated: these parents displayed a contradictory mix of rejecting behaviors and behaviors that sought attention from their infants. Infants of hostile/self-referential mothers were more likely to show a complex mix of disorganized, avoidant, and resistant behaviors.

Box 2. Dimensions of disrupted maternal affective communication

- Affective errors
 - a. Contradictory cues (eg, invites approach verbally, then distances)
 - b. Nonresponse or inappropriate response (eg, does not offer comfort to distressed infant)
- Disorientation (items from M. Main and E. Hesse, unpublished data, 1992)
 - a. Confused or frightened by infant (eg, exhibits frightened expression)
 - b. Disorganized or disoriented (eg, sudden loss of affect unrelated to environment)
- Negative-intrusive behavior (including frightening items from M. Main and E. Hesse, unpublished data, 1992)
 - a. Verbal negative-intrusive behavior (eg, mocks or teases infant)
 - b. Physical negative-intrusive behavior (eg, pulls infant by the wrist)
- Role confusion (includes items from Sroufe and colleagues[46]; M. Main and E. Hesse, unpublished data, 1992)
 - a. Role reversal (eg, elicits reassurance from infant)
 - b. Sexualization (eg, speaks in hushed, intimate tones to infant)

- Withdrawal
 - a. Creates physical distance (eg, holds infant away from body with stiff arms)
 - b. Creates verbal distance (eg, does not greet infant after separation)

In contrast, mothers who were labeled helpless/fearful regarding attachment were more fearful, withdrawing, and inhibited and sometimes appeared particularly sweet or fragile. They were unlikely to be overtly hostile or intrusive and usually gave in to the infant's concerted bids for contact: however, they often failed to take the initiative in greeting or approaching the infant and often hesitated, moved away, or tried to deflect the infant's requests for close contact before giving in. Infants of helpless/fearful mothers looked different from infants of hostile/self-referential mothers, in that they continued to express their distress, approach their mothers, and gain some physical contact with them, even though they also displayed disorganized behaviors including signs of conflict, apprehension, uncertainty, helplessness, or dysphoria. In other words, these parents "advertised" some potential for responsive contact, and then often delivered contradictory behaviors.

Given the earlier-reported associations between emotionally unavailable forms of early care and later dissociation, the subtle nature of the helpless/fearful profile of maternal behavior is important to note, as is the subtlety of many of the disorganized behaviors shown by their infants. The hostile/self-referential profile of maternal behaviors and infant behaviors is much easier to identify as maladaptive, yet recent data indicate that a helpless/fearful profile is likely to characterize slightly more than half of all disorganized relationships [47,48].

Although fearful or withdrawn parenting behaviors might seem less problematic than behaviors that are more frightening or hostile, there is repeated evidence that both subgroups of disorganized infants are at risk for a variety of negative outcomes including elevated cortisol secretion in response to mild stressors in infancy, inhibited or chaotic fantasy play in preschool, elevated internalizing and aggressive behaviors toward peers in kindergarten and second grade, and elevated rates of controlling attachment patterns toward parents by age 6 years [20]. In recent work, maternal withdrawing behaviors from the infant were found to be related to the infant's later borderline features in young adulthood [49].

In addition, both subgroups are related to a maternal history of trauma, with different forms of maternal trauma associated with hostile or withdrawing profiles. Mothers who had a history of physical abuse or witnessed violence were more likely to display the hostile profile of behavior at home, whereas mothers who had a history of sexual abuse or parental loss (but not physical abuse) were more likely to withdraw from interaction with their infants. Clinical treatment of sexual abuse survivors clearly reveals the underlying fear and rage of those who have been sexually victimized: however, sexually abused mothers appeared more likely to manage their negative affects by moving away from interaction with the infant, whereas mothers who had witnessed violence or had been physically abused appeared to handle their underlying fear by identifying with an aggressive style of interaction [50].

Longitudinal case illustration

To illustrate the types of early-disrupted mother-infant communication patterns observed in longitudinal research, one of the videotaped mother-infant interactions is described. Afterward, excerpts from the same child's description of his attachment relationships on the adult attachment interview at age 19 years are presented. The implications of these reports are discussed and illustrated by an additional brief vignette of a patient in treatment.

When the child, whom the authors call Justin, was 18 months old, the mother and child were videotaped during a “strange situation” session, an experimental procedure developed by Ainsworth and colleagues [51] to assess infant attachment strategies. Mother and child underwent a sequence of eight 3-minute episodes, involving two mother-infant separations (the first, leaving the child with a stranger and the second, leaving the child alone). The child’s reactions to separation and reunion with the mother were used as indices of his/her security of attachment with the mother and served as the basis for classifying the infant into one of four attachment categories: secure, avoidant, ambivalent, or disorganized. Justin was classified as disorganized in infancy and reported high levels of dissociation at age 19 years.

When alone with mother in the first episode, Justin wanders around the room without being able to focus on a toy or initiate focused activity. Watching the video in slow motion, the child’s movements appear lost, confused, and aimless—he walks around, turning and turning, briefly touching and then leaving a few objects. The frequency of this behavior increases after his mother’s lack of response to his attempt to initiate an interaction by showing her a toy. The child’s disoriented behavior dissipates, however, after the mother’s departure, when he is given the opportunity to interact with the stranger. His attempt to engage the stranger in a game with the ball is successful and he seems to enjoy the interaction.

After the first reunion, his mother enters the room but neither approaches nor greets Justin. She stands on one leg, the other leg relaxed, with her right hand in her pocket and leans back a bit, without interacting. The child lowers his gaze and moves toward the door, a sign of disorganization in the presence of the parent. Subsequent attempts from the mother to interest him with the toys are not successful. Rather, he attempts to keep his distance by refusing any shared activity with his mother and proceeds to engage in a new sequence of disoriented, aimless behaviors. During the second separation, the child becomes distressed. On reunion, his mother stands hesitantly but does not try to comfort her distressed child. Instead, she asks for a kiss and wants him to tell her about his activities while she was out of the room.

These examples of parent-infant dialog involve subtle movements and slight affective cues that are not apparently traumatizing or even openly conflictual, yet they have a measurable effect on the quality of the dyadic exchange and on the child’s subsequent behavioral organization. The authors stress the “dialogic” quality of such disrupted communications because the smallest movements and affective cues reciprocally influence one another and impact the course of the interaction.

The child presented in this vignette endorsed a significant level of dissociative symptoms at age 19 years. On the Dissociative Experiences Scale, for example, Justin endorsed often “finding [himself] someplace and not remembering how [he] got there” and “getting confused about whether [he] has done something or only thought about doing it” as a young adult. The parallels between these experiences and his observed disorientation and aimlessness following his parent’s withdrawal in his early interactions are noteworthy. In addition, when administered the Adult Attachment Interview (AAI), a semistructured interview that evaluates attachment in adulthood, this young man verbally described a sense of disorientation and of being pulled in several directions in his early childhood, which is reminiscent of the disorientation and aimless qualities of the taped interaction. He describes early childhood as follows: “Bounce here, bounce there. Go to court one week for my parents and have to go talk to judges and all this... I really didn’t have many friends at the time because I was always...moving from here to there.” His disappointment with the lack of stability that characterizes his relationship with his mother is also addressed in the AAI: “Each time I get bounced around it takes me six months to get settled back down and then resentment builds for another while. Every time I try to... finally open up I get moved around and just basically shut down again.” Not surprisingly, this

young man expresses hope that his relationship with his parents will move toward stability in his adulthood, “and then I can reach a sort of equilibrium around here.”

He also describes a role-reversed, caregiving stance toward his parents during the AAI. “From the age of twelve on ... I kind of brought myself up...I started becoming an adult at the age of twelve. I think...I consider my mom more of a friend right now than a mom...someone I can go and talk to and hang out with...And I know she’s my mother and everything, but I just have this weird feeling about—she’s so young.” When his mother would cry in front of him after fighting with his father. Justin reports. “I used to stay by her side...and help her out. I’d give her a hug or something...tried to make her laugh.” He also describes trying to think of ways to solve his parents’ conflicts when he was 6 years old: “[When I heard them fighting] it just made me start thinking—think and think. Think of ways of trying to fix—but could never.”

It is notable that the withdrawn and role-reversed nature of the parent’s involvement with the child was evident in the second-to-second interactive dialog between mother and infant, after which the child eventually begins to focus on his mother’s needs, per her request, rather than attend to his own needs.

Clinical implications

Attachment strategies, including their defensive and conflicted components, are examples of the nonconscious, implicit, behaviorally based representations of how-to-be-with-others that are developed in infancy before the explicit memory system associated with consciously recalled images or symbols is available [52,53]. In the view developed here, these implicit relational representations encode the “deep structure” of the early parent-infant affective dialog, including the deletions and distortions in the dialog that will eventually constitute internalized mental processes. The authors argue that such intrapsychic mental processes originate in characteristics of the two-person dialog from very early in life.

The dimensions of the parent-infant dialog most relevant to the later development of dissociation appear to be the contradictory communications, failures to respond, withdrawing behaviors, disoriented behaviors, and role-confused behaviors that override the infant’s attachment cues but are not, in and of themselves, explicitly hostile or intrusive. In such instances, the caregiver behaves in ways that have the effect of “shutting out” the child from the process of dialog. This shutting out of the child’s contribution to the regulatory process eventually leaves the child without an internalized form of relational dialog, or internal working model, that can provide a sense of safety and reliable comfort in times of distress.

In the case of an abusive parent, it is clear how the child’s attempts to participate in the parent-child dialog may be shut out; however, this invalidation of the child’s input can also occur without the degree of deviation represented by abusive parenting. Whitmer [54] described dissociation from a psychodynamic perspective as a process of simultaneously knowing and not knowing and related this process to the difficulty dissociative individuals experience when engaging in verbalization or meaning-making of their sensations and perceptions. He postulated that one cannot truly “know” his own experience until he is seen, recognized, and reflected on by the other. In essence, then, dissociated experiences around fearful affects are not necessarily experienced and then lost or defended against, but may instead be “unthinkable” in that they have gone unrecognized by central attachment figures. This model suggests that the etiology of dissociation does not lie in an individual, intrapsychic process but represents a dynamic, interactive dialogic process that originates in the interchange between the self and the other. That which occurs in this dialogic process may then become intrapsychic by way of internalization. In the case of primary failure of the parent-infant dialog, the child is faced with a lack of integrated affective, symbolic, and interactive dialog with the parent so that this lack

of integration, in the form of dissociation, is eventually internalized by the child. Thus, this model postulates that for an individual to be able to experience more fully integrated mental states, a collaborative dialog between the parent and child must be created. This dialog must be elaborated with the collaboration of the child, such that the parent elicits the child's contributions and actively considers his experience, and an expression of this consideration on the part of the parent is demonstrated back to the child in developmentally appropriate ways that will be understood by the child. Conversely, the parent's inability to acknowledge the child's experiences or needs while in dialog (in other words, shutting out the child) may result in the child's failure to understand or integrate these same self-experiences, eventually leading to the development of dissociative symptomatology.

A final clinical example, in which there was a frightening childhood experience in the context of a nonabusive family, provides a vivid illustration of how the pivotal absence of a regulating parent-child dialog may be related to dissociative phenomena. A young man, whom the authors call Nate, presented for treatment with a severe generalized anxiety disorder and intense fears of abandonment in his short and unstable romantic relationships. As the treatment relationship progressed over a 3-year period, he began to comment on the therapist's reliability and to have increasingly frightening nightmares of being killed, tortured, or mutilated. These increasingly fearful images finally culminated in a fugue state one evening that lasted several hours and was accompanied by chills, nausea, and diarrhea. In this state, which he said was like "dreaming while he was awake," he became increasingly frantic as he experienced himself being in a refugee camp desperately trying to match up young children with their mothers, only to find that they kept getting separated again.

He called the therapist and she scheduled an extra session to meet the next day. When he arrived at the session, he sat down and said that he had had trouble taking off his coat as he came into the office. It was difficult, he said, because there were two of him in the coat. One persona was a young boy named Buddy, who was the one who loved people and had feelings. Buddy's name was the same as the name of the boy in the movie *Fried Green Tomatoes* who was killed by a train when his foot became stuck in the railroad tracks. The other person in his coat was a hostile and distrustful boy named Max, whose job it was to protect Buddy and drive away anyone who tried to get close to him. As he left the session, he said to his therapist of 3 years, "I just want you to know that if I left treatment now, I wouldn't remember who you are."

In subsequent sessions, Nate alternated between being enraged at the therapist and beginning to recall images of being hospitalized unexpectedly for several weeks at age 4.5 years for a serious infection. As he recalled this experience, which he only remembered in a fragmentary way, several pivotal scenes emerged. He remembered that he was told by his family that they were going for a drive and then he found himself in the hospital. After he had been admitted, his parents told him they were going to park the car and would be back in a minute, but they did not return. His mother did not drive, so his parents only visited him once a week on Sundays. In one particularly poignant session, he remembered his parents coming to visit and seeing his mother looking at him very upset and frightened. He said, "I knew that she needed someone to help her and a part of me slipped out through a crack in the floor." Later in the same session he said, "I think I forgot my mother when I was in the hospital." His tendency to dissociate at moments of neediness continued into his adult life.

At the time that these images of his hospitalization were being explored in treatment, the extended separation from his parents while he was hospitalized was viewed as traumatic by definition and as fully accounting for the severity of his symptoms. It was not until much later in the treatment that he and his therapist more fully appreciated how deeply he felt his mother's sense of helplessness and anxiety throughout his childhood and how role-reversed his relationship with his mother had been and continued to be. Accordingly, the research results

previously reviewed and Nate's account of his early hospitalization point to the relational context of this event as critical to whether or not a dissociative solution occurred. If his parents had been able to tolerate his sadness and rage and remain in a collaborative and psychologically containing dialog with him throughout that experience, would there have been a dissociative outcome? Nate seemed to have internalized a way of being in which his extreme distress, his affective aliveness, was subordinated to the needs of his parent and excluded from the dialog. This internalization was theoretically the only available route to maintain some form of involvement with his mother, by reducing her stress and colluding in not knowing his feelings.

Summary

The first clinical implication of the theory and research reviewed in this article is that the capacity of attachment figures for modulating fearful arousal in a responsive dialog with the child has a major impact on the development of dissociative symptoms over time. A second clinical implication is that traumatic events are often discrete occurrences, whereas disturbed parental affective communications are often an enduring, day-in-day-out feature of the childhood years. In contrast to a more discrete traumatic event, the parent's responses to the child's foundational needs for comfort and soothing are worked into the fabric of identity from a very early age. They are also worked into the fabric of the child's biologic stress regulation. Therefore, the resolution of discrete traumatic events in treatment may come about more quickly than the resolution of long-standing patterns of role-reversal, disorientation, and disrupted forms of affective communication in the transference. Among dissociative young adults, current research results indicate that disrupted communication patterns with attachment figures tend to be a subtle and implicit part of dyadic interaction from a very early age and, therefore, may be extremely difficult for the patient to articulate until forms of a healthier and more genuine implicit and explicit dialog around heightened affective experiences are worked out in the therapeutic relationship.

This hypothesis regarding the importance of the quality of the parent-child dialog in the genesis of dissociative tendencies has important implications for treatment that are compatible with trauma theory. It highlights the importance of trauma survivors being "heard" in their journey to recovery. Herman [55] described dissociation as the "internal mechanism by which terrorized people are silenced." This internal mechanism may parallel the manner in which infants vulnerable to developing dissociation are silenced or shut out of collaborative dialog with their parent, setting the stage for the later lack of affectively alive collaborative dialog often seen in adults who have dissociative processes.

What is important about this model of the parent-child dialog is that it may help to address the current gaps in the dissociation literature that emphasize traumatic experience rather than ongoing parent-child processes in the generation of adult dissociative disorders. It offers a framework for understanding why individuals vary so greatly in the development of dissociation in response to trauma. This model may provide a better understanding of nontraumatized individuals who dissociate and of individuals traumatized by war or other nonfamilial experiences who do not develop dissociation. This model may also provide a more nuanced understanding of Liotti's [9] work regarding the relationship between infant disorganization and dissociation by adding to the model a finer description of the particular relational transactions that underlie disorganization in infancy and dissociation in early adulthood.

Although the studies reviewed in this article provide empiric evidence regarding the long-term predictive power of infant disorganization and the parent-infant dialog, these factors are not necessarily the only or even the most important factors in this development. Clearly, such development occurs within a complex web of environmental, societal, familial, and genetic

factors that are all likely to interact in ways that we have only begun to understand. Accordingly, more research is needed that includes strong measures of family relational process to expand our understanding of how these relational factors may interact with genetic, biologic, and trauma-related processes to influence the development of dissociation over the life span. Collaborative efforts between trauma clinicians and attachment researchers to document diagnosable adult dissociative disorders in longitudinal cohorts will also shed light on the clinical impact in adulthood of processes related to childhood attachment disorganization.

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