

Expanding the concept of unresolved mental states: Hostile/Helpless states of mind on the Adult Attachment Interview are associated with disrupted mother–infant communication and infant disorganization

KARLEN LYONS–RUTH,^a CLAUDIA YELLIN,^b SHARON MELNICK,^a
AND GWENDOLYN ATWOOD^a

^a*Harvard Medical School; and* ^b*Boston University*

Abstract

In a recent meta-analysis, only 53% of disorganized infants were predicted by parental Unresolved states of mind on the Adult Attachment Interview (AAI). The goal of this study was to identify additional predictors of infant disorganization on the AAI by developing and validating an interview-wide coding system for Hostile/Helpless (H/H) parental states of mind with respect to attachment. Maternal AAIs were collected from 45 low-income mothers with high rates of childhood trauma when their children were age 7; Strange Situation assessments had been collected at 18 months of age. AAIs were independently coded using both the Main and Goldwyn coding system and newly developed codes for H/H states of mind. Results indicated that the H/H coding system displayed discriminant validity in that it did not overlap substantially with the Unresolved, Cannot Classify, or Fearfully Preoccupied by Traumatic Events categories in the Main and Goldwyn coding system. Second, H/H states of mind accounted for variance in disorganized infant behavior not associated with the Unresolved classification. Third, H/H states of mind were significantly related to maternal disrupted affective communication as coded by the Atypical Maternal Behavior Instrument for Assessment and Classification coding system, and maternal disrupted communication mediated the relations between H/H states of mind and infant disorganization.

One current frontier of attachment research lies in the extension of adult attachment constructs and assessments to at-risk or clinical populations. The importance of validating attachment assessments in high- and low-risk family environments was demonstrated first in relation to attachment assessments in infancy. When high-risk infants were studied using the three-category attachment classification system developed for low-risk samples, unpredicted results were obtained, and

anomalous organizations of infant attachment behaviors began to be described that did not fit any of the three attachment categories well (Crittenden, 1985; Lyons–Ruth, Connell, Zoll, & Stahl, 1987; Radke–Yarrow, Cummings, Kuczynski, & Chapman, 1985). This led Main and Solomon (1990) to the development of criteria for a fourth attachment category in infancy—the disorganized/disoriented group.

More recently, the assessment of adult attachment patterns using the Adult Attachment Interview (AAI; Main & Goldwyn, 1998) has been extended to a variety of clinical populations. Similar to the early studies of infant attachment patterns, the pattern of results has

Address correspondence and reprint requests to: K. Lyons–Ruth, Department of Psychiatry, Harvard Medical School at Cambridge Hospital, 1493 Cambridge Street, Cambridge, MA 02139; E-mail: klruth@hms.harvard.edu.

been inconsistent and, at times, counter to clinical and theoretical predictions. Hypotheses based on attachment theory (Main & Hesse, 1990) suggest that clinical populations with high rates of childhood loss or trauma should exhibit high rates of states of mind classified Unresolved (U) with respect to loss or trauma. This prediction has been born out in some studies (Allen, Hauser, & Borman-Spurrell, 1996; Patrick, Hobson, Castle, Howard, & Maughan, 1994) but not in others. For example, few maritally violent men were judged U and only 33% were considered Cannot Classify (CC; Holtzworth-Monroe, Stuart, & Hutchinson, 1997); only 53% of personality-disordered violent criminal offenders in institutions were judged either U or CC (van IJzendoorn, Feldbrugge, Derks, & deRuiter, 1997). Results with women patients who were victims of abuse were somewhat stronger, with 60% of female psychiatric inpatients with sexual abuse histories classified U. From a clinical perspective, these rates are unusually low given the difficulties that clinical offenders or hospitalized abused women often experience functioning in day to day relationships. Finally, only 36% of mothers followed by protective services for grossly negligent parenting were classified U despite their chronically neglectful parenting and their histories of childhood abuse and current depression and substance abuse (Ethier, Lacharite, & St-Laurent, 2002).

None of the clinical studies have had converging infant data or parent-infant interaction data available to assess the validity of the AAI results. Therefore, it has been unclear whether the results are accurate indicators that some clinical populations have higher rates of organized states of mind (autonomous, dismissing, preoccupied) than expected or whether the classification criteria developed for low-risk samples are not yet adequately developed to capture the range of states of mind seen among clinical groups. The goal of the present study was to identify additional pathways toward infant disorganization by developing an interview-wide coding system for an underlying "hostile-helpless" parental state of mind with respect to attachment and assessing its validity in relation to infant disorganization and deviations in parental caregiving.

Classification as U With Respect to Loss or Trauma

According to the etiological model of the genesis of disorganized attachment strategies in infancy initially proposed by Main and Hesse (1990), parental experiences of loss or abuse may lead to unintegrated states of mind that generate lapses in reasoning or discourse when interviewed on the AAI. This is termed a U state of mind, and it is the adult representational measure of a disorganized working model of attachment. This U adult state of mind, in turn, is predicted to be associated with frightened or frightening (FR) parental behavior toward the infant, due to the lack of mental and behavioral integration of the fearful affect associated with the loss or abuse experience. The parent's FR behavior, in turn, is seen as placing the infant in an unresolvable conflict because the parent becomes a source of fear for the infant as well as the primary source of comfort. This conflict is viewed as leading to the contradictory and unintegrated behaviors toward the caregiver that are the hallmark of attachment disorganization (Main & Solomon, 1990).

Classification as U with respect to loss or trauma refers to the lack of full integration into consciousness of the occurrence and immediate implications of a traumatic event. This may be seen, for example, in extreme attention to the details of the loss or trauma or in indications that the interviewee felt unrealistically responsible for the loss or trauma, such as in believing that they killed the person with their thoughts (Main & Goldwyn, 1998). Hesse and Main (1999) view these slippages as brief and isolated and generally as occurring in the presence of an otherwise organized interview.

The infant attachment classification corresponding to the adult U classification is the Disorganized/Disoriented (D) classification, which refers to the category of infant attachment in which the infant displays a range of atypical behaviors in the presence of the caregiver that indicate fear, conflict, or disorientation (Main & Solomon, 1990). Behaviors such as freezing, showing apprehension, or approaching and moving away from the caregiver in rapid alternation suggest a collapse of an organized behavioral strategy for dealing

with the stress of separation from and reunion with the caregiver (Main & Solomon, 1990).

A number of studies have demonstrated a relationship between the adult U and infant Disorganized classifications (van IJzendoorn, Schuengel, & Bakermans-Kranenburg, 1999). Most of those studies have involved low-risk samples; none have involved clinically referred parents. In addition, as van IJzendoorn (1995) points out in a meta-analysis of nine attachment studies, a weaker relationship exists between the U and Disorganized classifications than between most other adult categories of attachment and their infant counterparts. In his meta-analysis the correlations between parent and infant attachment classifications for the combined studies were secure-autonomous ($r = .48$), avoidant-dismissing ($r = .42$), ambivalent-preoccupied ($r = .19$), and U-disorganized ($r = .31$). For 53% of disorganized infants, the parent was also classified U; this leaves 47% of disorganized infants unaccounted for by parental U states of mind. Thus, there is clearly a great deal of variance in infant disorganization that remains to be accounted for by other factors. Although Spangler and Grossman (1999) have suggested that infant temperamental factors also account for variance in disorganization, here we evaluate the possibility that methodological issues related to the current AAI coding system may lead to underestimates of the influence of parental state of mind on infant disorganization. Specifically, some parental states of mind described in the clinical literature and likely to be related to infant disorganization are not yet captured by coding criteria for U states of mind, as discussed below.

One methodological issue that may weaken the prediction from the U category is that coding for U status depends on the reporting of a specific loss or abuse experience. If no death or abuse is identified by the participant, then adult state of mind cannot be coded U.

In addition, in a departure from the practice established for other states of mind, only aspects of the interview that can be tied to the participant's state of mind regarding the loss or abuse experience are relevant to the coding of a U state of mind; aspects of the interview unrelated to the mental processing of loss

or abuse do not enter into the coding. In contrast, autonomous, dismissing, or preoccupied states of mind are viewed as pervasive mental models for organizing discourse regarding attachment-related affects; therefore, indicators of those states of mind are viewed as pervading the interview rather than as appearing in circumscribed lapses.

A related conceptual issue is also associated with the methodological dependence on experiences of loss or abuse. Adults are viewed as developing U states of mind in relation to experiences of loss or abuse that often occur later than the first few years of life. In contrast, infants are viewed as developing disorganized attachment strategies through exposure to the caregiver's unintegrated fear related to past loss or abuse (Main & Hesse, 1990). Thus, different etiological mechanisms are proposed to account for disorganization in early development and disorganization in adulthood. This leads to the conundrum that if a disorganized infant grows up without a specific experience of loss or abuse then the disorganized attachment strategy would not be expected to persist into adulthood, and methodologically he or she could not be judged as U on the AAI. Lyons-Ruth, Yellin, Melnick, and Atwood (2003) have termed this a "transmission block" in the conceptual model for how disorganized attachment is transmitted to the third generation.

However, existing data are at least congruent with the possibility that infant disorganization may lead to continued unintegrated states of mind in the absence of specific incidents of loss or abuse (Ogawa, Sroufe, Weinfield, Carlson, & Egeland, 1997). Infant disorganization has been shown to predict controlling attachment strategies at least through age 6 in low-risk samples in which neither parental death nor abuse were reported to be associated with the infant's continued deviance (Main, Kaplan, & Cassidy, 1985; Wartner, Grossmann, Fremmer-Bombik, & Suess, 1994). One theoretical issue that emerges, then, is how to conceptualize the etiological mechanisms that contribute to the maintenance of disorganized-controlling attachment strategies into adolescence and adulthood in the absence of specific incidents of loss or abuse.

The corresponding methodological issue that emerges is how to assess such disorganized-controlling strategies in adolescence or adulthood when there has been no serious loss or abuse about which to inquire.

In one approach to this dilemma, Hesse (1999) has developed criteria for designating an AAI as CC if both a dismissing and a preoccupied strategy are evident in different parts of the interview (i.e., in discussing mother vs. father or present vs. past). Due to the rarity of these protocols, however, there are as yet no reliability data available for this classification and no validity data available to tie these adult characteristics to the developmental pathways involving disorganized attachments. Therefore, more work is needed to identify indices of atypical states of mind on the AAI that can predict infant disorganization independent of unresolved loss or abuse.

Attachment, Relational Trauma, and Pervasively Unintegrated States of Mind

In the Main and Goldwyn coding system, an AAI participant may be coded U with respect to either loss or abuse. Most empirical work that has demonstrated a relationship between the U classification of the parent and the D classification of the infant has involved U parents who were classified U with respect to loss. Few studies have contained enough cases of unresolved abuse to look specifically at parental discourse about abuse and its relation to infant attachment classification. In addition, the parent's discourse about abuse events per se may constitute too narrow a window for indexing the range of relational events in early development that lead to dysregulation of fearful arousal, symptom formation, and intergenerational transmission of disorganized attachment.

The *Diagnostic and Statistical Manual of Mental Disorders* of the American Psychiatric Association (APA, 1994) describes a traumatic event as "direct personal experience of an event that threatens death, serious injury, or other threat to the physical integrity of the self or other, or learning about unexpected or violent death or injury or threat of death or injury experienced by a family member or other

close associate" (APA, 1994, p. 424). Others have described trauma from a psychological perspective as what occurs ". . . when neither resistance nor escape is possible, [and] the human system of self defense becomes overwhelmed and disorganized" (Herman, 1992, p. 34). Herman (1992) and Terr (1991) further distinguish acute trauma, involving a single overwhelming event, from chronic trauma, in which the trauma is prolonged and/or repeated. Van der Kolk and Fisman (1994) also distinguish the effects of isolated incidents of trauma which result in ". . . rather discrete conditioned biological and behavioral responses to reminders of the trauma" from chronic abuse and neglect, which are likely to have a more pervasive effect on psychological and behavioral regulatory processes" (p. 147). These authors describe the inability of some people exposed to interpersonal trauma at an early age to regulate their affective states and behavioral responses. When ongoing and occurring at an early age, such experiences affect not only current functioning but ". . . the totality of personality development" (p. 147), "resulting in a syndrome of complex PTSD which includes problems regulating affective arousal, dissociation, somatization, changes in perception of self and other, and changes in systems of meaning" (see also Herman, 1992). The crystallization of such a personality style includes psychological constriction, massive numbing, rage, and, in some cases, identification with an aggressive perpetrator.

Whether trauma is defined by event characteristics or by psychological and physiological response, one problem with the above account is that the attachment context of traumatic events is not typically integrated into the theory of symptom formation. The symptomatic impact of traumatic events has largely been considered outside the context of the attachment relationships that buffer or augment the fear-arousing potential of the event itself. It is important to note that physical or sexual abuse by a family member in childhood most often involves two distinct processes that are confounded: (a) occurrence of a physically threatening event and (b) failure in the ongoing protective function of attachment figures. These intertwined processes have not always

been clearly distinguished in conceptualizing the etiological context of trauma symptoms. For example, trauma symptoms, such as dissociation, have generally been viewed as precipitated by the nature and severity of the threatening event. However, recent prospective longitudinal studies from infancy indicate that chronic impairment in caregiver responsiveness may be more central to the etiology of dissociative symptoms than abusive events *per se* (Ogawa et al., 1997).

An additional problem with the objective specification of what constitutes a traumatic event (APA, 1994) is that trauma is defined from an adult point of view, with no adjustments for how infants and young children evaluate threats to the integrity of the self. The central focus of Bowlby's work was the demonstration that infants and young children experience threats to the integrity of the self as a function of the availability of a familiar protective caregiver, not as a function of "objective" adult-defined physical danger. Hence, Bowlby observed that children with their caregivers in war-time London threatened by bombing experienced themselves as safer and were less symptomatic than children separated from their caregivers and sent to objectively safer residential care in the countryside (Bowlby, 1973). We would further argue that the relative contributions of attachment security and physically dangerous or threatening events to the etiology of trauma symptoms will shift from infancy to adulthood, with symptom formation from infancy to age 6 influenced much more heavily by the lack of responsive availability of primary attachment figures and symptom formation from 6 to adulthood gradually becoming increasingly related to adult criteria for physical threat. Therefore, phenomena usually discussed as symptoms of childhood trauma or abuse are likely to be related not only to the occurrence of threatening events but also, more broadly, to uncertainty regarding the responsive availability of caregivers.

Both in the attachment literature and in the trauma literature, particular incidents of abuse (i.e., traumatic experiences) have not been clearly conceptually or empirically separated from the ongoing context of parent-

child interaction in which such incidents occur. The ongoing context of interaction is significantly different among maltreating families than among socioeconomically matched controls, even when assessed in relatively brief (40-min) assessments (e.g., Lyons-Ruth et al., 1987; Madigan, Pederson, & Moran, 2003). We have long argued that because of this confound, the impact of ongoing deviant regulation in the relationship needs to be empirically separated from the impact of abusive incidents *per se*. Many of the psychological correlates of abuse described in both the trauma and attachment literatures are likely to be effects not of trauma *per se* but of traumatic events occurring in the context of serious relationship deviance or even of sustained relationship deviance itself (e.g., Ogawa et al., 1997). For example, a large majority of dissociative disorders and borderline disorders occur in the context of chronic abusive or neglecting family relationships in which the ongoing interaction with the primary caregiver is likely to be deviant (Putnam, 1991; Zanarini, Williams, Lewis, Reich, Vera, & Marino, 1997). To the extent that the caregiver is markedly hostile or unavailable to the child, the child may experience excessive fearful arousal and associated symptom formation whether or not an adult-defined physically threatening event occurs. Animal models have contributed clear support for this model of the foundational nature of early care for the regulation of fearful responses in infancy and early childhood (Coplan, Andrews, Rosenblum, Owens, Friedman, Gorman, & Nemeroff, 1996; Francis, Diorio, Liu, & Meaney, 1999). In addition, congruent with animal models, human neuroscience research is demonstrating that enduring psychophysiological effects on brain organization and stress physiology may result not only from overt physical or sexual abuse but also from self-reported emotional abuse, such as repeatedly hostile or emotionally unprotective responses from central caregivers (Teicher, 2002; Yehuda, Hallig, & Grossman, 2001).

This converging evidence from animal models, adult neuroscience, and developmental studies suggests that disorganized attachment behaviors and states of mind are likely to be

related to a broader range of caregiving responses than abusive behaviors alone. Infant studies have established clear links between hostile or unavailable caregiving and infant disorganized attachment behaviors (Goldberg, Benoit, Blokland, & Madigan, 2003; Grienemberger & Kelly, 2001; Kelly, Ueng-McHale, Grienemberger, & Slade, 2003; Lyons-Ruth, Bronfman, & Parsons, 1999; Madigan & Hawkins, 2003; Madigan, Pederson, & Moran, 2003). Therefore, we expected that hostile, conflictual, or unprotective responses from caregivers would also be associated with atypical states of mind in adulthood on the AAI, even in the absence of specific incidents of abuse.

Despite the noted confound between specific threatening events and the ongoing quality of caregiving regulation, the clinical trauma literature has provided the most consistent, in depth descriptions of states of mind associated with very deviant caregiving relationships. Therefore, we turned to those descriptions to inform the development of the coding system. However, we remain agnostic about the relative causal contributions of physically threatening incidents per se versus ongoing features of the caregiving interaction in the genesis of these states of mind. Further work will be needed to differentiate empirically the effects of threatening events from the effects of ongoing caregiver hostility, withdrawal, role reversal, or helplessness to protect.

Main and Goldwyn (1998) and Main and Solomon (1990) have described contradictory and unintegrated behavioral and mental processes as a core phenomenon of disorganized attachment relationships. Therefore one set of psychological phenomena that seemed particularly relevant to intergenerational transmission of disorganization were the extreme forms of segregated mental systems that have been described by students of trauma and psychopathology under the labels of "dissociation" and "splitting." These concepts, in combination with the detailed examination of a small set of pilot AAI protocols, guided the development of a set of additional interview-wide codes for indexing pervasively unintegrated states of mind on the AAI. Dissociation is sometimes referred to as a "vertical split" because disparate representations of both self

and other are observed to be maintained in separate mental "compartments" unintegrated with one another but available to consciousness in alternation with one another (Horowitz, 1986; Kluft, 1991). Thus, traumatized individuals may dissociate, or mentally segregate, affects that are too disorganizing of coping efforts to experience at the time of fearful arousal or may dissociate self-schemas that are threatening to the maintenance of positive identity, self-esteem, and motivation. The person is not generally simultaneously aware of these mentally segregated contents; yet, they both remain mentally active and available to consciousness and find expression in discourse and behavior at different times.

Splitting is a specific form of dissociation, defined as an unconscious process that actively separates contradictory positive and negative affects and their related mental representations of good and bad aspects of the other and the self. Splitting is viewed as a defense that allows contradictory representations to alternate in consciousness without an integrating conscious overview of the contradiction. Initially developed to capture the therapist's clinical experience of being alternately globally idealized and globally devalued in the relationship between patient and therapist, the mechanism of splitting has been central to understanding a variety of phenomena associated with Axis II personality disorders and traumatic childhoods, in particular, borderline psychopathology (e.g., APA, 1994; Kernberg, 1975). Borderline personality disorder has also been consistently related to a history of trauma (e.g., Herman, Perry, & Van der Kolk, 1989; Kernberg, 1975).

The global idealization that occurs in splitting is viewed as more extreme and less stable than the stable idealization that occurs in dismissing stances. Stable idealization is viewed in clinical writing as based on a repressive strategy, or "horizontal split," through which negative affects and related representations that generate conflict for the individual are consistently maintained out of awareness, converging with the research evidence that dismissing attachment strategies are best viewed as consistent and organized. In contrast, splitting is viewed as a form of mental segregation in which alternations in states of consciousness

may occur, so that even mild disappointments in a relationship may activate representations of the “bad” caregiver expressed as affectively intense devaluation and, at times, in a complete rupture of the relationship. When the negative representation is not active, some individuals who present global idealization are also clinically described as displaying “affect intolerance” or emotional constriction that excludes involved anger, emotional pain, fear, and vulnerability from consciousness. Relatively little controlled research has yet explored these clinically described phenomena. However, Fischer and colleagues have documented experimentally the presence of such a core devalued self among victims of childhood sexual abuse, in which attributes rated more central to the self concept are also evaluated as negative (Calverley, Fischer, & Ayoub, 1994).

The Hostile/Helpless (H/H) Coding System for Pervasively Unintegrated States of Mind

To operationalize the states of mind that might present on the AAI secondary to chronic relational trauma, including but not limited to sexual, physical, or emotional abuse, the development of an additional set of codes for the AAI was undertaken. The indicators for coding H/H states of mind were derived theoretically from concepts in the trauma and attachment literatures, as reviewed above. They were also derived empirically through close examination of the AAI's of mothers in a development sample, as described under Methods.

In the resulting coding system, an H/H state of mind describes the overall psychological organization of an adult who displays explicit contradictory but unintegrated emotional evaluations of a central caregiver across the transcript, often including evidence of an unexamined identification with that caregiver. These contradictory evaluations are typically accompanied by evidence of globally negative devaluing mental representations of self and/or caregiver. Another common presentation is for the participant to make recurrent references to fearful affect that may or may not have an identified source in a traumatic

experience. A more elaborated description of the H/H classification, as well as the ways in which it differs from the established Main and Goldwyn classifications, is included in the Methods section.

Descriptively, a number of H/H protocols were characterized by devaluation of caregivers, identification with those caregivers, and laughter at pain. These protocols often featured a concise, nontangential narrative, with both positive and negative experiences frankly discussed. Such protocols often had a distinct attitude of “telling it like it is,” that is, of frank identification of negative life experiences and of not pulling any punches in describing the foibles of caregivers, for example, “Did you ever feel rejected?” “Yeah, all the time.” In addition, they conveyed an attitude of being “tough” or resilient in the face of those experiences, as conveyed by their matter of fact or even darkly humorous presentations of such experiences. Idealization was often low and/or inconsistent, and there was little appeal to lack of memory. Involved anger was typically notably absent. However, the degree of vulnerability and pain clinically known to be associated with such experiences went largely unacknowledged, and was distanced by laughter and discourse style, “He was a drunk, but he was a good drunk (laugh).”

This newly developed category for the AAI differs from the coding of the U category in several ways. First, whereas the existing coding system classifies participants as U when they show lapses of monitoring of reason or discourse in regard to experiences of loss or trauma, the coding system for pervasively unintegrated H/H states of mind examines discourse patterns throughout the whole protocol regardless of relevance to particular experiences. Second, the H/H coding system is compatible with the entire range of relational experiences in childhood and is not contingent on the interviewee being able to identify instances of loss or abuse, as is the case in coding U states of mind. Third, the H/H coding system is informed by clinical descriptions of defensive functions among clinical populations with chronic trauma and makes more explicit the connections between features of AAI discourse and clinical presenta-

tions secondary to relational trauma. The system thus extends the potential of the codes for capturing variations in attachment-related states of mind within clinical populations.

Three hypotheses guided the study. First, it was expected that the H/H coding system would overlap with the current CC and Fearfully Preoccupied by Traumatic Events (E3) categories of the Main and Goldwyn (1998) coding system and provide additional specifications for those states of mind. Second, in high-risk or clinical samples, maternal H/H states of mind were predicted to account for variance in disorganized infant behavior not associated with the U classification. Third, H/H states of mind were predicted to relate to disruptions in maternal affective communication with the infant as coded by the Atypical Maternal Behavior Instrument for Assessment and Classification (AMBIANCE) coding instrument (Lyons-Ruth et al., 1999), and the extent of these disruptions was expected to mediate any relation between maternal state of mind and infant attachment disorganization. Parental disrupted affective communication as coded by the AMBIANCE coding instrument has been shown in several studies to relate both to parental U states of mind and to infant disorganization and to mediate the statistical link between them, as well as accounting for additional variance in infant disorganization not associated with U status. These relations have been demonstrated in both low- and high-risk samples and in relation to maternal behaviors assessed in both the strange situation (Grienberger & Kelly, 2001; Lyons-Ruth et al., 1999) and in separate laboratory assessments (Evans, Forbes, Bento, Moran, Pederson, & DeOliveira, 2003; Goldberg et al., 2003; Kelly et al., 2003; Madigan et al., 2003; Madigan & Hawkins, 2003).

Methods

Participants

The sample for this study consisted of 45 mothers and their 7-year-old children who had been participating in a longitudinal study since infancy (Lyons-Ruth, Connell, Grunebaum, & Botein, 1990). Of the 45 children, 28 were

male and 17 were female. In infancy, 66% of families had incomes under \$50 per person per week, and 62% received Aid to Families with Dependent Children. The sample was 80% Caucasian and 20% Latino, African American, or biracial children. Sixty percent of the mothers were high school graduates and 49% were single parents.

The infant sample consisted of 70 infants who were assessed for attachment security at 18 months of age and their mothers. Of those, 38 were low-income families referred to the study by health or social service agency staff because of concerns about the quality of the parent-infant relationship and 32 were demographically matched families from the community who were screened for histories of maltreatment or psychiatric hospitalization.

At the 7-year assessment, five families refused participation, and the remainder could not be relocated. The 45 families who participated in the 7-year sample did not differ significantly from those who did not participate on demographic measures or measures of infant attachment, maternal depression, or mother-infant interaction. The infant attachment distribution of the infants seen at age 7 was 42% ($n = 19$) secure, 16% ($n = 7$) avoidant, 10% ($n = 5$) disorganized-forced secure, and 32% ($n = 14$) disorganized-forced avoidant or ambivalent. The corresponding distribution for the full sample in infancy was 32% ($n = 23$), 21% ($n = 15$), 14% ($n = 10$), and 32% ($n = 23$).

Measures

Demographic risk. A cumulative demographic risk variable was computed by summing the presence of the following five factors: mother not a high school graduate; mother a single parent; mother under the age of 20 at birth of first child; family supported by government assistance; and family included three or more children under the age of 6.

Infant attachment security. At 18 months of age, mothers and infants were videotaped in the Ainsworth Strange Situation (Ainsworth, Blehar, Waters, & Wall, 1978). In this procedure the infant is observed in a playroom dur-

ing a series of eight 3-min episodes in which the mother leaves and rejoins the infant twice. Videotapes were coded for infant attachment behaviors and for the three attachment classifications as described by Ainsworth et al. (1978) and for disorganized/disoriented behaviors as described by Main and Solomon (1990). The three original attachment classifications (secure, avoidant, ambivalent) were assigned by both a computerized multivariate classification procedure developed on the original Ainsworth data (Connell, 1976; see Lyons-Ruth et al., 1987; for additional details, see also reference in Richters, Waters, & Vaughn, 1988) and a coder trained by M. Main. Agreement between the two sets of classifications was 86%. Agreement on the disorganized classification between M. Main and a second coder for 32 randomly selected tapes was 83% ($\kappa = .73$). Coder reliability for the 9-point Level of Disorganized Behavior Scale was $r = .84$.

AAIs. The AAI was administered to mothers when the children were age 7–8 (Davidson, 1993). The AAI (George, Kaplan, & Main, 1984/1985/1986) is a semistructured interview designed to elicit a participant's current state of mind regarding attachment experiences with parents and other significant caregivers during childhood. The interviewer asks about the quality of childhood experiences with parents, the participant's responses to experiences of rejection, separation, loss, and trauma during childhood, and the participant's evaluation of the effects of those childhood experiences on his or her current functioning.

Using the Main and Goldwyn coding system (1998), the interview is scored from a transcript using scale points that characterize the degree to which each parent was loving, neglecting, rejecting, involving, and pressuring to achieve. A second set of scales is used to assess the participant's state of mind and discourse style, including scales for overall coherence of transcript and of thought, idealization, insistence on lack of recall, derogation, fear of loss of child, metacognitive monitoring, passivity of speech, involved anger, and lack of resolution of loss or trauma. The scale scores are used to assign the adult to one of four major attachment classifica-

tions: secure, insecure/dismissing, insecure/preoccupied, and unresolved with respect to loss or trauma (Main & Goldwyn, 1998). These parallel the secure, avoidant, ambivalent, and disorganized classifications of the Ainsworth Strange Situation scoring system for infant attachment. Emerging criteria for a fifth category, currently designated CC, include shifting from one strategy to another over the course of the interview (e.g., dismissing to preoccupied) or displaying low coherence on the interview as a whole without an elevated score on any of the indicators of an insecure state of mind (Hesse, 1999). Stability of AAI classifications has been demonstrated in several studies (e.g., Bakermans-Kranenburg & van IJzendoorn, 1993; Benoit & Kevin, 1994). Discriminant validity of the AAI has been demonstrated with respect to intelligence, memory, cognitive complexity, social desirability, and overall social adjustment (Bakermans-Kranenburg, & van IJzendoorn, 1993; Sagi, van IJzendoorn, Scharf, Koren-Karie, Joels, & Mayseless, 1994).

Coding how the participant discusses material related to abuse experiences is critical to coding lack of resolution of abuse on the AAI. Because the AAI was developed for low-risk samples, abusive experiences are not probed in the same depth as experiences of loss. In interviewing mothers in this study on the AAI, additional questions were included in the interview specifically asking about experiences of physical abuse, sexual abuse, or witnessed violence, based on the Antecedent Experiences Questionnaire of Herman et al. (1989; see Appendix A).

Interviews were coded using the standard Main and Goldwyn (1998) coding system by a coder from the lab of one of the trainers for AAI coding who was certified as reliable through the standard training procedures of Main and Hesse. The coder had coded over 500 AAI protocols and had received additional training in applying criteria for the CC category. The coder was blind to all other data from the study. Using the standard Main and Goldwyn system, 58% of AAIs were classified in organized categories (40% Autonomous, $n = 18$; 7% Dismissing, $n = 3$; 11% Preoccupied, $n = 5$), 29% were classified U

($n = 13$), and 13% were classified CC ($n = 6$). Among those classified U, 10 were classified U for loss and 3 were classified U for abuse.

Disrupted maternal affective communication. Disrupted maternal communication with the infant was coded using the AMBIANCE coding system (Lyons-Ruth et al., 1999) over all episodes of the Strange Situation Procedure conducted at 18 months. Coders were naïve to the criteria for coding infant disorganized attachment behaviors. The AMBIANCE coding protocol yields a scaled score (1–7) for extent of disrupted communication and a classification as Disrupted or Not Disrupted, as well as a count for total atypical communicative behaviors, with five subtotals for affective communication errors, role confusion, negative-intrusive behavior, disorientation and withdrawal (see Lyons-Ruth et al., 1999, for more extended description).

Fifteen randomly selected tapes were coded by two coders to assess reliability. The reliabilities were as follows: Level of Disrupted Communication Scale, $\kappa = .93$; Disrupted Classification, 87% agreement, $\kappa = .73$; Total Atypical Behavior Score, $r_i = .75$; Affective Communication Errors Subscore, $r_i = .75$; Role Confusion Subscore, $r_i = .76$; Negative-Intrusive Behavior Subscore, $r_i = .84$; Disorientation Subscore, $r_i = .73$; Withdrawal Subscore, $r_i = .73$. Only the overall classification is used in the current analyses.

In studies to date, the AMBIANCE system has been coded both from the Strange Situation and from separate laboratory procedures and, using both assessment situations, has been validated in relation both to infant attachment disorganization and maternal U classification on the AAI (Goldberg et al., 2003; Grienberger & Kelly, 2001; Kelly et al., 2003; Lyons-Ruth et al., 1999; Madigan et al., 2003; Madigan & Hawkins, 2003).

Additional work with the AMBIANCE codes at the person level rather than the variable level identified three patterns of maternal behavior that were associated with infant disorganization: frightening, fearful-inhibited, and withdrawn (Lyons-Ruth, Bronfman, & Atwood, 1999). High levels of frightening, dissociated or role reversed behavior were as-

sociated with disorganized-avoidant and/or resistant forms of infant behavior; fearful-inhibited and withdrawing maternal behavior patterns were associated with disorganized-secure forms of infant behavior (disorganized behaviors combined with approach and cessation of crying). All three patterns of maternal behavior are classified in the Disrupted category.

H/H Coding system for the AAI. Following the coding conventions in the attachment literature, the H/H coding system is made up of a number of indicators that contribute to an overall scaled score for level of H/H state of mind (1–9). A score of 6 or above on the scale results in a H/H classification, and a score of 5 leaves the classification decision open to the coder's judgment. Consistent with the Main and Goldwyn practice, this continuous score is based on the coder's judgment as to how well the protocol fits the classification description in the coding manual. The coding system is described in detail in Lyons-Ruth, Melnick, Atwood, & Yellin, 2003.

A categorization as having an H/H state of mind regarding attachment indicates that the interviewee displayed discourse that contained elements of one or both of two very different hostile or helpless strategies for managing attachment-related affects. Although pure subtypes of Hostile or Helpless states of mind are possible, they are not necessarily expected to appear in pure form because they are viewed as related aspects of a single H/H internal model of self-other relations (see Lyons-Ruth, Bronfman, & Atwood, 1999).

In the Hostile subtype, at least one attachment figure from childhood is represented in globally negative terms and, in many cases, the participant seems to have identified with this hostile or devalued attachment figure. Such global devaluation is viewed as an indicator of "split" all good/all bad representations in the clinical literature and identification with the aggressor is a commonly observed sequel to victimization, as noted earlier. Difficult or traumatic childhood experiences are often directly described. There is also evidence of a tendency to block out or constrict feelings of vulnerability by turning painful experiences

into “dark humor.” Laughter at painful anecdotes was considered an indicator of such a stance. The discourse structure of those classified in this subcategory could remain in the concise or constricted range during the entire interview. Although the importance of devaluation (and identification with the devalued figure) might suggest that these were Ds2 or E2 protocols, only two protocols in the study were classified E2 and none were classified Ds2. The poor fit to those categories occurs because the devaluations have a “hot” or involved feel (e.g., “my enemy”) rather than a coolly dismissive tone, but they often occur in concise narratives with no involved anger. Such a combination of frank relating of negative experiences, “hot” devaluations, minimization of vulnerability, and a concise narrative would provide a poor fit to any of the existing AAI categories.

In the Helpless subgroup, pervasive feelings of fearfulness and helplessness are evident, and in some cases individuals classified in this subgroup are clearly identified with a victimized attachment figure. Thus, while continuing to maintain some denial of vulnerability, individuals in this subgroup are more likely to acknowledge vulnerable feelings, such as fear and globally negative evaluations of the self, and to be more psychologically involved with unsuccessful efforts to make sense of their painful attachment relationships. Fearful affect, as operationalized here, need not occur in the context of identified (or inferred) traumatic experiences, but can be described in relation to a variety of unrelated and nontraumatic events across the interview. Discourse in this subgroup often provides a poor fit to existing categories because it can have a predominantly passive and/or tangential structure, punctuated by dismissing features, such as global devaluation and attempts to minimize vulnerability by laughing at painful anecdotes, and by apparently autonomous features, such as frank discussion of negative aspects of early experiences.

Readers familiar with the AAI will note that the description of the “Helpless” subgroup has many points in common with Main and Goldwyn’s (1998) description of the Preoccupied subgroup E3, “Fearfully Preoccupied with

Traumatic Events” and overlap with this subgroup was predicted. However, the helpless classification differs from the E3 classification in several respects. First, it does not require the reporting or inferring of traumatic experience per se but only of repeated references to fearful affects across the context of the interview. Second, in many cases fearful affect is expected to coexist with indicators of a hostile, as well as helpless, state of mind. Third, empirically infants of these mothers are hypothesized to show disorganized attachment behavior rather than organized ambivalent behavior, as would be predicted if the mother’s state of mind were best described as preoccupied.

The coding system also includes a set of the following six individual frequency codes that serve to tie the qualitative rating and classification to clearly specifiable features of the transcript:

“*Global devaluation of a caregiver*” was scored whenever the participant’s language suggested that globally negative representations of caregivers were held in the past, and that these representations continued to be active in the present (i.e., have not been mitigated or distanced) in adulthood. Examples included references such as “she was a witch,” “horrible,” or “I hated him,” or their negatives, “I don’t hate him.” This “all-bad” language could also be described as “hot” devaluation in comparison to the “cool” derogation described by Main and Goldwyn as a hallmark of the DS2 Dismissing subcategory. However, it should be noted that cool derogation that was globally devaluing of a caregiver was also counted in these frequencies and was considered a potential predictor of infant disorganization rather than avoidance.

“*Identification with a hostile caregiver*” was scored whenever a globally negative evaluation of a caregiver was stated, yet the reader noted that the participant also identified with and appeared to value or accept similarities between the negatively evaluated attachment figure and the self. In some cases the parent’s negative qualities were emphasized throughout the interview and the identification with the parent was repeated in unrecognized form in the present (e.g., participant’s parent was criticized as extremely anxious and overprotective, and participant justified her overly restrictive actions towards her own child). In other cases the parent’s negative qualities were emphasized,

but the participant's similarity or closeness to the parent was also emphasized, for example, "She was my enemy/we're very close."

This form of contradiction was distinguished from the immediate evaluative oscillation described by Main as characterizing Preoccupied participants in that these contradictions were inferred over the entire interview, rather than necessarily existing as immediately juxtaposed contradictory statements. In addition, these statements were not accompanied by involved anger, suggesting that the expected negative affect had been segregated from the conscious content.

"*Recurrent references to fearful affect*" was a frequency measure coded whenever the participant made a reference to her own experiences of fearful affect states in the interview. Fearful references could pertain to a variety of unrelated and/or not particularly threatening circumstances.

"*Sense of self as bad*" referred to an internalized sense of "badness" or "blameworthiness" in which the participant felt guilty, responsible, deserving of disrespectful treatment, or undeserving of positive attention. By noting the continuation of this attitude into adulthood, this code was thought to index an ongoing need to preserve a positive view of caregivers by continuing to blame the self, as well as a lack of autonomy in making sense of childhood events.

"*Laughter at pain*" was coded whenever laughter followed anecdotes about psychological or physical distress. Laughter at pain was understood as a defensive use of laughter to dismiss the impact of childhood experiences of vulnerability.

"*Ruptured attachments*" was coded when a participant referred to no longer having contact with one or more members of his or her nuclear family through a deliberate decision to terminate contact. Because this code was relatively infrequent, the frequency of reference data were converted to a dichotomous score with 0 = no references and 1 = one or more references. Ruptured attachment relationships have been theoretically tied to all good/all bad unintegrated representations in the clinical literature, as noted.

The initial version of the coding system for H/H states of mind was developed by Atwood and Lyons-Ruth (Atwood, 1995). Blind to infant classification, Atwood examined a development set of 10 randomly selected AAIs stratified to include a sizeable number of interviews of mothers of disorganized infants. Drawing on the theoretical literature reviewed

earlier, an initial version of the coding system was developed and the 10 interviews were coded blind to all other data on the sample.

Two additional coders (C.Y. and S.M.) were then trained on this system using the 10 interviews from the development set. Reliability coefficients on 15 additional randomly chosen interviews were as follows: scaled score for H/H state of mind, $r_i = .83$, H/H classification, $\kappa = .86$; global devaluation of a caregiver, $r_i = .77$; identification with a hostile caregiver, $r_i = .80$; sense of self as bad, $r_i = .85$; recurrent references to fearful affect, $r_i = .70$; recurrent laughter at pain, $r_i = .90$; and ruptured attachments in adulthood, $r_i = .71$. All coders were blind to all other data on the sample.

Results

Maternal states of mind on the AAI and demographic risk factors

Pearson correlations revealed no reliable relations between the H/H state of mind scale and cumulative demographic risk within this uniformly low-income cohort ($r = .06, ns$). There were also no reliable relations between individual demographic factors and H/H level ($r_s = -.11$ to $.15$, all ns). AAI classifications (1 = *autonomous*, 2 = *dismissing or preoccupied*, 3 = *unresolved or cannot classify*) were also unrelated to cumulative demographic risk ($r = -.04, ns$), or any individual measure of demographic risk. Given the lack of relation between demographic factors and maternal states of mind, these variables were not included in further analyses.

H/H state of mind and unresolved loss on the AAI

The first hypothesis was that the H/H codes might overlap with the CC or E3 classifications and provide additional specifiers of those states of mind. Table 1 displays the associations between the H/H coding system and the existing Main and Goldwyn codes for U and CC states of mind. As can be seen, the H/H state of mind scale was unrelated to maternal

Table 1. Relations between unresolved (U) or cannot classify (CC) AAI classifications and Hostile/Helpless (HH) state of mind codes

H/H Codes	AAI Classification	
	U vs. Organized (<i>N</i> = 39) ^a	U or CC vs. Organized (<i>N</i> = 45)
Overall state of mind		
Level of HH state of mind	.14	.15
Classification as HH	.22	.15
Individual codes		
Identification with a hostile caregiver	-.02	-.05
Global devaluation of caregiver	-.03	-.10
Sense of self as bad	-.02	-.09
Recurrent references to fearful affect	.08	.01
Recurrent laughter at pain	.02	-.01
Ruptured attachments in adulthood	.09	.01

Note: Point biserial correlations are shown, except for the HH classification and ruptured attachments in adulthood where phi is shown. All *p* values are nonsignificant.

^aSix AAIs classified as CC were omitted.

classification as U using the Main and Goldwyn system, with the CC group omitted. The H/H scale was also unrelated to the combined U and CC categories. Contrary to prediction, no AAI interview in the current study was classified E3 or U/E3, so the relation between the H/H codes and the E3 subcategory could not be assessed in this study.

The individual frequency codes that are part of the H/H coding system were also unrelated to both U and U or CC classifications, as shown in Table 1. Relations between the two systems were no stronger using the 9-level U scale scores for loss and trauma ($r = -.10$ and $-.04$, respectively) or scaling the AAI classifications to increase power (as Autonomous = 1/Dismissing or Preoccupied = 2/U or CC = 3; $r = .20$, *ns*). Among mothers classified as having organized states of mind, 54% were classified H/H: 56% of Autonomous ($n = 18$) mothers, 0% of Dismissing ($n = 3$) mothers, and 80% of Preoccupied ($n = 5$) mothers. Among mothers classified U or CC, 77 and 50%, respectively, were classified H/H.

Based on these results, the hypothesis that the H/H codes might represent additional specifiers of states of mind now termed CC or Fearfully Preoccupied was not supported. Instead, H/H codes captured aspects of parental state

of mind that were unrelated to the U, CC, or E3 categories in the standard coding system.

Maternal H/H state of mind and infant disorganization

Hypothesis 2 was that in high-risk or clinical samples H/H states of mind would account for additional variance in infant disorganization not associated with U states of mind. As shown in Table 2, the extent of the mother's H/H state of mind on the AAI was significantly related to the extent of disorganized attachment behaviors displayed by the infant. Classification as H/H was also related to infant disorganization. Given these significant correlations on the most inclusive variables, the relations between infant disorganization and the frequency codes for specific H/H features were assessed, as also shown in Table 2. The extent of mother's Laughter at Pain and Devaluation of Caregivers were most strongly associated with the infant's disorganization. Identification with a Hostile Caregiver and Recurrent References to Fearful Affect both had reasonable effect sizes, but these were only marginally reliable with the present sample size. Finally, one additional code, reflecting the presence of Ruptured Attachments in Adult-

Table 2. Magnitude of association between maternal states of mind on the AAI and extent of infant disorganized attachment behavior

Maternal AAI Codes	<i>r</i>
H/H codes	
Overall state of mind codes	
Level of HH state of mind	.35*
HH classification	.35*
Individual codes	
Identification with a hostile caregiver	.29†
Global devaluation of caregiver	.31*
Sense of self as bad	.27†
Recurrent references to fearful affect	.28†
Recurrent laughter at pain	.36*
Ruptured attachments in adulthood	.43**
Main and Goldwyn codes	
Classification as U (CC omitted) ^a	.05
Classification as U or CC	-.10

Note: *N* = 41. Pearson correlations are shown, except for HH and U or CC classifications where point biserial correlations are shown.

^a*N* = 35.

†*p* < .10. **p* < .05. ***p* < .01.

hood, was also a significant correlate of infant disorganization.

Table 2 also shows that in this high-risk sample neither U nor U/CC classifications on the AAI were related to level of infant disorganized attachment behavior. A multiple regression analysis on level of infant disorganized behavior confirmed that an H/H state of mind explained a significant portion of the variance in infant disorganization not accounted for by U and CC status on the AAI, as shown in Table 3.

Maternal U and H/H states of mind and subtypes of infant disorganization

Closer examination of the relation between U status and infant disorganization revealed that concordance rates between mothers and infants differed significantly by the subtype of infant disorganization displayed. Consistent with Main and Hesse's (1990) hypothesis, 80% of mothers of disorganized-secure infants were

Table 3. Contribution of maternal state of mind on the AAI to infant disorganization

Maternal State of Mind	Results of Regression Analysis on Infant Disorganization			
	β	<i>R</i>	ΔR^2	ΔF
Step 1				
U or CC	-.13	.10	.01	.37
Step 2				
Level H/H	.36	.37	.13	5.74*

Note: *N* = 41.

**p* < .02.

classified U or CC on the AAI. However, only 23% of mothers of disorganized-insecure infants were classified U or CC, whereas 53% were classified autonomous.

The HH coding system yielded similar results to the standard Main and Goldwyn system in classifying mothers of D-secure infants, as shown in Figure 1. However, the H/H codes were significantly more concordant with infant classification than U or CC classifications among mothers of D-insecure infants, as also shown in Figure 1, $\chi^2(1, N = 24) = 6.00, p < .02$. Among mothers of D-insecure infants, 23% were classified U or CC compared to 75% classified HH. Comparable figures for mothers of organized infants were 45% classified U or CC by the standard system versus 54% classified HH by the current system.

Previous reports from this study have also documented that, compared to the disorganized-secure group, mothers of disorganized-insecure infants were more hostile and role reversing in interaction with their infants, had experienced higher rates of parental psychopathology as children, and had higher rates of psychosocial problems in adulthood (Lyons-Ruth et al., 1999; Lyons-Ruth, Repacholi, McLeod, & Silva, 1991). These multiple converging sources of data indicate that failing to identify atypical states of mind among mothers in this subgroup could result in misleading assessments of clinical samples.

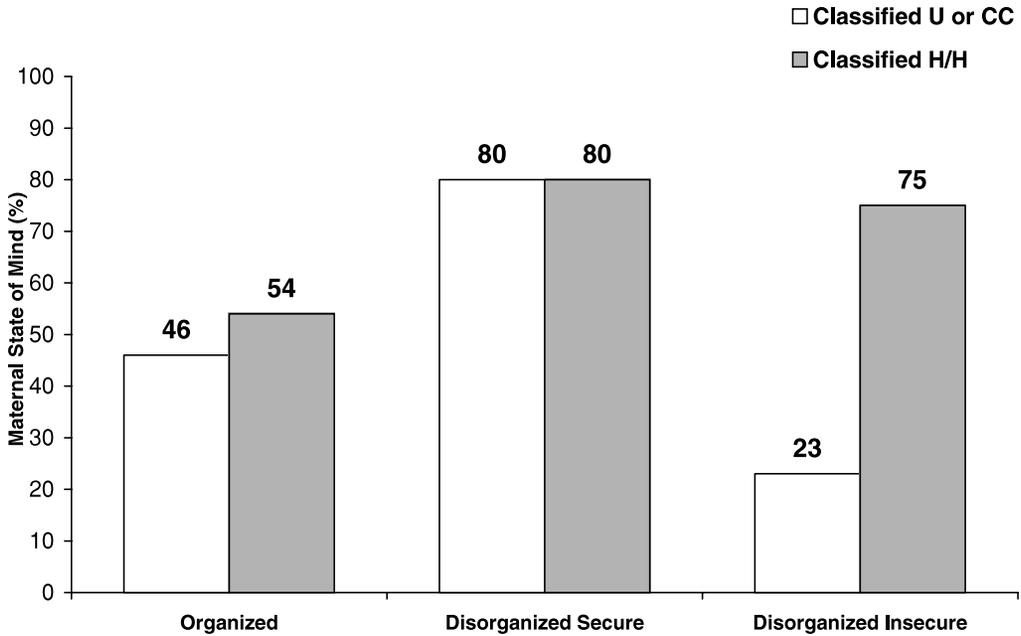


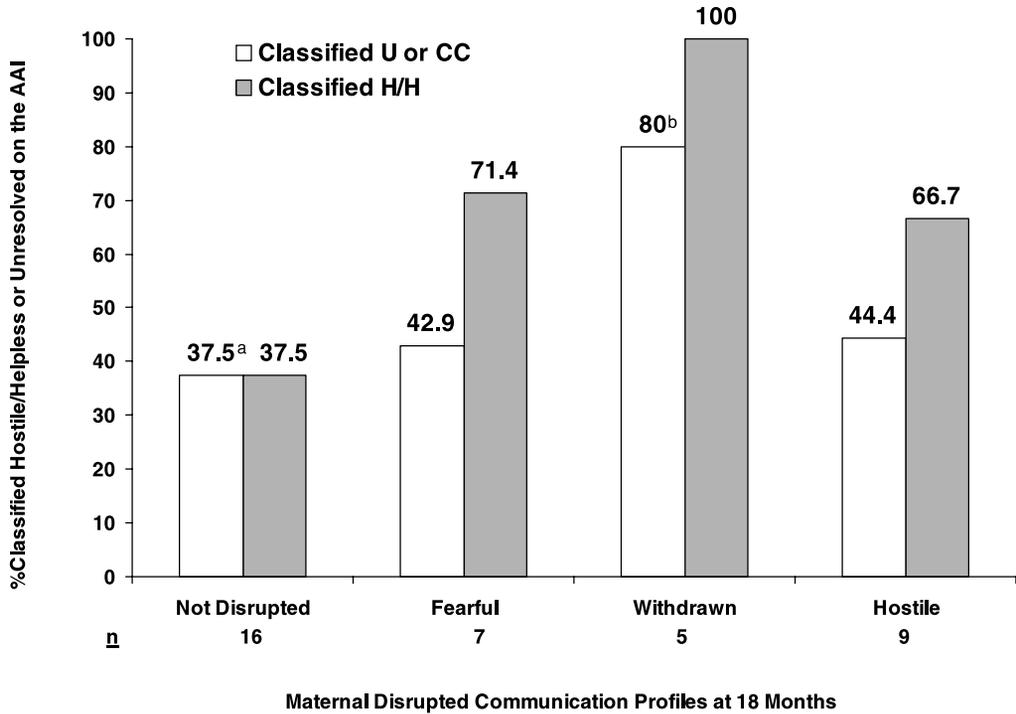
Figure 1. Maternal states of mind on the AAI and subtypes of disorganized infant attachment strategies.

Maternal H/H states of mind and disrupted mother–infant affective communication. Hypothesis 3 was that any relations between maternal states of mind and infant disorganization would be mediated by deviations in parent–infant interactions. Maternal H/H states of mind were also related to maternal disrupted affective communication with the infant (H/H classification, biserial $r = .39, p < .03$), and maternal U states of mind were also marginally related to disrupted affective communication (biserial $r = .33, p < .06$). Adding the CC classification to the U classification decreased the relation to maternal behavior ($r = .15$). Frequencies of specific H/H codes were not significantly related to maternal disrupted communication ($r_s = .08-.24$). Consistent with previous reports from the larger infancy sample (Lyons–Ruth et al., 1999), maternal disrupted communication was also related to infant disorganization ($r = .38, p < .03$).

Because there were three profiles of disrupted maternal behavior included in the overall disrupted classification, it was of interest to examine whether some profiles of maternal disrupted behavior were being better accounted

for by maternal U or H/H states of mind than others. The proportion of H/H and U states of mind associated with each maternal profile is displayed in Figure 2. Although the cell sizes preclude meaningful statistical analysis, it is apparent that all disrupted profiles, including the more subtle maternal behaviors represented in the fearful–inhibited and withdrawing profiles, were contributing to the obtained significant relation between disrupted communication and H/H states of mind, and with the CC groups omitted, all disrupted profiles also contributed to the marginally significant relation between disrupted communication and U states of mind.

When mothers with unresolved loss and mothers with unresolved abuse were differentiated in the analysis, the incidence of disrupted maternal behavior increased linearly with the progression from organized states of mind to unresolved loss to unresolved abuse, 44 to 78 to 100%, $r(37) = .39, p < .02$. However, only three mothers were classified U in relation to abuse, indicating the need for replication of this finding. The finding does point to the potential importance of differentiating



^a 20.8% Cannot Classify ^b 5% Cannot Classify

Figure 2. Maternal states of mind on the AAI and profiles of maternal disrupted affective communication.

the sequelae of loss from the sequelae of abuse, as well as of developing broader criteria to capture states of mind associated with the aftermath of hostile, emotionally unprotective, or frankly abusive relationships.

Given that the relations among maternal H/H state of mind, maternal behavior, and infant disorganization were all significant, the criteria were met for a possible mediational role of maternal behavior in transmitting the influence of maternal H/H states of mind to the infant (Baron & Kenny, 1986). Therefore, a final regression analysis testing the mediational model was conducted. With H/H states of mind entered first into the equation, the regression equation for the relation between H/H state of mind and infant disorganization was significant, $\beta = .37$, $F(1, 35) = 5.43$, $p < .03$. In the second equation, after variance associated with maternal disrupted communication was accounted for by entering

it first into the equation, the relation between maternal H/H state of mind and infant disorganization decreased to nonsignificance, $\beta = .26$, $\Delta F(1, 34) = 2.40$, $p < .13$, while the coefficient for disrupted communication was significant, $\beta = .38$, $F(1, 35) = 5.85$, $p < .02$.

This finding supports the conclusion that the effect of maternal H/H state of mind on infant attachment behavior is at least partly mediated by the mother's disrupted affective communication with her infant. However, the effect size associated with H/H state of mind (.26) was still sizeable enough to reach significance in a larger sample, indicating the need for replication before complete mediation is assumed. It is also notable that maternal disrupted communication did not relate to the individual H/H frequency codes and so could not be mediating the obtained relations between those codes and infant disorganization.

Discussion

The results of this study indicate that the coding system for H/H states of mind captures features of discourse on the AAI that are associated with infant disorganization. Contrary to our hypotheses, the aspects of discourse that indexed an H/H state of mind did not overlap substantially with the standard criteria for assigning the classifications for U, CC, or E3 in the standard Main and Goldwyn (1998) system. The CC category is currently applied to transcripts in which the discourse characteristics change over the course of the interview (dismissing to preoccupied) or change from parent to parent or in which coherence is low but no particular state of mind scale is elevated. Although we had expected otherwise, the results indicate that these CC indicators were independent of the HH indicators. There appear to be many ways to manifest contradictory strategies on the AAI, not all of which are included in the U or CC coding criteria.

Rather than elaborating on the current criteria for those existing classifications, the H/H codes appear to delineate additional trauma-related ways in which a contradictory or pervasively unintegrated state of mind can be manifested on the AAI. The HH system both codes new elements that do not overlap with the traditional system, and combines those new elements with elements of the existing rare classifications (Ds2, E3) into more elaborated profiles associated with the intergenerational transmission of disorganization. Thus, the H/H system is an important augmentation to the current system for capturing indicators of a pervasively unintegrated state of mind. As is evident, however, this work exists within the Main and Goldwyn theoretical framework regarding integrated and unintegrated states of mind and expands the existing Main and Goldwyn system to include additional ways that incoherence manifests itself in more disturbed samples.

Consistent with standard AAI coding, it is not the content of the participant's experiences that is used to classify the participant's state of mind. Instead, it is the way the participant organizes his or her discourse about these experiences, that is, how the participant tells the story. The discourse of H/H mothers when

describing relational experiences with their own caregivers was characterized by global devaluation of attachment figures, continued identification with those devalued figures, a sense of self as bad, fearful affect, and laughter at pain, as well as contradictory and unintegrated evaluations of central caregivers over the course of the interview (see also Steele, 2003, for similar features in the AAIs of severely dissociative abused patients).

It is important to note that a number of the simple frequency codes were also significantly related to infant disorganization. Although capturing only specific and limited aspects of the H/H conceptualization, the frequency codes were retained for analysis because they are more closely tied to objectively specifiable features of the transcript than are the overall rating scale and classification, which allow the coder to weight more global features of the transcript that cannot easily be coded as frequency data. Given the limited and specific nature of the frequency codes, their generally robust associations with infant disorganization were somewhat surprising.

It is also important to note that because of the importance of assessing lack of resolution of abuse in this sample, the standard AAI protocol was augmented with a set of questions developed by trauma researchers to ask about the occurrence of physical abuse, sexual abuse, and witnessed violence (Herman et al., 1989; see also Appendix A). These questions were added to the protocols to enhance the ability to detect and code U states of mind and are not necessary for the coding of the H/H system. In contrast to coding U states of mind, coding for H/H states of mind does not rely on portions of the interview that relate to experiences of loss or abuse. Similar to traditional coding procedures for organized states of mind, HH states of mind are coded from discourse over the entire interview and the sections of the AAI that elicit the most relevant material for H/H coding are the early adjectives and examples describing the quality of the parent-child relationship and the later questions asking the parent to reflect on childhood experiences. In support of the applicability of the HH coding system to standard AAI protocols (without additional probes for abuse ex-

periences), the coding system has also been applied to the standard AAI interviews of borderline and dysthymic patients reported on by Patrick et al. (1994; Melnick & Patrick, 2003). Those protocols did not include additional questions about abuse and the HH system significantly differentiated between dysthymic and borderline patients, with no problem applying the system.

Recent evidence indicates that the primary gain from the additional questions is likely to lie in increased reporting of sexual abuse experiences. Bailey, Moran, and Forbes (2003) reported that physical abuse experiences were reported at about the same rate on the standard format of the AAI as on a structured traumatic experiences questionnaire; however, sexual abuse experiences were underreported on the AAI compared to the traumatic experiences questionnaire. Therefore, the additional questions are likely to result in increased identification of sexual abuse experiences compared to the standard AAI format. The validity of the AAI in relation to the prediction of infant disorganization depends on accurate identification of abuse experiences so that lack of resolution of such experiences can be assessed. Therefore, the additional probes should have maximized the potential for experiences of abuse to be identified during the interview and coded for U status.

Despite these attempts to identify abuse and provide opportunity for abuse-related discourse, however, and despite the high rates of childhood abuse and infant disorganization in the sample (47% of mothers, $n = 21$, had experienced physical or sexual abuse during childhood using state criteria; Lyons-Ruth & Block, 1996), only three protocols met criteria for unresolved abuse using the standard coding criteria. Thirteen percent of women considered abused by the AAI coder ($n = 23$) were coded U for abuse, while 22% of women who had suffered a loss ($n = 45$) were coded U for loss. Greater difficulty resolving loss than abuse experiences is unexpected and difficult to justify given existing theory and research on sequelae of abuse. In addition, most losses had not occurred prior to age 16, and did not involve nuclear family members, while abuse experiences were all prior to adulthood.

There is almost no published data for comparison from other studies on the relative rates of subjects with abuse histories who are classified U for abuse compared to rates of subjects with loss histories who are classified U for loss. Such a breakdown would be valuable in future reports. To date, however, there is no reason to consider these data atypical. Because the criteria for U states of mind were originally developed for loss experiences and only subsequently extended to abuse experiences, current criteria for lack of resolution may be more sensitive to processes involved in integrating loss and less sensitive to processes involved in integrating abuse. Abused mothers of D infants who were not captured by the U abuse scale included those who either consistently denied occurrence of abusive events, for example, "She abused all the other kids but she didn't hit me because I was too fast" (not a believable statement to those who work with abusive families), or those who fit the profile described above where negative experiences are frankly and vividly and concisely described, for example, "Did you consider it abusive?" "Sure, it was abusive." The essential problem is likely to be that "unresolved" abuse presents in discourse in very different ways than does unresolved loss. In contrast, a high proportion of abused women were classified as H/H, and the severity of both sexual and physical abuse experiences were related to HH states of mind (Lyons-Ruth et al., 2003).

It seems unlikely that including the few additional questions about the occurrence of abuse experiences altered the process of the AAI for the participant. First, for the large group who have not experienced abuse, the questions do not apply. Second, recent data indicate that the group who has experienced physical abuse is already reporting those experiences on the standard AAI interview at the same rates as any structured questionnaires, as noted above. Therefore, the AAI process for this group is also unlikely to be different. Only for the small group who have experienced sexual abuse would we expect the AAI process to be different, in that those experiences are often not elicited in the usual AAI format (Bailey et al., 2003) and would be more

likely to be elicited and discussed with the additional questions. However, the opportunity to hear how such experiences are discussed in the interview should result in a gain rather than a loss of coding validity for the AAI and, particularly, for the coding of lack of resolution of abuse.

Given that the AAI data were gathered 5.5 years after the infant attachment and mother–infant interaction data, the significant associations between state of mind and maternal and infant behavior are especially notable. These predictive associations over time from infant attachment to maternal state of mind were also evident in the original Berkeley study data where AAIs were gathered when the children were age 6 (Main et al., 1985).

In addition to being associated with infant disorganization and maternal disrupted communication, an H/H state of mind has been associated with the severity of childhood trauma in other analyses (Lyons–Ruth et al., 2003). Both exposure to physical violence and sexual abuse alone, but not severity of loss experiences, were significantly associated with increased indicators of a H/H state of mind. Severity of trauma was not directly associated with infant disorganization, however. Therefore, the parent's H/H state of mind provided one indirect path through which the parent's traumatic experiences were associated with disorganized attachment in the next generation.

An H/H state of mind was not theoretically conceived as related only to trauma, however. An important impetus for developing the current coding system was the view that parental emotional unavailability, whether due to chronic hostility, role reversal, or withdrawal from the child, responses that do not meet current criteria for abuse, constitutes a primary relational trauma. The serious relational deviations inherent in parental hostility, role reversal, and withdrawal can now be coded reliably from early infancy onward, and are robust predictors of infant disorganization, as noted earlier (e.g., Goldberg et al., 2003; Kelly et al., 2003; Lyons–Ruth et al., 1999; Madigan et al., 2003). According to this conceptualization, such primary early relational trauma would be expected to impact overall symptom severity by adulthood through at least three

mechanisms. First, serious early relational deviations create early impairments in the sense of safety and protection of the infant and young child, with concomitant impact on neurobiological stress responses and psychological symptom formation. Second, these parental stances are also likely to be correlated with the child's exposure to physically threatening events over time. Third, unresponsive parental stances are likely to contribute to more pronounced symptom formation around particular traumatic events, due to the lack of parental comfort and help in integrating the traumatic experience. In this light, it should be noted that despite the increased prevalence of H/H states of mind among parents with a history of childhood abuse (Lyons–Ruth et al., 2003), such trauma histories were neither necessary nor sufficient for the occurrence of H/H states of mind in this sample.

Given the relation between U states of mind and infant disorganization repeatedly found in low-risk samples (van IJzendoorn et al., 1999), we view the lack of prediction from U to D in this sample as resulting from the high prevalence of parenting dysfunction and adverse events experienced during childhood by mothers in the current clinical sample. The standard coding system for the AAI may be most sensitive to identifying lapses of monitoring of reason and discourse related to family disruption and loss, while the H/H coding system was specifically designed to detect the more pervasively unintegrated states of mind that accompany experiences of relational trauma, including the cumulative traumas of consistently hostile or withdrawn parenting, as well as the episodic traumas of abuse events.

Theoretically, we view a hostile adult stance, either as captured by the HH coding system or as revealed in parent–infant interaction, as a likely outgrowth of a controlling/punitive stance in childhood (Cassidy, Marvin, & the MacArthur Working Group, 1991). Additional codes for controlling/punitive or controlling/caregiving stances in childhood and adulthood have been added to the coding system since this study was completed. In the only work to date to use those additional codes, Melnick and Patrick (2003) found that

references to caregiving or punitive stances in childhood, as well as other H/H codes, differentiated adult borderline patients from adult dysthymic patients.

Although the description of a hostile stance has features in common with a dismissing stance, it is notable that none of the protocols classified H/H were classified dismissing by Main and Goldwyn criteria, despite such indicators of denial of vulnerability as "laughter at pain." These protocols were not coded as dismissing because of the low or inconsistent levels of idealization displayed in the devaluations of caregivers and the frankness with which negative experiences were discussed. They were also not often coded as preoccupied because the negative evaluations were usually not presented in the context of angry, entangled speech patterns but as closed judgments in the context of a concise or even constricted discourse structure. In addition, a number of these clinical protocols have features that are rare in normative samples, including normative low-income samples, such as "hot" but concise devaluation, and those features provide a poor fit to any of the existing category descriptions. Protocols like these in which negative experiences were vividly related but the vulnerability and pain normally associated with such experiences were distanced by laughter and discourse style tended to be coded F1 or F4 in the Main and Goldwyn system, but to the clinician's eye these represent tough, "street-kid" stances. It appears that the difficulties in early relationships were too encompassing to be dealt with by lack of memory or by consistent idealization and caregivers were often too frightening or vulnerable to risk any anger, so the difficulties are presented as matter of fact or even as having a certain entertainment or shock value.

The H/H protocols closer to a helpless prototype were characterized most often by repeated references to fearful affects, as well as global devaluation of caregivers, a sense of self as bad, laughter at pain, and often frank reporting of negative experiences. Protocols of the helpless subtype were not coded E3, however, because in many cases traumatic events were not the topic of the fearful statements and/or were not identified or could

not be inferred. Instead, fearful statements were made about a variety of different topics throughout the interview. The discourse of Helpless protocols was also likely to convey an attitude of lack of autonomy of thought, although not necessarily through childlike or passive speech forms, in combination with active role reversal in regard to a caregiver. Some participants classified in the Helpless category described caregivers who were frightened or victimized and at the same time showed identification with the victimized caregiver.

Theoretically, we view a helpless adult state of mind as a potential outgrowth of a caregiving stance in childhood, organized around the (largely impossible) goal of helping an impaired parent to function more effectively. At the most basic level, we would view the child's sense of helplessness as grounded in a primary failure to receive effective care around attachment needs in infancy. This sense of helplessness would be further elaborated in childhood as a function of the inability to ease the parent's vulnerability, as well as by the identification with and modeling of the parent's anxiety and dysfunction. Converging with this formulation, Solomon and George (1999) described mothers of disorganized/controlling children as ". . . helpless, in the sense of feeling themselves to be without strategies" (p. 19).

Although these hostile or helpless profiles anchor the two extremes of the distribution captured by this coding system, it should be reiterated that these hostile or helpless states of mind often occur in mixed rather than pure form. Consistent with the view that hostile and helpless working models represent complementary roles in an unbalanced dyadic relational structure (Lyons-Ruth et al., 1999), it is not surprising that women in the sample often displayed aspects of both hostile and helpless discourse features, as well as mixed references to both caregiving and punitive stances in childhood.

The H/H codes add to the Main and Goldwyn system in three ways. First, the coding system for H/H states of mind examines discourse patterns throughout the whole interview. Second, H/H codes can be assigned regardless of the occurrence of particular ex-

periences in childhood, so that coding does not depend on the identification of an experience of loss or abuse. Third, the H/H coding system is informed by descriptions of defensive functions among clinical populations, thus extending the potential of the codes for capturing variations in attachment-related states of mind within clinical groups.

Given the initial promise of these results, additional work is needed exploring the concurrent correlates and predictive validity of these codes in a wider range of clinical samples with concurrent infant attachment data. Data from one recent study of clinically re-

ferred outpatients indicates that H/H states of mind (as well as U states of mind) are more prevalent among women with borderline personality disorder than those with dysthymic disorders (Melnick & Patrick, 2003). However, no infant data from clinical samples are yet available to assess the intergenerational transmission of H/H states of mind among specific diagnostic groups. Assessing the factors associated with infant disorganization among clinical populations now constitutes a critical agenda if adequate early prevention programs are to be designed for the parents and infants at greatest risk.

References

- Ainsworth, M. D. S., Blehar, M., Waters, E., & Wall, S. (1978). *Patterns of attachment*. Hillsdale, NJ: Erlbaum.
- Allen, J. P., Hauser, S. T., & Borman-Spurrell, E. (1996). Attachment theory as a framework for understanding sequelae of severe adolescent psychopathology: An 11-year follow-up study. *Journal of Consulting and Clinical Psychology, 64*, 254–263.
- American Psychiatric Association. (1994). *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition*. Washington, DC: Author.
- Atwood, G. (1995). *Adult attachment disorganization: A new classification and scoring scheme for the adult attachment interview*. Unpublished doctoral dissertation, Harvard University.
- Bailey, H. N., Moran, G., & Forbes, L. M. (2003, April). *Adolescent mothers' trauma symptoms, unresolved attachment, and maladaptive parent-child interactions*. Paper presented at the biennial meeting of the Society for Research in Child Development, Tampa, FL.
- Bakermans-Kranenburg, M. J., & van IJzendoorn, M. H. (1993). A psychometric study of the Adult Attachment Interview: Reliability and discriminant validity. *Developmental Psychology, 29*, 870–880.
- Baron, R., & Kenny, D. (1986). The modulation-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51*, 1173–1182.
- Benoit, D. P., & Kevin, C. H. (1994). Stability and transmission of attachment across three generations. *Child Development, 65*, 1444–1456.
- Bowlby, J. (1973). *Attachment and loss: Vol. 2. Separation anxiety and anger*. New York: Basic Books.
- Calverley, R., Fischer, K. W., & Ayoub, C. (1994). Complex splitting of self-representations in sexually abused adolescent girls. *Development and Psychopathology, 81*, 195–213.
- Cassidy, J., Marvin, R. S., & The MacArthur Working Group on Attachment. (1991). *Attachment organization in preschool children: Coding guidelines* (3rd ed.). Unpublished manuscript.
- Connell, D. B. (1976). *Individual differences in attachment: An investigation into stability, implications, and relationships to structure of early language development*. Unpublished doctoral dissertation, Syracuse University.
- Coplan, J. D., Andrews, M. W., Rosenblum, L. A., Owens, M. J., Friedman, S., Gorman, J. M., & Nemeroff, C. B. (1996). Persistent elevations of cerebrospinal fluid concentrations of corticotropin-releasing factor in adult nonhuman primates exposed to early-life stressors: Implications for the pathophysiology of mood and anxiety disorders. *Neurobiology, 93*, 1619–1623.
- Crittenden, P. M. (1985). Maltreated infants: Vulnerability and resilience. *Journal of Child Psychology and Psychiatry and Allied Disciplines, 26*, 85–96.
- Davidson, C. (1993). *The intergenerational transmission of resilience and risk: Maternal depression, maternal attachment states, and the competence of school-aged children*. Unpublished doctoral dissertation, Tufts University.
- Ethier, L. S., Lacharite, C., & St-Laurent, D. (2002, April). *Parental negligence*. Paper presented at the Quebec Attachment Conference, Quebec.
- Evans, E. M., Forbes, L. M., Bento, S., Moran, G., Pederson, D. R., & DeOliveira, C. A. (2003). *Continuity and change from infancy to toddlerhood in measures of attachment and maternal behavior*. Poster presented at the biennial meeting of the Society for Research in Child Development, Tampa, FL.
- Francis, D., Diorio, J., Liu, D., & Meaney, M. (1999). Nongenomic transmission across generations of maternal behavior and stress responses in the rat. *Science, 286*, 1155–1158.
- George, C., Kaplan, N., & Main, M. (1984/1985/1996). *Adult Attachment Interview*. Unpublished manuscript, University of California Berkeley.
- Goldberg, S., Benoit, D., Blokland, K., & Madigan, S. (2003). Atypical maternal behavior, maternal representations and infant disorganized attachment. *Development and Psychopathology, 15*, 239–257.
- Grienenberger, J., & Kelly, K. (2001, April). *Maternal reflective functioning and caregiving: Links between mental states and observed behavior in the intergenerational transmission*. Paper presented at the biennial meeting of the Society for Research in Child Development, Minneapolis, MN.
- Herman, J. L. (1992). *Trauma and recovery*. New York: Basic Books.

- Herman, J. L., Perry, J. C., & van der Kolk, B. A. (1989). Childhood trauma in borderline personality disorder. *American Journal of Psychiatry*, *146*, 490–495.
- Hesse, E. (1999). The adult attachment interview: Historical and current perspectives. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of attachment: Theory, research, and clinical applications*. New York: Guilford Press.
- Hesse, E., & Main, M. (1999). Second generation effects of unresolved trauma in nonmaltreating parents: Dissociated, frightening, and threatening parental behavior. *Psychoanalytic Inquiry*, *19*, 481–540.
- Holtzworth-Munroe, A., Stuart, G. L., & Hutchinson, G. (1997). Violent versus nonviolent husbands: Differences in attachment patterns, dependency, and jealousy. *Journal of Family Psychology*, *11*, 314–331.
- Horowitz, M. (1986). *Stress response syndromes* (2nd ed.). New York: Jacob Aronson.
- Kelly, K. M., Ueng-McHale, J., Grienerger, J., & Slade, A. (2003, April). *Atypical maternal behaviors at 4 months of age and their relation to infant attachment disorganization*. Paper presented at the biennial meeting of the Society for Research in Child Development, Tampa, FL.
- Kernberg, O. (1975). *Borderline conditions and pathological narcissism*. New York: Jacob Aronson.
- Kluft, R. (1991). Multiple personality. In A. Tansman & S. Goldfinger (Eds.), *Review of psychiatry* (Vol. 10, pp. 161–188). Washington, DC: American Psychiatric Press.
- Lyons-Ruth, K., & Block, D. (1996). The disturbed caregiving system: Relations among childhood trauma, maternal caregiving, and infant affect and attachment. *Infant Mental Health Journal*, *17*, 257–275.
- Lyons-Ruth, K., Bronfman, E., & Atwood, G. (1999). A relational diathesis model of hostile–helpless states of mind: Expressions in mother–infant interaction. In J. Solomon & C. George (Eds.), *Attachment disorganization* (pp. 33–70). New York: Guilford Press.
- Lyons-Ruth, K., Bronfman, E., & Parsons, E. (1999). Maternal frightened, frightening, or atypical behavior and disorganized infant attachment patterns. *Monographs of the Society for Research in Child Development*, *64*(3, Serial No. 258).
- Lyons-Ruth, K., Connell, D., Grunebaum, H., & Botein, S. (1990). Infants at social risk: Maternal depression and family support services as mediators of infant development and security of attachment. *Child Development*, *61*, 85–98.
- Lyons-Ruth, K., Connell, D., Zoll, D., & Stahl, J. (1987). Infants at social risk: Relations among infant maltreatment, maternal behavior, and infant attachment behavior. *Developmental Psychology*, *23*, 223–232.
- Lyons-Ruth, K., Melnick, S., Atwood, G., & Yellin, C. (2003). *Pervasively unintegrated hostile–helpless states of mind on the Adult Attachment Interview: Classification and coding manual version 3.0*. Unpublished manuscript, Harvard Medical School.
- Lyons-Ruth, K., Repacholi, B., McLeod, S., & Silva, E. (1991). Disorganized attachment behavior in infancy: Short-term stability, maternal and infant correlates, and risk-related subtypes. *Development and Psychopathology*, *3*, 377–396.
- Lyons-Ruth, K., Yellin, C., Melnick, S., & Atwood, G. (2003). Childhood experiences of trauma and loss have different relations to maternal unresolved and hostile–helpless states of mind on the AAI. *Attachment and Human Development*, *5*, 330–352.
- Madigan, S., & Hawkins, E. J. (2003, April). *Pathways to disorganization: Links between histories of physical and sexual abuse and atypical maternal behavior*. Poster presented at the biennial meeting of the Society for Research in Child Development, Tampa, FL.
- Madigan, S., Pederson D. R., & Moran G. (2003, April). *Bridging the gap between unresolved states of mind and disorganized attachment relationships: Links to atypical maternal behavior*. Poster presented at the biennial meeting of the Society for Research in Child Development, Tampa, FL.
- Main, M., & Goldwyn, R. (1998). *Adult attachment scoring and classification system. Version 6.3*. Unpublished manuscript, University of California at Berkeley.
- Main, M., & Hesse, E. (1990). Parents' unresolved traumatic experiences are related to infant disorganized attachment status: Is frightened and/or frightening parental behavior the linking mechanism? In M. Greenberg, D. Cicchetti, & E. M. Cummings (Eds.), *Attachment in the preschool years: Theory, research and intervention* (pp. 161–184). Chicago: University of Chicago Press.
- Main, M., Kaplan, N., & Cassidy, J. (1985). Security in infancy, childhood and adulthood: A move to the level of representation. *Monographs of the Society for Research in Child Development*, *50*(1–2, Serial No. 209), 66–104.
- Main, M., & Solomon, J. (1990). Procedures for identifying infants as disorganized/disoriented during the Ainsworth Strange Situation. In M. Greenberg, D. Cicchetti, & E. M. Cummings (Eds.), *Attachment in the preschool years: Theory, research and intervention* (pp. 121–160). Chicago: University of Chicago Press.
- Melnick, S., & Patrick, M. (2003, April). *Discriminating borderline states of mind: Operationalizing the concept of affective splitting and pervasively unintegrated states of mind on the adult attachment interview*. Poster presented at the biennial meeting of the Society for Research in Child Development, Tampa, FL.
- Ogawa, J. R., Sroufe, L. A., Weinfield, N. S., Carlson, E. A., & Egeland, B. (1997). Development and the fragmented self: Longitudinal study of dissociative symptomatology in a nonclinical sample. *Development and Psychopathology*, *9*, 855–879.
- Patrick, M., Hobson, R. P., Castle, P., Howard, R., & Maughan, B. (1994). Personality disorder and mental representation of early social experience. *Development and Psychopathology*, *6*, 375–388.
- Putnam, F. W. (1991). Recent research on multiple personality disorder. *Psychiatric Clinics of North America*, *14*, 489–502.
- Radke-Yarrow, M., Cummings, E. M., Kuczynski, & Chapman, M. (1985). Patterns of attachment in two- and three-year olds in normal families and families with parental depression. *Child Development*, *36*, 884–893.
- Richters, J. E., Waters, E., & Vaughn, B. E. (1988). Empirical classification of infant–mother relationships from interactive behavior and crying during reunion. *Child Development*, *59*, 512–522.
- Sagi, A., van IJzendoorn, M., Scharf, M., Koren-Karie, N., Joels, T., & Mayseless, O. (1994). Stability and discriminant validity of the Adult Attachment Interview: A psychometric study in young Israeli adults. *Developmental Psychology*, *30*, 771–777.

- Solomon, J., & George, C. (1999). The measurement of attachment security in infancy and childhood. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of attachment: Theory, research, and clinical applications* (pp. 287–316). New York: Guilford Press.
- Spangler, G., & Grossmann, K. (1999). Individual and physiological correlates of attachment disorganization in infancy. In J. Solomon & C. George (Eds.), *Attachment disorganization* (pp. 95–124). New York: Guilford Press.
- Steele, H. (2003). Unrelenting catastrophic trauma within the family: When every secure base is abusive. *Attachment and Human Development*, 5, 353–366.
- Teicher, M. H. (2002). Scars that won't heal: The neurobiology of child abuse. *Scientific American*, 286(3), 68–75.
- Terr, L. C. (1991). Childhood traumas: An outline and overview. *American Journal of Psychiatry*, 148, 10–20.
- Wartner, U. G., Grossmann, K., Fremmer-Bombik, E., & Suess, G. (1994). Attachment patterns at age six in south Germany: Predictability from infancy and implications for preschool behavior. *Child Development*, 65, 1014–1027.
- van der Kolk, B., & Fisler, R. (1994). Childhood abuse and neglect and loss of self-regulation. *Bulletin of the Menninger Clinic*, 58, 145–168.
- van IJzendoorn, M. H. (1995). Adult attachment representations, parental responsiveness, and infant attachment: A meta-analysis on the predictive validity of the Adult Attachment Interview. *Psychological Bulletin*, 117, 387–403.
- van IJzendoorn, M. H., Feldbrugge, J., Derks, F., & de Ruiter, C. (1997). Attachment representations of personality-disordered criminal offenders. *American Journal of Orthopsychiatry*, 67, 449–459.
- van IJzendoorn, M. H., Schuengel, C., & Bakermans-Kranenburg, M. J. (1999). Disorganized attachment in early childhood: Meta-analysis of precursors, concomitants, and sequelae. *Development and Psychopathology*, 11, 225–249.
- Yehuda, R., Hallig, S., & Grossman, R. (2001). Childhood trauma and risk for posttraumatic stress disorder: Relationship to intergenerational effects of trauma, parental posttraumatic stress disorder, and cortisol excretion. *Development and Psychopathology*, 13, 733–753.
- Zanarini, M. C., Williams, A. A., Lewis, R. E., Reich, D. B., Vera, S. C., & Marino, M. F. (1997). Reported pathological childhood experiences associated with the development of borderline personality disorder. *American Journal of Psychiatry*, 154, 1101–1106.

Appendix A

Additional trauma questions inserted into the AAI

The following series of questions were inserted after the standard AAI question “Were your parents ever threatening with you in any way?”.

- a. When you were angry, what would happen?
- b. How would your parents discipline you or others in your family?
- c. Was it ever harsh enough for you to feel it was abusive?
- d. How did it make you feel?
- e. How do you feel the experience affects you now?
- f. How do you feel this experience influences your approach to your own child?
- g. Was there ever any (other) violence in your home?
- h. How did you get your early sexual information?
- i. How old were you when you had your first sexual experiences?
- j. Have your sexual experiences been fully your choice, or was there some pressure or coercion involved?
- k. Were any of these experiences scary or upsetting?
- l. Were any of these inappropriate enough to seem abusive?
- m. How did it make you feel?
- n. How do you feel this experience affects you now?
- o. How do you feel this experience influences your approach to your own child?

(Herman et al., 1989). The standard questions continue with Question 10: “How do you think these experiences with your own parents have affected your adult personality?”