

## **Maternal reflective functioning, mother–infant affective communication, and infant attachment: Exploring the link between mental states and observed caregiving behavior in the intergenerational transmission of attachment**

JOHN GRIENENBERGER<sup>1</sup>, KRISTEN KELLY<sup>2</sup>, & ARIETTA SLADE<sup>3</sup>

<sup>1</sup>*Wright Institute Los Angeles*, <sup>2</sup>*Pennsylvania State University*, and <sup>3</sup>*The City University of New York, Yale Child Study Center, USA*

### **Abstract**

This study examines the link between mental representations and maternal behavior within the intergenerational transmission of attachment. Maternal reflective functioning was hypothesized to predict the quality of mother–infant affective communication based on the AMBIANCE measure. Each of these measures was also considered as a predictor of the quality of infant attachment. The subjects were 45 mothers and their 10–14-month-old infants. Results supported each of the study's major hypotheses. The AMBIANCE measure and the reflective functioning measure had a strong negative correlation. Thus, the level of disruption in mother–infant affective communication was inversely related to the level of maternal reflective functioning. The AMBIANCE measure was also shown to be a very good predictor of infant attachment. Mothers with high AMBIANCE scores were more likely to have infants classified as disorganized or resistant, whereas mothers with low AMBIANCE scores were more likely to have infants classified as secure. A linear regression analysis indicated that maternal behavior mediates the impact of maternal reflective functioning upon infant attachment. Implications for attachment theory and early intervention are explored.

**Keywords:** *Attachment, reflective functioning, mentalization, AMBIANCE, affective communication, caregiving behavior, early intervention*

### **Introduction**

It has been suggested (Slade, Grienemberger, Bernbach, Levy, & Locker, this volume) that the relationship between adult and infant attachment is mediated by maternal reflective functioning. Thus, it was asserted that a mother's capacity to understand her child's mind is the vehicle whereby her attachment organization becomes highly relevant to the child's sense of self and of his relationships to others. A crucial mechanism in the intergenerational transmission of attachment, a parent's capacity to comprehend the developing mind of the child, gives the child a sense of his own mind (Fonagy, Target, Gergely, & Jurist, 2002; Slade, 2002). This formulation begs a critical question, however: What is the relationship between maternal reflective functioning and maternal behavior, which has long been thought to be crucial to the intergenerational transmission of attachment?

Attachment theory has traditionally emphasized the role of maternal sensitivity as it pertains to intergenerational transmission. Research utilizing the AAI has been able to

Correspondence: John F. Grienemberger, Ph.D., 11340 W. Olympic Boulevard, Suite 245, Los Angeles, CA 90064. E-mail: jgrienemberger@yahoo.com

demonstrate modest to moderate links between autonomous adult attachment and maternal behavior that is sensitive and contingently responsive to infant attachment signals (e.g., Crowell & Feldman, 1988; Grossman, Fremmer-Bombik, Rudolph, & Grossman, 1988; Ward & Carlson, 1995). However, van IJzendoorn's (1995) meta-analysis examined the relations between AAI classifications, parental sensitivity, and infant attachment. He found that the AAI explained only 12% of the variance in parental sensitivity. Furthermore, parental sensitivity accounted for merely 10% of the variance in infant attachment. He concluded that a "transmission gap" existed in the study of intergenerational attachment processes, as behavioral measures of maternal sensitivity have failed to adequately account for the strong link between the AAI and the Strange Situation. It has remained uncertain whether the transmission gap is due to theoretical limitations, measurement issues, or both.

In this paper, the possibility that one reason for the apparent transmission gap is the relative limitations of the construct of maternal sensitivity will be explored. Maternal sensitivity usually refers to global positive features like cooperation, acceptance, contingent responsiveness, and pleasurable affect. Following the work of Lyons-Ruth and her colleagues (Lyons-Ruth, 1999; Lyons-Ruth, Bronfman, & Atwood, 1999; Lyons-Ruth, Bronfman, & Parsons, 1999b), the hypothesis that a mother's capacity to regulate her child's affect at times of heightened arousal will be examined, since her behavior at times of distress and negative affect (rather than global sensitivity, *per se*) will be most crucial in determining the child's attachment security. The hypothesis that maternal caregiving behaviors will be linked to her capacities for reflective functioning will also be examined.

#### *Maternal caregiving behavior: A broader view*

A mother's capacity to regulate her infant's fear and distress is crucial to that child's ultimate feeling of security (Lyons-Ruth & Spielman, 2004). Indeed, one of the attachment figure's vital functions is the regulation of fear in the infant. When the child is frightened, the mother provides a ready and available secure base. In their seminal work on the etiology of disorganized attachment in infants, Main and Hesse (1990) proposed that a mother's frightened and frightening behavior, usually associated with her own unresolved loss or trauma, creates an irresolvable paradox for the child, in which the parent "is at once the source and solution" of and to his distress (i.e., he must seek safety from an attachment figure whose behavior he finds scary or distressing) (Main & Hesse, 1990, p. 163). This occurs in cases where the parent is frightened and deferential or the parent is hostile and intrusive, as both instances are confusing and frightening to the child (Lyons-Ruth et al., 1999a; Main & Hesse, 1990). Unresolved trauma and loss in mothers may result in multiple and incoherent internal working models of attachment that are often characterized by unintegrated fear, anxiety, or hostility. Frightened and frightening maternal behavior emerges as the intensity of the attachment relationship stimulates the emergence of dissociated affect left over from the parent's own early attachment relationships.

Several studies have investigated the link between maternal frightened and frightening behavior and infant disorganization. Jacobvitz, Hazen, & Riggs (1997) applied Main and Hesse's scale to observations of a series of structured tasks that required mothers to interact with their infants. Mothers who were classified as unresolved on the AAI displayed significantly more frightened and frightening behavior than mothers classified as resolved. Schuengel, Bakermans-Kranenburg, & van IJzendoorn (1999) examined a nonclinical middle-class sample of mothers who had experienced the loss of someone important to them. Mothers who were both unresolved and insecure were significantly more likely to display frightening behavior toward their infants.

In a series of research investigations, Karlen Lyons-Ruth and her colleagues (Lyons-Ruth et al., 1999a, 1999b) have expanded upon these original hypotheses in a number of ways, and have created an instrument intended to code atypical maternal behavior during the Strange Situation: the Atypical Maternal Behavior Instrument for Assessment and Classification (AMBIANCE, Version 2) (Bronfman, Parsons, & Lyons-Ruth, 1999). In addition to the frightened, frightening, and dissociated behavior originally described by Main and Hesse (1990; Hesse & Main, 1999), Lyons-Ruth also considers profound disruptions in mother–infant affective discourse as well as behaviors that are physically or emotionally withdrawn. She suggests that such extreme forms of misattunement lead to fear in the infant who has no means of effectively influencing the attachment figure during times of distress.

The AMBIANCE measure was developed with consideration for three broad and overlapping hypotheses (Lyons-Ruth et al., 1999a, 1999b). In addition to the “frightened/frightening” hypothesis originally outlined by Main and Hesse, the AMBIANCE measure incorporates the notion of “failure of repair”, which suggests that the parental response to infant distress must be predictable and responsive enough to provide the infant with at least a minimally effective strategy for eliciting care. Finally, the “competing strategies” hypothesis suggests that caregivers who experience “a continuing state of fear” (Main & Hesse, 1990) in the context of attachment needs will also experience contradictory attachment tendencies toward their infants. That is to say, caregivers feel compelled to simultaneously reject and heighten the infant’s attachment related affects and behaviors.

The AMBIANCE measure was originally applied to a sample of 65 at-risk mothers and infants (Lyons-Ruth et al., 1999b). Results indicated that mothers of disorganized infants exhibited increased rates of disrupted affective communication. The strongest correlation was seen between infant disorganization and the qualitative score for the Overall Level of Disrupted Communication Scale. Significant correlations were also found between the AMBIANCE total score and a 9-point scale that measured the level of infant disorganized attachment behavior.

These studies would appear to indicate that it is not maternal sensitivity, per se, but rather the breakdown of affective communication and the intrusion of unintegrated fear, hostility, and anxiety, that is the most critical aspect of maternal behavior contributing to infant attachment. Furthermore, Lyons-Ruth’s work suggests that it is important to evaluate maternal behavior within the context of infant distress in order to tap into the behavioral characteristics that are most closely related to intergenerational transmission.

In the present study, the notion that a mother’s ability to regulate her infant’s fear and distress are linked to her capacities to make sense of her child’s internal experience, that is, to her capacity for reflective functioning will be explored. The theory of reflective functioning, as originally outlined by Fonagy and his colleagues (Fonagy et al., 1995, 2002), is rooted in current research in cognitive science that has examined the developmental acquisition of “a theory of mind” or “an intentional stance” (Baron-Cohen, 1995; Dennett, 1987; Premack and Woodruff, 1978). Fonagy and his colleagues describe mentalization as involving an awareness of the nature of complex mental states including attitudes, feelings, intentions, and plans (Fonagy & Target, 1998). A core element of maternal reflective functioning involves the mother’s capacity step back from her own affective experience in order to reflect upon her child’s uniquely subjective intentions during moments of stress or conflict (Slade, Bernbach, Grienenberger, Levy, & Locker, 2002). Lyons-Ruth and her colleagues have noted that the, “repeated lack of appropriate responsiveness to the *intention* conveyed in the infant’s communications could take many forms, including antagonism, withdrawal, intrusive overriding of the infant’s cues, or role-reversing focus on the parent’s

needs . . .” (Lyons-Ruth et al. 1999, p. 52, italics added). Thus, the AMBIANCE measure attempts to operationalize the behavioral manifestations of a parent’s gross failures to grasp and respond to the intentionality of the infant. These failures are rooted in limitations of reflectiveness that leave the caregiver unable to differentiate her own affects from those of her child. Such moments are ripe opportunities for distortion, misattribution, and otherwise misattuned responsiveness to infant distress.

Fonagy and his colleagues suggest that an individual’s capacity to mentalize is crucial to his or her ability to regulate affect (Fonagy, 1996, 2000; Fonagy et al., 1995). Painful affect (in either the caregiver or the child) becomes manageable because the caregiver can see painful feelings, or disturbing thoughts, as merely mental states, rather than concrete realities, thus opening the possibility for modulation and change over time (Fonagy et al., 2002). It is this capacity, in turn, that allows the caregiver, time after time, to remain both emotionally engaged and sufficiently in control, so that she can contain the infant’s distress and transform it into a tolerable experience over which the child can begin to develop a sense of mastery. The mutual regulatory processes of early childhood gradually allow for an increase in the child’s ability to self-regulate, and ultimately to begin to symbolize his internal experience and to mentalize for himself.

It is believed that the caregiver’s capacity for reflective functioning is intimately tied to the particular ways in which she responds to her infant’s attachment signals, particularly during moments involving strong negative affect within either member of the dyad. It is these moments of heightened emotion that are central to the formation of the particular mode of affect regulation that characterizes each of the different attachment organizations.

In this study, maternal reflective functioning is measured using the Parent Development Interview (PDI; Aber, Slade, Berger, Bresgi, & Kaplan, 1985). (For a fuller description, see Slade, this volume.) Both the AMBIANCE measure and the PDI focus heavily on the mother’s capacity to reflect upon and respond to the intentions that lie beneath the infant’s behavior and communications. It is hypothesized that this unifying construct will lead to a meaningful link between the mother’s representations and her behavior, as both offer a unique perspective from which to observe a mother’s grasp of her own, and her child’s affect and intentions.

In this study, it is hypothesized that the level of disrupted affective communication will be inversely correlated with ratings of maternal reflective functioning. Furthermore, it is predicted that both will contribute to the overall quality of infant attachment. The reliability and validation analyses reported by Lyons-Ruth and her colleagues indicated that the AMBIANCE measure can be utilized in a meaningful way to identify the significant disruptions in affective communication that often occur in cases of infant disorganization. In the present study the AMBIANCE measure is used to predict infant insecure attachment more broadly, not only disorganized attachment.

## **Methods**

This study is part of a longitudinal project that has sought to explore various aspects of early mother–infant attachment relationships. This particular study examines the link between a measure of maternal reflective functioning and the quality of mother–infant affective communication. Affective communication is measured by the Atypical Maternal Behavior Instrument for Assessment and Classification (AMBIANCE, Version 2) (Bronfman et al., 1999), which tracks disrupted maternal behavior during the Strange Situation. The AMBIANCE measure is also considered as a potential predictor of the quality of infant attachment.

### *Participants*

The participants were 45 first-time mothers and their infants who were followed from the third trimester of pregnancy through to the second year of the infants' lives. The mothers were middle and upper-middle class, with 90% having graduated from college, and over 50% having completed some form of graduate study; 92% were employed at the time of recruitment. The sample was primarily Caucasian (94%). The mother's ages ranged from 25 to 40 years, with a mean of approximately 31 years. (See Slade et al., this volume, for sample attrition rates.)

### *Procedures*

Participation in the study included three visits to a university laboratory during pregnancy and four to six subsequent visits with the baby following birth. There was also a brief postpartum telephone interview at 1 month. The postpartum visits occurred when the infants were 4, 10, 14, and 28 months old. The mothers were reimbursed \$20.00 for their participation following each visit to the laboratory. Informed consent was provided. For purposes of the present analysis, data collected at the 10 and 14 month laboratory visits will be relied upon. At 10 months, the Parent Development Interview (PDI) (Aber et al., 1985) was administered. When the infant was 14 months old, the dyad participated in the Strange Situation (Ainsworth, Blehar, Waters, & Wall, 1978).

### *Measures*

*The Parent Development Interview* (PDI; Aber et al., 1985) is a semi-structured clinical interview containing 45 questions that take approximately 90 minutes to administer. The PDI was used to score maternal reflective functioning using the Addendum to the Reflective Functioning Scoring Manual (Slade et al., 2002). See Slade et al. (this volume) for a thorough description of the administration and scoring procedures utilized to score maternal RF.

*The Strange Situation.* The present study utilized the Strange Situation coding procedures (Ainsworth et al., 1978; Main & Solomon, 1990) in order to determine the quality of the infant's attachment to his mother. See Slade et al. (this volume) for a thorough description of the Strange Situation administration and scoring procedures.

*Atypical Maternal Behavioral Instrument for Assessment and Classification (AMBIANCE).* Strange Situation videotapes were coded for disrupted affective communication using the AMBIANCE measure described by Lyons-Ruth and her colleagues. Since its inception, the vast majority of studies using the Strange Situation have focused exclusively on the child's behavior. More recently, Lyons-Ruth and her colleagues (Lyons-Ruth et al., 1999b) have argued that the Strange Situation also provides an optimal opportunity to observe the maternal caregiving system in action, as this procedure is the best validated assessment technique known to activate the infant's attachment behavioral system. Maternal behavior during the Strange Situation is particularly interesting because it provides a window into the manner by which the mother regulates, or fails to regulate, her child's negative affect or distress.

The AMBIANCE measure is made up of the following five dimensions: (1) Affective Communication Errors; (2) Role or Boundary Confusion; (3) Fearful, Disoriented,

Dissociative, or Disorganized Behavior; (4) Intrusiveness or Negativity; and (5) Withdrawal. Examples from Dimension 1 (Affective Communication Errors) include not offering comfort after an infant falls or laughing while the infant is crying. An example of a Dimension 2 behavior (Role or Boundary Confusion) is demanding a show of affection from the infant. A Dimension 3 (Fearful Behavior) that is often seen at reunions is a sudden rise in intonation or a tense, high-pitched, squeaky voice. Dimension 3 (Dissociated or Disoriented Behavior) includes sudden voice changes. Dimension 4 (Intrusive or Negative Behavior) includes pulling the infant by the wrist, mocking, or criticizing the infant. Finally, Dimension 5 examples (Withdrawal) include not acknowledging the infant after a separation or redirecting the infant to toys and not oneself as a substitute for closer contact.

Several different scores are derived for a given AMBIANCE protocol including the following: (1) tallies of the total number of atypical behaviors observed; (2) Overall Level of Disrupted Communication, a qualitative score ranging from 1 (“High normal”) to 7 (“Disrupted communication with few or no ameliorating behaviors”); and (3) Parental Classification, a bivariate classification of either Disrupted or Not Disrupted affective communication.

The two coders of the AMBIANCE measure in the present study were advanced doctoral candidates in clinical psychology. Elisa Bronfman, Ph.D. and Karlen Lyons-Ruth, Ph.D., two of the three principal authors of the AMBIANCE scale, trained both coders to reliability. Successful levels of agreement with the expert codes were reached ( $r = .76$  and  $.77$ ), and permission was given to code the present sample. Inter-rater reliability within the present study was checked at regular intervals. The ICC (2, 1) was  $.83$  for the Level of Disrupted Communication Scale and  $.85$  for the AMBIANCE total score.

## Results

### *The link between maternal RF and AMBIANCE*

The first major research question considered the relationship between maternal reflective functioning and maternal disrupted affective communication. It was hypothesized that the AMBIANCE measure would be inversely correlated with the overall RF score. The results of a Pearson correlation between maternal RF and the Overall Level of Disrupted Communication Scale of the AMBIANCE was found to be significant. As predicted, there was a strong negative correlation between RF and disrupted affective communication ( $r = -.481$ ,  $p = .000$ ). This correlation represents a very large effect size ( $d = 1.1$ ). These results indicate that negative maternal caregiving behavior is inversely correlated with maternal reflective functioning. Maternal RF assessed when infants are 10 months old is predictive of maternal AMBIANCE scores when infants are 14 months old.

### *AMBIANCE as a predictor of infant attachment*

The 45 infants in this study were classified as Secure, Avoidant, Resistant, or Disorganized using the Strange Situation coding procedures (Ainsworth et al., 1978; Main & Solomon, 1990). The next research question addressed the relationship between maternal disrupted affective communication and the infant’s quality of attachment. It was hypothesized that mothers of insecure infants would have higher AMBIANCE scores than mothers of secure infants. The results displayed in Table 1 provide support for this hypothesis. When collapsing the three insecure categories (avoidant, resistant, and disorganized), the one-way analysis of variance was significant at the .05 level ( $F = 5.70$ ,  $df = 1,43$ ,  $p = .021$ ). This analysis produced a moderately large effect size of  $d = .72$ .

Table I. AMBIANCE level of disrupted communication by infant attachment security.\*†

Infant Attachment	<i>N</i>	Mean	Standard Deviation
Secure	23	2.78	1.35
Insecure	22	3.91	1.80
Total	45	3.33	1.67

\* $p < .05$ .

†Effect size: moderately large ( $d = .72$ ).

Table II. AMBIANCE level of disrupted communication by infant attachment category.\*†

Infant Attachment	<i>n</i>	Mean	Standard Deviation
Avoidant	8	2.88	1.25
Secure	23	2.78	1.35
Resistant	4	4.50	1.29
Disorganized	10	4.50	2.07
Total	45	3.33	1.67

\* $p < .01$ .

†post hoc tests: Secure vs. Resistant  $p < .05$ ; Secure vs. Disorganized  $p < .01$ .

In order to further clarify the impact of maternal behavior upon infant attachment, an ANOVA was completed without collapsing the three insecure categories (Table 2). This analysis was also significant ( $F = 4.02$ ,  $df = 3,41$ ,  $p = .014$ ). Post hoc tests found significant differences between the secure category and both the resistant group ( $p = .043$ ) and the disorganized group ( $p = .005$ ).

These results indicate that negative maternal caregiving behavior assessed by the AMBIANCE measure is clearly related to child attachment outcome. Mothers with high AMBIANCE scores are more likely to have infants with resistant or disorganized attachment organization, and mothers with low AMBIANCE scores are more likely to have infants with secure attachment organization.

#### *Regression analysis evaluating the impact of RF and AMBIANCE on infant attachment*

A previous study (see Slade et al., this volume) had found maternal RF to be highly correlated with both adult and infant attachment within a similar sample. The results reported above suggest that AMBIANCE was also predictive of infant attachment, and that AMBIANCE and RF were highly correlated with each other. In light of the conceptual and empirical relations among the AMBIANCE measure, maternal RF, and infant attachment, a regression analysis was conducted in order to evaluate the degree of overlap between maternal representation and maternal behavior in predicting infant attachment. Due to small cell sizes, attachment categories were ordered for this analysis, with level one including the secure category, level two including the avoidant and resistant categories, and level three the disorganized category. Figure 1 depicts the results of this analysis. It appears that the originally significant relationship between maternal RF and infant attachment ( $r = -.345$ ,  $df = 43$ ,  $p = .009$ ) is reduced after accounting for the influence of the AMBIANCE measure (partial  $r = -.217$ ,  $df = 42$ ,  $p = .087$ ). The AMBIANCE measure continues to be significantly correlated with infant attachment even after accounting for maternal RF

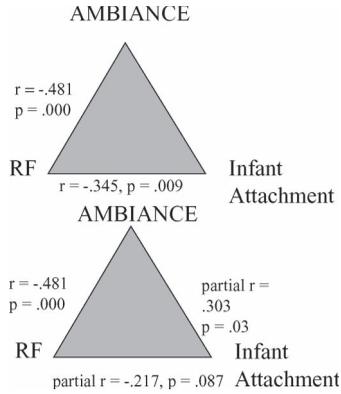


Figure 1. Linear regression analysis.

(partial  $r = 3.03$ ,  $df = 42$ ,  $p = .03$ ). This finding indicates that maternal behavior plays a mediating role, and may be the primary vehicle through which a mother’s reflective functioning is translated and communicated in her relationship with her child. However, it should be noted that the partial  $r$  for RF approached the .05 significance level ( $p = .087$ ), and therefore AMBIANCE can best be understood as a partial mediator, and RF likely accounts for a unique amount of the variance that is not accounted for by maternal behavior alone. Each of these results will be discussed in relation to the implications for attachment theory and clinical treatment.

**Discussion**

The results of this study suggest that maternal reflective functioning and maternal behavior are closely related; specifically, highly reflective mothers were unlikely to exhibit significant disruptions in affective communication during the Strange Situation. RF appears to serve as a buffer against breakdowns in affect regulation during times of infant distress. Our findings also indicate a significant correlation between disrupted affective communication and infant attachment. Failures of affect containment appear to be more strongly associated with infant attachment than previous measures of maternal sensitivity.

Finally, a regression analysis examining the relations between maternal reflective functioning, maternal behavior, and infant attachment, indicated that the AMBIANCE measure mediates the impact of maternal reflective functioning upon infant attachment. Thus, while RF plays a crucial role in the intergenerational transmission of attachment (Slade et al., this volume), its influence is mediated through the mother’s behavior, and specifically her capacity to regulate the baby’s fear and distress without frightening or otherwise disrupting the baby. Taken together, these findings help to clarify the nature of the transmission gap identified by van IJzendoorn (1995), and suggest that future studies of the maternal behavioral contributions to infant attachment should focus on observations involving infant negative affect, using measures that assess breakdowns in maternal affect regulation.

*Implications for attachment theory*

Fonagy and his colleagues (Fonagy et al., 1995; 2002) have defined RF as the capacity to understand that one’s own or another’s behaviors are linked in meaningful ways to

underlying mental states such as feelings, wishes, thoughts, and desires. RF refers to the awareness that an individual's behavior is a reflection of likely unobservable, changing, dynamic intentions, and emotions. The theory of reflective functioning was developed with special consideration for Bion's (1962) concept of affect containment. Fonagy suggests that secure attachment is the direct outcome of successful containment, namely the parent's capacity to both reflect the infant's internal state, as well as represent that state for the infant as a manageable experience. Insecure attachment evidences failures of containment that differ in terms of the defense mechanisms adopted by the caregiver (Fonagy, 1996; Fonagy et al., 1995). The reflective functioning scale for use with the PDI was designed to evaluate the caregiver's ability to openly reflect on complex and often uncomfortable mental states without the over-intrusion or the breakdown of defensive processes. Reflective mothers are able to make sense of their own experiences as caregivers, as well as their infant's mental states, in a coherent and flexible manner that facilitates the early roots of mentalization in the child.

The mother must not merely demonstrate that she understands the child's anger, fear, or distress, however, but must also communicate this behaviorally in a way that serves as a model for the child, thereby indicating that he can have a similar experience of mastery (Fonagy & Target, 1998). With some caregivers, there is a failure of affect mirroring, but the caregiver is able to clearly maintain a strong parental role, and thereby demonstrate stability and mastery for the child. With others, there is an abundance of affect but a lack of the necessary calmness and confidence on the part of the caregiver. Finally, with some parents there are critical breakdowns of both mirroring and mastery, as infant distress becomes a trigger for the caregiver's own unintegrated and chaotic internal states.

The results of this study support a basic tenet of attachment theory; namely, that the infant is reliant on his mother to respond at the behavioral level to his affective state, particularly his distress, in ways that are containing and contingent to his internal experience. The present study provides further validation of previous studies that have shown the AMBIANCE measure to be a good predictor of infant disorganized attachment (Goldberg, Benoit, Blokland, & Madigan, 2003; Lyons-Ruth, Bronfman, & Parsons, 1999). Furthermore, this is the first time that the AMBIANCE measure has been found to be predictive of insecure-resistant attachment. It is also the first time that this measure has been shown to mediate the association between maternal representations and infant attachment. These findings suggest that the AMBIANCE measure may provide a critical tool in helping to understand certain aspects of the intergenerational transmission process, more specifically, the maternal behavioral factors that are associated with the disorganized and resistant forms of insecure infant attachment.

The AMBIANCE measure focuses specifically on negative or disrupted maternal behavior. This approach differs from most other approaches to coding mother-infant interactions, which have typically focused on sensitivity, responsiveness, attunement, and warmth. As noted by van IJzendoorn (1995), attempts to designate maternal sensitivity as the vehicle of intergenerational attachment transmission have been unsuccessful. Our results suggest that aggressive and intrusive, or fearful and withdrawn behaviors, as well as miscommunications and misattunements, may be more likely than maternal sensitivity to be critical in attachment transmission. When mothers respond in ways that disrupt mother-infant communication, via behaviors that are frightening or fearful, hostile or withdrawn, or more generally misattuned, child disorganization and insecurity are the result. These findings support the work of attachment theorists such as Cassidy (1994; Cassidy & Kobak, 1988) and Kobak (1987; Kobak & Sceery, 1988) who have emphasized the centrality of negative affect and the regulation of negative affect in the dynamics of attachment.

Although this was not an at-risk sample based on traditional methods of assessing risk (e.g., socioeconomic status), the sample was nonetheless unusual in that the overall level of

psychopathology was significantly elevated (see Slade et al., this volume). Therefore, based on maternal psychopathology, many of the infants in this sample could in fact be considered to be at-risk. Furthermore, the AMBIANCE scores within this sample were normally distributed across the full range of the scale, with 27% scoring at 5 or above on the 7-point scale (those scores considered to be in the highly disrupted range). This degree of disrupted mother–infant affective communication would not be predicted in a typical low-risk sample. Rather, it is closer to what has been found in previous studies that have utilized high-risk samples (e.g., Lyons-Ruth et al., 1999b).

Based on these findings, it may be that the significant strength of the relationship found between parental reflective functioning and infant attachment may have been partially related to elevated risk factors such as maternal psychopathology. This would further validate previous results in which reflective functioning has been found to be of increased relevance and significance in groups with adverse histories, deprivation, or other risk factors (see Fonagy 1996; Fonagy et al., 1995; Levy, Mayes, & Slade, 2001; Truman & Levy, 2002).

One of the major hypotheses of this study concerned the relation between representation and behavior within the caregiver; specifically, it was proposed that a mother's RF in relation to her child would provide a buffer against the emergence of negative cycles of behavior during times of infant distress. Stated another way, it was thought that those mothers who were able to openly reflect on their children's affect and intentions would be better equipped to handle infant vulnerability without becoming overwhelmed by their own unintegrated fear or hostility. This was indeed confirmed by our results, a very strong correlation between maternal reflective functioning and maternal disrupted affective communication was found. Thus, it was concluded that maternal RF plays a critical role in helping mothers to provide integrated responses to infant distress.

Fonagy and his colleagues note that RF includes "both a self-reflective and an interpersonal component that ideally provides the individual with a well-developed capacity to distinguish inner from outer reality, pretend from 'real' modes of functioning, intrapersonal mental and emotional processes from interpersonal communications" (Fonagy et al., 1998). The ability to make these kinds of distinctions is particularly important when parents are confronted with their children's displays of intense negative affect. Parents who are lacking in RF may become easily dysregulated or disorganized by their infant's distress as they fail to distinguish between their own feelings and those of their children. Thus, without the benefit of the capacity to step back and reflect on their infants' negative affect, parents may be prone to various kinds of negative enactments during which they take on a hostile and intrusive or a fearful and withdrawn role in relation to their children.

Although maternal reflective functioning and maternal disrupted affective communication were both shown to be related to infant attachment, a regression analysis was required in order to determine whether these were simply two different measures of the same underlying factor, or whether each was measuring distinctly separate phenomena. The results indicate that maternal behavior appears to play a mediating role in relation to the link between maternal reflective functioning and infant attachment. Thus, behavior is the mechanism whereby a mother's understanding of the child's mental states is communicated to the child. This makes sense, as the real life dance between the infant and the caregiver is where one would expect to find the most direct influence on the infant's attachment organization. In fact, attachment researchers have long sought to find the behavioral factors that serve to link maternal representational processes to infant attachment. However, the results of this regression analysis indicated that maternal RF also approached significance. Future studies will be needed to further clarify the specific contributions of each these measures toward predicting infant attachment.

*Implications for early intervention*

Parenting infants and young children is often a puzzling enterprise, requiring parents to put forth much effort as they attempt to respond in sensitive ways to their children's behaviors and communications. Parents must struggle to understand the minds of their children. This involves great challenges to the parent, not only in attempting to understand the child, but also in terms of self-reflection. For many parents, the birth of a child can lead to the healthy reorganization of previously established beliefs, defenses, and representations of self and others. However, both developmental research and clinical work with children alert us to the fact that parents are not equally prepared to meet the psychological burdens of parenthood. As a result, there is a great range in the degree to which parent–child interactions become dominated by the emotional needs of the parent versus those of the child. This is particularly the case when the attachment system is activated, and strong affects are generated in both caregiver and child.

In discussing the implications of reflective functioning theory for adult psychotherapy, Fonagy (2000) contends that the ultimate goal of treatment is to help the patient find meaning in his own and other people's behavior. He suggests that the therapist's technical efforts and therapeutic stance should be guided by an attempt to help the patient locate himself within the mind of the therapist as an intentional being. In other words, the patient must experience the therapist as someone *who thinks about him* as a thinking and feeling person. It is the patient's internalization of the therapist's interest in mental states that fosters the patient's developing curiosity toward the contents and mental processes within his own mind.

This same notion can be applied to work with parents. Not only can the parent–infant or child psychotherapist demonstrate interest in the mental states of the parent, but she can also show this same curiosity regarding the mental states of the child. The parent and the therapist can struggle together, within the context of a safe and containing relationship, to understand the child's thoughts, feelings, motivations, intentions, and behaviors. As in any good treatment, it is the therapeutic process itself, in addition to the insight that has been gained, that becomes integrated into the patient's personality to be utilized in an ongoing way (Grienerberger, Popek, Stein, Solow, Morrow, Levine, Alexander, Ibarra, Wilson, Thompson, & Lehman, 2005).

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