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Mother-Infant Research Informs Mother-Infant Treatment

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Abstract

A brief mother-infant treatment approach using “video feedback” is described. This approach is informed both by psychoanalysis and by research on mother-infant face-to-face interaction using video microanalysis. Two cases are presented. In the first, descriptions of the videotaped interactions which informed the interventions are presented. In the second, knowledge of mother-infant microanalysis research informed the treatment, even though videotaping was not an option. The respective "stories" of the presenting complaints, the video interaction, and the parent's own upbringing are linked. Specific representations of the baby that may interfere with the parent's ability to observe and process her nonverbal interaction with her infant are identified. The mother has a powerful experience during the video feedback of watching herself and her baby interact. Our attempts together to translate the action-sequences into words facilitates the mother's ability to “see” and to “remember,” fostering a rapid integration of implicit and explicit modes of processing.

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Introduction

Over two decades of research on maternal distress, mother-infant interaction, and infant and child developmental outcomes have shown that infants suffer when a parent is distressed. At times parental distress stems from longstanding character psychopathology. Research on depressed mothers and their infants shows that these infants are at risk for insecure attachments and compromised cognitive outcomes (Murray & Cooper, 1997). Maternal prenatal anxiety has been shown to predict behavior problems in the children at age 4 years (O'Connor, Heron, Golding, Beveridge, & Glover, 2002). Maternal unresolved mourning has been specifically linked to infant and childhood disorganized attachment, a form of insecure attachment that predicts childhood psychopathology (Lyons-Ruth, 1998). But even highly competent parents can become destabilized under the impact of illness, loss, or other traumas, such as the loss of the husbands of 100 pregnant women from the 9-11 World Trade Center tragedy (Beebe, Cohen & Jaffe, 2002). In addition to maternal contributions, infants may also bring their own difficulties to the relationship, based on constitutional or developmental factors..

In this paper I describe a brief mother-infant treatment approach using “video feedback.” This approach is informed both by psychoanalysis and by research on mother-infant face-to-face interaction using video microanalysis. Two cases are presented. In the first, Cecil, descriptions of the videotaped interactions which informed the interventions are included. In the second, Nicole, I show how knowledge of mother-infant microanalysis research can inform a treatment even when videotaping is not an option. Whereas the implicit, procedural mode of exchange addresses behavioral transactions which are usually out of awareness, the explicit, declarative mode refers to our symbolic, verbalized narrative. In the discussion, I suggest that the mother’s

experience during the video feedback of watching herself and her baby interact, and our joint attempts to translate the action-sequences into words, facilitates the mother's ability to "see" and to "remember," stimulating a rapid integration of procedural and declarative modes of processing (see Beebe, 2003). Some mothers, however, require more extensive treatment (see Cohen & Beebe, 2002).

Psychoanalytic pioneers such as Anna Freud, Melanie Klein, Margaret Mahler, Fred Pine, Anni Bergman and Paulina Kernberg understood the importance of intervention in the first years of life. Parent-infant therapy specifically has been known for several decades, spearheaded by Adelson and Shapiro (1975), Call (1963), Ferholt and Provence (1976), Fraiberg (1971, 1980), Greenacre (1971), Greenspan, 1981; Lebovici, 1983; Spitz (1965), Lieberman & Pawl (1993); Weil (1970), among others. Although therapeutic interventions are widely available for young children, mother-infant treatment remains less available.

The last decade has shown great progress in conceptualizing methods of intervention with parents and infants. Both psychodynamic approaches aimed at the mother's internal representations, and interactional approaches attempting to intervene via specific behavioral transactions are effective (see for example Brazelton, 1994; Fraiberg, 1980; Field et al, 1996; Hofacker & Papousek, 1998; Hopkins, 1992; McDonough, 1993; Marvin, Cooper, Hoffman & Powell, 2002; Malphurs et al., 1996; Murray & Cooper, 1997; Seligman, 1994; Stern, 1995; van den Boom, 1995). Many different kinds of mother-infant therapies have been shown to produce positive outcomes (Cramer et al, 1990).

Nevertheless, even in current approaches to mother-infant treatment, the infant is in danger of being the "forgotten patient" (see Lojkasek, Cohen and Muir, 1994; Weinberg & Tronick, 1998). Weinberg and Tronick (1998) documented by video microanalysis that the

infants of mothers with panic disorder, obsessive-compulsive disorder and major depression were still in distress, even though the mothers reported improvement of their own symptoms with medication and individual psychotherapy.

Our approach to mother-infant treatment integrates psychodynamic and interactional approaches within the context of feedback on videotaped interactions. We address the mother's representations of and transferences to the infant as well as mother-infant interaction patterns visible on videotape. Microanalytic research describing face-to-face patterns has been extensively reviewed elsewhere (see Beebe 2003, 2000; Beebe & Lachmann, 2002; Stern, 1985, 1995). Two treatment cases informed by microanalytic research have previously been presented in Beebe (2003) and Cohen and Beebe (2002); see also Freeman (2001).

Face-to-face interaction research

The video feedback treatment method attends to specific patterns of mother and infant self- and interactive regulation which have been documented by 3 decades of video microanalysis research. This work focuses on face-to-face interaction rather than the regulation of feeding and sleep (but see as an exception Sander, 1977) and is most relevant for infants 3-12 months. The importance of mother-infant face-to-face interaction for social and cognitive development is extensively documented (see Belsky, Rovine & Taylor, 1984; Cohn & Tronick, 1988; Cohn, Campbell, Matias & Hopkins, 1990; Field, 1995; Lewis & Feiring, 1989; Leyendecker, Lamb, Fracasso, Scholmerich & Larson, 1997; Martin, 1981; Malatesta et al., 1989; Lester, Hoffman & Brazelton, 1985; Stern, 1985; Tronick, 1989). This research provides a rich resource for the parent-infant clinician, but has nevertheless remained strikingly underutilized.

A "dyadic systems view" of face-to-face communication informs our approach to this

research (Beebe, Jaffe & Lachmann, 1992; Beebe & Lachmann, 2002). Because each person must both monitor the partner and regulate inner state, in this view *all interactions are a simultaneous product of self- and interactive regulation, and each form of regulation affects the other* (Gianino & Tronick, 1988; Sander, 1977; Thomas & Malone, 1979). Both the individual and the dyad contribute to the organization of behavior and experience.

Interactive regulation is defined as bi-directional contingencies in which each partner's behavioral stream can be predicted from that of the other. It is a "co-constructed" process in which each partner makes moment-by-moment adjustments in response to the other's shifts in behaviors such as gaze, facial expression, orientation, touch, vocal quality, and body and vocal rhythms. Despite the fact that the mother has the greater capacity and range of resources, the infant is a very active participant in this exchange, bringing remarkable capacities to seek and avoid engagement (Beebe & Lachmann, 2002; Beebe & Stern, 1977; Stern, 1971, 1985; Tronick, 1989). This emphasis on the contribution of both partners to the organization of the exchange avoids the temptation to locate the source of difficulty in only one partner or the other, for example, in maternal intrusiveness or in infant temperament difficulty.

From birth and even in utero infants perceive durations of events and temporal sequences (DeCasper & Carstens, 1980). By the time infants are 3-4 months, when most of this research is conducted, infants perceive the existence and magnitude of contingencies and can anticipate when events will occur (Haith, Hazan, & Goodman, 1988; Jaffe et al., 2001; Watson, 1985). These capacities enable the infant to anticipate how each partner changes predictably in relation to the other's changes, organizing "expectancies" of "how I affect you," and "how you affect me." These infant capacities for the perception of sequence, contingency detection, and the anticipation of events underlie the generation of procedural, presymbolic representations of

interactive sequences (Beebe & Stern, 1977; Beebe, Lachmann & Jaffe, 1997; Gergeley & Watson, 1997; Stern, 1985; Tronick, 1989).

Although the terms “mutual influence” or “mutual regulation” are often used to describe the co-construction of interactive regulation, we no longer use these terms because neither “mutuality” nor “influence” in their usual meanings is accurate. Mutuality usually connotes a positive interchange, but aversive interactions such as “chase and dodge” are also co-constructed, in the sense that each partner’s behavioral stream can be predicted from that of the other (Beebe & Stern, 1977). The term “influence” can also be misleading because no conscious intention to influence the behavior of the partner is implied in these contingency analyses (although obviously the parent has many conscious intentions to influence the infant). It is not a causal process but rather a probabilistic one. The interactions we study are extremely rapid, with individual behaviors lasting on the average $\frac{1}{4}$ to $\frac{1}{3}$ of a second; lag times between the onset of one individual’s behavior and the onset of the partner’s behavior are generally within $\frac{1}{2}$ second (Beebe, 1982; Cohn & Beebe, 1990; Stern, 1971). Thus many aspects of these interactions occur out of awareness, often subliminally; they are “nonconscious,” rather than dynamically “unconscious” (see Lyons-Ruth, 1998), although again, the parent has many dynamically unconscious motivations as well. Thus we prefer the more neutral terms “bi-directional regulation” or “coordination” to describe these contingency analyses.

Self-regulation is just as important as interactive regulation. While participating in the interactive exchange, each partner must simultaneously regulate his or her inner state. Both infant and parent bring constitutional proclivities such as temperamental dispositions and arousal regulation styles which affect self-regulation. Each partner’s self-regulation capacity and style affects the nature of the interactive regulation, and vice-versa. Whereas one meaning of “co-

construction” is that each partner contributes to the interactive regulation, a second meaning is that inner and relational processes are co-constructed (see Beebe & Lachmann, 1998). Thus both partners come to expect particular interactive patterns, associated with particular self-regulation processes. Infant expectancies of different patterns of self- and interactive regulation provide one process by which parental distress can be transmitted to the infant and alter the trajectory of development.

In applying this research to treatment, it is important to recognize that ranges of “normal” interactions are more ambiguous than extremes of difficulty, and there is no one optimal mode of interaction. Despite extensive research predicting developmental outcomes from face-to-face interaction patterns, there are no official “norms,” and this research is still in progress. All dyads use problematic patterns at some moments, as adaptive modes of coping and defense in the context of specific interactive dilemmas.

The infant’s nonverbal language

The use of “video feedback” as part of parent-infant psychotherapy still constitutes a new approach to mother-infant treatment, despite the fact that Stern (1995; Cramer & Stern, 1988), McDonough (1993), Tutors (1991), and Downing (2001) among others, have been using variations of this technique for over a decade (for current work see for example Bakermans-Kranenberg, Juffer & van Ijzendoorn, 1998; Hofacker & Papousek, 1998; Malphurs et al, 1996; Marvin, Cooper, Hoffman & Powell, 2002; van den Boom, 1995).

Video feedback is introduced to the parent as a way of learning about the infant’s “nonverbal language,” and of becoming aware of the ways the parent may respond. Video feedback is a remarkable clinical tool in the hands of an experienced “baby watcher” who is also a sensitive clinician. Videotape played in slowed time, or frame-by-frame, acts like a “social

microscope,” revealing subtleties and subliminal details of interactions which are too rapid and complex to grasp with the naked eye in ongoing time. It is difficult for anyone to be aware of his or her nonverbal behavior. If the video feedback is handled with great care to protect the parent’s self-esteem, it helps the parent to *see how* both infant and parent affect each other, moment-by-moment. Video feedback provides an opportunity for the parent to process and reflect on the difficult moments in the interaction, as well as the successful ones (Fonagy, Gergely, Jurist, & Target, 2002).

The methodology of microanalysis

Video microanalysis can teach us to observe the subtle, fleeting details of the mother-infant action language. The infant’s repertoire during a face-to-face exchange is complex. There is a remarkable range of behaviors at the infant’s disposal to initiate, maintain, disrupt, or avoid a face-to-face encounter (Stern, 1971, 1985). The mother is instructed to play with the infant as she would at home. Until 9-12 months, we do not provide toys. The infant is placed in an infant seat opposite the mother, who is seated in the same plane. Two cameras, one on each partner’s face and upper torso, generate a split-screen view of the pair interacting.

Gaze. We begin by observing gaze. Mothers tend to look at the infant’s face most of the time, and it is the infant who typically engages in a look-look away cycle, looking at mother’s face for a period of time, looking away, and then looking back (Stern, 1971, 1974). As the ethologists note, looking into the face of a partner can be very stimulating; most animals do not sustain long periods of such looking unless they are about to fight or make love (Chance & Larsen, 1996; Eibes-Eibfeld, 1970). Field (1981) verified that infants organize their look-look away cycle to regulate degree of arousal. She monitored infant heart rate during face-to-face play and showed that the moment that the infant looks away is preceded by a burst of arousal in

the previous 5 seconds; following the infant's gaze aversion, heart rate decreases back down to baseline within the next 5 seconds, and then the infant returns to gazing at mother's face. Thus infant gaze aversion is an important aspect of infant self-regulation. Brazelton, Kozlowski and Main (1974) first showed that mothers typically pace the amount of stimulation according to this gaze cycle, stimulating more as the infant looks, and decreasing stimulation as the infant looks away. Although these are typical patterns, we have also noted a pattern of mutual "eye love" (Beebe, 1973; Beebe & Stern, 1977) in which mothers and infants can sustain prolonged mutual gaze for up to 100 seconds during periods of positive affect. These are the moments, of course, that every parent loves.

Maternal difficulty in tolerating momentary infant gaze aversion is one of the most common pictures observed in mothers and infants who present for treatment. If the mother feels that her infant does not like her or is not interested in her, she may pursue the infant, increasing rather than decreasing the amount of stimulation. In her pursuit or "chase," mother may call the infant's name, pull the infant's hand, or in rare instances actually attempt to force the infant's head to get the infant to look. Maternal "chase" behavior is counter-productive; the infant then requires more time to regulate arousal down sufficiently to return to gazing at mother. Instead, if the mother can be helped to give the baby a "time-out" to re-regulate, "cooling it" when the infant looks away, trusting her infant to return to her, the infant will rapidly re-engage.

Head orientation. We next observe infant head orientation to the mother: is the head oriented vis-a-vis, or displaced in the horizontal plane approximately 30, 60, or 90 degrees away? In the 90 degree aversion, first described by Stern (1971), the infant's head is tucked into the chin, which takes considerable energy. Are head aversion movements in the horizontal plane complicated by oblique angles of the head down (or up) as well? These increasing degrees of

head aversion are described by ethologists as degrees of severity of “cut-off” acts (Chance, 1962; McGrew, 1972). They are “read” by the partner as active initiations of disengagement. As the infant turns away up to about 60 degrees, he can still monitor the mother with his peripheral vision (tracking presence, direction, and intensity of movement); by 90 degrees away, or arching, however, he may lose peripheral visual monitoring of her movements. More usual gaze aversions retain head orientation within an approximately 30 degree angle from the vis-à-vis, retaining access to rapid visual re-engagement with minimal effort.

In relation to the maternal “chase” behaviors above, the infant may “dodge” with increasing degrees of head aversion, as well as arching back, freezing (described by Fraiberg, 1982), or going limp and giving up tonus. Beebe and Stern (1977) described split-second sequences of “chase and dodge” in which maternal chase movements predicted infant dodges, as the infant monitored her every movement through peripheral vision; but infant dodges also predicted maternal chase behaviors, a reciprocal, bi-lateral interactive regulation. Through increasing head aversions, arching, or going limp, this infant had a remarkable “veto power” over the possibility of a sustained, mutual gaze encounter.

Face. If mother and infant together manage the infant’s look-look away cycle so that the infant can comfortably regulate arousal, periods of sustained mutual gaze with infant vis-à-vis orientation can be enjoyed. During these periods, facial and vocal communication take center stage. By 3-4 months there is a flowering of the infant’s social capacity. Although the innervation of the facial musculature is myelinated before the infant is born, the full display of facial expression emerges only gradually from 2-4 months.

The infant’s opening and closing of the mouth is a powerful and continuous form of communication. Even without any hint of widening or smiling, a fully opened mouth (“neutral

gape”) is highly evocative (Beebe, 1973; Bennett, 1971). A fully widened smile by itself, with closed lips, is only moderately positive. As increasing degrees of mouth opening are added to a smile, positive affect increases up and up into the fully opened “gape smile,” hugely exciting for both partners. Mothers intuitively *roughly* match the infant’s increments, so that both build to a peak of positive facial excitement. Often both partners excitedly vocalize at such moments, further increasing the intensity (see Beebe, 1973; Beebe & Lachmann, 2002; Stern, 1985; Tronick, 1989). In general, mothers and infants tend to match the direction of the other’s positive-to-negative affective change, increasing and decreasing together (Beebe et al, 2004). Rarely is there an exact match of expression. Elaboration (Fogel, 1993), echo or complementing (Trevarthen, 1977) are better metaphors than matching or imitation (Stern, 1985). Instead of the more romanticized notion that mothers and infants exactly match, or are in exact “synch,” Tronick and Cohn (1989) have shown that a more flexible process of match, mismatch, and re-match (disruption and repair) characterizes the exchange. Furthermore, a greater likelihood of rapid re-match (within 2 seconds) predicts secure attachment at one year. It is unusual for mothers to display no facial matching at all, particularly when infants are distressed. Malatesta et al (1989) showed that unusual responses such as maternal joy or surprise to infant anger or sadness predict toddler preoccupation with attempts to dampen negative affect (compressed lips, frowning, sadness). We construe these patterns as “failures of facial empathy.”

Vocalization. A key feature of the vocal exchange is a turntaking structure. Both partners contribute to turntaking by matching the brief “switching pause” as turns are exchanged. Mothers contribute by slowing their speech rhythms, providing a great deal of repetition, and matching the intonation of the infant’s sounds. Vocal contours refer to the “shape” of the sound. Across cultures, a sinusoidal shape indicates approval and a rightward falling shape disapproval

(Fernald, 1993). Mothers also optimally pause sufficiently to give the infant a turn. Mothers who prattle continuously do not permit this; on the other hand, mothers who are silent partners can disturb the development of vocal turn-taking, an essential building block of language. When infants present for treatment with difficulty in sustaining mutual gaze and the face-to-face encounter, matching the infant's vocal contours and rhythms can be an effective way to make contact with the infant. Because the infant does not have to orient or to look, approximately matching the infant's rhythms (vocal or motoric) is a non-intrusive way of helping the infant feel sensed: someone is on his "wavelength."

Vocal rhythm and the prediction of attachment: The midrange model. Security of attachment as assessed at 12-18 months is a key milestone in the infant's development. In the Ainsworth "Strange Situation" attachment test, mother and infant go through periods of free play, separations and reunions (Ainsworth, Blehar, Waters, & Wall, 1978). Based on the infant's reactions, individual infants can be classified as having a secure, insecure-avoidant, insecure-anxious-resistant, or disorganized attachment style.

The secure infant can easily be comforted by mother and return to play, using mother as a secure base while being able to explore the environment. The insecure-avoidant infant shows little distress at separation, avoids mother at reunion, and continues to play on his own. The insecure-anxious-resistant infant is very distressed at separation, but cannot be comforted by mother's return and does not easily return to play (Ainsworth et al, 1978). The insecure-disorganized infant simultaneously approaches and avoids the mother, such as opening the door for her but then sharply ignoring her. The mother herself acts frightened or frightening, and typically has a history of unresolved loss, mourning, or abuse (Lyons-Ruth et al, 1999; Main & Hesse, 1990). In contrast, secure attachment at 1 year is associated with better peer relations,

school performance and capacity to regulate emotions, as well as less psychopathology in childhood and adolescence (Sroufe, 1983).

Disorganized attachment at 1-2 years is associated with oppositional, hostile-aggressive, fearful and disorganized behavior, low self-esteem and cognitive difficulties in childhood (Lyons-Ruth, Bronfman & Parsons, 1999; Jacobson, Edelstein & Hofmann, 1994).

Over 50 studies have shown that the security of the child's attachment to the parent is dependent on the emotional availability of the parent, using global assessments and clinical ratings (see van IJzendoorn, 1997 for a review). Nevertheless, we still lack a full understanding of the origins of attachment, its modes of transmission, and the role of the infant (and infant temperament) in this process. Fewer than a dozen studies have used microanalysis of videotape to predict attachment outcomes.

Although infants typically vocalize only about 10% of the time at 4 months, vocalization is such a central means of communication that the way mothers and infants coordinate their vocal rhythms predicts infant attachment. Jaffe, Beebe, Feldstein, Crown and Jasnow (2001; Beebe et al, 2000) predicted 12-month attachment outcomes from 4-month vocal rhythm coordination, assessed with a technique that samples behavior every quarter of a second. As each individual shortens or elongates the durations of sounds and silences, how tightly or loosely does the partner coordinate with adjustments in his or her own sound and silence durations? Midrange degrees of mother-infant and stranger-infant coordination at 4 months predicted secure attachment; very high and very low degrees of coordination predicted insecure attachment classifications.

This work led us to conceptualize interactive regulation on a continuum, with an optimal midrange, and two poles defined by very high (excessive) or very low (withdrawn) monitoring of

the partner. High coordination increases the predictability of the interaction, construed as a coping strategy elicited by the uncertainty or threat experienced by both mother and infant. At the very low pole of coordination, both partners are behaving relatively independently of the other, interpreted as a withdrawal or inhibition of interpersonal monitoring. Although much research literature concentrates on the concept that lowered interactive coordination is a risk condition for infant development, a substantial body of work examining *both* high and low poles is now converging on an “optimum mid-range model” as well (see Belsky et al., 1984; Cohn & Elmore, 1988; Lewis & Feiring, 1989; Malatesta et al., 1989; Sander, 1995; Roe, Roe, Drivas & Bronstein, 1990; Leyendecker et al, 1997).

In our vocal rhythm study, very high mother-infant bi-directional coordination predicted insecure-disorganized attachment, the most problematic of attachment classifications. We interpreted the high coordination on the part of both partners as vigilance, arousal, or hyper reactivity. Our research film of Clara at 4 months dramatically illustrates a very disturbing mother-infant pair with very high vocal rhythm coordination; subsequently, at one year, Clara was classified as showing disorganized attachment. In the research film, Clara is crying and flailing as the interaction begins. Mother excitedly repeats her name. Clara’s crying rhythm and mother’s rhythmic repetition of her name synchronize. Mother flashes big smiles at Clara as she synchronizes with the cry rhythm, as if attempting to “ride” high negative arousal into a more positive state. Both escalate, Clara screaming more loudly, mother now frantically vocalizing and moving Clara’s arms. Although most mothers would back off, this mother just keeps going, and each partner continues to “top” the other. By the end Clara has thrown up, sobbing and writhing. In addition to vigilant vocal rhythm coordination, this interaction illustrates “mutually escalating over-arousal,” a disturbance of the ability of the dyad to manage the infant’s distress.

The optimum midrange model has direct clinical relevance. Vocal rhythm coordination is an important means of attachment formation and transmission. Whereas the midrange dyad retains more variability and flexibility, the tightly coordinated dyad is less flexible and variable. Too much predictability in the system may compromise flexibility and openness to change; too little may index a loss of coherence (Beebe et al., 2000). These concepts can be used in mother-infant treatments as a framework with which to evaluate interactive difficulties and the process of change, in any modality (not just vocal rhythm), as we do in the first case described below.

The key role of the face-to-face interaction.

An ongoing NIMH-funded study in our lab has examined maternal self-report depression and anxiety at 6 weeks and 4 months, mother-infant face-to-face interaction at 4 months, and infant attachment at 12 months, in a community sample of 132 families (Beebe, Jaffe, Chen, Cohen, Buck, Feldstein, et al., 2003). Maternal depression and anxiety at infant age 6 weeks or 4 months did robustly affect patterns of self- and interactive regulation at 4 months, but did not predict infant attachment outcomes at 1 year. Instead, it was the quality of the 4-month mother-infant face-to-face interaction itself that predicted infant attachment outcomes. The implication is that, in a community sample, distressed maternal states of mind at 6 weeks or 4 months do not necessarily lead to insecure infant attachment outcomes unless there is also difficulty in the face-to-face interaction. This study provides a further rationale for therapeutically supporting the quality of the mother-infant face-to-face interaction when mothers are distressed, which may then prevent later insecure infant attachment outcomes. Such an effort is currently underway with the 9/11 widowed mothers and their infants, using brief videotape-assisted clinical interventions (Beebe et al, 2002).

Self-regulation. From birth onward, self-regulation refers to the management of arousal, the maintenance of alertness, the ability to dampen positive or negative arousal in the face of over-stimulation, and the capacity to inhibit behavior (Beebe & Lachmann, 2002). Neonates differ in their ability to regulate state (see for example Korner and Grobstein, 1977; Brazelton, 1994). Infant temperament patterns, including sleep, feeding, arousal difficulties, or special sensitivities to sound, smell, or touch, are an important area of inquiry in the treatment (see DeGangi, Di Pietro, Greenspan, & Porges, 1991; Greenspan, 1981; Korner & Grobstein, 1977; van den Boom, 1995). Disturbances of infant self-regulation can be noted in patterns of autonomic distress (hiccupping; vomiting) and disorganized visual scanning, as well as pulling the hair or ear, or a history of head-banging (Tronick, 1989). Although maternal touch is a primary means of soothing a distressed infant, and extra handling is associated with diminished irritability (Korner & Thoman, 1972), some infants with difficult temperaments do not tolerate a great deal of touch (see DiGangi et al., 1991).

By the time infants are assessed in the face-to-face situation, typically at 3-6 months of age, state regulation has stabilized and fluctuations in the management of an alert state have receded with maturation of the nervous system. At this point it is difficult to distinguish between infant constitutional processing difficulties that may have existed at birth from problematic interactive patterns. Infant temperament and self-regulation are already intertwined with interactive regulation difficulties (see also Hofacker & Papousek, 1998). For this reason, infant self-regulation is both a property of the individual and of the dyad.

A study from our lab using second-by-second microanalysis of videotaped face-to-face interactions showed that 4- month infants who would be classified as insecure-avoidant at 12 months were already distinctly different from infants who would be classified secure

(Koulomzin, Beebe, Anderson & Jaffe, 2002). These future “avoidant” four-month infants showed: 1) more self touch; 2) the necessity to self-touch while looking at mother in order to look for durations comparable to those of secure infants; 3) decreased range of facial expression, with constriction toward a predominance of neutral); 4) a disruption of the capacity to coordinate gaze and head orientation into a stable posture while smiling, so that infant gaze at mother occurred while head was “cocked for escape”, and (5) more “labile” behaviors (lasting one second), in contrast to “stable” (lasting 2 seconds or more). This study describes infant self-regulation patterns that are directly useful for identifying infants who are at risk for avoidant attachment. An examination of the mother’s contribution to the interactive process is planned.

Distress regulation. Dyads show important differences in infant ability to manage moments of heightened distress, and maternal management of infant distress. Both partners bring capacities to soothe and dampen as opposed to escalate distress. Obviously the mother has greater range and resources in this process. The pattern of “mutually escalating over-arousal,” where each ups the ante, was illustrated above. In contrast, an effective form of distress regulation is a partial or *loosely coordinated* “joining” or matching of the infant’s fuss or cry rhythm, with “woe face” and associated vocal “woe” contours (vocal empathy). In this process, the rhythm (but not the volume or intensity) of the crying is matched, and then gradually slowed down (Beebe, 2000; Gergeley & Watson, 1997; Stern, 1985).

The stranger as partner. Identical to our research lab assessment, in our treatment cases mother and infant first play face-to-face, followed by infant and stranger. The stranger-infant interaction has been shown to be a sensitive predictor of infant attachment outcomes (Jaffe et al, 2001) and to discriminate treatment and control dyads (Weinberg & Tronick, 1998). Before the end of the first year, when some infants develop “stranger anxiety,” the stranger is both a novel

challenge and at the same time an intensely interesting new partner. Most 4-month infants are very sociable with the stranger, to the point where often the stranger has an initial advantage over the mother. On the other hand, some infants are wary with the stranger, for example the infants of the treatment dyads in Weinberg and Tronick's (1998) study. We assess the infant's capacity to engage the stranger and, if the interaction is stressful with the mother, the infant's ability to "repair" with the stranger. The degree to which the stranger feels at ease with the infant vs. feels "wary" or needs to be "careful" not to over-arouse the infant is also noted.

Psychoanalytically Informed Video Feedback

"Mother-infant treatment occurs at a unique intersection of implicit 'procedural' (repetitive action-sequences) and explicit 'declarative' (symbolic) modes of processing, and it fosters a greater integration between the two modes" (Beebe, 2003, p.34). Three orienting questions organize our approach: (1) In the procedural bi-directional "action-dialogue," how does each individual's patterns of behavior affect those of the partner? (2) In the declarative mode, can the parent verbally describe any of the ways in which he or she affects the infant, and the ways in which the infant affects the parent? (3) Are there ways in which the parent's representation of the infant, and the parent's own childhood history, may interfere with the ability to perceive the action-dialogue and to put it into words?

In the initial contact I usually have a long telephone conversation with the parent. I explain my videotape approach and my preference that the first meeting be a lab visit, because I can "see" more with the aid of the videotaped interaction. However if the parent prefers, I start with an office visit. In the lab, infant with mother, father, stranger and possibly nanny are videotaped in face-to-face interaction.

The format of the lab visit for a treatment pair is identical to that for a research pair. The parent is instructed to play with the infant as she or he would at home. Each lab visit is followed within a few weeks by a two-hour feedback session in my psychotherapy office. This treatment format is extremely flexible. If a brief treatment is indicated, two to four lab visits and accompanying feedback sessions may be adequate, as in the first case presented below (see also Beebe, 2003). If a longer treatment is indicated, the same basic method is applicable. Or, in the case of a more serious situation, two therapists may easily collaborate, one proceeding with a standard individual treatment, and one functioning in the role of the consultant for the video feedback consultations (see Cohen & Beebe, 2002). An Ainsworth attachment test, coded by someone blind to the infant's status, is usually included in each treatment, somewhere between 12 and 18 months.

A long session, usually two hours, greatly facilitates the work of the feedback session. I have reviewed the videotape in detail prior to the session, informed by the patterns of regulation documented by research microanalyses, described above. In the session I follow the parent's lead, attempting to construct with the parent the "stories" of the presenting complaints and the parent's own history. This initial psychoanalytically informed conversation is a critical background to our ability to understand the "story" that unfolds in the videotape. Other important aspects of the parent's history usually emerge during or after watching the videotape together. [It is extremely rare for a parent to refuse to view the videotape. In only two of approximately 50 cases that I have seen has a parent refused. In those cases I understood the refusal as an index of the level of trauma, and I simply used my own microanalysis to inform the interventions.]

In viewing the videotape I attempt to translate specific details of interaction patterns revealed by microanalytic research into terms that the parent can use, based on a psychoanalytically-informed view of the meaning of the parent's complaints in relation to his or her own functioning and history, and based on my understanding of any temperament or arousal-regulation difficulties the infant may have. Viewing a small portion of videotape, often at the beginning of the interaction, usually is sufficient. Nonverbal interactions are highly repetitive, and similar patterns can be discerned over and over.

I consider that one of my most important functions is to admire the parent-infant pair wherever possible. Bringing into awareness the ways in which this dyad already "finds" each other, enjoys each other, copes with disruptions, and negotiates repairs, is itself a powerful therapeutic intervention. My first goal is to point out a successful moment, using this example as an entry into learning to observe the small micro-moments of the interaction. Together we view the videotape slowly, trying to see exactly when and how and in what sequence each partner oriented, looked, cooed, smiled, or increased a smile by opening the mouth or reaching the head forward. I try to help the parent identify the exact moments where the parent responds to the infant and the infant responds to the parent. My goal is to give the parent "new eyes" to see the infant's remarkable nonverbal language, and the infant's ability to respond to minute, but nevertheless identifiable, behaviors. Together we try to describe what we see, finding a "new language" for their exchange as well. I encourage the parent to put into words what he or she is feeling, and what the infant may be feeling. Very likely I will play this positive portion several times, at least once in slow-motion.

As we proceed I illustrate how evocative minute infant facial expressions can be, moments when the parent matches the infant's vocal contours, how the parent paces and pauses,

facilitating the infant “taking a turn.” I note infant self-regulation and self-soothing behaviors, and ways the pair manage moments of infant distress, as they occur in the interaction. Having studied the videotape in detail in advance, I will also have selected one or two central difficult interaction patterns that I would like the parent to be able to see. Together we try to observe the effects of each partner’s behaviors on the other in these difficult moments. I again inquire into what the parent felt, what the parent thinks the infant felt, and the meaning these moments have for the parent. It is here that the parent is likely to have a spontaneous insight into the problem. Being confronted with the implicit “action-dialogue” in the videotape often triggers the parent’s associations to aspects of his or her history that the parent always “knew” but could not productively use in the current context with the infant.

Wherever possible I like to use research findings, illustrating with a drawing, to help parents understand the infant’s behavior, shifting attention away from “the right way to do it” to infants’ remarkable capacities. I emphasize what this particular infant needs to stay optimally engaged. My role is often to give permission to do less, to slow down, to wait. For example, with an infant who easily becomes over-aroused and irritable, I suggest slower rhythms, more repetition, longer pauses, and more “waiting” when the infant looks away.

I attempt to link the “stories” of the presenting complaint, the video drama, and the parent’s childhood history, in an effort to understand what may interfere with the parent’s ability to “see” the infant and the interaction. When specific representations of the infant (or “transferences”) seem to interfere with the parent’s ability to “see” the infant and how each partner affects the other, they are identified. At the end of the session the parent is encouraged to trust what has been learned, and to try not to be too self-conscious. Another videotaped assessment is scheduled in another month or two.

*The Case of Cecil**May: First contact*

In my first contact with Mrs. C. over the phone she told me that she had an eight year old son and a 9 month old baby boy, Cecil. The older son had always been easier, had seemed to match the mother's temperament. This second baby had been different from the beginning. "He is a friendly baby, but he is not focused on me when I play with him. Cecil looks past me, unless I energetically try to engage him. He seems happier by himself. He seems more connected to the babysitter than to me." Mrs. C. thought that perhaps Cecil needed a higher level of stimulation. Or perhaps she herself had disturbed the relationship initially, she wondered, by talking to her older son while nursing Cecil. Or maybe she had never given Cecil sufficient eye-contact and intimate engagement during nursing.

The first consultation occurred in my office. Mrs. C. was warm, friendly, and seemed quite relaxed. Cecil made very good eye contact with me, with excited positive affect, and even had moments of a "gape-smile". The mother then took Cecil, tried to play with him face-to-face, and could not get Cecil to engage. Cecil never even looked at her. Mrs. C. said this was typical. Mrs. C. then tried a peek-a-boo game, putting the blanket over Cecil's head. As the blanket came off, there was a moment of brief eye contact, but Cecil emerged from the blanket momentarily dazed, with a sober look. He then smiled at his mother briefly, and looked away.

My suggestion in this initial meeting was that although the peek-a-boo game did have a moment of "built-in" eye contact, it did not seem to engage Cecil. Instead of trying to force more contact through high arousal games, I suspected she would have more success if she followed Cecil's lead for eye-contact, letting him go when he looked away, and waiting until he initiated gaze before trying to engage him. I explained that looking away is the baby's natural

method of re-regulating his arousal when it has become a little too high. We agreed to do a split-screen lab videotaping, so that I could try to see more of the details of the interaction. From what I could observe in the office, I had difficulty understanding in more detail why the infant was so avoidant with his mother.

June: First Lab Videotaping, Cecil 10 Months

In the lab mother and infant were asked to sit face-to-face, with the infant in a high chair. The standard instructions to the mother are to play with the infant as she would at home. One camera is focused on the mother's face, and one on the infant's face, producing a split-screen view, in which both partners can be simultaneously observed. In my microanalysis of the face-to-face play interaction, I observed that the mother continuously gave Cecil toy after toy.

Microanalysis of first two minutes of mother-infant interaction. In the opening moments of the interaction, mother shook the toy toward Cecil, with abrupt, rapid movements, each accompanied by a strong sound, "gheh!" At each maternal movement, Cecil blinked, with mild startles. Mother then moved into, "What's that!" showing the toy, making a series of "ooooh" sounds, and Cecil's face showed a hint of a smile. As mother continued with, "Say hello dolly, hello Cecil, hi baby", Cecil's face showed a hint of a slight mouth opening, and then receded into his more characteristic neutral expression, as if the stimulation was just a bit too much for him.

After a brief interruption to get the seating and the camera angles right, Cecil briefly glanced at his mother with a neutral face, and then looked down. While he was still looking down, mother asked Cecil to look at the toy, but Cecil stayed with his head down. Then mother made an interesting noise, "gurooom!" and got Cecil's attention. Cecil responded with his own "ghum!"

There was then a repetition of the earlier series of mother's rapid movements shaking the toy toward Cecil, each accompanied by a strong sound. At each Cecil blinked. Cecil then looked down and away, then shifted his body and hung over the side of the chair, limp. We have come to view such loss of postural tonus as a coping strategy in the face of overstimulation.

While Cecil was still hanging over the side of the chair, not looking, mother found a new toy, and offered it with a "sinusoidal" shaped vocal contour (the contour of approval and flirtation): "Hello Cecil; and do you know what else?" This vocal contour is usually reserved for greeting, once eye contact has already been made. It was successful in getting Cecil to look at mother, and to pay attention to the new toy, as mother continued, "Look what's here, the dolly, look at her, look at her".

However, just at this moment, Cecil's face took on a negative frown expression, and he looked down, moved his head down, then averted, moved his head further down, and then uttered a fussy sound. Finally he gave up body tonus and collapsed his head into his stomach. Simultaneously with the collapsing tonus mother said, "Hello Cecil" and gently tapped Cecil on the head with the toy. Cecil's head collapsed further into his stomach.

This is a detailed description of approximately the first two minutes of the interaction. At a more global level of description, in the rest of the ten minute session there were nice moments of mutual gaze, and some interest on Cecil's part in the toys mother offered. However, often without pausing in her movements, or sounds, mother offered Cecil another toy, and yet another. Periodically Cecil continued to collapse, into his stomach, or over the side of the chair, and mother gently tapped him on the head with the toy. When the play was more successful, there were nice long strings of vocal exchanges, and the mother beautifully matched the contours of Cecil's sounds. Several times Cecil showed intense interest and vocal excitement in a toy, and

mother joined the excited sounds. However, Cecil did not smile. When Cecil became fussy, started to cry and shake his body, mother offered more toys.

Overall, Cecil was low-key, with his face mostly neutral. Occasionally there were some moments of eye contact, and some nice low positive moments. Mother showed excellent capacity for vocal rhythm matching, facial mirroring, and following the infant's line of regard to an object of interest. But she did not give the baby a chance to respond, or to organize an interest in the toys on his own, and thus she disrupted the baby's initiative. She also disrupted the baby's arousal regulation, over-arousing the baby by never pausing, offering one toy after another, and then "chasing" the baby when he averted gaze. I understood Cecil's difficulty with eye contact and the restriction of his facial expressiveness toward neutral as the baby's attempt to reduce his arousal toward a more comfortable range, but at the expense of the social engagement.

Toward the end of the ten minute interaction, Cecil began to get fussy. Mother took a rattle and began to shake it, further increasing the intensity of the stimulation. Cecil got even fussier, orienting away, averting gaze. Mother then called to Cecil in the "sinusoidal" vocal contour usually reserved for greeting. Cecil did not respond. By the end Cecil was openly protesting the level of stimulation, very fussy, throwing to the floor all the toys that mother handed him, while mother never paused.

Stranger-Infant Interaction. Following the interaction with mother, I played with Cecil for three minutes, while the mother watched the interaction over a TV monitor from another room. The infant's ability to engage with a trained novel partner is a critical aspect of the assessment. Those babies who can "repair" the engagement with a novel partner are generally more resilient, whereas those who generalize the difficulty to a novel partner are in more difficulty (see Field et al., 1988). In evaluating this interaction, I noted that my tempo was

noticeably slower than that of the mother. I waited for Cecil to look at me before I attempted to engage him. When he did look, he quickly smiled broadly. But then Cecil became fussy. When I handed Cecil a toy, he quickly threw it on the floor, and this was repeated over and over. In the process, Cecil was very physically active, turning around in his chair a lot.

Eventually Cecil began to bang his own body gently against the seat, as if to both self-stimulate and self-soothe. There were then a few moments of eye contact with me, with mid-range positive affect, but these were very brief. Each brief gaze encounter was followed by a sequence of immediate averting, mild negative facial expression, looking down on the floor at an object, and then hanging limp, sideways over the chair, body tonus collapsed. Each time I waited, and he came back into the engagement on his own. Once he looked, he became slightly excited, with a positive expression, and then immediately became negative and averted, looking down. My overall impression was that he easily over-aroused. On the other hand, he had the capacity to re-engage on his own when I waited.

July: Video-Assisted Intervention

A two and a half hour period was set aside to meet with the mother to discuss how things were going, and to review the videotape. The mother had already watched the tape and she felt bad. She realized that she was “trying too hard” and it was not working. She saw me as smoother, quieter. I suggested that as we watched the tape, we could try to make quite specific just what she was doing when she felt she was “trying too hard”. My own goal was to help the mother notice exactly what she did, and exactly what the infant did, as each responded to the other. In essence, I wanted to give her new “eyes”, a new ability to observe the details of interaction.

In this process my goal was to help her confirm what she did quite beautifully, that elicited the response from the baby that she wanted, as well as to notice what did not work for her baby. I admired her facial empathy, her vocal responsiveness, and her well-modulated vocal contouring (see McDonough, 1993). She was quite surprised when I pointed out the infant's blinks and startles at the beginning of the interaction, in response to her abrupt movements with the toys. She was also surprised to see me point out very subtle facial expressions of slight mouth openings, hints of shifts in cheek tonus, which can be expressions of interest and involvement, even when the infant is not smiling.

We succeeded in defining the mother's "trying too hard" as lack of pausing in movement or voice, trying to get the infant's attention when he was turned away, and calling the infant in a "greeting" contour at moments when the infant was clearly not receptive. I told Mrs. C. my hypothesis that Cecil dampened his face, lowered his arousal, averted gaze, and turned away, as self-regulation strategies in the face of feeling over-stimulated.

Mrs. C. then told me that her own mother was rigid, controlling, distant, and quite depressed, although she had managed to work. Her mother was never attuned, had never been able to sense Mrs. C's feeling state as a child, and never knew "where she was at." Mrs. C's mother had "set the pace," irrespective of where she was emotionally or what she needed. And now Mrs. C. could see that she was doing the same thing with Cecil, setting the pace, and setting it too fast for him.

We then discussed my description of Cecil's face as too neutral, and I showed her again a section of the videotape illustrating it. I re-enacted for her the face I saw in the baby. Mrs. C. said that all of a sudden she saw Cecil's face as like that of her own mother, who had always appeared impassive, hard to read, hard to reach. She saw that she now felt the same way about

Cecil, that Cecil was hard to read, hard to reach, like her mother. And she saw that she would become anxious, and try harder with Cecil, as she had when her own mother had been so difficult to read. In this interaction, the mother's ability to "see" Cecil's "too-neutral" face seemed to be facilitated by watching the videotape as well as watching my own entry into the baby's neutral face. Now "seeing" Cecil's neutral face seemed to trigger her procedural "motor memory" of her mother's own face.

Together we saw how understandable it was that she could be treating Cecil the way her own mother had treated her by setting the pace, and that she could be seeing Cecil as like her own difficult and removed mother. We both empathized with how hard it must have been for Mrs. C, as Cecil seemed to become more and more un-readable. How natural it was to keep trying harder, as a way of reaching him. And how counterintuitive it was to lower the stimulation, to "try less hard," to be slower and calmer, to wait, just when she was feeling more and more desperate to reach Cecil.

We both felt sad over Mrs. C's own difficult childhood, and the aspects of it that entered into her interactions with Cecil. But as we parted we both felt encouraged by understanding what the difficulty was. Mrs. C. felt very positive about the experience, and stated that she thought she could shift what she was doing with Cecil now. I suggested that she try to trust herself with what she had learned, without becoming overly self-conscious or self-critical. We agreed to do a follow-up split-screen videotaping and an Ainsworth "separation test" in a couple of months.

August: Second Filming, 12 Months

There had been a long wait in the lab, and technical difficulty delayed the beginning of the filming. Even without such delays, sitting in a high chair for ten minutes is hard for any

active 12 month toddler. Once we got started, there was no sound track for a couple of minutes. In evaluating the interaction, I observed that the mother was slower and softer, and she paused in between her movements and her vocalizations. Cecil made more eye contact, and it was more sustained. The mother did not push toys at Cecil; instead Cecil himself took a toy and explored it, and mother was able to wait. There was clearly more room for Cecil's own initiative.

Microanalysis of first two minutes of mother-infant interaction. As the videotape began, Cecil was tired. He had been there a long time, waiting for us to get going. Without the sound in this section, we see Cecil rocking his body back and forth in the chair. Mother then rocked her own body a bit too, matching the rhythm. Mother then showed Cecil a doll. Cecil concentrated on it, while mother held it quietly. After a few minutes, Cecil lost interest, and mother showed him another toy. Cecil took the toy, held it close to his body, explored it, again while mother waited quietly. Then there was an interruption at the door. Mother was told that the sound was now working, and was asked if she wanted to continue the filming. We agreed to continue.

The interruption disturbed Cecil, and now he very much wanted to get out of the seat, holding his hand up in an appeal to be picked up. The mother was gentle, slow, and held him, but without taking him out of the chair. Mother made a "woe face," joining the infant's distress, and was very sorry that Cecil couldn't get out yet. Cecil collapsed into his stomach, fussing, and mother matched the distress sounds. Mother then tried some puppet play, moving the puppet very slowly, and Cecil briefly engaged. Then Cecil was distracted by the sound of the camera moving, and mother joined his line of regard, explaining the noise. Cecil then made another bid to get out, and mother joined Cecil's vocal distress with similar sounds, and held him close.

Describing the rest of the session, at a more global level, after a few minutes mother did a peek-a-boo game, covering Cecil's face with her hands and saying, "where is Cecil?". This time

the quality was totally different: slower and very successful. Cecil emerged smiling, and sustained the positive affect. Then Cecil was briefly quiet, and mother waited. Cecil then heard the noise of the camera again, and mother joined his line of regard, and waited. Now Cecil wanted to get out again, and this time I stopped the filming after seven minutes. There was nothing the mother did in this second filming that seemed to interfere with the infant's capacity to play and to respond.

Stranger-infant interaction. We then attempted a stranger-infant filming, but Cecil would have none of it. He cried loudly, angrily, and threw any toys on the floor. Three different attempts by me to play with Cecil had to be aborted, since he was crying hard. Finally we organized a set-up in which Cecil sat in mother's lap, and mother was instructed to "be the chair", not to help or respond.

For the first five minutes of the interaction, Cecil was disengaged. He was silent, made no eye contact, and every toy that I tried to engage him with was immediately thrown on the floor. However, at some point he finally made a vocalization, a "spit" sound. Immediately I matched this sound. And right away he looked at me and made another, similar one. All of a sudden the whole tenor of the interaction had changed, and we were engaged in a fascinating vocal dialogue. As we continued to match and elaborate on each others' sounds, at some point Cecil began to move his tongue as he made the sounds, and it came out as "la-ler, la-ler". He was intensely visually engaged. I tried making the "la-ler" sound, and we both burst into big smiles, and giggled. Variations on this rich vocal dialogue continued for the next four minutes. Cecil had been enormously responsive to my matching his vocalization. Since this form of engagement does not require the child to be visually engaged, it can potentially provide a less

intrusive or demanding means of making contact. His own willingness to elaborate on the jointly formed patterns was critical to the success of the dialogue.

Toward the end of the interaction Cecil began to be tired. Although he had been having a spirited, at times elated, turn taking dialogue with me (as he sat in his mother's lap), when he began to get tired, he arched away into his mother's body, and avoided me. But then he was able to keep coming back to me, and to continue the rhythm of the vocal exchange. These movements away from me were his own self-regulatory efforts to manage his arousal within a comfortable range. The success of his self-regulation efforts could be seen in his continuing ability to re-engage me, in cycles of vocal dialogue, disruption, and then repair (see Tronick, 1989; Beebe & Lachmann, 1994). This aspect of the interaction with me was used as part of the therapy. It was a demonstration of a way to make contact without forcing, intruding, or chasing. It also vividly showed the power of vocal rhythm matching in making contact, since the child does not have to make eye contact.

This laboratory filming ended with a brief discussion with the mother that her interaction with Cecil was going extremely well now. We made a decision not to pursue the attachment test since the visit had already been too long. Cecil was doing well, and all we needed to do was to watch to be sure he continued to be fine.

Follow-up Contacts

September. A telephone conversation: "Things are just great. We were on vacation for three weeks and we had a lot of time to spend...I totally relaxed with Cecil. I got to know him better. I stopped my agendas, stopped comparing him to his brother. He is a delightful baby; we are just charmed by him, he is now so social. I had seen this side of him from time to time, but

now it has really come out. He is more bonded with me too, he wants mommy only. He seems terrific. I'm enjoying how different he is from his brother.

November. A letter: "You have played an absolutely pivotal role in my life....To begin with, Cecil; our connection is deep and easy and full of joy. He is an absolutely delicious, funny, charming, very loving little person....you helped me relax and see him; I stopped focusing on who he was not and on how he and I were not....So, having discovered Cecil, I fell in love with Cecil. No surprise. ...In retrospect, my feeling of self-reproach was based on some accurately-sensed stuff. I intuitively knew that I was not being with him or being emotionally responsive to him anywhere near as much as I can be. Now I am, and let me tell you, the difference is not minor."

Discussion of the C. Case

We return here to the theme that parent -infant treatment occurs at a unique intersection of implicit and explicit modes of processing and fosters a greater integration between the two. Our three orienting questions provide a framework for conceptualizing the treatment: (1) In the implicit mode of action-sequences, how does each partner affect the other? (2) In the explicit narrative mode, can the parent verbalize the nature of either partner's affect on the other? (3) And does the parent's representation of the infant interfere with the ability to perceive the nonverbal action dialogue? From the presenting complaints it is clear that parents are aware of some aspect of the infant's behaviors, and particularly ways in which the infant affects the parent, such as, my baby does not smile at me, or my baby does not look at me. But it is harder to observe one's own behaviors which affect the infant. Often various representations of the infant disturb this process further.

Addressing the infant's impact on the mother, Mrs. C. could observe as well as verbalize that her infant often did not look at her, or smile at her. When asked how she would respond to this, however, Mrs. C. was vague: "I try harder," or "He needs more stimulation". Addressing the mother's impact on her infant, Mrs. C. had not been aware of the specific behaviors that we were able to describe together, for example, rapidly moving into the face, not pausing, continually offering toys. Identifying these specific behaviors enabled Mrs. C. to observe the moments in which they influenced the infant to "disengage, for example, to startle, look away, collapse into the stomach, or inhibit initiation with toys.

We were able to identify some of the "transferences" to the infant that seemed to disturb Mrs. C.'s ability to observe and verbalize both sides of the bilateral effects of each partner on the other. She acted like her own mother, who had "set the pace," and her infant seemed to act like Mrs. C. had as a little girl, that is, to "withdraw". Her own "setting the pace" behaviors (not pausing, continually offering toys) were out of her awareness. Mrs. C. was aware that her infant was withdrawing from her, but was not aware of how similar her infant's behavior was to that of her own childhood. Thus she and her infant had "re-enacted" an aspect of her own history, the mother who sets the pace and the child who withdraws.

Similarly, the infant seemed to act like Mrs. C.'s own mother, since the infant had an "impassive" face, neutral, impossible to read, which reminded Mrs. C. vividly of her own mother's face. Mrs. C.'s response to her own infant's impassive face was very similar to her response to her mother's face when she had been a little girl, that is, to become anxious and to try harder. Presumably the similarity of this interaction with ones in her childhood interfered with Mrs. C.'s ability to *see* that her "trying harder" was just pushing her infant farther away from her.

These transferences were identified in the process of watching the videotape. Being presented with the procedural level of action sequences which are out of the mother's awareness, presumably because they are connected to painful childhood experiences, facilitates the mother's ability to *see*, and to *remember*. The mother is being asked to make a unique integration of procedural and declarative information, in an arena that has been out of awareness due to some kind of unresolved pain. This work allows the mother to shift her representation, for example, from the baby rejecting her, to the baby as over-stimulated and attempting to dampen his arousal.

The optimum midrange model of regulation described above is useful as a framework for evaluating the progress of the treatment. At the outset of the treatment, Cecil could be described as preoccupied with self-regulation (looking away, lowered level of arousal, constricting the range of the face), with lowered levels of contingent coordination with mother's behaviors through facial, visual, and vocal behaviors, and with his initiative shut down, body collapsed. Mother could be described as a "high coordinator," very contingently responsive to the infant's every move, with excellent facial-mirroring and vocal rhythm matching, but interacting with levels of stimulation that were too high, with patterns that were spatially intrusive, that disturbed the infant's initiative.

Following the videotape intervention, the mother was able to move from high- to more "mid-range" coordination, less vigilantly responsive to every infant move. She was able to pause more, do less, wait, tolerate the infant's disengagement without "chasing," tolerate the infant's distress, and give the infant space to initiate play. Moments of matching were interspersed with "waiting" for the infant's own moves (of self-regulation, or initiative), so that they did not seem "excessive," or imposed. The infant for his part shifted from a "low-coordinator" and became more "mid-range" in his level of contingent tracking of the mother, more midrange in facial

responsivity with both positive and negative expressions rather than a predominance of neutral, more visually engaged, and much more active in initiating play with objects.

The Case of Nicole

The case of Nicole is a useful counterpoint to the Cecil case, which illustrates mild maternal intrusion coupled with some temperament and arousal regulation difficulty in the infant. Nicole, on the other hand, illustrates a maternal “absence of provision.” Because this family was from a distant city, and I happened to be traveling nearby, the mother-infant pair was not evaluated in my lab, but rather in an office, and they were only seen in person for one extended three hour evaluation, together with a number of follow-up telephone consultations. Since the problem turned out to be an absence of intimate engagement, rather than a complex misregulation of engagement between infant and mother, it was a case in which a detailed videotape evaluation was luckily not essential. In the Cecil case, I was not able to detect the problem without the videotape microanalysis. In the case of Nicole, knowledge of the microanalysis research was nevertheless essential to the treatment.

Mrs. N. was referred by her therapist, who described her as an anxious new mother, strongly involved in her hard-driving career. Mrs. N. had become worried that her five month old baby was not as responsive to her as she was to the Nanny, and she had requested a consultation with an infant “expert”. The therapist suggested that Mrs. N. probably had difficulty giving focused attention to her daughter because she had never gotten much herself.

The first contact was a telephone session. Mrs. N. felt “disconnected” from her daughter. She described feeling crushed when she arrived home to see her daughter laughing and giggling with the Nanny, but Nicole would not even look at her. “I’ve been going 100 miles per hour all

day, and Nicole has been with someone laid back with nothing to do but to be with her. I take Fridays off, and it takes her quite a while to warm up. My husband does not think it is anything to worry about. But what will it do to her in the long-term? I feel like she does not love me, that I'm not good as a mother, I'm not as natural as the Nanny. How much I need her love. I envisioned a different reaction to me. She smiles more to my husband and the Nanny than to me."

"I have never seen myself as a mother. I was little 'Miss Career.' My mother was domestic, but she resented it. We were toys and dolls to her. Now I want to pick back up the domestic side, but it does not come naturally." I commented that evidently she did not have a model of what it would be like to really enjoy one's child: her mother resented children and domesticity. It was very understandable that it would be hard for her to learn. "I don't measure up to the Nanny; she knows exactly what to do. I don't mind if she loves the Nanny, but I want her to love me more. It's my nature to be doing three things at once. Instead of being able to relax, and take the time to be with her, I'm on the phone. I tell myself, this is her time, don't pick up the phone." As she told me this, I sensed the rapid clip of her speech. I commented on how aware she was that she needed to try to relax and slow down to be with Nicole. "I don't like myself when I am with her. I feel like my mother when she's running around like crazy and can't get organized." I said that evidently she had learned to be like her mother in this, and perhaps it had been a way of being close to her own mother. But now she's not so happy about it, and she's trying to help herself change it. We then discussed exactly what happens when she comes home from work. She nurses Nicole when she comes in, but the infant will not look at her. "Maybe it's because I always had the phone in my ear when she was nursing. Have I hurt

her now? Can it be fixed? Would I have had a better relationship with her if I had been different? She did not deserve a mother like me.” And then she cried.

I empathized with her agony over feeling that she had disturbed her relationship with Nicole. I told her how important it was that she had taken the step of calling me, and that she was struggling to find a way to slow down to be with Nicole. She lamented that she did not do it right, and that she had been stupid. I said that we needed to find a way of re-righting this without blaming. She responded that I had a beautiful voice, and that she felt smart for trying to get help.

The second contact was a three-hour consultation with the mother and baby. Although the father came as well, he declined to be involved. This was the only contact in which I actually saw them in person because of the extremely long distance involved. Nicole at 5 ½ months was a big girl, and heavy. Mrs. N. propped her up at one end of the couch with a toy. As she was settling Nicole in, the infant’s body arched away from her. Mrs. N. then sat at the other end of the couch. I pulled up a foot-stool and sat halfway between the two of them. The baby played with the toy, putting each different part of it in her mouth, quite placid and self-sufficient. She never looked at her mother or at me, nor did she look around the room, while her mother talked to me about her work schedule and her dilemma of work vs. home life.

Nicole then needed her diaper changed. She had a large bowel movement. Mrs. N. was gentle, solicitous, and managed it well. Now Mother and Nicole were together on the couch, and Mrs. N. showed me a “pull-to-sit” game that she plays with Nicole, a game that her friend had taught her. The baby clearly knew the game, anticipating the moves with her body, but she did not look at her mother, her face showed no animation, and at the last moment before attaining the sitting position, her head oriented up and 30 degrees away from the vis-a-vis. Mrs. N. then held Nicole lying across her lap on the infant’s back. This was the nicest connection they made, slow,

both bodies relaxed, both looking at the other, but without smiling. Mrs. N. then began to talk about how terrible she felt: “Have I hurt her, what will be the effect, will she know her own mother, should I stop working?” She cried during most of this discussion.

After about an hour, I suggested that we start to see how we could help her engage Nicole more. I said that I did not think the issue was the amount of time that she worked, as much as finding a way to make a connection with Nicole. I explained that first I needed to play with her to try to see her range of responsiveness. Nicole chortled, with high positive affect, sustaining long gazes with me. She was marvelously socially engaged. From this interaction it was clear that the difficulty was not an incapacity on the part of the infant. Evidently, the social engagements with her Nanny and her father were going well.

I then set about trying to teach Mrs. N. how to engage Nicole. The first thing I taught her was vocal rhythm “matching,” making sounds contingent on the baby’s sounds, both matching and elaborating on the intonation, pitch, and rhythm. I chose this first because the child does not have to make eye contact in this mode of relating. Mrs. N’s sounds were thin and squeaky. She did not give the sounds a robust prosody, she could not elaborate on them, and she did not put any words to the sounds. She did not seem to know how to play. I coached the sounds from the sidelines. Eventually the sounds she made were adequate to make some contact with the baby. Nicole oriented to her a bit more, and returned some of Mrs. N.’s sounds with her own, beginning a rudimentary vocal dialogue. But Nicole did not look at her mother.

Noting how flat her face was as she interacted with Nicole, I then tried to teach Mrs. N. facial mirroring, by having her roughly match some of my faces (gape smile, mock surprise). I tried to get her to move her face in ways similar to the ways I moved mine (small increments of open mouth, open a little more, then a little more; moving the upper lip in and out of a purse etc).

She was unable to play with her face; her face was tight, flat, and unvarying. I then had the idea of showing her how to unlock her jaw, and how to massage her face. I asked her if she would be interested in trying this. She agreed. In this process she had an association to her mother's angry, tight face, and she became a little teary. I suggested that her reaction to her mother's angry face was expressed in her own facial tightness and constriction. She was receptive and felt sobered by this idea. The attention to the behavioral details of the procedural level, particularly the constriction, seemed to trigger her representation, which we could then address and elaborate at the symbolic level.

We then moved to an attempt at face-to-face interaction between mother and baby. At first Nicole was very gaze avoidant and her whole body arched away from her mother. The infant made absolutely no eye contact. Gradually I taught Mrs. N. to slow down and to make some slow rhythmic sounds, and to do vocal rhythm matching if Nicole made any sound. When the infant would give her a darting glance, I taught her to give an exaggerated mock surprise greeting. The instant the infant looked away, I taught her to "cool it". Nicole began looking a bit more. We spent quite a while at this.

By the end of the three hour session Nicole showed some brief partial smiles to her mother. The gazes were not sustained. But Mrs. N. had a direct, powerful experience of getting some more response from her baby. She could see that she was getting somewhere. She expressed relief and gratitude that I had validated that something was wrong. I reminded her of the many things that were right as well: she had a very gentle and affectionate capacity to hold Nicole and to feed her, she did have some games she played with the infant, and most of all, she wanted more contact with her.

Ten days later we had a telephone session. “Now I make it totally Nicole’s time when I get home. If I can slow down, we can connect better. By the end of the week I feel totally disconnected from her. When the Nanny leaves, she is used to her. I have to be careful: I expect her to demonstrate affection and attachment. When I don’t get it, I get worried. Sometimes she does not make any sounds, so I can’t mimic her.” I asked her if she could start it with occasional sounds of her own. “My husband can walk in the room and connect with her right away. He is like the Pied Piper. It is hard for me. I feel bad that I don’t connect the way he does. If I don’t get a lot of feedback, I feel unliked.” I asked if there was then a danger that she would feel rejected and withdraw. She agreed, yes, very much. She then reported that Nicole is not as avoidant as she was: “She looks at me, she watches, though she does not smile. She can concentrate on my face though, that’s new.” She told me that Nicole was right there with her, looking at her face right now. I suggested she try a mock surprise expression right now, and she did. I waited a moment while Mrs. N. played with her. She reported that Nicole looks but she does not smile. “She will watch me now if I do interesting things with my face. But I noticed that if I’m tense I close my face up.” I said that it was wonderful that she was trying to engage her child with her face, and that Nicole was clearly beginning to respond. I congratulated her on becoming so aware of her own face, and able to notice when she closes it up.

“When Nicole looks at my husband, she gets this glow; will it always be this way? In the morning I am terrible with her. I’m trying to get ready, I’m in a hurry, and I do a dancing conversation in front of her face, all speeded up.” I commented on Mrs. N.’s increasing ability to notice what she does and to see if it is disturbing Nicole’s ability to connect with her. She then asked, “Have I lost my chance? When I left you, I felt so bad, and angry; I missed my chance. I should have stayed home and not worked.” Without waiting for me to respond, she immediately

told me that Nicole was looking at her right now, and Mrs. N. began to make sounds. We practiced the “sinusoidal”-shaped “hello”, she and I saying it to each other, and she reported that Nicole was looking constantly at her while she made the sinusoidal sounds.

Then I asked her about feeling angry. She said that she was angry her husband wasn't encouraging her to quit work and she was angry that no one had been agreeing with her that something was wrong. She felt that finally I had validated her. “I would be devastated if I do not have a good relationship with Nicole. She lights up for my husband. She is so responsive to the Nanny. But what you are saying to me is, it's not too late for me to connect. I've never felt so insecure in my life.” I empathized with her fear and distress. Then I told her how terrific it was that she was holding on to her hope to connect with Nicole, and that she and I could both see progress.

A telephone message two weeks after the initial three hour session in person: Mrs. N. was canceling our tentative appointment to see each other in person because she and Nicole were doing so well: “I am getting so much feedback from her, I am relaxing a little. She smiles more, looks more. I don't feel crazy anymore. All of a sudden she has started really vocalizing. The biggest thing you said was, focus on her. When I'm with her, I'm just giving her all my attention”.

A telephone session one month after the initial three hour session in person: “She's wonderful, she's happy, she's more vocal, more expressive, she's really relating to me. Occasionally we have a bad evening. But I'm more comfortable around her. I may be doing more of her language. I try to slow it down for her. If I'm rushing, I notice it. Then I just hand her to the Nanny, because I don't want her to sense it. I imitate her sounds, but not all the time. If she initiates, and I respond, and make it even bigger, then she laughs.” I tell her how

wonderful all this is, how thrilled I am that things are so much better. “I think we’re doing a lot better. When I come home, I get a greeting. She looks, she smiles, she kicks.” Then she asked me if it was a mistake not to come for a second consultation in person, and I said no, I didn’t think so, because things were going so much better. We agreed that she would call me if she had any more concerns. She thanked me profusely. I told her that it was so remarkable how quickly she and Nicole were able to turn things around.

Discussion of the N. Case.

This pair illustrates an absence of maternal provision of the usual “infantized” facial and vocal behaviors that engage infants in face-to-face play. Presumably the more adequate “provision” of the housekeeper and the father had to this point safeguarded the overall social development of Nicole. The mother’s frozen face and inhibition of maternal “play” behavior required me to figure out how to get the action-sequences going, how to “prime the pump.”

Mrs. N.’s immediate transference to me in the first telephone contact as having a beautiful voice set the stage for me to “provide” something that seemed to have been absent for her. By teaching her specific ways of engaging the infant, that is, vocal rhythm matching, vocal contouring, facial mirroring, and “cooling it” when the baby looked away, it is possible that she experienced a “provision” from me. I was also admiring of her willingness to try these new behaviors, and of her increasing ability to engage Nicole, as she tried it, over the phone.

The key to unlocking Mrs. N.’s capacity to mother Nicole was the discovery of her traumatic reaction to her own mother’s face, which was then “carried” in a procedural form through her inhibition of her own face with Nicole. In retrospect, the vocal modality proved to be easier for Mrs. N. to develop with Nicole. Since the vocal modality did not require Nicole to look, it was initially easier to reach Nicole this way. But Mrs. N. had also been so responsive to

my voice, from the very first contact, and she carried on most of her relationship with me over the telephone. It may be that the voice was a “non-traumatized” mode for Mrs. N., compared to the face (M.S. Moore, personal communication, August 18, 1999).

Discussion

Many different approaches to mother-infant treatment yield dramatic progress (see for example Cramer et al, 1990; Fraiberg, 1980; Seligman, 1994; Stern, 1995) (but note that controlled clinical trials are rare). Although the use of video feedback is growing, three decades of microanalysis research on the mother-infant face-to-face exchange is surprisingly under-utilized in current treatment approaches. Microanalysis of behavior allows us to perceive the details of interactions which are usually too rapid to grasp with the naked eye. These details provide the clinician with the ability to translate the parent’s presenting complaints into specific behaviors which can then be understood as an unfolding “story” of the relationship. With the additional perspective of the dyadic systems view of communication (despite the mother’s obviously greater ability and range of resources) the clinician can continually attempt to understand how each partner contributes to the exchange, how each affects the other. And the clinician can notice how the self-regulation strategies and styles of both partners affect and are affected by the nature of the interactive exchange. With this perspective, for example, negative interactions such as “chase and dodge” or “mutually escalating over-arousal” can be seen as reciprocally responsive co-constructed *forms of engagement*. This systems view helps us remain empathic to how each partner is affected by the other.

However, video microanalysis of the interaction from a systems view can only richly *set the stage* for the treatment. A clinician’s sensitive ability to construct jointly with the parent a description of the exchange, to help the parent use the behavioral details of the video drama as a

springboard for memories and associations, and to link the stories of the presenting complaints and the parent's own history to the video drama, form the core of the treatment. The clinician's careful attention to the parent's self-esteem, particularly feelings of shame and humiliation, is essential.

The video feedback method does not disturb the dyad while they interact. Later, when the parent and I view the videotape, it is simultaneously "immediate" and visually concrete, as well as somewhat "distant" and safer, in that it is not happening *right now* (Lefcourt, personal communication, July 7, 1998). In the video replay we can concentrate on a particular modality, and slow it down, whereas in the live interaction all modalities, as well as words, flood the senses. Since the visual information speaks on its own, the therapist is free to emphasize different aspects, to underscore the positive elements as well as identify derailments (Tabin, personal communication, September 10, 1998). Because the mother is usually so motivated to engage her infant, she can make an effort to overcome any natural awkwardness at seeing herself. We rarely know what we really look like as we interact. Seeing oneself on videotape may operate like a "shock" to the unconscious, "perturbing" the system (Milyentijevic, personal communication, June 26, 1998; Kohler, personal communication, October 23, 1998). This "shock" may be part of the emotional power of the video feedback method. The therapeutic viewing promotes a capacity to observe oneself in interaction, to think about the emotions seen in the video, and to reorganize representations (Beebe, 2003, p. 45).

Both parents in the two cases presented felt that the treatment validated their sense that "something was wrong." Mrs. N. was able to persist in trusting her discomfort despite the fact that her husband did not think there was a problem. This vague discomfort is the parent's ability to sense the impact of the implicit procedural mode and enables the parent to seek treatment. But

the meaning of this discomfort is not usually recognizable without help (Tabin, personal communication, September 10, 1998). Procedurally organized interactive memories that are unrecognized and unsymbolized often come to play a role in shaping the action-language of our intimate interactions as well as the representations of our intimate partners. The psychoanalytically oriented video feedback method goes directly to the core interactional dynamic that is out of awareness and provides a safe format in which this dynamic can be verbalized and reflected on. The parent can become more aware of the infant's "mind" as well as her own (Fonagy et al, 2002). In this process implicit, procedural aspects of the parent's mode of relating to the infant which have remained out of awareness can be translated into explicit, narrative forms of understanding.

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