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New Evidence for the Social Embeddedness of Infants' Early Triangular Capacities

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Abstract

Infants appear to be active participants in complex interactional sequences with their parents far earlier than previously theorized. In this report, we document the capacity of 3-month-old infants to share attention with two partners (mothers and fathers) simultaneously, and trace links between this capacity and early family group-level dynamics. During comprehensive evaluations of the family's emergent coparenting alliance completed in 113 homes, we charted infants' eye gaze patterns during two different mother-father-infant assessment paradigms. Triangular capacities (*operationalized as the frequency of rapid multishift gaze transitions between parents during interactions*) were stable across interaction context. Infants exhibiting more advanced triangular capacities belonged to families showing evidence of better coparental adjustment. Theoretical and practice implications of these findings are discussed.

Keywords

Coparenting; Infants; Triangular Relationships

Over the past decade, two related developments in the fields of family psychology and infant development have kindled important paradigmatic shifts in the understanding of social relations during the early infancy period. Family psychologists have recently documented that families begin establishing identifiable coparenting and family-level dynamics during the first 100 days of their babies' lives, dynamics that show remarkable stability well into the child's toddler years (Favez et al., 2006; Fivaz-Depeursinge & Corboz-Warnery, 1999; McHale, 2007a; McHale & Rotman, 2007). Concurrently, infant developmentalists have posited that babies may already possess a primary form of intersubjectivity, or capacity to share in others' feelings and mind-states, far earlier than once thought (perhaps even as early as the first months of life; Butterworth, 1998; Meltzoff & Gopnick, 1993; Rochat, 1999; Trevarthen, 1993), providing compelling new evidence that there may even be a collective form of early intersubjectivity (Fivaz-Depeursinge, Favez, Lavanchy, de Noni, & Frascarolo, 2005; Nadel & Tremblay-Leveau, 1999; Selby & Bradley, 2003; Tremblay & Rovira, 2007). In particular, Fivaz-Depeursinge and colleagues have discovered that babies may possess clear capacities for coordinating their attention and affects between two partners simultaneously (an emergent "triangular capacity") as early as 3–4 months postpartum.

Each of these developments is compelling in different ways. The full implications of coparenting (McHale, 2007a, 2007b) and triadic (Fivaz-Depeursinge & Corboz-Warnery, 1999) theories have yet to fully penetrate the fields of infant and child development, largely because developmental scientists not trained as family theorists or therapists do not customarily conceptualize beyond two-person interactions when studying children's socialization contexts (Dickstein, Seifer, & Hayden, 1998; Hayden, Schiller, & Dickstein, 1998; Mchale, 2007b; Mchale & Fivaz-Depeursinge, 1999). Both research and clinical studies of infants continue to be structured by dyadic (mother-infant) socialization models, principally because infants' earliest socialization and acculturation experiences are largely dyadic in nature. At the same time, several theorists (e.g., Dunn, 1991; Schaffer, 1984) underscore that infants are more often in multipartite contexts than they are dyadic ones. Hence even as mothers and babies develop dyadic rhythms, regularities, and "personalities," so too do other systems and subsystems within the family. For example, father-infant relations are now known to afford meaningful and unique early social experiences for infants—though ironically, the belated and largely reactive focus on the salience of father-infant relationships also channeled attention away from a coparenting perspective, our guiding framework and focus in this report.

In all families where children are raised by more than one adult caregiver, the family establishes a signature coparenting relationship and dynamic, and infants' socialization experiences are fundamentally affected by the manner in which adults work and coordinate together in this relationship (McHale, 2007b). Coparents can provide similar or very different interpersonal experiences for babies, support one another's parenting efforts, or interfere with them. The parenting adults can each provide substantive and recurring engagement for babies, or collude to shunt most effort to one parent to the exclusion of the other. It is such patterns of support, cooperation, coordination, opposition, and detachment in the family's coparenting relationship that coalesce and collectively come to define coparental solidarity in the family. Such patterns are firmly established by 3 months postpartum, show remarkable stability across developmental time, and, most importantly, ultimately come to have an imprint on toddlers' and young children's social and emotional development (McHale, 2007a, 2007b).

Data on infants' early triangular capacities are equally remarkable. The understanding of infants' socio-affective development has historically traced the field's predominant focus on mother-child dyadic relations. More specifically, development has typically been conceptualized as proceeding from person-person to person-object and only then to person-person-object "triadic interactions" near the end of the baby's first year (Carpenter, Nagell, & Tomasello, 1998). This conceptualization was first challenged by research that detected the beginnings of joint or shared attention long before the advent of pointing, the typical watermark for the emergence of perspective-taking capacities. Butterworth's (1998) work was particularly important in documenting a perceptually based attentional sharing as early as 2–3 months. Following this initial observationally based evidence on early-emerging person-person-object triadic interactions, two research teams (Fivaz-Depeursinge & Corboz-Warnery, 1999; Nadel & Tremblay-Leveau, 1999) completed systematic experimental studies of infants' precocious capacities for sharing attention between two people—with Fivaz and Corboz coining the term "triangular capacity" to distinguish such social attentional sharing from "triadic relationships" (a term used in writings describing person-person-object relationships).

These studies verified not only that young (3-month-old) infants track back-and-forth exchanges between two adult partners, but also appear to make triangular bids, sharing with both parents their attention and affects (Fivaz-Depeursinge & Corboz-Warnery, 1999). While these capacities appear in robust form in 6–9-month-old infants, they can be systematically observed in infants as young as 3 months of age (Lavanchy, 2002; Nadel & Tremblay-Leveau, 1999). Triangular bids at this age function principally to share affects in order to influence the flow of interaction (as when infants share protest in order to change a state of affairs, or interest

or pleasure as a signal to continue), and may perhaps also serve as a precursor of future social referencing capacities (Dickstein & Parke, 1988).

Elsewhere, we (Dickstein et al., 1998; Fivaz-Depeursinge et al., 2005; Fivaz-Depeursinge & Corboz-Warnery, 1999; Hayden et al., 1998; McHale & Fivaz-Depeursinge, 1999; McHale & Rasmussen, 1998; McHale et al., 2002) have outlined why it is essential to understand infants' and young children's family group dynamics to apprehend the child's growing social, emotional, communicative, and regulatory capacities. Child and family adaptive capacities are intertwined from infancy forward, with coparental and triadic dynamics accounting for variability in child adjustment outcomes unexplained by indices of dyadic (parent-child or husband-wife) relationship functioning (Belsky, Putnam, & Crnic, 1996; McHale, Johnson, & Sinclair, 1999; McHale & Rasmussen, 1998). However, while researchers have established associations between early family dynamics and later child adjustment, there has as yet been relatively limited focus on whether some of the earliest-emerging infant capacities can be tied to concurrently developing family-level interaction and adjustment.

Of the evidence that does currently exist, it does appear that early temperamental characteristics can amplify or mitigate early coparenting difficulties in families that were at risk prenatally for developing such problems (McHale & Rotman, 2007; McHale et al., 2004; see also Schoppe-Sullivan, Mangelsdorf, Brown, & Sokolowski, 2007). Provocative evidence from Fivaz-Depeursinge's laboratory also indicates that infants showing more robust triangular capacities at 3–4 months are more likely to be members of better adjusted family alliances (Fivaz-Depeursinge & Corboz-Warnery, 1999; Koller, 2004; Lavanchy, 2002). This latter discovery prompted the current study, in which we explored linkages between 3-month-old infants' early-emerging capacities for triangular relations and concurrent coparenting cohesion, conflict, and risk.

ASSESSING TRIANGULAR RELATIONSHIPS AND CAPACITIES DURING EARLY INFANCY

Thus far, existing evidence for infants' triangular capacities in the family has been marshaled almost entirely in studies using Fivaz-Depeursinge and Corboz-Warnery's (1999) Lausanne Trilogue Play (LTP) paradigm. The LTP is a semistructured interaction task appropriate for families with infants as young as 3 months of age that affords systematic process data about dyadic and triadic family configurations. In the LTP, parents and baby interact together in four distinct, consecutive play vignettes or "parts." In Part 1, one of the two parents engages in face-to-face play together with the baby while the second parent is "just present." In Part 2, the adults trade off, with the previously "third party" parent taking over as the "active parent" while the partner assumes the third party role. In Part 3, all three family members play together, and in Part 4, the adults engage together with one another and place the baby in the position of "third party." No toys or other objects are used when the LTP is conducted with infants below a year of age. In the original LTP studies in Switzerland that documented infants' triangular capacities, decisions about when transitions between parts would occur were left entirely to the parents, so that the duration of each part was free to vary.

In the Lausanne system for evaluating family alliances, a specific profile is shown by families that have the most adaptive alliances. Specifically, during the LTP all partners are primed to interact, respect their prescribed roles (active vs. third party parent), and maintain a joint focus on communal games, while staying in touch emotionally. In families with less adaptive alliances, partners exclude one another, withdraw or interfere with one another's roles, or fail to establish a joint focus during games or to remain in touch with one another. If exclusion is marked, the alliance is characterized as disordered. If no exclusion is observed but interference or withdrawal dominate the alliance is characterized as collusive. And if neither exclusion nor

interference or withdrawal is observed, but the partners cannot maintain a joint focus, it is characterized as stressed. Hence, alliances are cooperative only if none of these difficulties are manifest and the partners stay in touch with one another emotionally (Fivaz-Depeursinge and Corboz-Warnery, 1999; Frascarolo, Favez, Carneiro, & Fivaz-Depeursinge, 2004). This conception of family alliances shares a number of similarities with coparenting conceptualizations. Cooperative and stressed alliances are akin to the most adaptive coparenting, where the adults show cooperative and warm interactions devoid of antagonism or intrusiveness. By contrast, collusive and disordered alliances are akin to problematic coparenting, characterized by low warmth together with antagonism or marked discrepancies in the two parents' levels of engagement with the child.

In an early study of infants' deployment of attention to their interactive partners, Lavanchy (2002) examined 3-month-olds at play together with both parents during the four parts of the LTP. In this study, she focused on the extent to which babies signaled, through the shifting of their gaze patterns, a sharing of attention with two partners simultaneously. Coding infant gaze from videotaped records of LTP sessions in ½second intervals, she found that 97% of the study's 38 three-month-olds demonstrated a capacity for rapid transitioning from one parent to the other (gaze shifts occurring in 5 seconds or less), though there was substantial variability in the number of rapid transitions made (range: 1–40; Lavanchy, 2002). Far more rapid transitions were observed in the part where they played the three together. Multistep transitions (alternating gaze from one parent to the other and then back again—sometimes for as many as nine successive turns) were shown by nearly all infants analyzed. Three-month-old infants hence appeared quite capable of making rapid transitions (Lavanchy, 2002). Especially provocative and germane was Lavanchy's finding that infants' triangular capacities varied as a function of the type of "alliance" their family had formed. More precisely, the infants' triangular capacities (total number of rapid transitions revealed during interactions) were greatest in families showing the most adaptive alliances, and were less robust in families that made less adaptive adjustments.

In a follow-up to Lavanchy's study, Fivaz-Depeursinge and colleagues (2005) extended evidence for the communicative function of infants' early triangular capacity by demonstrating that 4-month-old infants typically signal the same affect from one parent to the other when making transitions—that is, they are consistent in the signals they address to parents and do not juxtapose different affects. Moreover, by creatively incorporating a modified still-face segment into the LTP (LTP-SF, wherein *one parent, but not the other*, posed a motionless face), Fivaz and colleagues were able to demonstrate that triangular bids are context-specific. First, they found that communications bidding for triangular engagement were most frequent during 3-together parts of the LTP-SF. Second, though bids were less frequent in the 2+1 parts, infants showed more bids in the 2+1 *with still face* than in the standard 2+1 (a difference that approached statistical significance). This distinction suggested that when placed in the paradoxical situation of the still face, infants actively sought the third party parent for help—perhaps an early precursor to the much later-emerging capacity for social referencing (Dickstein & Parke, 1988). Collectively, these data indicate that 4-month-olds discriminate contexts in which affect and attention can legitimately be shared, with their coordination of gaze and affect behavior reflecting this distinction.

Summary and Prospectus

In summary, evidence to date indicates that babies as young as 3 months show a beginning capacity for sharing triangular relations with two adult partners. Operationalized as the coordination of rapid multishift gaze transitions between partners, these capacities are not only scaffolded by the adult partners, but also emanate from babies' own initiatives in the absence of adult solicitation. Most such behavior looks to have a communicative function as consistent

affects (both positive and negative) are transferred between partners, and babies show sensitivity to interpersonal context. There is also beginning evidence indicating that these capacities are better developed in infants whose parents have worked collaboratively to help cultivate adaptive family alliances, though available work to date has only assessed family alliance data in the same context as the infants' triangular capacities have been assessed.

This report builds upon and advances prior work in three ways. First, we for the first time examine infant gaze behavior in two different contexts—the LTP, and a novel *two-person* still-face challenge in which *both* parents presented motionless faces and then worked collaboratively to re-establish contact during a repair phase; analyzing triangular capacity during a focused stressor allowed us to assess cross-task consistency in infants' triangular capacities. Second, drawing on a much larger sample of infants than has heretofore been studied, we provide a partial replication of the finding that infants' triangular capacities can be tied to more coordinated coparenting and family processes, documenting connections between coparenting and family adaptation during the LTP and the nature of young infants' gaze coordination both in the LTP and in the Still-Face procedure. Finally, we show that infants' early triangular capacities can be linked to indicators of coparental cohesion and risk beyond the immediate family interaction contexts in which they are revealed, suggesting that they are not simply epiphenomena of the paradigm in which they are manifest, but rather capacities embedded in more enduring family structures.

Research Questions

1. Do infants who show greater triangular capacity during the LTP show a similar capacity during the more stressful two-parent Still-Face procedure?
2. Are there links between triangular capacity and coparenting and family adaptation *during* the LTP procedure? In particular, are multishift gaze patterns more pronounced in families showing either (a) more adaptive family alliances, as assessed by the Lausanne system for establishing alliance functioning, or (b) more active coaction, a related coparenting process signifying collaboration and coordination between adults?
3. Can triangular capacities be linked to coparenting conflict, cohesion, or risk indicators derived from assessment data gathered *outside* the LTP paradigm?

METHOD

Participants

Participants were 113 families with first-born, 3-month-old infants. All contained at least one birth parent and were headed by two committed adult partners who identified themselves as the baby's coparents. Most (98%) were married at the time of the assessments. All participants were residents of central Massachusetts, earning an average family income of \$70,000 in 2002 U.S. dollars (with a range from under \$20,000 to over \$100,000). 89% of study participants were of European descent and 11% were African American, Asian American, or Hispanic. 51% of the 3-month-old children were girls and 49% boys.

Design and Procedure

A team of two research assistants brought materials to families' homes to complete assessments at times when babies were usually awake and alert. These materials including a specially designed infant orthopedic seat that enabled babies to sit, with head, neck, and body fully supported, at chest height with their seated parents; and a large mirror placed behind the parents so that the baby's face and body would be visible between them on the mirror (for the videotaping of the session). The infant seat could be rotated toward either parent, or set at a

midline position between the two adults as they sat facing the baby in a prescribed equilateral triangular configuration. With all parties comfortably seated, the family completed the four Parts of the standard LTP (Fivaz-Depeursinge & Corboz-Warnery, 1999) assessment. Parents could switch from one Part to the next when they wished, but were signaled after 2 minutes had transpired if they had not yet switched spontaneously.

They next took part in a novel adaptation of the widely used Still-Face procedure. The procedure involved three 2-minute segments (both parents playing together with baby; both parents posing motionless, expressionless faces; both parents reengaging with the baby, and working together to “repair” the family connection with the child). Finally, they undertook a Who Does What problem-solving discussion in which they negotiated and tried to resolve their differences in perspective about who did how much caregiving work with the infant (diapering, feeding, responding to cries; see Elliston et al., 2008, for full details), and completed a Birth Story Interview in which they jointly described the day their baby was born (Oppenheim, Wamboldt, Gavin, Renouf, & Emde, 1996). The infant remained with the parents during the latter two tasks, and hence the adults’ joint interaction proceeded as they tended to the baby. All families completed all four coparenting procedures.¹

Measures

This section summarizes the main variables of interest in this report; descriptive data for all individual measures (except for the omnibus indicators Coparental Conflict and Coparental Cohesion, which were formed by adding standardized scores for relevant individual process indicators derived from the various assessments described below) are listed in Table 1.

Infant Triangular Capacity: Rapid MultiShift Gaze Patterns—The primary measure of interest in this report is infants’ multishift gaze patterns, our index of triangular capacity. As eye gaze was not always detectable from the video-record, infants’ head-turns were used as a proxy for gaze orientation following guidelines developed by Fivaz-Depeursinge and colleagues (2005). Gaze codes were always mutually exclusive. Video records were marked with time codes and instances of gaze were recorded by the fourth and fifth authors within each 1-second interval of the interaction. Each gaze was tabulated as (a) directed toward mother’s face, (b) directed toward father’s face, (c) directed elsewhere, or (d) uncodeable. A rapid transition was scored any time the infant’s attention moved from one parent to the other within a 3-second window (see Figure 1). We used a more exacting standard of 3 seconds rather than the 5-second time frame employed by Fivaz-Depeursinge and colleagues (2005) to strengthen the case that shifts occurred within the infant’s window of working memory; in Fivaz-Depeursinge et al.’s study, 92% of all rapid shifts documented occurred within such a 3-second frame.

The main variable of interest in this report is *multishift* gaze patterns, which provide the most unambiguous evidence of emerging triangular capacity. All cases in which infants look from one parent to the other, and then rapidly redirect gaze back to the first parent after having shifted once are classified as “multishift.” All multishift occurrences involving two or more rapid eye gaze/head turn shifts within the designated time window (involving at minimum at least one mother-to-father-to-mother, or father-to-mother-to-father sequence) were summed to create a total “multishift” index for each baby. The mean number of multiple shifts for 3-month-olds during the 8-minute LTP was 3.10 and during the 4 ½ minute Still-Face, 2.53 (see Table 1). 97% of the infants in this study showed at least one single or multishift transition in one or

¹Still Face data could not be generated for 18 families (as a result of video problems and/or coding problems related to protocol issues). These 18 families did not differ from the other 95 families on any of the other coparenting or infant gaze measures.

both paradigms; 95% demonstrated at least one single transition and 80% showed at least one multishift transition.

Coparenting and Family Measures

Coparenting and Family Process during the LTP: The LTP interactions for this study were coded both by the first author's laboratory and by collaborators at the Centre D'Etude de la Famille in Lausanne who were trained and supervised by the second author and versed in the Lausanne scoring protocol. All coders at both sites were blind to all other family data pertinent to this report.

(a) Overall Family Alliance Rating from LTP Part 3: Coders in Lausanne used an adaptation of Fivaz-Depeursinge, Cornut-Zimmer, Borcard-Sacco, and Corboz-Warnery's (1997) "Grid for Trilogue Evaluation of the Centre for Family Study" (GETCEF) rating system to evaluate the LTPs of a randomly selected 47 families. The GETCEF system involves global coding of family interactive patterns. Three hierarchically embedded functions—participation, organization, and focalization (see Frascarolo et al., 2004)—were coded. Participation refers to the partners' readiness to interact, focusing on the extent to which everyone is included in the interaction. Organization refers to roles, focusing on the degree to which everyone honors their roles as active or third party participant. Focalization refers to whether the family maintains a joint focus of attention in the games. Coders take account of several indicators revealed at three nonverbal communication levels (pelvis, torso, and head and gaze) and of the quality of the family games (for extensive details, see Frascarolo et al., 2004).

Participation was evaluated along three dimensions (two for parents, one for infant), drawing on cues that were contextual (correct positioning of the child, managing to always keep the baby included), corporal (parents' pelvises and torsos oriented toward baby, signifying physical engagement in the interaction, and visual (each partner's maintenance of the others at least in peripheral vision, signifying a visual connection during the interaction). Organization was also evaluated along three dimensions (two for parents, one for infant), using cues that were both corporal (maintenance of a distance between partners appropriate for dialogue, orientation of baby toward the parent with whom he is playing, affording proper coordination of roles) and visual (all three partners' faces oriented toward each other). Focalization was evaluated along two dimensions (one for the parents and one for the infant), using cues that were visual (focus of attention) and included quality and appropriateness of the games in relation to the infant's age and disposition.

Focusing on LTP Part 3 (the 3-together), raters attributed scores between 0 (most inappropriate) and 4 (most appropriate) for each dimension. Parent scores were weighted doubly so that final function scores ranged from 0 to 20 for participation, 0 to 20 for organization, and 0 to 12 for focalization. Function scores were then summed yielding a total alliance score ranging from 0 to 52 ($M = 37.93$). Higher scores signified more functional alliances, exemplified by a high likelihood that all three partners remained included in the interaction, engaged in their roles (neither detaching or intruding), and coordinated well with both play partners. Lower scores signified difficulties along one or more of these dimensions by one or more involved parties. Two coders evaluated all 47 family interactions. Coding agreement between the two evaluators was within acceptable bounds ($\kappa = .64$). All coding discrepancies were resolved by conference.

(b) Active Co-Action during Part 3: In their 2005 report, Fivaz-Depeursinge and colleagues noted that in some families who navigated the LTP successfully, parents developed a rhythm of engaging the baby jointly, striking upon a common game or activity and providing synchronized stimulation for the baby. Such stimulation included singing songs together, providing uniform touch to or stimulation of the baby's arms or legs (swinging, caressing),

and similar coordinated activities. In adapting McHale et al.'s (2000) Coparenting and Family Rating System (CFRS) for use with families of 3-month-olds, Carleton, Rotman, and McHale (1999) had also independently discovered similar sets of activities. They defined a construct they called "active coaction" to capture simultaneous and synchronized auditory, tactile, or synesthetic stimulation of the infant by the two parents shown in a coordinated, rather than discordant, manner. Trained coders in the first author's laboratory, working independently from the Lausanne team, rated presence or absence of active coaction in 5-second interval blocks for the same 47 randomly selected families (range = 0–11; $M = 2.30$). Two coders evaluated all 47 family interactions. Coding agreement between the two evaluators was acceptable (intraclass correlation = .79). All coding discrepancies were resolved by conference.

Coparenting Cohesion, Conflict, and Risk: Additional Interaction and Narrative Data:

Coparenting Conflict and Cohesion: Besides the rather specialized, theoretically relevant LTP indicators, we also assessed 3-month coparenting conflict and coparental cohesion more comprehensively. We created overall indicators of observed coparental conflict and observed coparental cohesion using process data from each of the 3 three-person interactions (LTP, Still-Face, and Who Does What procedures) outlined above. Separate teams of blind, trained coders (graduate, postdoctoral, and early career professionals trained in family theory and therapy), working independently from one another, evaluated videotaped records of these assessments. For each of the three assessments, coders drew on verbal and nonverbal behavior shown by the adults during the assessment to generate scores reflecting degree of coparental collaboration, warmth, opposition, and negative affect.

The LTP and Still Face procedures were each assessed using modified 5-point ratings (ranging from low to high) adapted from pertinent CFRS scales; these included cooperation and warmth (used for the cohesion index) and competition and verbal sparring (used for the conflict index). Extensive descriptions of these scales can be found in McHale et al. (2000). Briefly, cooperation ratings captured the parents' propensity to work together as a team, actively respecting and supporting one another's initiatives and activities with the child. Warmth scores reflected the parents' affect toward one another, typically expressed facially or verbally. Competition took the form of nonverbal behavior by one or both parents that deflected the infant's attention away from the other parent (orienting the child toward oneself and away from the partner in Parts 3 and 4 of the LTP or during the Still Face reunion, interrupting a game the child appeared to be enjoying with the other parent or intentionally drawing the baby's attention from the partner and to the self). Verbal sparring was an index of the frequency of sarcastic and disqualifying comments parents directed toward one another during the flow of interaction with the baby. Descriptive data for these variables are presented in Table 1.

For the Who Does What, relevant scales coded on a scale from 0—none to 3—high (Elliston et al., 2008) included positive affect and collaboration between coparents (used for the cohesion index), and negative affect between coparents and individual defensiveness (used for the conflict index). Briefly, positive affect was an index of pleasantness and positive task orientation of the discussion. Collaboration described the extent to which the adults stayed engaged and worked productively to understand and resolve points of difference. Negative affect was an index of partners' exhibition of overt irritability or annoyance. Defensiveness (rated for each partner individually) denoted parental responses to perceived criticisms from the partner by issuing denials, by making pre-emptive remarks after an initial criticism, and/or by responding to an apparent difference in perspective with a counterattack. Descriptive data for each of these indicators can also be found in Table 1.

Interrater reliabilities (intraclass correlations) for all indicators were acceptable, ranging from .68 to .85. The relevant scores were standardized (converted to z-scores) and then summed

together to form the omnibus conflict and cohesion indices; full details on the construction of the omnibus conflict and cohesion measures can be found in McHale and Rotman (2007).

Coparental Risk: Narrative Assessment: We also, for the first time, employed a narrative-based assessment to assess coparental risk, augmenting the triadic interaction data. The estimate of coparenting risk drew on content and process data from Oppenheim et al.'s (1996) semistructured Birth Story Interview. During this brief interview, which took approximately 15 minutes to complete, the couple was asked to jointly share the story of their child's birth, as if telling it to a close friend or relative. The couple then described how they felt when they first saw the child; and how their experiences with the birth process may have affected their relationship with the child. Birth Story Interviews were evaluated by a single criterion rater (the third author) who was a participant in developing the Family Narrative Consortium Coding System (FNC; Fiese et al., 1999) for interview-based narratives pertaining to family themes. Interviews were rated for signs of risk that the couple may develop later husband-wife, parenting-related relationship problems using the Psychological Impairment Rating Scale-Couple Functioning (Co-PIRS; Dickstein & Seifer, 1998; Baldwin et al., 1993).

Modified from a Child-PIRS measure with excellent internal consistency, interrater reliability, and validity with respect to behavioral competence, the Co-PIRS yields global assessments of couple functioning relevant to social-emotional competence within the relationship. Co-PIRS items are rated on 5-point scales from "lowest" to "highest" risk; in higher-risk families, couples' perspectives are separate and unrelated, with one or both partners restrictive of the other's opinion, overinvolved, and/or prone to dismiss the partner and his/her ideas as inferior and unimportant. The two Co-PIRS scores of principal conceptual interest (husband-wife and parenting-related risk) were highly intercorrelated ($r = .76, p < .001$), and so were summed to form a summary index of coparenting risk (Table 1). We took care to ensure that birth narrative evaluations would be independent from other family measures. The third author did not administer any of the Birth Narrative Interviews (and so did not have access to potentially confounding peripheral information such as the family's resources, overall family functioning, or economic status), nor did she conduct or code any other study protocol.

RESULTS

Results are presented in three sections, paralleling the research questions posed earlier.

Consistency of Triangular Capacity Across the Two Triadic Interaction Procedures

Infants' triangular capacities during the LTP and Still-Face procedures, as signified by a greater number of multishift gaze transitions between the coparenting adults throughout the course of each assessment, were significantly intercorrelated. Babies who exhibited a greater propensity for multigaze shifts during the LTP showed a substantially similar propensity during the more stressful Still-Face procedure ($r = .57, p < .001$).

Triangular Capacity and Coparenting and Family Adaptation During Part 3 of the LTP

In families where babies showed a more advanced triangular capacity during the course of the LTP assessment, the family displayed a more adaptive and coordinated family alliance ($r = .31, p < .05$) and the coparents more frequently undertook coordinated bouts of active coaction with one another and the baby during LTP Part 3 ($r = .33, p < .05$). In regression analyses, the two Part 3 process variables collectively explained a statistically significant 12% of the variance in the infant eye gaze measure.

Notably, we also found that more advanced triangular capacities *revealed during the Still-Face procedure* showed the same significant connections with more adaptive family alliance patterns

($r = .32, p < .05$) and with more active coaction ($r = .34, p < .05$) displayed during Part 3 of the LTP. Regression analyses indicated that the two LTP process variables explained a statistically significant 11% of the variance in the Still-Face eye gaze measure. In other words, evidence from this study indicated that 3-month-olds' triangular capacities are not simply tied to the interpersonal dynamics of the specific context in which they are revealed. The conceptually meaningful LTP coparenting and family alliance indicators were *also* associated with triangular capacities that were revealed through infants' eye gaze patterns during an unrelated assessment, the new Still-Face procedure.

Triangular Capacities and Coparenting Cohesion, Conflict, and Risk

Were there any indications that the eye gaze indicators of triangular capacity showed meaningful connections with interactive or narrative measures of coparental adjustment gleaned from assessments beyond the LTP? Here, data were a bit less striking than the findings reported above—but nonetheless noteworthy and in the anticipated direction. First, regression analyses indicated that infants' multishift gaze patterns revealed during the Still-Face procedure were significantly associated with the omnibus index of observed coparental cohesion ($B = .25, t = 5.62, p < .05$). That is, in families where babies were more likely to show extended, coordinated gaze shifts from one parent to the other during the Still-Face challenge, their mothers and fathers had demonstrated more positive and cooperative interpersonal engagement and coordination while coparenting together in the LTP, Still-Face, and Who Does What tasks. A statistically significant 6% of the variance was accounted for by the coparenting cohesion measure. Neither the omnibus index of observed coparental conflict ($B = .04, t = 0.32, ns$) nor the narrative-based index of coparental risk ($B = .00, t = -0.03, ns$) accounted for significant variance in Still-Face eye gaze patterns.

Turning to infants' multishift gaze patterns during the LTP, regression analyses revealed a significant contribution of the narrative-based coparental risk measure ($B = -.21, t = -1.98, p < .05$). Specifically, in families where infants showed fewer multi-shift gaze transitions between their parents during LTP enactments, their parents had educated clinicians' concerns about their capacity to work collaboratively and/or to portray their experiences of the baby compatibly as they detailed the baby's birth and early days of life. A statistically significant 4% of the variance was accounted for by the coparenting risk index. Neither the omnibus index of observed coparental conflict ($B = -.15, t = -1.24, ns$) nor the omnibus index of observed coparental cohesion ($B = .09, t = 0.80, ns$) explained significant variance in LTP eye gaze patterns.

DISCUSSION

Our aims in this study were to establish the extent to which early patterns of coordinated infant eye gaze, as indicators of babies' early-emerging triangular capacities, can be linked to concurrent individual and family adaptation as early as 3 months postpartum. Building upon the ground-breaking work of researchers at the Centre d'Etude de la Famille in Lausanne, Switzerland, we sought to confirm in an independent laboratory the reliability and consistency of these extraordinary triangular capacities, and to establish for the first time whether they can be linked to measures of adaptation beyond the interaction paradigm in which they were discovered. Overall, findings from this investigation advance the existing knowledge base on triangular capacities in several meaningful ways.

First, our data provide the first evidence that infants' coordinated eye gaze patterns are not simply epiphenomena of the LTP paradigm itself. Infants who demonstrated more frequent multistep gaze shifts during the LTP also did so during the more stressful Still-Face procedure. Second, our findings substantiated and extended findings previously linking family coordination exhibited during the LTP to infants' emergent triangular capacities as assessed

in the LTP. We found that both the adaptiveness of family alliances and active coaction between coparents during LTP Part 3 were associated with infants' triangular capacities, not just within the LTP itself but also within the Still-Face procedure. And finally, we found preliminary evidence that there are also meaningful linkages with family dynamics that transcend the LTP assessment procedure. That is, multishift gaze transitions were associated not only with coparenting and family alliance data obtained within the LTP setting, but also with an omnibus indicator of coparenting cohesion based on process data from three separate coparenting assessments, and with an indicator of coparenting risk obtained from a narrative assessment of coparental coordination based on both process and content data. These findings were consistent with our hypotheses that advanced triangular capacities may best be cultivated in families where there is better-developed coordination between the child's coparents.

In posing this possibility, we certainly do not wish to argue causal influence; infants' triangular capacities may be viewed as an asset helping to promote coparental coordination and reduce coparental risk as much as a reaction to better coordination between adults in their coparental alliance. Indeed, infants' triangular behavior may serve as a means of recruiting and sustaining coparental engagement and thereby helping to solidify coparental and family cohesion. Kaye (1982) has contended that early parent-infant interactions are largely unilateral and not truly reciprocal, as adults assume responsibility for enacting reciprocity for their infant as necessary. A similar point was made by Selby and Bradley (2003). Studying infants' relational capacities when playing in infant triads, they argued that the best way to truly demonstrate babies' relational capacities (akin to what we have called triangular capacity) is with infant rather than adult partners to control for power imbalances between adults and babies. Their work documented robust relational capacities in 6–9-month-olds.

There are a variety of different ways to frame and address the issue of influence, of course. To pursue causal relations in the flow of triadic interaction data itself would require, as Fivaz-Depeursinge and colleagues (2005) point out, the development and implementation of advanced analyses treating more than two time-series at once (e.g., Bakeman & Gottman, 1986). But from a systems perspective, excising an externally observable incident or moment in time from the ongoing flow of family interaction and imbuing that "starting point" with "causal" power is always an arbitrary choice made by researchers. Taking a broader view, individual, dyadic, and triadic processes within families are always dynamically interconnected and evolve in tandem, even if the trajectory of one family subsystem assumes a different path than that of another. The dynamic contributions that young babies make to the evolving family process via capacities such as their propensity to recruit or exclude partners through the sharing of attention and affect has been overlooked in most studies of coparenting and early family group process (c.f. McHale, Kavanaugh & Berkman, 2003; McHale, Kuersten-Hogan & Rao, 2004) and represents a bold new direction for this emerging field.

To the extent that findings from this study prove replicable, reliable phenomena, how might they alter our current understanding of infant and family development? Most essentially, the infant and young child's sociability is likely to be furthered when triangular capacity works better, an important working hypothesis to pursue in future prospective studies. Moreover, to the extent that triangular capacities are more mature in families with stronger coparenting and family alliances, there are important implications for infant mental health theory and practice given that most interventions with families of infants target mother-infant relationships, ignoring both fathers and cocaregiver solidarity and coordination (McHale, 2007a). Relatedly, we anticipate that children's theory of mind would be promoted both by better triangular capacities and by greater coparental solidarity. Infants who from very early in life were enabled to monitor their parents' relationship and to be party to dynamics of warmth and animation between the adults are far more likely to excel at understanding relationships than those who defensively disengage to protect themselves from parental competition and conflict. In short,

these data may indicate that infants begin in the earliest months of life to grasp relationships and to exercise group sociability.

Matters will not always be completely straightforward, of course. In recent work, Fivaz and colleagues have noted some interesting exceptions in families they characterize as showing problematic alliances. In case studies, they have detected what they call “coalitions of two against one.” Studying these individual cases intensively, they traced individual trajectories of families and infants from the prenatal period to child age 18 months and found that infants’ triangular capacities were progressively enlisted to serve the parents’ problematic relationship rather than the child’s own social development. In one “triangulating” family (Fivaz-Depeursinge & Favez, 2006), an infant caught between two competing parents progressively gave up on making triangular bids. In another role-reversing family, the child actually amplified his triangular capacities to help pacify the parents’ relationship (Fivaz-Depeursinge, Frascarolo, Lopes, Dimitrova, & Favez, 2007). Likewise, hypervigilance, often shown by infants of psychotic parents, can be manifested by flurries of triangular bids. Hence, it is important to acknowledge that large-scale studies such as the one provided here can only afford general insights; trajectories of specific infant and family cases always need to be understood individually.

While we believe these to be exciting findings, we wish to acknowledge constraints inherent in field assessments. First, as home assessments afford none of the luxuries of standardization that laboratory assessments do, there was a great deal of nonsystematic error and noise in the observational data we had to work with. It is, indeed, quite remarkable that the systematic pattern of associations presented here surfaced given the wide range of home environments and intrusions, variable video quality, and other unmeasured sources of error that colored the gaze and family interaction data. Controlled laboratory assessments will almost certainly enhance the quality of data required to make the strongest case for infant-family associations, and we are confident given the nature of the findings from this investigation that there is great value in pursuing such work.

Perhaps relatedly, findings presented here provide only a beginning case that there may be connections between infants’ early emerging capacities and family-level dynamics beyond the LTP paradigm itself. Coparental cohesion was associated with multishift gaze transitions only during the Still-Face paradigm, not the LTP, while the measure of coparenting risk based on the narrative assessment was associated only with multishift gaze transitions during the LTP, not during the Still-Face. This said, in that these findings are the first to establish associations between infants’ early triangular capacities and coparenting and family processes beyond the LTP assessment paradigm itself, we believe these to be the seeds of what promises to be a very fertile area for subsequent study.

In summary, with the limitations of our data in mind, findings extend the current evidentiary base not just for infants’ early triangular capacities but also for close interplay between development of these capacities and coordination of the baby’s coparents. Patterning of data in this study underscores the importance of family development during the earliest months of the baby’s life, and suggests a number of theoretically compelling directions for subsequent work in this evolving field. We suspect that concentrated attention on infants’ early social competencies will only help to clarify the young infant’s role in important family system dynamics, and advance Stern’s (2004) case that intersubjectivity is a basic motivational system.

Implications for Practice

Though family clinicians concur that children are never too young to take part in family therapies, in practice the young infant’s presence during sessions is frequently overlooked as direct work is charted with adults and older children. This is certainly not the case in dyadically

based mother-infant therapies, where an explicit focus is on promoting maternal attunement and sensitive responding to infant signals. But in work with couples or other coparents, the young infants' dawning capacities for social engagement with multiple parenting adults are seldom an explicit focus of the evolving therapeutic process. In part this circumstance has owed to the absence of a relevant means for systematically assessing trilogue communication—though the introduction of the LTP paradigm has now removed this obstacle. The other impediment to taking a true triangular stance with families of very young infants has undoubtedly owed to an underestimation of infants' interactive capacities. Evidence provided here and in related new studies can embolden practitioners to consider inclusion of babies in therapeutic enactments, drawing attention to their patterns of attention and their role in ongoing family trilogues.

Though the study presented here employed a specially designed seat to support infants' efforts in making triangular bids, this device was used to help researchers clearly document the phenomenon. Clinicians need not be concerned with securing such a contrivance as the eye gaze phenomenon is observable under ordinary conditions. Practitioners interested in incorporating triangular stances into their work with families have a number of available options. First, as empirical studies that employ the LTP and other observational means of evaluating coparenting dynamics continue to multiply, many clinical researchers stand in a position to offer systems consultations (Wynne, McDaniel, & Weber, 1986) to family therapists not sufficiently versed in infancy. Second, with video equipment now a staple and standard of practice in infancy work, infant mental health practitioners can themselves introduce the LTP and free family play in their standard assessments, using more simple video equipment than required for clinical research (for a field example, see Fivaz-Depeursinge, Corboz-Warnery, & Keren, 2004). The power of video-feedback has been known for decades in infant mental health work as well as in family therapy. Judicious use of videotaped playback of segments of the family interaction is best to highlight infant behavior, query adult reactions, and frame family themes, ideally in combination with interaction guidance (e.g., McDonough, 1995). Failing this use of video replay of prior session segments, couples' responses during and reactions to trilogue enactments might be used to launch discussions of infant capacities, needs, and proclivities, and of mutual engagement, cooperation, conflict, and withdrawal in the family triad.

Recent years have witnessed heightened sensitivity to the central significance of early-emerging coparenting and family group dynamics; the next frontier is establishing sensible practices for helping enlist babies as full partners in therapeutic work with young families.

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FIGURE 1.
An infant rapidly shifts attention from one parent to the other, and back again.

TABLE 1
Descriptive Data

	Descriptive data		
	Mean	Standard deviation	Range
Infant gaze—LTP			
Single shifts	6.04	5.00	0–25
Multiple shifts	3.05	4.37	0–27
Infant gaze—still-face			
Single shifts	5.39	4.41	0–16
Multiple shifts	2.53	4.03	0–22
Observational indices: coparenting/family			
LTP Part 3 indicators			
Total alliance score	37.93	12.30	0–52
Active coaction	2.30	2.62	0–11
Variables used to create cohesion composite			
LTP: cooperation	3.56	0.82	2–5
LTP: warmth	3.47	0.97	1–5
Still-face: cooperation	2.66	1.11	1–5
Still-face: warmth	2.40	1.06	1–5
WDW: positive affect	1.92	0.97	0–3
WDW: collaboration	2.24	0.97	0–3
Variables used to form conflict composite			
LTP: competition	2.08	0.89	1–5
LTP: verbal sparring	1.95	0.98	1–5
Still-face: competition	1.57	0.94	1–5
Still-face: verbal sparring	1.20	0.77	1–5
WDW: negative affect	0.51	0.84	0–3
WDW: defensiveness mother	0.65	0.89	0–3
WDW: defensiveness father	0.59	0.95	0–3
Narrative index: coparenting risk	4.84	1.74	2–9