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**SOCIO-EMOTIONAL DEVELOPMENT WITHIN THE  
FAMILY SYSTEM: TRENDS AND OUTCOMES FROM BIRTH  
TO THE PRESCHOOL AGE**

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## ABSTRACT

Recently a growing interest has been devoted to the study of the development of early triadic interactive competencies and to the definition and validation of triadic observational paradigms (Nadel, & Tremblay-Leveau, 1999; Tremblay-Leveau, 1999). Among these, the theoretical and methodological framework provided by Fivaz-Depeursinge and Corboz-Warnery (1999) in the study of the quality of family interactions seems to give the chance for a new view on these issues by moving the focus of the research towards the triadic (mother-father-child) interactive system as the main object of investigation. Family interactions is thus considered as a primary developmental context for child socio-emotional development as well as a privileged unit of observation of parenting skills. Taking a theoretical and methodological triadic and systemic approach to the study of mother-father-child interactive competences during infancy and the preschool age draws interest to the role of individual, dyadic and contextual-relational factors that might influence their developmental trajectories. In this perspective the aims of the research were: a) to analyze the development of triadic interactions within the family system from infant's first months of life to the preschool age; b) to investigate the relationship between individual characteristics of parents and the child (gender, parents' affective-relational history and mothers' postnatal depressive symptoms), contextual sources of stress and support (the quality of the marital and coparental relationship, the degree of father involvement) and the development of socio-emotional competencies expressed during triadic mother-father-child interactions and children's outcomes at the preschool age.

31 non-referred primiparous families participated in the study and were recruited at child-birth classes. All the families have been seen during pregnancy, at the 4<sup>th</sup>, 9<sup>th</sup>, 12<sup>th</sup> and at the preschool age. Measures included: self-report (Dyadic Adjustment Scale, Questionnaire on Father Involvement, Edinburgh Postnatal Depression Scale) and parents' report (Symptom Checklist modified) questionnaires, interviews (Adult Attachment Interview) and observational procedures (Prenatal and Postnatal Lausanne Trilogue Play).

Results showed a partial stability of the quality of family triadic interactions from pregnancy to the child's preschool age: indeed only the overall quality of triadic interactions assessed at the baby's 9<sup>th</sup> month of life correlates significantly with that assessed at the child's preschool age. Moreover, a significant increase in the quality of

mother-father-child interactions during this period was observed. Triadic interactive competences at the preschool age were predicted by the degree of father involvement at the infant's 4 months and mothers' inferred experiences of involvement and preoccupation for their parents' well-being during childhood, both exerting a positive effect on the later quality of mother-father-child interactions. Finally fathers' perception of marital adjustment was found significantly associated to children's sleeping difficulties, mothers' and fathers' marital adjustment and father involvement were found significantly and negatively related to children's regulation problems whereas mothers' experiences of neglect during childhood were positively associated with children's outcomes in this area. Moreover, marital adjustment reported by mother at the infant's 4 and 12 months and mothers' experiences of neglect during childhood were found predictive of children's behavioural problems at the preschool age.

Summarizing these data, different pathways of family interactive and socio-emotional skills can be observed from baby's birth to the child's preschool age: while during the first year of infant's life, the overall and specific dimensions of the quality of triadic interactions show no stability and, at the same time a significant discontinuity between the 4<sup>th</sup> and the 9<sup>th</sup> month, the succeeding period presents an higher stability and continuity in the family triadic competences. These results seem to stress the importance of early interactions, in this case within the mother-father-child triad, in shaping later interactions and relationships as well as the possibility to look at the first year of the baby's life as a developmental window for the family interactive system, during which family triads can significantly improve their interactive competences. Strong cross-sectional and longitudinal association have been also revealed between the overall quality of triadic competencies and the degree of father involvement: these observations seem to provide a first evidence of the close relationship between the two constructs during early childhood and their mutual interdependence in fostering a relational context functional to the well-being and the development of the child. Moreover, mothers' early experiences of involvement and preoccupation for their parents well-being seem to foster later quality of family interactions. On the other hand, children's psycho-functional outcomes at the preschool age seem to be predicted mainly by marital adjustment, father involvement and mothers' experiences of neglect: the first two, predicting more favourable outcomes for children, the latter exerting a negative influence on children's regulation and behavioural problems.



## RIASSUNTO

Recentemente si è assistito ad un interesse crescente verso lo studio dello sviluppo delle competenze interattive precoci manifestate dal bambino in contesti interattivi che prevedevano la compresenza di due partner interattivi che ha portato alla definizione e validazione di paradigmi osservativi triadici (Nadel, Tremblay-Leveau, 1999; Tremblay-Leveau, 1999). Tra questi, la cornice teorica e metodologica proposta da Fivaz-Depeursinge and Corboz-Warnery (1999) per lo studio della qualità delle interazioni familiari sembra poter fornire una nuova prospettiva spostando il focus della ricerca verso il sistema interattivo triadico costituito dalla triade madre-padre-bambino, considerate come oggetto di indagine privilegiato. Le interazioni familiari sono quindi considerate come un contesto evolutivo primario per lo sviluppo socio-emotivo del bambino e un'unità di osservazione privilegiata delle competenze genitoriali. L'assunzione di una prospettiva teorica e metodologica di tipo triadico-sistemico nello studio delle competenze interattive del sistema madre-padre-bambino nel corso dell'infanzia e dell'età prescolare promuove l'interesse verso il ruolo di fattori individuali, relazionali e contestuali che ne possono influenzare le traiettorie evolutive.

In questa prospettiva gli obiettivi dello studio sono stati di: a) analizzare lo sviluppo delle interazioni triadiche familiari nel periodo che va dai primi mesi di vita del bambino all'età prescolare; b) di analizzare la relazione tra caratteristiche individuali dei genitori (in particolare la storia affettivo-relazionale e la presenza nelle madri di sintomatologia depressiva nel periodo postnatale) e del bambino (il genere), e fonti di stress o supporto per il sistema famiglia (la qualità della relazione coniugale e cogenitoriale e il coinvolgimento paterno nella cura del bambino) sullo sviluppo delle competenze interattive triadiche e gli esiti psicofunzionali del bambino in età prescolare.

Alla ricerca hanno partecipato 31 famiglie appartenenti ad una popolazione non clinica, reclutati presso i corsi di preparazione al parto. Lo studio ha previsto un disegno longitudinale in 5 tappe per cui tutte le famiglie sono state incontrate al 7° mese di gravidanza, al 4°, 9° e 12° mese di vita del bambino e durante l'età prescolare (3-4 anni del bambino). Gli strumenti utilizzati includono: questionari self-report (Dyadic Adjustment Scale, Questionario sul Coinvolgimento Paterno, Edinburgh Postnatal Depression Scale) e parents' report (Symptom Checklist adattata), interviste (Adult Attachment Interview) e

procedure osservative (Lausanne Trilogue Play Prenatale e Postnatale).

I risultati hanno evidenziato: a) una parziale stabilità delle competenze interattive triadiche familiari dalla gravidanza all'età prescolare: infatti solo la qualità globale delle interazioni triadiche al 9° mese del bambino è risultata correlare significativamente e positivamente con quella valutata in età prescolare. Inoltre si è rilevato un incremento significativo della qualità delle interazioni madre-padre-bambino tra il 4° e il 9° mese e una progressiva stabilizzazione tra il 9° mese e l'età prescolare che coinvolge la maggior parte delle sottostanti competenze considerate nel sistema di codifica del LTP. b) I fattori risultati predittivi delle competenze interattive triadiche osservate in età prescolare sono il coinvolgimento paterno al 4° mese del bambino e le esperienze di coinvolgimento e preoccupazione per il benessere dei propri genitori nell'infanzia riportato dalle madri: entrambi questi fattori sono risultati associati in modo positivo alla successiva qualità delle interazioni madre-padre-bambino. c) Per quanto riguarda gli esiti psicofunzionali del bambino in età prescolare, la qualità della relazione di coppia percepita dai padri è risultata negativamente associata alla difficoltà dei bambini nell'addormentamento; anche per quanto riguarda le difficoltà nella regolazione, si sono rilevate associazioni significative negative con l'adattamento coniugale percepito dai genitori nel tempo e il coinvolgimento paterno al 9° mese e positive con le esperienze di neglect nella relazione con i genitori nell'infanzia riportati dalle madri. Infine, l'adattamento coniugale riportato dalle madri al 4° e 12° mese del bambino e le esperienze di neglect nella relazione con i genitori nell'infanzia riportati dalle madri sono risultati predittivi dei problemi comportamentali dei bambini nella tappa prescolare. In sintesi quindi si sono rilevati percorsi evolutivi differenti delle competenze socio-emotive ed interattive familiari nel periodo che va dai primi mesi di vita del bambino all'età prescolare: in particolare, mentre nel primo anno di vita del bambino la qualità complessiva delle interazioni familiari e le sue sottostanti e specifiche competenze sembrano caratterizzate da instabilità e da una significativa discontinuità tra il 4° e il 9° mese, il periodo successivo, dal 9° mese all'età prescolare presenta invece una maggiore stabilità e continuità di tali competenze. In linea con le ricerche condotte secondo paradigmi diadici, questi risultati sembrano sottolineare l'importanza delle interazioni precoci, in questo caso quelle co-costruite dalla triade madre-padre-bambino, nel formare le interazioni e relazioni successive e parallelamente, sembrano evidenziare la possibilità di guardare al primo anno del bambino come una finestra evolutiva per il sistema interattivo

familiare, durante il quale la triade familiare può migliorare ed aumentare le proprie competenze interattive secondo un percorso non deterministico. Le significative associazioni trasversali e longitudinali tra il coinvolgimento paterno e le competenze interattive triadiche sembrano confermare la stretta relazione tra questi due aspetti durante la prima infanzia e la loro reciproca interdipendenza nel promuovere un contesto relazionale funzionale al benessere e allo sviluppo del bambino. Inoltre le precoci esperienze di coinvolgimento e preoccupazione per il benessere delle figure di attaccamento riportate dalle madri sono risultate a loro volta favorire la qualità degli scambi interattivi triadici osservati all'età prescolare del bambino. Viceversa, non si sono rilevate associazioni significative tra la qualità delle interazioni familiari e gli esiti psicofunzionali del bambino, che sembrano essere influenzati principalmente dall'adattamento coniugale, dal coinvolgimento paterno e dalle esperienze materne di neglect: i primi due sembrano predire esiti evolutivi più favorevoli mentre il terzo aspetto sembra esercitare un effetto negativo in particolare sulle difficoltà di regolazione e i problemi comportamentali del bambino in età prescolare.



## INTRODUCTION

The affirmation of the systemic perspective in developmental psychology and developmental psychopathology research contributed to highlight the critical role of the mother-father-child system in facilitating or complicating children's developmental and psycho-functional outcomes (Sameroff, McDonough, & Rosenblum, 2006; Fivaz-Depursinge & Corboz, Warnery, 1999)

Numerous studies helped to confirm the fundamental role of the quality of early infant-caregiver affective exchanges in promoting child's socio-emotional development and adjustment in the short and medium term (see Lavelli, 2007 for a review). Most of these researches were, at least at the beginning, based on dyadic paradigm which considered the infant-caregiver dyad and their interaction as one of the primary relational matrix for child development and the infant-mother interactions as the privileged unit of observation and study. Studies in this field contributed to spread and affirm the idea that the infant can be an early active partner in the co-construction of emotional exchanges with the caregiver thanks to the presence of several pre-adaptation to social interaction and to an intrinsic and primary motivation toward the construction of social bonds. On the other hand many researchers analysed and defined some of the mechanisms that rule infant-caregiver interaction, stressing the centrality of the dialectic process between self-regulation and interactive regulation (Beebe & Lachmann, 2002; Sander, 2007) which would allow both partners to co-construct and organize the communicative exchange and to share affective states and emotions.

Since the 80s an increasing interest was devoted to the study of more complex interactive contexts focusing on the analysis of characteristics and developmental trajectories of infant's early competences in the interaction with his caregiver in relation to an external object or event (Klennert, Campos, Sorce, Emde, & Svedja, 1983; Klennert, Emde, Butterfield, & Campos, 1986; Striano, Stahl, Cleveland, & Hoehl, 2007 ) or with two other persons (Fivaz-Depeursinge & Corboz-Warnery, 1999; Nadel & Tremblay-Leveau, 1999; Tremblay-Leveau & Nadel, 1996).

Both these research areas contributed to confirm the infants' early triadic and triangular competences observable since the firsts months of life both in person-person-object Interaction than in person-person-person context: these data seem to testify on the one

hand, “infants’ social embeddedness” (McHale, Fivaz-Depeursinge, Dickstein, Robertson, & Daley, 2008) and their primary motivation to social interaction, on the other hand these early social competence might be the possible precursors for later social referencing (Dickstein & Parke, 1988) and the development of secondary intersubjectivity which take place at about 9 months.

Within this perspective, the theoretical and methodological framework provided by Fivaz-Depeursinge and Corboz-Warnery (1999) in the study of the quality of family interactions seems to give the chance for a new view on these issues by moving the focus of the research towards the triadic (mother-father-child) interactive system as the main object of investigation. Family interactions is thus considered as a primary developmental context for child socio-emotional development as well as a privileged unit of observation of parenting skills. The daily interactions that the child experiences within the family system and the emotional bonds that builds with his caregivers from birth are thus considered as a potential predictor of subsequent emotional-relational skills as well as of child’s socialization within more complex relational contexts.

Taking a systemic and contextual perspective in the study of child development within the family system, notes, however, the need to consider the different levels of complexity representing the dialectic relationship between the child and his family environment (McHale & Cowan, 1996): in this sense, research in this area certainly needs further studies to investigate the role played by individual characteristics of the child and the parents, relational subsystem and other contextual sources of stress and support (Belsky, 1984), as well as the direct and indirect relationships between individual, dyadic and family level variables (McHale & Fivaz-Depeursinge, 1999).

Given the significant implications related to an early identification and definition of protective and risk factors associated with the development of functional interactive competences and the experiences of positive and affective exchanges within the mother-father-child triad for child development and adjustment, within a systemic and triadic theoretical and methodological approach to the study of child development and social interactions (Fivaz-Depeursinge & Corboz-Warnery, 1999), the research here presented is to provide an original contribution to the study of the development of mother-father-child interactive competences from infant's early months of life to the preschool age. Moreover, by a multi-factor and multidimensional approach, the research purpose is to investigate the

nature of the relationship between: a) individual characteristics of parents (affective-relational history, maternal postnatal depressive symptoms) and the child (namely child gender); b) relational and contextual sources of stress and support (the quality and trajectories of the marital relationship and the degree of father involvement) c) and the quality of co-parental interactions on the development of family interactive and emotional competences expressed during triadic mother-father-child interactions and on children's psycho-functional outcomes at the preschool age.

The first chapter will present a critical review of the theoretical and methodological background of the Lausanne Trilogue Play approach: thus the first part of the chapter will deal with the literature on the study of early interactions between the child and his/her caregiver and its connections with socio-emotional and affective development: in particular, focusing: - on the results from Infant Research studies and the main research paradigms used in this context; - on the comparison between dyadic and triadic observational paradigms that in the last two decades have given new impetus to the research in this area. Then the systemic perspective on the study of the birth of the family and of its developmental trajectories will be discussed in order to introduce Fivaz-Depeursinge and the Lausanne group approach to the study of mother-father-child interactions.

The second chapter will describe in depth the Lausanne Trilogue Play (LTP) paradigm proposed by Fivaz-Depeursinge and Corboz-Warnery (1999) for assessing the quality of triadic family interactive competences summarizing its theoretical and methodological background and highlighting influences and differences between LTP and other dyadic and triadic observational paradigms; - the use of LTP in national and international researches, their main findings, the connections and implications for the understanding of child's socio-emotional development and its application areas.

The third chapter will be devoted to the definition and description of those factors that can be potentially associated to the development of child-caregivers interactions during early childhood and the preschool age of the child in order to support the validity of using a systemic approach to the study of socio-emotional and affective-relational development, centered on the analysis of families interactive competencies as one of the primary relational matrix for the subsequent development and adjustment of the child.

Specifically a review will be carried out about the role of individual factors related to individual characteristics of the parents and the child (parents affective-relational history, maternal depressive symptoms during the postnatal period, child's gender) and relational and contextual factors (quality of the marital and co-parental relationship, father involvement,) on the development of triadic interactive competencies and children's outcomes.

The fourth chapter will focus on the description of the research plan: in particular aims and hypothesis of the study; the design of the research; the methodology, e.g. participants; - procedure; - measures and coding.

The fifth chapter will regard the description of results, focusing on a) preliminary analysis performed in order to assess reliability and internal consistency of specific measures; b) findings about the aims described in chapter 4.

Finally, the sixth chapter will be devoted to the discussion of the results obtained in relation to the research hypothesis and the literature in this field. I will also discuss limitations and strengths of the study, trying to outline the possible implications for its application and some perspectives for future researches.



## **Theoretical and methodological background**



## CHAPTER 1

### **SOCIO-EMOTIONAL DEVELOPMENT DURING INFANCY AND EARLY CHILDHOOD: THE ROLE OF INFANT-CAREGIVER INTERACTION WITHIN THE DEVELOPING FAMILY SYSTEM**

The recognition of the importance of the interactions and the relationships that, from birth, the child experiences and builds with significant adults (particularly his/her parents), on the development of social, emotional and affective skills, as well as the recognition of the infant's early pre-adaptations and competences for social interaction, are now basic assumptions for those who work both in research and in the clinical field, adopting a systemic-relational perspective in the study of functional and at risk developmental pathways (Beebe & Lachmann, 2002; Sameroff, McDonough, & Rosenblum, 2006).

The following paragraphs will focus on the contributions of *Infant Research* to the study of early infant-caregiver interactions and child's socio-emotional development within the developing family system: the emergence of the systems perspective to the study of human development has not only provided a large amount of empirical data about children's early adaptive and at risk outcomes in their life contexts but also inspired the development of new theoretical and methodological approaches to the investigation of triadic interactions within the family system.

#### **1. The Developmental Psychology perspective: dyadic models and paradigms**

##### **1.1. The contribution of *Infant Research* to the study of infant-caregiver interactions**

Historically the study of the characteristics of early interactions between the child and the caregiver developed from the '60s mainly in the field known as the *Infant Research*. This theoretical and research perspective is considered by most as being responsible for a radical change in the view of infant socio-emotional development and in providing new methods to investigate this topic. From a theoretical point of view this research

tradition produced a shift of the interest toward the centrality of early interactions, considered as the basis of individual socio-emotional development and contributed to highlight the central role of the child in the co-construction of interactive exchanges with his/her caregiver (Beebe & Lachmann, 2002; Sander, 2007) .

This innovation, in fact, fostered the emergence of observational measures and paradigms useful to the empirical analysis of the quality and characteristics of infant-caregiver interactions and communicative exchange based on the assumption that the infant-caregiver dyad was the primary relational matrix for later social and emotional development. The introduction of increasingly more accurate and complex techniques of observation and video-recording allowed the micro-analysis of experimental sessions (see Lavelli, 2007, for a review) and consequently permitted improved analysis and understanding of the nuances and variations that characterize the interactive exchange between the infant and his partner during the interaction.

The large body of research (Beebe & Lachmann, 2002; Fogel, 1993; Lavelli, 2007; Sander, 2007; Tronick, 1989, 1998) conducted in this field was then mainly based on the observation of infant-caregiver interaction and affective exchange.

Since the 60s, many studies have been carried out from this perspective, and many authors have contributed to the understanding and the further definition of the mechanisms that rule affective communication and the interactions between the child and his partner.

One of the first authors who introduced the systems perspective in *Infant Research* was Louis Sander (1977, 1985, 1995, 2007). Since the '70s his research work and his theoretical reflection have been characterized by a constant redefinition and integration of research data in a more general and complex model of interactions between the child and his environment. Sander's work has greatly helped to support a concept of human development no longer as a linear process but rather as a systemic and dynamic process. According to the dyadic-systemic model developed by Sander (1977, 1985, 1995) the individual would be engaged in a continuous exchange with his environment according to a process of mutual regulation. Sander's model thus emphasized the systemic and procedural nature of the exchange between the individual and his life context, and therefore also of infant-caregiver interaction. In this sense, the infant-caregiver dyad is considered as a system that guide the infant's behavioural organization and that is

unique: both the child and the caregiver, as living systems, are equipped with self-regulation and self-organization competences, e.g. they have the capacity to regulate and organize their own internal states (Beebe & Lachmann, 1998). Indeed, several studies had previously recognized infant's ability of self-regulation and had focused on this aspect highlighting its central role in the development of attentional and interactive competences (Freedman, Barroso, Bucci, & Grand, 1978), the originality of Sander's thought and work in having shown that, in addition to the individual processes of self-regulation, the infant-caregiver dyadic system was characterized by the parallel process of interactive regulation. Thus, the communicative exchange between the infant and his caregiver would be defined by a constant and dynamic interaction between self-regulation and interactive regulation processes (Sander, 1977).

Through the repeated experiences of dyadic interaction and the ways in which the two partners negotiate the communicative exchange, both the infant and the caregiver develop a model of prediction and expectations with respect to the other's behaviour (Sander, 1975; cited in Carli, & Rodini, 2008).

Sander's studies (1977, 1983, 1985) indeed, supported and confirmed the idea that early infant internal experience would be organized through the interactive exchange with his relational context. In one of his classic studies, Sander identified how infants came to regulate their sleep and awake states, and the transitions from one state to the other and to organize the sleep-wake cycle in relatively stable and predictable patterns through the experience of repeated sequences of interaction with their caregiver. The interactive regulation of sleep-wake cycle, of activities and feeding would be based thus on a mechanism of mutual coordination of self- and interactive regulation processes between the infant and his caregiver in which the caregiver can play the role of an organizer (Sander, 1977) in regulating the infant's state transitions.

Summarizing, through the experience of: - growing self-regulation competences; - of contingency and recurrence of interactive regulation patterns; - of the specific nature of correspondence, as well as by the facilitating role played by his caregiver, the infant will develop an increasing awareness of their states and a sense of self as an active agent in interacting with others.

Inspired by Sander's dyadic-systemic model but also referring to Bruner's work (1977) and to the dynamic systems theory (Thelen, & Smith, 1994), Tronick (1989, 1998,

2005) proposed that a Dyadic Expansion of State of Consciousness would occur through the process of mutual regulation of emotions that characterize infant-caregiver affective communication and the subsequent development of more complex brain and behavioural organization would explain human beings' primary motivation to social interaction.

The infant-caregiver interactive experience of affective communication and mutual regulation has the potential to create dyadic states of consciousness and their progressive complexification (Beebe & Lachmann, 1998; Tronick, 1989). In this case the caregiver can provide the infant with regulatory input and emotional “scaffolding” (Bruner, 1975): for instance, during the interaction, the mother receives information about her infant’s state of consciousness (e.g., intentions, affects, and arousal level) that she has learned to understand through repeated experiences and interactions. In response to the infant's communicative signals, the mother can provide a regulatory support that permits the baby to achieve a more complex level of organization (Tronick, 1998).

The process of mutual regulation therefore refers to the ability of each partner to recognize and understand the emotional and affective expressions and signals of the other, and to frame ("scaffold") the actions in order to achieve the goal of interactive exchange. Numerous studies seem to support the view just described, highlighting the critical relevance of social experience for infants and, conversely, noting the effects of the break of infant–mother social connectedness and of the process of mutual regulation. The Face-to-Face Still-Face Paradigm (Tronick, Als, Adamson, Wise, & Brazelton, 1978) created in order to observe the effects on the infant of a break of mutual regulation processes during the interaction with his mother, previews that during the Still-Face episode the caregiver (e.g. the mother in most of the studies) should not engage in her normal interactive behaviour, maintaining the position of face to face interaction but keeping a neutral face (“still face”) and remaining unresponsive.

It was observed that at the beginning of the Still Face episode most three-month-old infants initially tended to send signals to their mothers through facial expressions, gestures and vocalizations in order to get their mothers to come back to their normal behaviour. When these behaviours directed to the interactive partner failed to achieve their goal, infants began to manifest negative affects and to withdraw activating self-

regulation strategies (like turning away their gaze, self-comforting etc.) in order to control their emotional state and the distress caused by the situation. During the Reunion episode, when mothers came back to their normal behaviour interacting with their babies, infants continued for a few minutes to show negative affects and self-regulatory behaviours such as a reduced orientation of their gaze toward their mothers, which led to hypothesize that events could have a lasting effect even at this age.

Other studies have confirmed the idea that self and interactive regulation are closely linked: in fact, infants using more adaptive self-regulation strategies during the still-face procedure (for instance continuing to try to get their caregiver to come back to their normal behaviour), had a better mutual regulation with their mothers during play situations than infants with less self-regulation competences (Tronick, 1989; Gianino & Tronick, 1988). Moreover, self and interactive regulation are also related to other dimensions of infants socio-emotional development: 6-month-olds who continue to show positive affects and signals in order to engage their mothers were indeed more likely to develop a Secure attachment at one year than infants who demonstrated different coping strategies (Cohn, Campbell, & Ross, 1991; Beebe & Lachmann, 1998).

Based on these findings, Tronick and Cohn (1989) proposed that a crucial aspect for understanding the process of mutual regulation could be related to the moments of break and interactive errors and reparation that characterize the normal interactions, e.g. the transition between match and mismatch interaction sequences. Indeed it has been observed that during the infant's first year of life the typical mother–infant interaction would be characterized by frequent and rapid shifts from coordinated to miscoordinated states (Tronick, 1989) in which coordinated (matched) states would occur only for one third of the time (Tronick & Cohn, 1989). Thus, the “normal” interaction would be characterized by frequent transitions from positive and affective moments of mutual engagement to negative and miscoordinated states (rupture) and back again, to mutually coordinated states (reparation) according to the process of mutual regulation (Match-Mismatch-Reparation process, MMR, Tronick, Cohn, 1989).

The experience of successful reparation and coordinated states would be more likely to be associated with positive affective states, whereas interactive errors would generate negative affects (Tronick & Weinberg, 1997). Moreover, Gianino & Tronick (1988) found that the experience of repeated successes during interactions influenced also

infants' behavioural and self-regulation competences: indeed, infants who experienced more repairs during interactions were more likely to implement communicative behaviours to restore the emotional contact with their mothers when their mothers acted in an unusual and stressful manner (i.e., during the still-face episode). On the other hand, infants who experienced fewer repairs were more likely to withdraw from the interaction and to show signals of distress. These specific patterns have been found stable within a period of two weeks and often generalized to other interactions: indeed, infants who had repeatedly experienced miscoordinated interactions (as happened to infants of depressed mothers, Tronick & Field, 1986; Tronick, & Weinberg, 1997) usually tend to manifest a withdrawal from their mothers and the environment and distortion during their interactions with other people.

Starting from, and sharing Sander and Tronick' idea that the dyadic communicative exchange is centred on the dialectic and bidirectional relationship between self-regulation and interactive regulation, as well as according to empirical data (as those previously described) Beebe and colleagues (Beebe & Lachmann, 2002) proposed a “model of balance between self- and interactive regulation” (Beebe, Lachmann, 2002, pp. 97-98) assuming that the quality of the interactive experience would lay in the balance between self- and interactive regulation, e.g. in the midrange of both.

The flexibility of movement and the balance between self-regulation and interactive regulation as well as the subsequent experience of a balance between moments of rupture (interactive errors) and repairs during interaction would yield an optimal level of attention, activation and affective experience in the child and would greatly contribute to the internal and interpersonal experience of the infant (Lavelli, 2007). If there is an imbalance in the direction of an excess of self-regulation or, vice versa, an excess of interactive regulation, infants probably will not experience optimal levels of attention, activity and emotional states. In particular, an excess and an imbalance toward the pole of interactive regulation, like an excessive monitoring of the partner, would probably lead to “interactive vigilance”. On the other hand, an excess in self-regulation at the expense of interactive regulation would produce as well an imbalance towards the individual “withdrawal or “inhibition” (Jaffe, Beebe, Feldstein, Crown, & Jasnow, 2001).

Summarizing these theoretical contributions and empirical data, Infant Research



promoted the shift of the research focus to the characteristics of the interaction between the infant and his caregiver, its mechanisms and its developmental aspects, and the definition of research paradigms that have contributed to provide a considerable amount of empirical data to support these premises, and to inform further theoretical and explanatory models.

## **1.2 Toward the social child: newborns' pre-adaptation and infants' early socio-emotional competences**

Infant Research studies also emphasized the early active role of the infant in the co-construction of the interactive exchanges with his caregiver and to show how the quality of early interactions between the baby and his caregiver lay the foundation for the individual socio-affective-emotional development, well-being and adjustment to different relational contexts through various developmental stages.

Numerous studies have highlighted that, from birth and during the first months of life, infants possess a range of skills allowing them to activate and analyse the interactive exchange with the caregiver, proving the presence of an intrinsic primary motivation for social interaction. Among the many indicators of infant pre-adaptation and early social competence, empirical data have proved (see Beebe, Lachmann, 2002; Lavelli, 2007 for an extensive review): - infants' ability to recognize and prefer the voice (DeCasper & Fifer, 1980), the smell (MacFarlane, 1975) and the face (Field, Woodson, Greenberg, & Cohen, 1982) of their mothers; - newborns imitation of facial expressions of an adult model (Meltzoff, 1985, 1990) through the Transmodal perception of correspondences between the visual information derived from the perception of the adult's face and the proprioceptive information of their own face, which seems to provide a very early sense of connection with another person and of differentiation from the other (through the mechanism of Active Intermodal Mapping, AIM, Meltzoff, Moore, 1997); - infants ability of imitation of actions performed by an adult and the provocation of a similar response in adults (Nagy, Molnar, 1994, 2004); - the ability to distinguish differences in rhythm, intonation, and frequency of phonetic components of language, as well as to develop expectations on the basis of the experience of contingency and association between infant's behaviours and others' responses

(DeCasper, Fifer, 1980).

From 2-3 months the baby would also show memory-retention capacity about objects representations (Greco, Rovee-Collier, Hayne, Griesler, & Early, 1986; Hayne, Greco, Earley, Griesler, & Rovee-Collier, 1986) and this competence, in particular the recovery of memory, seems to be influenced by the affect felt at the time of learning (Singer & Fagen, 1992). Moreover, focusing specifically on the characteristics considered as the most salient to the development of representations of social interactions (time, space, emotions and activation level) (Beebe & Lachmann, 2002), infants are born with the ability to perceive time (Lewkowicz, 1989) and, as they grow older, they acquire an increasingly refined capacity to identify temporal sequences (Lewis & Goldberg, 1969) that is a basic feature of infant-caregiver early proto-conversations and interactive exchanges (Beebe & Lachmann, 2002). Furthermore starting from 2 months, infants gain and recognize the proprioceptive information in relation to their own movement in the environmental space (Butterworth, 1990) and, between the 3<sup>rd</sup> and 4<sup>th</sup> month babies can distinguish between "organic" and "mechanic" movement (Mandler, 1988, 1991). Early, infants are also able to recognize the primary emotional states (surprise, fear and sadness) on the face of their partner, to be influenced by others' emotional expressions and states and to imitate facial expressions (Field et al., 1982; Meltzoff & Moore, 1977; Tronick, 1989). Studies on the social smile development highlighted that, by the end of the second month, infants were not only capable of smile exchanges with their mothers, showing that this was a stabilized interactive pattern but they are also able to produce a wide range of facial and vocal expressions (Lavelli & Fogel, 2005) that accompany smile exchanges. Moreover, infants are able to self-regulate their level of physiological arousal and this ability interacts with the information processing of environmental stimuli (Gardner & Karmel, 1984; Hadley, 1989) and they show an increasing range of perceptive, motor and cognitive competences as well as a number of presymbolic categorization skills (Mandler, 1988, 1991; Stern, 1985; Younger & Cohen, 1985; Younger & Gottlieb, 1988).

All these data about the infant innate and early emerging skills seem to confirm the hypothesis of a primary intersubjective competence that would develop by the first trimester of baby's life. Trevarthen (1979; Trevarthen, Kokkinaki, & Fiamenghi, 1999) in particular, identified neonatal imitation and infant-caregiver proto-conversations as

the main expression of the infants' primary intersubjectivity, namely an early infant's form of sharing during the communicative and interactive exchange (Legerstee & Varghese, 2001) recognizable from the 2<sup>nd</sup> -3<sup>rd</sup> month. Indeed, in a face-to-face interaction two-months-old babies were found able to respond contingently to their caregiver vocalizations, facial expressions and gestures (Trevarthen, 1979; Trevarthen *et al.*, 1999) and to vary the timing and intensity of communication in relation to their interactive partner as well as an early sensitivity to maternal affective mirroring. In summary the baby seem to be able to engage in face-to-face "protoconversations" (Trevarthen, 1986) with his/her partner by the bidirectional and mutual regulation of attention, behaviours and affects (Beebe & Lachmann, 2002).

The identification of newborns pre-adaptations to social interaction and the definition of infants early socio-emotional, perceptual and cognitive skills thus seem to confirm the active and mutual role of the baby in the communicative exchange from birth. In the meantime, an increasing interest was devoted to the study of possible precursors of triadic competences observed from 6 months and fully developed during the first year of the child, referring to the infant's emerging interest and search for environmental objects and events, proved for instance, by the fact that play with objects begins to substitute face-to-face interaction and to introduce a third pole of interest (e.g., an object or an event) external to the dyad. These first manifestations of attention sharing between the infant, the caregiver in relation to an object during playful and interactive situations would promote, starting from the 7-8 months, the development of the "coordinated attention" (Legerstee, 2005) and the transition from primary to "secondary intersubjectivity" (Trevarthen, 2005; Trevarthen, Aitken, 2001).

## **2. The Developmental Psychology perspective: infants' early triadic and triangular competences**

The gradual emergence of a systemic perspective to the study of human development has produced an increasing interest in the study of more complex interactive contexts (for instance, triadic interactive situations) and to the investigation of the skills that infants are able to demonstrate in interactive situations that involve a partner and a third pole.

## **2.1 A triadic perspective: the study of Person-Person-Object interaction**

Since the 80's several studies have been undertaken to investigate the quality of early triadic interactions, defining the term "triadic interactions" as the interaction between the infant and an adult (often the caregiver), in reference to an object or event, thus integrating the observation of communication processes specifically directed to the infant-caregiver dyad with those involving external actions or objects.

The first studies that investigated the presence of triadic interactive skills in infants showed that triadic competences would developed and be observable later and consequently the development of dyadic interactive skills by the second half of the infant's first year of life, linking their development to the emergence of referential communication and secondary intersubjectivity (Klennert et al., 1983; Klennert et al., 1986; Tomasello, Carpenter, Call, Behne, & Moll, 2005; Trevarthen & Hubley, 1978).

However such a perspective is not consistent with other more recent research that has further explored the triadic interaction between the infant, the adult and an object (person-person-object paradigms) using different types of experimental situations, for instance observational paradigms in which the infant and the adult interacted in a face-to-face situation in relation to an object (Hains & Muir, 1996; Striano & Stahl, 2005; Striano et al., 2007), or "virtual" situation in which the infant watched an adult face on a screen moving the gaze toward an object (Hood, Willens, & Driver, 1998). Results showed that infants, already at 3-4 months, presented triadic competences detectable in their ability to follow the gaze of the partners in relation to a third pole of interest and to process information about the object (Reid, Striano, 2005; Reid, Striano, Kaufman, & Johnson, 2004). A recent study by Striano and colleagues (2007) found confirmed these findings highlighting an early sensitivity to relevant aspects of dyadic interaction and to some triadic attention features such as movement and facial signals.

Summarizing these data it seems that 3-month-old (and younger babies) infants have an early sensitivity to small gaze deviations of the interactive partner (Symons, Hains, & Muir, 1999) and an emerging sensitivity for triadic attention and social cues (Striano, & Stahl, 2005).

These results seem particularly interesting since many studies have shown how a

sensitivity to triadic interactive situations could be a factor underlying the development of later skills such as social referencing (Moses, Baldwin, Rosicky, & Tidball, 2001) and language learning (Baldwin, 1993; Morales, Mundy, & Rojas, 1998). Consequently, it seems that the idea of socio-emotional development as proceeding from person-person interaction to person-person-object interaction (Carpenter, Nagell & Tomasello, 1998) is currently inconsistent since an early sensitivity to triadic situation and joint attention was observed as early as 6 months (Striano *et al.*, 2007).

## **2.2. Triadic or triangular competences? Infant's socio-emotional skills during Person-Person-Person interaction**

Since the 90's, mainly after the advent of studies on triadic interactions (person-person-object) and the more and more shared considerations that infants are frequently in multi-person contexts and of the relevance of the family interactive context (Schaffer, 1984) researchers began to be interested in the study of person-person-person interactions (Barton & Tomasello, 1991; Dunn, 1991). Few research studies have investigated infant competences to interaction with more than one person at a time. To assess this question, different paradigms have been proposed: in some cases, the paradigm involved the analysis of triadic interactions between the infant, his caregiver and a non-familiar adult, (Nadel & Tremblay-Leveau, 1999) in others, the interactive setting previewed the presence of the infant and two adults or an adult and another infant; other studies considered the triadic interaction between the infant, his mother and his father (Fivaz-Depeursinge, & Corboz-Warnery, 1999).

Among these studies, Tremblay-Laveau and Nadel (1995, 1996) using the paradigm of Exclusion, attempted to study infant behaviour in a situation of temporary exclusion from the ongoing interaction between two other persons, as well as infants ability to monitor and influence the focus and intentions of the partner temporarily directed toward a third person, assuming that in every triadic situation each partner can experience a temporary exclusion from the direct communication that occurs between the other two partners.

Using the version of the Exclusion paradigm that requires the interaction of one adult and one child in front of another child, Tremblay-Laveau and Nadel, (1995) found that

infants showed a high capacity to monitor others' behaviour as well as to act in triadic situations already at 11 and 9 months (1996). In a subsequent study (Nadel & Tremblay-Leveau, 1999; Tremblay-Leveau, 1999) with 3 to 6 month-old infants, they adopted a slightly different version of the Exclusion paradigm: in this study at first two adults interacted with the infant and then, after having engaged him in the interaction, they left him as a third party, simply watching, while they talked. During each of the episodes of dyadic interaction infants showed occasionally that they shifted rapidly their gaze the third party partner while in the episode of exclusion they repeatedly shifted their gaze from and adult to the other and back again and they sought to attract their attention sending them communicative positive signals.

Consistent with these observations, previous studies (Donzè, 1998; Fivaz-Depeursinge, 1998) focused on the analysis of early infant's competences during mother-father-child interactions found that 3-month-olds had the ability to shift their gaze and to transfer affective signals between the two parents and these shifts were rapid enough to suggest that they could be the manifestation of a primitive capacity for coordination of attention. A subsequent research used an integrated version of the Lausanne Trilogue Play (LTP; Fivaz-Depeursinge, & Corboz-Warnery, 1999, described in more depth in future chapters) including a Still Face Episode (Fivaz-Depeursinge, Favez, Lavanchy, De Noni, & Frascarolo, 2005): it has been observed that at 4 months, infants tended to shift signals of confusion and distress between their parents during the Still Face episode and to transfer signals of pleasure during the reunion. Authors concluded that as early as 4 months, infants show a proto-competence of triangular coordination of attention and affects which seems to prefigure the referential strategies observable at 9 months (see Lavelli, 2007), using the term “triangular” in order to distinguish person-person-object competences (triadic) from person-person-person competences (triangular).

Summarizing these studies, it emerges the idea of a infant early able to follow and monitor the partner's attention and to triangulate attention and emotions between two interactive partners and the presence of an early form of shared attention, as early as 3 months, which would have different characteristics and would be relatively interdependent to shared attention on an object.

Finally, all these research studies have contributed to the development of a perspective that conceptualizes a triadic basis of socio-emotional competences and social

interactions, present and evolving since the earliest stages of life: on the one hand, triangular and triadic interactions seem to perform the same functions of dyadic interactions in laying the foundations and promoting the development of primary intersubjectivity and the intentional stance; on the other hand, they differ from dyadic interactions because they consisted of a more complex and dynamic interactive context given the presence of two social partners (Fivaz-Depeursinge et al., 2005). At the same time, infants access to early experiences of physical and social coordination, which occurs for example during triadic interactions, could be made easier through the early experiences of triangular interactive context thanks to the presence of a third social pole of attention. In this perspective, triangular competences would follow a path not subsequent to the development of dyadic competences, but at least parallel to this and with its own characteristics (Fivaz-Depeursinge et al., 2005).

According to these empirical findings it seems the case that infants would develop early competences for more complex interactions so that the early experience of the inclusion of a third external element in the dyad would lead, starting from the 7-8 months, to the development of the "coordinated attention" (Legerstee, 2005) and to the transition toward secondary intersubjectivity (Trevarthen, 2005; Trevarthen, & Aitken, 2001). Infants' socio-emotional development would then proceed towards increasingly more complex skills, so that 9-month-olds become capable of coordination and communication in interactions involving themselves, an other person and an object according to which the communicative exchange, gestures and imitation of the ways to use objects can be considered as the main manifestation of the achievement of secondary intersubjectivity (Trevarthen, 2005; Trevarthen, & Aitken, 2001): that is the competence of referring and sharing other's and intersubjective experiences based on the understanding of others as the possessors of states of attention, affective states, emotions and intentions (Lavelli, 2007).

The caregiver plays a key role in the development of infant's capacity to coordinate his perspective on objects/events of the surrounding environment with that of another person, in other words, in the development of the skills that mark the changeover to experiences of "secondary intersubjectivity" (Trevarthen, 1978) providing structural and emotional scaffolding as well as adequate responses to social referencing (Lavelli, 2007).

Later, between 18 and 36 months children's language acquisition and increasing autonomy in movement restructures and changes the child's experiences leading to the development, of a "sense of verbal self" based on the development of new attitudes and skills (Stern, 1985). The increase in motor skills also leads to a change in the behaviour of the caregivers, who feel the need to define the limits within which the child has to act and experience. In this context, "moral emotions", such as empathy, pride, shame or embarrassment, begin to appear favouring the child's adaptation to cultural requirements (Emde, 1991) and "tertiary intersubjectivity" also develops, which is based on the sharing of symbols and conceptual representations, on the negotiation of limits, on the child's ability to feel moral emotions and, later, on child's mind-reading and others' perspective taking (Braten, 2009; Trevarthen, 1998).

### **3. Towards a systemic-relational model for the analysis of triadic family interactions**

The study of the triad and in particular of the mother-father-child relationship has also received a further boost from the increasing convergence between social psychology, developmental psychology and the application of the systems perspective to family therapy: through the dialectic and progressive integration of these different perspectives it has been possible to re-conceptualize and re-read the individual changes and development as occurring while experiencing also triadic contexts during the life cycle (McGoldrick, Heiman, & Carter, 1993). A growing consensus has emerged about the idea that the models which are limited to examining the role of dyadic interactive patterns within the family, are not sufficient (Minuchin, 1985; Parke, 1990): both in the field of developmental psychology and in social and clinical psychology, researchers have shown a growing interest in the establishment of models and research paradigms that would point out the complexity of the interactions that take place in the family system during child development, recognizing the important role of family dynamics to provide a primary relational matrix which can promote or, conversely, fail to foster functional developmental outcomes for the child.

The family systems perspective (Minuchin, 1985) helped to shift the focus to the unique and specific role of each member of the family system and of family relationships



(mother-child, father-child, and mother-father-child relationship) in the individual development of a sense of self. Minuchin (1974) considered the family as a unique system wherein the sum of its parts is not totally overlapping the whole system. From this perspective the family should be studied as a whole and its structure could be defined according to the sub-systemic boundaries and sub-systems that constitute it wherein the presence of clear boundaries would promote adaptive and functional outcomes (Bogels & Brechman-Touissant, 2006).

Within the systemic-relational paradigm, studies were mainly focused on the analysis of relational models in particular within clinical groups of families with adolescents or young adults being thus concentrated on defining the characteristics of dysfunctional triangular coordination and on the analysis of verbal communication (Bowen, 1978; Haley, 1959, 1964; Minuchin, 1974; Mischler & Waxier, 1975; Reiss, 1981). Studies in this context had shown that overall, both in clinical and normative groups, the family exerts its influence by establishing its own affective and communicative styles thus representing a source of stress or support for the achievement of developmental goals both of the individual and of the family itself (Cusinato & Tessarolo, 1993; Walsh, 1982; *citt.* In Malagoli Togliatti & Mazzoni, 2006). Different authors have from time to time focused on recurrent and stable patterns of family relationships in which the child is inserted, introducing the concepts of family coalitions, alliances and triangulations (Minuchin, 1985); other authors have been more concerned with the various subsystems, hierarchically organized, which characterize the family system, considering the level of the marital relationship and of parenting and co-parenting development.

These shifting of the focus from the whole family to its subsystems and the definition of methodological paradigms in order to study the verbal component of family interactive exchanges did not permit a full understanding of the functioning of the triad as a whole (Parke, Power, & Gottman, 1979) and constituted a limit to extend this perspective to the study of early family interactions which are mainly characterized by non-verbal communication such as proxemics, the orientation of the gaze, facial and vocal expressions and gestures (McHale & Fivaz-Depeursinge, 1999).

On the other hand, as previously described, researchers in developmental psychology field were introducing highly refined microanalytic paradigms for the study of early social interaction. However, only recently, thanks mainly to the shift from a dyadic and

mother-centred perspective (which looked to the mother-child relationship as the essential relational matrix for the development) to a systemic-triadic approach was it possible to extend the acquisitions and methods of developmental research to the study of family dynamics and their link with socio-emotional development of children.

In the context of developmental research the study by Jay Belsky and colleagues in Pennsylvania (Belsky, Gilstrap, & Rovine, 1984) was one of the first attempts to study the family as a whole focusing on the mother, father and child system considering different levels: the individual level, the dyadic-marital level, and the level concerning father-child and mother-child relationship. This research highlighted many of the mechanisms within the family but did not reach the level of the family unit as it was based on trying to extrapolate it from its various dyads.

In the 80s it seems that those few researchers that were interested to the study of the "father-mother-child" triad did not completely succeed because they tried to infer the characteristics of the triad on the basis of its dyadic components, and also because of the absence of a valid and reliable methodology for the study of triadic family interactions (Fivaz-Depeursinge, Corboz-Warnery, 1999).

The growing awareness among researchers of a methodological gap in the study of the characteristics of family interactions and processes that govern the three-way (or more than three-way) interactions has driven a considerable effort towards the definition and testing of methods able to capture the complexity of the family system dynamics during infancy and early childhood. The convergence of the systems perspective within different disciplines and areas of research in psychology has produced over the past 20 years an increasing spread of theoretical and methodological proposals to overcome this gap: among them, one of the most interesting models is produced by Fivaz-Depeursinge and the Group of Lausanne, which will be the subject of the next chapter.

**CHAPTER 2**  
**THE LAUSANNE TRILOGUE PLAY PARADIGM:**  
**CHILD SOCIO-EMOTIONAL DEVELOPMENT WITHIN**  
**MOTHER-FATHER-CHILD INTERACTIONS**

Different perspectives converged in supporting the need to move beyond the dyad to consider family-level dynamics and relationships and to focus on the complexity of the family as a whole supporting the idea of the systemic nature of infants socio-emotional development within the family system.

All these different approaches shared the idea that three-way (or multiple-way) interactions within the family system are characterized by a high number of regulations and coordinations involving the expression and development of attentional, behavioural and affective competences appropriate to achieving the interactive goal, that is the experience of shared and effective affective communication.

As a consequence of this shift, new methods and measures have been and are being developed and tested in order to better understand the characteristics and development of early family interactions and relationships (McHale & Fivaz-Depeursinge, 1999): most of the methods are based on the direct observation of the family and include measures of non-verbal communication even though they differ in the definition of research paradigms, choosing from time to time, experimental or ecological settings and more or less standardized procedures.

Among these contributions, the theoretical and methodological framework provided by Fivaz-Depeursinge and Corboz-Warnery (1999) on one hand seems to be one of the most interesting and promising approaches to the study of triadic interactions within the family system giving the chance for a new view on these issues by moving the focus of the research towards the triadic (mother-father-child) interactive system as the main object of investigation ; on the other hand, the relatively recent development and testing of the Lausanne Trilogue Play paradigm for the evaluation of triadic interactions developed by these researchers, surely needs an ongoing reflection and further empirical contributions.

## **1. The perspective of Fivaz-Depeursinge and the Lausanne group to the study of mother-father-child interactions**

Since the 80s, the study group of the Centre d'Etude de la Famille (CEF, Lausanne) proposed to study the primary relationships and interaction within the family system. Starting from a systemic view of the research and the intervention on the family and from the idea that it was not enough to re-construct and understand the complexity of family relationships from its dyadic components, Fivaz-Depeursinge and Corboz-Warnery (1999) developed a theoretical model and an empirical methodology (the Lausanne Trilogue Play, LTP, Fivaz-Depeursinge, Corboz-Warnery, 1999) based on the centrality of the family triad as the primary unit for the understanding of child development and of the family functioning as a whole.

There are three main approaches and research traditions that have inspired and influenced the theoretical and methodological background and references of Fivaz-Depeursinge and colleagues (Fivaz-Depeursinge, Corboz-Warnery, 1999).

1) First of all, developmental psychology and in particular the contribution of the application of the systemic theory to the Infant Research studies: from this field Fivaz-Depeursinge and colleagues resumed in particular the idea of the centrality of interactive exchanges that the infant experiences and co-constructs early with his caregivers, the infant's active role during interactions and the presence of early triadic and triangular interactive competences which are considered as favouring the early social integration of the child in a complex environment such as the family system (Fivaz-Depeursinge et al., 2005).

From a developmental point of view therefore they proposed that the mother-father-child triad (like the dyad but with a unique and relatively independent contribution) might be considered as one of the primary relational matrices within which the infant develops his socio-emotional competences. Infants' experience, in fact, is not characterized for most of the time by the interaction with only one significant person, which is responsible for the development of his relational world (in the dyadic paradigms usually the mother), but rather, at least, by the joint presence of the mother and the father as the interactive reality of the infant's experiences.

The underlying reference is to Stern's primary intersubjectivity model (1985): the

concept of infant's "patterns or schemes of being with" another person are reworked so that, during development, the infant would acquire "schemes of belonging to a triad", involving the repeated experience of mother-father-child interactions.

As previously noted therefore, the quality of triadic interaction (using the term triadic in relation to interaction within the mother-father-child triad) and infant interactive competences would be no longer considered as a developmental goal subsequent to the attainment of dyadic interactive competences (Fivaz-Depeursinge, 1989): these competences would be the counterpart and expression of infant's primary social motivation which can be observed from the infant's 3rd month of life and would not build later in the course of development, deriving from the experience of triadic infant-person-object interactions (Fivaz-Depeursinge & Corboz-Warnery, 1999; Tremblay-Laveau & Nadel, 1995).

Infant Research has been a significant reference for Elizabeth Fivaz-Depeursinge and her colleagues also with regard to the contribution provided in the definition of methodologies useful for the micro-analysis of non-verbal communication between the child and the caregiver and in the introduction of increasingly sophisticated techniques of video-recording and coding of observational sessions thus inspiring and influencing the definition of the Lausanne Trilogue Play paradigm (LTP; Fivaz-Depeursinge & Corboz-Warnery, 1999) devised by researchers of the CEF to analyse the quality of triadic interactive exchanges during early childhood.

2) Second, a further relevant inspiration refers again to the developmental psychology research, in particular to the studies on the birth of the family and the development of family relationships. This field of research indeed showed an increasing interest and shift from the study of dyadic interactions and dyadic level phenomena to the study of the family as a whole. The growing recognition of the special and unique role played by family relationships in the life cycle of the subject produced two major strands of research in this area. The perspective on the "practicing family" as well as the perspective of the "represented family" agreed on the view that family relationships contribute, significantly, to human development, being characterized by a certain amount of stability and consistency. However, the two positions differently considered the mechanisms through which this stability and consistency would influence family relationships (Reiss, 1989).

Reiss (1989) stressed that these differences seem to be related in particular to the role of memory function assigned to family relationships: according to "the represented family" approach (which was considered above all in the study of attachment relationships during the life cycle), the memory function of family relationships would reside primarily in the representations (Internal Working Model, IWM; Bowlby, 1980) that each family member individually, would build throughout significant relationships. On the other hand, "the practicing family" perspective assumed that the memory function of relationship would lie primarily in shared and coordinated family interactions and routines.

Despite the initial difficulty of this area of research in focusing the object of the research on the gestalt of the family system as the inseparable unity of observation, concentrating attention on the direct observation of the family in action has provided further impetus and preliminary data to better define theoretical and methodological paradigms. Fivaz-Depeursinge and Corboz-Warnery (1999) privileged the "practicing family" approach in the study of early triadic interactions, and this choice also informed the methodological choice in the definition of the LTP procedure.

3) Finally, the integration of the systemic-relational theory used by family therapists explains the importance given by Fivaz-Depeursinge and colleagues to the transactional and procedural aspects that consistently characterize family interactions and, to their recurrence and patterns of repetition which seem to influence the development of family functional or maladaptive trajectories. According to Minuchin (1985), Fivaz-Depeursinge and the Group of Lausanne thus identifying the mother-father-child triad as the privileged unit of observation assumed and highlighted many times that the system (in this case the family) is not reducible to the sum of its dyadic and individual components. According to Fivaz-Depeursinge (1989), therefore, by the study of the family system as a whole and not as broken down into its constituent dyads, co-construction and interactive regulation processes are interpreted in a triadic and "trialogic" perspective through the concept of Family Alliance.

In summary, Fivaz-Depeursinge and Corboz-Warnery (1999) proposed to integrate the systems theory approach, widely used in research and clinical fields, with the methods and empirical evidence provided by developmental psychology and Infant Research studies, in order to define a systemic theory of development (Fivaz-Depeursinge, 2006)

and a standardized and valid measure of family interactions.

## **2. The Lausanne Trilogue Play paradigm**

Parallel with the establishment of a theoretical framework based on the centrality of early triadic interactive experiences within the family and through ongoing work that has merged and integrated research and clinical observation and practice, Fivaz-Depeursinge, Corboz-Warnery, and their colleagues of the CEF have been developing and refining the Lausanne Trilogue Play paradigm (LTP; Fivaz-Depeursinge, & Corboz-Warnery, 1999), into a semi structured and standardized observational procedure for the assessment of three-way interactions within the family system during a play situation. The LTP provides an assessment of the "Family Alliance", defined as the degree of coordination and collaboration between the members of the family in achieving the playful and interactive goal proposed, thus permitting the evaluation of the quality of triadic interactive competences within the mother-father-child system.

According to the view of Fivaz-Depeursinge and colleagues as other groups that have the function of promoting human development, the family triad is composed of two main sub-systems: the structuring unit, represented by the co-parental component, and the developmental unit represented by the child. The various components of the system affect each other, and a new property, irreducible to the sum of its single parts, emerges from their cooperation and coordination.

The Lausanne Trilogue Play paradigm consists of an observational procedure, semi-structured and standardized, performed in a laboratory setting. It allows for the direct observation of the family triad "in action" while playing and interacting together according to a 4 part scenario. The overall objective is to analyse the way in which the triad is able to cooperate and coordinate themselves during the interaction in order to achieve the ultimate goal of every functional and successful communicative exchange, namely the sharing of positive affects. The definition of the setting, the procedural instructions and the development and validation of the coding system have been guided by a series of assumptions, references, ongoing reflection and further improvements made in relation to data obtained from the application of the LTP procedure in developmental research and clinical trials. Here we describe the setting and procedural

instructions defined by observation of family interactions in early childhood paying attention to stress the ongoing work of interface and inspiration to developmental, social and clinical psychology research that has guided the methodological choices of the authors.

## **2.1. Setting and instructions of the procedure**

The setting of the procedure consists of a laboratory room separated by a window from a room containing video-recording equipment: in the room two seats and a special infant-seat are organized according to a triangular configuration at an equal distance to each other. The infant seat is "special" because it can be oriented, inclined and cushions are available to adjust it to the baby's size (Corboz-Warnery, Fivaz-Depeursinge, Gertsch-Bettens, & Favez, 1993) .

This standardized observational setting refers to the basic assumption of the authors that what you want to see is the family's best performance during an interaction task: with this in mind it is fundamental to put all the family members in the optimal and most functional situation to experience a satisfactory interaction. In this sense, the standard triangular space in which each partner is at the same distance from the other and the distance between partners itself, defined according to the developmental stage of the child, are designed in order to encourage and foster the interaction between parents and their baby in relation to ethological rules that govern the manifestation of intuitive parenting behaviours (Papousek & Papousek, 1987). Moreover, given that early triadic interactions are mainly based on non-verbal communication and are also multi-modal, the observation of such interactions was made easier by the clear definition of spatial boundaries (eg the equilateral triangle configuration) that enables face-to-face communication between all the family members.

The design of a special infant seat that allows parents to ensure that the baby has the best predisposition to the interaction is specifically aimed at putting all the family members under the most favourable and unbiased situation as possible. Indeed, the Lausanne group considered carefully the developmental stage of the child when designing the LTP procedure. An important premise in the authors' definition of the method is that as infancy is a period of rapid development and change also involving



the communicative exchange (especially non-verbal communication), it was important that the procedure permitted researchers to distinguish infants' own contributions from those provided by their parents in replacing them.

A second consideration for the Lausanne group was the technical issue of recording observations. The laboratory setting for the LTP foresees two video cameras: one has to be situated above the parents' head facing the baby while the other is opposite to the parents. In this way two separate images are obtained, one showing the baby full-face and the other showing both parents face. These images are synchronized, assembled together and the duration of the whole procedure is calculated by a common timer (Corboz-Warnery et al., 1993).

Such a video-recording procedure permits the researchers to make a micro-analytical analysis of the interactive sequences, observing the facial expressions (orientation of the face, eyes, facial expression etc.) of all the family members simultaneously.

According to previous studies of early mother-infant interaction, microanalysis was the method of choice until broader indices of normative interaction had been derived (McHale & Fivaz-Depeursinge, 1999).

With regard to the instructions of LTP, once the family has been settled in the laboratory setting described above, the researcher asked the family to play together as a family according to a four part scenario: in the first part, one of the parents will play with the baby while the other will stay simply present; in the second part parents will change their role and the parent that was simply present in the 1<sup>st</sup> part will play with baby while the other will stay in the third-party position; in the third part both parents will play together with baby and then, in the fourth part, parents will talk together and it will be the baby's turn to stay simply present (Corboz-Warnery et al., 1993).

Some considerations regarding the proposed task are to be made: 1) the choice of the task: starting from the definition of the "family alliance" (Fivaz-Depeursinge & Corboz-Warnery, 1999) as the degree of collaboration and coordination between the family members and the way they work as a team to achieve the goal of the interaction, authors believed that in order to capture three-way coordination, the family should be observed working together to achieve a significant goal for all the interactive partners. According to these criteria for the design and definition of the LTP procedure and its instruction, they decided to propose for the LTP procedure a playful interaction

for the families.

They have also been concerned about providing an interactive situation developmentally appropriate to the baby's age. Indeed, the standardized instruction for families with few months-old-babies (3-4 months), like that described above, provides that the play should primarily consist of face-to-face interactions between the parent(s) and the baby, without the use of objects (as in the Infant Research tradition). Later, when the infant is about 9 month-old, even if toys are not provided, the family has the possibility of introducing an object or a baby's toy given the infant's increasing sensitivity to the environment and external stimuli and the decreasing involvement in the simple face-to-face interaction with the caregiver. However, for older children (toddlers and preschoolers), a standard set of toys (Lego blocks) is provided, so that the child can be properly get involved in the co-construction and sharing of the activity according to his emergent or recently acquired cognitive, motor and emotional skills.

2) the choice of a 4 interactive frames play scenario: according to previous researchers, they agree with the idea that observing a triad interacting together would necessitate taking into account the different interactive configurations that can be observed when members of the triad are engaged together in daily interactions in ecological settings. In fact, mother-father-child interaction can be characterized by 4 possible situations: two possible interactive configurations are those where one parent actively interacts with the child while the other, not directly involved in the interaction, follows the ongoing interaction. In some cases the mother, the father and the child interact together. Finally, it is likely that in everyday life parents interact with each other in the presence of the child without involving them actively in the interaction.

These different interactive configurations can thus be considered as framework (resembling in some way the concept of "*frames*", Fogel, 1993), of recurrent and relatively stable patterns of different possible ways to "stay in 3" or, in other words as "schemes of being in a triad", according to Stern's schemes of "being with" (1985, 1995). The first and second part of the LTP procedure are "two-plus-one" configurations during which one of the parents is designated as the active partner interacting with the baby while the other parent is asked to stay as the third party to observe the ongoing interaction. From a systems perspective, even though the 1<sup>st</sup> and 2<sup>nd</sup> part of the LTP would seem similar to a dyadic play situation the presence of the the other parent makes

the situation quite different: in this case the third party has the double function of observer and participant being physically near the interacting dyad so that he/she can engage or disengage and at the same time permit participation in the interaction by sharing attention and emotions with the interacting partners (Corboz-Warnery et al., 1993).

In the third part, the mother, the father and the child are asked to interact together (configuration 3 together): this puts them in a potentially more complex situation that foresees more refined negotiations and coordination and requires the parental ability to create a framework enough adjusted and predictable for the baby, who, in turn, is asked to share his attention with two persons.

Finally, in the fourth part, parents have to interact while the baby is the third party: during this phase parents are supposed to be able to talk together keeping a non-excessive monitoring of the baby's behavioural and emotional state. On the other hand, the baby can show his ability of adaptation and self-regulation: the situation resembles in some way the Exclusion Paradigm (Nadel & Tremblay-Leveau, 1999; Tremblay-Leveau & Nadel, 1995, 1996) because, after a growing engagement in the play with one parent at a time and then with both parents, the baby is then “excluded” from the direct interaction between the parents. In this situation he may express his self-regulation skills permitting the observation of his/her emotional states while experiencing being in the third party position between his/her parents, a situation presumably relatively frequent in the family daily life.

## **2.2. Measurement and coding triadic family interactions: the LTP ongoing coding system**

Further discussion and considerations are needed to understand how the features of triadic mother-father-child interactions, observed by the LTP procedure, have been operationalized and what was the process of continuous review that has led to the current method of analysis and coding.

According to the developmentalists' perspective, the Lausanne group has chosen to focus the observation of LTP video recordings on non-verbal behaviour and communication, pointing out its hierarchical organization. For the development of the

LTP coding systems Fivaz-Depeursinge and colleagues chose to focus on the micro-analysis of distances and orientations of body, face and gaze, facial, and on vocal, affective and gestural expressions that the infants have been proved to be able to recognize and use early (though not in a symmetrical way to that of the adult) in the communicative exchange with his partners (Frascarolo, Favez, Carneiro, & Fivaz-Depeursinge, 2004; Frascarolo, Gertsch-Bettens, Fivaz-Depeursinge, & Corboz-Warnery, 1997).

The development of a coding scheme for the analysis of triadic interactions needed also to account for complex and multiple coordinations through hierarchically organized configurations. In this perspective the Lausanne group referred to the concept of "F-formations," (eg. "F" stands for "face") introduced to explain spatial arrangements in group interactions (Kendon, 1977, 1990) relying on the geometrical arrangement (i.e. body formation, gaze formation and so on) of the participants as a whole. According to general systems theory, Schefflen (1964) and Kendon (1990) stressed the hierarchical structure of these formations and Fivaz-Depeursinge (1991) found that the parental structuring of a context that provides face-to-face interaction at a dialogue distance appropriate to the baby's age is a necessary condition for gaze interaction and, consequently, for affective communication. Finally, Frascarolo and colleagues (1997) showed that in three-way interaction (like mother-father-child interaction) the body formation corresponding to an equilateral triangle in which all partners are included, is the necessary condition for the triadic gaze interaction.

The Lausanne group believed therefore that a hierarchical model of interactions that would consider the different embedded levels and the structure organizing communicative exchanges could be the most appropriate model to understand and define the complexity of 3-way interactions (Frascarolo et al., 2004). Given the complex nature of the triadic interactions Fivaz-Depeursinge and Corboz-Warnery (1999) choose to focus initially on body and gaze formations defined by the position of mother, father and baby in the interactive space as the fundamental model for the preliminary understanding of the characteristics of triadic interactive exchanges within the family system (Corboz-Warnery et al., 1993).

Concerning the method of analysis, it was previously stressed that in early mother-infant interaction research, microanalysis served as the method of choice until broader

indices of normative interaction had been derived. In line with this also Fivaz-Depeursinge and the group of Lausanne began working on the definition of the LTP coding system, starting their analyses of triadic family interaction proceeding through micro-analysis of single cases thus going on to define several variables drawn on an empirical basis through microanalysis and comparisons of interactions between clinical families with parents with psychopathological disorders and non-clinical families (Corboz-Warnery, et al., 1993; Fivaz- Depeursinge, Cornut-Zimmer, & Martin, 1984; Frascarolo et al., 1997; Gertsch-Bettens, Favez, Corboz-Warnery, & Fivaz-Depeursinge, 1992).

Then, aiming at assessing interactions in real time rather than from microanalysis, they drew from these micro-descriptions a set of macro-indicators that could guide the coding of triadic interactions and the elaboration of a model that could explain the functions performed during the interactive task proposed by the LTP paradigm.

Four main functions were then defined (Fivaz-Depeursinge & Corboz-Warnery, 1999), each one answering different questions: (1) participation, that answers the question: is everyone included in the interaction?; (2) organization, or is everyone in their role?; (3) focalization, answering the question: is everyone attending to the play?; and (4) affective contact, are all the family members in emotional touch with each other?. The above functions are considered essential for the co-construction of emotional exchange during a trilogue play (Frascarolo et al., 2004).

The first comprehensive LTP coding system was thus defined as the Evaluation Grid for Trilogue of the Centre for Family Study (GETCEF; Fivaz-Depeursinge, Corboz-Warnery, Carneiro, Frascarolo, & Wasem, 1998; Fivaz-Depeursinge, Cornut-Zimmer, Borcard-Sacco, & Corboz-Warnery, 1997).

The GETCEF leads to a global coding of triadic interactive patterns. The coding system consists essentially of several variables referring to three levels (pelvis, torso, and head and gaze) of non-verbal communication and of variables associated to the quality of the interaction then converging on three of the main functions.

The first step of coding consists in rating the different variables according to criteria detailed in the manual (GETCEF; Fivaz-Depeursinge et al.,1997; Fivaz-Depeursinge et al., 1998).

The three main functions are arranged hierarchically so that starting from participation,

that is the most "superficial" and at the same time, fundamental because we can observe triadic interaction only if all the family members are included in the interaction, the coding then proceeds to evaluate the organization and focalization functions. Following this hierarchy each function is a necessary but not sufficient condition for the explication of the next one.

Participation is thus the initial necessary condition for a triologue play: indeed a triadic interaction can be observed only if all partners are included. It is evaluated along three dimensions (two for parents, one for infant), drawing on contextual, corporal and visual cues. Organization considers whether the three partners show each other clear non-verbal signals marking their roles in the different parts of the LTP. It is evaluated along three dimensions (two for parents, one for infant), using corporal and visual signals of role assumption and maintenance. Focalization is the family's ability to share a common focus on a particular task (Bruner, 1978). It centres on whether there is a joint focus of attention in the play considering visual indicators and the quality and appropriateness of the interaction in relation to the infant's developmental stage and state. Finally, only if each family member shares the same focus as the others on the ongoing exchange and activity can the family reach affective attunement and the sharing of positive affects.

The higher the score, the more coordinated the interaction as well as the more functional will be the family alliance. The assessment of appropriateness of each of these distinct but nested 4 functions leads to the definition of the specific type of Family Alliance to the family (Fivaz-Depeursinge, et al., 1998).

If the rating data concerning participation variables indicates the exclusion of a member, the family is codified as a "disordered" alliance, that is particularly dysfunctional. This is common among clinical families even if such families can also occur in non-clinical samples. If participation is fulfilled but ratings highlight that one or more partners are not able to keep their role the family alliance is considered "collusive"; this has been observed both in clinical and non-referred families (Fivaz-Depeursinge, & Corboz-Warnery, 1999).

If participation and organization have been fulfilled but focal attention is not fully appropriate, the family alliance is categorized as "stressed.", a type of alliance most frequently seen in non-clinical families (Fivaz-Depeursinge, & Corboz-Warnery, 1999).

When the first 3 functions are rated as appropriate and affective contact is achieved

between all the family members the family alliance is considered as "cooperative".

The advantage of such a hierarchical model therefore lies not only in the ability to acquire knowledge on the levels, functions and rules that govern the triadic interactive exchange but also in the possibility to detect the levels of functionality and dysfunctionality of family interaction and therefore resources and difficulty of the family system (Fivaz-Depeursinge & Corboz-Warnery, 1999).

Empirical data seem to confirm the basic assumption of the hierarchical organization of the four functions (Fivaz-Depeursinge, Frascarolo, & Corboz-Warnery, 1996; Frascarolo et al., 2004).

The coding system is being continuously refined in the light of analysis of empirical data resulting from the application of the LTP in international research: thus the Lausanne group is still working on redefining the variables under the headings of the 4 main functions already described in the GETCEF coding system.

The current coding system, is the Family Alliance Assessment Scale (FAAS, Lavanchy, Cuennet, & Favez, 2006; Lavanchy, Favez, Tissot, & Frascarolo, 2009) that has substituted the GETCEF according to the Lausanne group's main aim of defining broader quantitative macro-analytical indicators and redesigning the qualitative categories of Family Alliance in line with empirical findings and observations. While remaining conceptually related to the consideration of the four key functions of the triadic interactive exchange, the FAAS coding system is characterized by having broken the characteristics of body and gaze configurations into more specific observable behaviours, as well as for its increased attention to behavioural indicators of triadic attentional and emotional involvement and to parental and infant developing interactive skills. The coding system in fact, considers the following 10 variables (the coding system will be described in more depth in Chapter 4): Body postures and signals of availability to interact, Orientation of the gaze, and Inclusion of the partners, that are conceptually linked to the function of Participation; Role organization, derived from the previous Organization function; Co-constructed and shared activities and Parental Scaffolding, that seem to resemble the Focalization function and finally, Sensitivity and affect regulation and Family warmth that have been added in order to give an appropriate weight and to take appropriately into account the emotional and affect

regulation component of the interaction. Other two variables, Child's involvement and Co-parental coordination, have been considered to take into account the contribution of the Child's subsystem and of the Co-parental subsystem.

Also the Family Alliance categories have been slightly changed defining three main types of Alliance, each characterized by two sub-categories: 1) Cooperative Alliance (two subtypes: Fluid and Tense Cooperative Alliance); 2) Conflictual Alliance, (two subtypes: Covert and Overt Conflictual Alliance); 3) Disordered Alliance (Exclusive and Chaotic Disordered Alliance)

The validation of the FAAS coding system is still going on in multiple international sites.

### **3. Research on triadic family interactions through the LTP paradigm**

Research on the development and characteristics of triadic interactions according to the LTP approach refers to a series of studies, currently still limited, that in several international contexts have been concerned with the test of the usefulness of the LTP procedure and the study of the characteristics of triadic interactions during early childhood, and its potential precursors and/or associated contextual factors as well as child developmental outcomes.

A first series of studies has focused on the assessment of the LTP psychometric characteristics; a second group of studies has focused on the developmental trajectory of triadic interactions and on socio-emotional development emerging in the triadic interactive system considering from time to time the relationship with contextual factors, individual characteristics and children's developmental and psychofunctional outcomes. A brief review of these contributions will be presented in the following paragraph, and, in relation to the focus of my research, the strengths and limit of this approach and areas where it is necessary to further investigation will be stressed.

#### **3.1. The LTP model and measurement: its psychometric properties**

A series of preliminary research studies were aimed at the description and operationalization of the constructs and to the definition of observational variables,



criteria for scoring and classifying categories of Family Alliance and to the preliminary assessment of some psychometric characteristics of the coding system.

Regarding interrater reliability, a satisfactory degree of agreement between pairs of blind judges has been found, both on the dimensions ratings of the GETCEF coding system, (Cohen's kappa ranges from .64 to .92 with a mean kappa of .73; Carneiro, Corboz-Warnery, & Fivaz-Depeursinge, 2006; Fivaz-Depeursinge et al., 1998; Frascarolo et al., 2004), and on the total LTP scores (Pearson  $r=.97$ ,  $p=.003$ ; Carneiro et al., 2006; ICC ranges between Alpha =.83 and .96, with an average Alpha = .80; Favez, Frascarolo, & Fivaz-Depeursinge, 2006a; Favez et al., 2006b). Internal consistency was also good with Cronbach's alpha ranging between .79 and .86, with an average of .82 (Favez et al., 2006).

As mentioned in the previous section, the validity of the hierarchical model for the four functions of the Family Alliance was also tested: a longitudinal (Fivaz-Depeursinge, Frascarolo, & Corboz-Warnery, 1996) and cross-cultural analysis (Frascarolo et al., 2004) of the hierarchical model of the first three functions seems to confirm the hierarchy between them, in that each function had to be fulfilled in order to allow for, but not guarantee, the fulfilment of the following one.

With respect to the FAAS coding system, to our knowledge there is only one study (Bighin, 2009) that has been working to assess its reliability and validity for the evaluation of triadic interactions during the child's first year. Results are still consistent with previous findings obtained in the analysis of the GETCEF psychometric properties: indeed interrater reliability assessed calculating the agreement of two blind judges was good both for the coding of LTP at the baby's 4<sup>th</sup> month ( $K = .80$ ) and at the 9<sup>th</sup> month ( $K = .87$ ). Moreover, a high internal consistency of the 10 observational variables that lead to the total LTP score according to the FAAS criteria has been found with Cronbach's alpha ranging from .97 (4 months) to .95 (9 months). Finally, the exploratory factorial analysis performed taking into account the 10 FAAS variables found that a monofactorial model explains a significative rate of variance (84.55% at the 4<sup>th</sup> month and 76.64% at the 9 postnatal month). These results seem to give a preliminary evidence that FAAS variables significantly converged toward a unique and specific construct, that is the overall quality of triadic interactive competences (Bighin, 2009).

Few preliminary and partial findings (due to the small samples involved) about the validity of the LTP paradigm have been described by Fivaz- Depeursinge & Corboz-Warnery (1999): first, a study of nine clinically referred families and nine matched, non-referred, families of infants found predominantly collusive and disordered alliance patterns among the clinical families, and predominantly stressed and cooperative alliance patterns in non-referred families. In line with the Lausanne group's hypothesis, this data seems to indicate that greater miscoordination in triadic alliances would occur in families experiencing clinical levels of distress, giving a preliminary indication of LTP discriminant validity.

Preliminary evidence of test-retest reliability and predictive validity has been found in a longitudinal study of 12 families observed five times over the first year, and then again at age 4 years: a marked stability was indeed found in the type of family alliance over time as well as a significant relationship between the type of family alliance assessed at 9 months and child's socio-emotional development at 4 years, assessed clinically.

### **3.2. The development of triadic family interactions: correlates and children's outcomes**

A further series of studies was aimed at assessing the developmental trajectories of triadic interactions patterns during the child's early years of life, in order to detect their stability or discontinuity.

A few studies (Favez et al., 2006a; Favez et al., 2006b) have highlighted the stability of the quality of triadic interactions between pregnancy and the first 18 months of the child: in particular, the quality of the Family Alliance results to be stable during the first two years of the child in most of the families and the quality of the Coparental Alliance, assessed during pregnancy, seems predictive of the subsequent family interactions observed after the baby's birth. The stability and continuity of interactive patterns seems to be explained by a developmental process in which the coparental interactive competences are a style that remains stable in the construction of triadic interactions with the child, at least in the short term (Carneiro et al., 2006).

Moreover, in a longitudinal study focused on family interactions from pregnancy to the child's first 18 months, Favez et al. (2006a, 2006b) found that the total LTP scores

obtained by families during pregnancy and the 3<sup>rd</sup>, 9<sup>th</sup> and 18<sup>th</sup> month of the child, expression of the degree of Family Alliance, were all positively and significantly related, hence demonstrating the essential stability of Family Alliance during the first two years of the child.

However, the use of a person-centered method of analysis (cluster analysis), allowed for better understanding and description of the underlying developmental pattern and features of each family: in this respect, Favez et al., (2006a) identified three types of families in relation to the development of triadic interactive skills: the first group of families and also the most numerous group was called the "average stable" development: they showed average to high scores which remained relatively stable in all stages of the research being able to engage in playful affective interactions during the LTP at different ages, and to adapt their interactive style to the child's needs, abilities and developmental stages. The second group was defined as "average to low" development: these families received good scores both during pregnancy and at 3 months, but they showed a decrease in triadic interactive skills at the infant's 9 months that was maintained even at the 18 month stage. Finally, the third group, called "low with slight increase" patterns presented an opposite trend to the second one: these families demonstrated an unsatisfactory alliance before birth and at 3 months, whereas the alliance improved at 9 and 18 months but was still significantly lower than the alliance of the "average stable" group. It seems that it becomes easier for the parents to coordinate as the child is growing older. Even though a person-centered approach can be particularly useful to highlight and exploit inherent inter-family variability, on the other hand it does not allow for the detection of common and general features and developmental trends of triadic interactive skills beyond the variability of specific groups.

Anyway, the interest for this approach and for the emerging empirical data has led several international research groups to use the LTP in different cultural contexts: in the Italian context preliminary findings seem to confirm the predictivity of Prenatal coparental interactions on the quality of triadic interactions assessed at the fourth postnatal month (Simonelli, Fava Vizziello, Petech & Bettega, 2008). However, unlike the Lausanne group's studies, in the Padua group's studies an interesting and significant discontinuity of triadic interactions patterns has been observed: first of all, a decrease in

the quality of family interactions between pregnancy and the infant's 4<sup>th</sup> month has been found that seems to confirm the criticality of the introduction of the baby, as the third, in the marital dyad (Simonelli, Fava Vizziello, Bighin & Cattaneo, 2006); moreover, triadic interactive competences seem to increase significantly between the 4<sup>th</sup> and the 9<sup>th</sup> month of the baby (Bighin, 2009; Simonelli, Fava Vizziello, Bighin, & Petech, in press). These results have somehow reduced the generalizability of the stability of triadic interactive patterns, highlighting the need for additional and more detailed information in order to continue with the analysis of underlying meanings. At the same time, this mixed data pushes researchers to take into account other factors that might be involved in facilitating the development of functional triadic interactions and their stabilization over time.

In this direction, a few studies have considered the role played by individual, relational and contextual variables in the development of triadic interactive competences.

Looking at the child's individual characteristics such as gender and temperament, poor to no relationship have been observed with the characteristics of the Family Alliance, at least in the first two years of child's life: if, as it might be expected, there were no differences in the quality of family interactions controlling for child's gender (Carneiro et al., 2006; Simonelli et al., in press), unlike the researchers' hypothesis, temperamental characteristics of the child did not appear to significantly influence the quality and development of triadic interactions (Bighin, 2009). Indeed, the only significant findings concerned the negative relationship between the degree of sociability of the child and the quality of triadic interactions at 18 months (Favez et al., 2006b) so that, children perceived as less sociable by their parents, belong to the families that presented the best triadic interactions. Authors hypothesized that 18-month-olds perceived by their parents as more at ease when they are alone (and thus probably as more autonomous and able to regulate themselves without the adult) would experience more appropriate and functional family interactions.

Regarding the relationship between triadic interactions and the marital relationship, even in this case, no significant relationships emerged between the two aspects from the baby's birth to the preschool age (Carneiro et al., 2006; Petech et al., in press) except in the study of Favez et al. (2006a). In fact, analysing the relationship between different developmental patterns of triadic interactions (described above) and the quality of the

marital relationship, Favez and colleagues (2006a) noted that, interestingly, marital satisfaction was higher in families with an “average to low” pattern at 18 months than in the other families: they hypothesized that parents that maintain high marital satisfaction over this period might be too centred and focused on the couple, less flexible in assuming the parental and coparental roles and to reach a balance between these two subsystems (Favez et al., 2006a).

Some studies have also investigated the role of the father, and in particular his degree of involvement in child care, on the development and the quality of triadic interaction during early childhood. Results are fairly consistent in finding positive influences of father involvement on the quality of triadic interactions experienced at different ages of the child, either when assessed through fathers' discourse on their own experience with fatherhood and the child (Frascarolo, Zaouche-Gaudron, Rouyer, & Favez, 2005), or in relation to fathers' representations and expectations about the future fatherhood (von Kitzling, Simoni, Amsler, & Bürgin, 1999), or when the perception of fathers and mothers on the degree of father involvement in childrearing practices was taken into account (Petech, Simonelli, Altoè, in press).

Finally, the currently available data reports only a low correlation between the overall quality of triadic interactions within the family and children's outcomes during the child's first two years, even if, case studies, comparison of individual cases and the use of the LTP procedure in clinical-therapeutic setting, have permitted the detection of the relationship between a child's psycho-functional disorders or parental psychopathology and dysfunctional triadic interactions (Fivaz-Depeursinge & Corboz-Warnery, 1999; Phillip, Fivaz-Depeursinge, Corboz-Warnery, & Favez, 2009).

If then, at this moment, research conducted with the LTP paradigm has not completely and adequately explained the link between triadic interactive competences and children's developmental outcomes in the short and medium term, on the other hand, one of the most original and innovative contributions of the LTP paradigm concerns the study of infants' early triangular competences observable within mother-father-child interactions.

Indeed, Fivaz-Depeursinge and the Lausanne group stressed that the precursor of triadic competences and secondary intersubjectivity may be already found with the early manifestations of social triangulation at the infant's 3<sup>rd</sup> month of life (Donzé, 1998;

Fivaz-Depeursinge, 1998); these precursors would manifest in the patterns of infant's gaze orientation, facial, vocal and gestural expressions, attentional cycling and so on, the violation of which would lead to aversive behaviours (see Beebe & Lachmann, 2002 for a review). During the LTP, they observed a large number of behaviours that seem to be predictors of emerging triangular strategies: in fact infants made triangular bids rapidly shifting their attention and affect between their parents depending on the interactive configuration which seems consistent with the purpose of sharing the feelings experienced during interactions with two partners at the same time. Lavanchy (2002) found that most of 3-month-old infants demonstrated a capacity for rapid and alternated gaze shifts from one parent to the other. Moreover rapid transitions were more frequent during the 3<sup>rd</sup> part of the LTP when the mother, the father and the baby played together. Interestingly, infants' triangular capacities have been proved to be associated with the overall quality of triadic interactions: the higher infant's triangular competences, the better and more functional the quality of triadic interactions during the LTP (and vice versa).

Two more studies used a modified version of the LTP to study triangular bids more systematically. In order to stress the triangular abilities of infants, the procedure was modified to include a still-face episod. According to this scheme, 4-month-old infants were observed in four interactive contexts: first they play with both parents, then they play with one parent while the other remains simply present as third party; then one parent, but not the other, posing a still-face and finally they play again with both parents. In the first of these studies, Fivaz et al. (2005) highlighted young infant's competences of triangular coordination, both of attention and of affect in 4-month-olds: infants in fact shifted their gaze between their parents and typically signalled the same affect from one parent to the other when making transitions. Moreover infants seemed able to discriminate between the four interactive contexts as their triangular bids were context-specific: indeed triangular bids most frequently occurred during the 3-together parts; on the other hand, comparing their frequency in the 2+1 parts, Fivaz et al. (2005) have observed that they were most frequent during the Still Face episode which seem s to be a proof of infant's active search for the third party parent.

Starting from these data, McHale and colleagues (2008) then essentially replicated and further extended these findings within a sample of families with 3-month-old infants.

Assessing infants' triangular capacities, operationalized as the frequency of rapid multishift gaze transitions between parents during interactions, during the standardized LTP procedure and during a triadic interaction with a Still-Face episode involving both parents, they found that infants who showed more frequent gaze shifts during the LTP also did so during the Still-Face procedure. Moreover, a significant relationship between family coordination assessed through the LTP and infants' early triangular competences as assessed in the LTP was found and an association between infants' early triangular competences and the overall coparental cohesion and coparenting risk was observed with infants with higher triangular competences belonged to family with better coparental adjustment (McHale et al., 2008).

The observation of the infant's early triangular skills and their continuity through the development has led to the hypothesis that triangular competences would develop parallel to and independent of dyadic interactive competences (Fivaz-Depeursinge & Corboz-Warnery, 1999), thus extending the scope of the procedure to the observation of primary processes of early socio-interactive development..

### **3.3. Strengths, limits and future directions of the LTP paradigm approach**

As it is clear from this brief review, the Lausanne Group perspective can be considered as one of the most interesting contributions of the last 20 years for the study of family triadic interactions. This approach has considerable potential related to the efforts of these researchers to continuously improve the methodological issues through the comparison of empirical data and clinical observations. The growing interest for this approach seems to be linked to the attempt to develop a systemic theoretical and methodological model integrating the developmental perspective on the study of early interactions and family development and the therapeutic systemic-relational perspective. Moreover the definition of a standardized observational paradigm in order to assess early triadic interactions within the family system, the careful operationalization of scoring criteria and its linkage to observable behavior as well as the attention devoted to the infant's contribution to the family process are considered all aspects of strength of this approach.

However, these can also be partly considered as limitations: first, the attention paid so

far to the study of early triadic interactions has also been considered a limit of research with the LTP paradigm that has been limited mainly to families with infants. However, most research groups are devoted to the adaptation of the LTP for its use with families with preschoolers (Favez, & Frascarolo and the group in Lausanne; Fava Vizziello, & Simonelli and the Padua group), with school age children and adolescents (Malagoli Togliatti, & Mazzoni in Rome) and to the study of normative and dysfunctional processes that characterize family interactions during development.

Another critical aspect is related to the ecological validity of the method: it is often argued that the observations made in laboratory settings would not be completely generalizable and extendible as ecological assessment. However, as recently stressed by McHale and Fivaz-Depeursinge (1999), evidence from research studying families of infants and toddlers (Hayden *et al.*, 1998) seems to indicate that the observation of family functioning in laboratory setting would provide the same amount of information obtained through the observation of the family at home, both in referred and non-referred group of families (McHale *et al.*, 2008).

However, it is desirable that future research takes into account this limit and considers the use of both types of observational measures in order to compare their findings.

Despite these limitations, both in the context of developmental research, and in the clinical and therapeutic field, the use of the LTP approach and further studies in this area may help to shed light on what are the dynamics involved in the early construction of interactions within the family system.

In particular, with regard to developmental psychology, the use of the LTP will help to understand what the developmental trajectories of triadic interactive competences emerging within the family are, as well as the characteristics that underlay these overall competences, thus integrating acquisitions obtained from studies conducted according to the dyadic paradigm and helping to better understand child's socio-emotional development.

If in fact the family triad is considered as a primary relational matrix for the subsequent development of the child, further investigation of larger samples of the structural and procedural aspects of triadic interactions during early childhood will outline a normative model of the development of triadic interactive competences within the family.

Many research questions still need to be answered: surely further effort is needed in



order to better define the psychometric characteristics of the method and to determine its cross-cultural validity; on the other hand, given the mixed results previously reported, further studies are needed to assess whether the development of triadic interactive patterns is characterized by stability or by cycles of stability and instability during early childhood; it would also be desirable that the observation of triadic interactions could be more extended to older age children (such as preschool and school age) in order to provide a long term perspective on developmental patterns of these competences. At the same time, the investigation of the connection between triadic interactive competences and individual and contextual variables, particularly looking at child's socio-emotional development and mental and physical well-being will lead to the assessment of the predictive and heuristic role of triadic competences in the subsequent development as suggested by theory.

Alongside these considerations, it would be interesting to study more deeply the role that factors existing prior to the birth of the child or belonging to different levels of the family system (individual characteristics of parents and child, relational factors associated with couple and coparental relationship, contextual factors, such as the socio-economic status, the social support received, and so on) can play in fostering or conversely, in preventing the development of functional triadic interactions. In this perspective, the dialectic dialogue between developmental and clinical research will help to better understand interactive processes and family dynamics over time.



**CHAPTER 3**  
**A SYSTEMIC AND CONTEXTUAL PERSPECTIVE**  
**ON THE STUDY OF FAMILY INTERACTIONS:**  
**INDIVIDUAL, DYADIC AND CONTEXTUAL CONTRIBUTIONS**

Taking a systemic perspective to the study of developmental processes implies the need to consider the different levels of complexity of the child-environment system. In parallel, considering the level of mother-father-child interactions as the privileged object of research, as well as a primary developmental context for a child's socio-emotional development, brings with it a number of difficulties inherent to the study of processes to the family-level. The main difficulty resides especially in the multiple sources of influence on the family system: indeed the study of triadic processes need to consider the different levels of direct and indirect influences resulting from the interaction of individual, dyadic, inter-dyadic and contextual sub-systems (McHale & Cowan, 1996).

A similar reflection emerges by extending the perspective of developmental contextualism from the study of individual behavior (Lerner, 1986, 1991; Lerner & Kauffman, 1985) to the study of the family system functioning: intra-personal, interpersonal or contextual variables taken alone are not sufficient to explain a given phenomenon. It is rather the structure of the pattern of relationships between these factors and levels that would determine the properties of the system, so if the relationships between these variables change, probably the developmental system will change too (Dixon, Lerner, 1999).

In a similar way, Belsky's process model of the determinants of parenting (1984) hypothesized the interplay of multiple factors promoting or failing to promote the construction and development of family interactions. These factors related to three main domains: a) the individual characteristics of parents (such as the affective-relational history and characteristics of personality); b) the individual and developmental characteristics of the child (health, temperament, etc.); c) the contextual sources of stress and support (such as the quality of marital relationship , the socio-economic and working status and the social network). All these domains and related variables can exert their influence on the development of parenting both directly and indirectly, through their relationships.

In line with these perspectives this chapter will be devoted to a brief review of research that has investigated some of the factors that, with regard to the different levels of analysis, have constituted and constitute areas of study particularly relevant for their interface with research on family interaction and child development.

## **1. The individual level: the parents' and the child's individual contributions**

Many aspects related to the individual level have been and continue to be investigated both for their potential direct influence on child's socio-emotional development and for their connections with the dynamics of family relationships, through which they can also indirectly influence the child's developmental outcomes.

### **1.1 The role of parents' characteristics: a) parental affective-relational history**

Among these, many studies have considered the role of parent's emotional-relational history experienced during childhood within their families of origin in influencing the transition to parenthood, family relationships and the subsequent style of parenting and co-parenting.

Attachment theory provided a theoretical framework useful in clarifying the process of transmission of internalized relational models based on early experience on the individual's later relationships. The continuity between caregiving experiences during childhood and later individual ability to build and maintain satisfactory relationships, to choose to become a parent and the subsequent parenting style would be maintained through *internal working models* (IWM, Bowlby, 1973, 1980) of attachment relationships. IWM consists of the representations of the self, the other and the relationship that the subject constructs and potentially revises on the basis of his relational experience with significant figures (Carli, 1995).

In line with this perspective, individuals who received more sensitive care during their childhood would be more likely to develop secure working models, while those who experienced unfavourable and unresponsive caregiving in their childhood would be more likely to develop insecure working models. Secure and Insecure working models carry different representations of self, others and relationships, so that Secure subjects

have internalized a representation of others as reliable and supportive and of the self as worthy of support; in contrast, Insecure individuals tend to expect that others may be rejecting or unavailable and, in a complementary manner, they tend to perceive themselves as not deserving of support and care (Hazan & Shaver, 1994). Thus, early attachment relationships built within the family of origin are an important context for the internalization of patterns of emotional regulation and the development of a sense of felt security: from these early experiences the individual draws generalized models of relationships that will guide his expectations and behaviours in subsequent relationships (Cohn, Cowan, Cowan, & Pearson, 1992) and also parents' expectations and behaviours during interactions with their children (Bowlby, 1988; Van Ijzendoorn, 1992). At the same time research found that attachment working models can be modified as a result of the experience of new significant relationships developed over time (Bowlby, 1988).

In fact, there is empirical evidence in the literature of such continuity but not in terms of a linear causal relationship between childhood and adult relational experience (Van Ijzendoorn, 1992). Indeed the more current perspective in the study of intergenerational transmission of attachment is the contextual perspective (van Ijzendoorn & Bakermans-Kranenburg, 1997) according to which there would not necessarily exist a direct link between parents' early attachment experiences and their parental behaviour: past attachment experiences and the influence they exert on parental behaviour would be conversely mediated by other contextual factors. First of all, in the process of intergenerational transmission of attachment, an important role is played by parental sensitivity and responsiveness, that is the ability to perceive and understand the child's communicative signals and to respond properly. Moreover, the construction of new attachment relationships, such as the child-caregiver relationship, would be increasingly mediated by current mental representations of attachment. These representations are built not only on the basis of early attachment experiences, but are also based on the influence of later close relationships and of social support (Belsky, 1984). In particular the intimate relationship with an adult partner also seems to favour the revision of attachment representations. Thus the adult can reach a more appropriate symmetry in the relationship with his parents, as well as the ability to assume the role of caregiver for his own children (Carli, 1995).

Most studies investigated the relationship between the parent's affective-relational

history during childhood and attachment representations and, the subsequent parenting style, caregiving competences and their influence on the construction of the attachment bond between the child and the caregiver and on child development and well-being from infancy onward (Belsky, 1984; Main, Kaplan, & Cassidy, 1985, Van Ijzendoorn, 1992).

Regarding the specific link between early relational experiences in the family of origin and subsequent parenting skills and individual functioning, studies that focused on the intergenerational transmission of neglect and abuse had provided an early indication of the connection between early family experiences and subsequent parental behaviour (Belsky, 1978, 1980; Parke & Collmer, 1975) highlighting how, albeit in a non-deterministic way, parents who abused or neglected their children, were more likely to have been abused or neglected as children (Belsky, 1978, 1980). Moreover, studies on the origins of depression found that the experiences in the family of origin, and in particular the experiences of separation from the parent, were not only a risk factor for the development of affective disorders (Brown & Harris, 1978), but also for the subsequent ability to take care of one's own children (Frommer & O'Shea, 1973b). Similarly, research on the transmission of paternal involvement have shown the association between paternal caregiving experienced during childhood and subsequent parenting behaviour and involvement in child care (Sagi, 1982).

In literature many studies seem also to confirm the relationship between parents' attachment working models and the quality of parent-child relationship and child attachment to his parents: indeed parents' quality of attachment assessed during pregnancy was found to be predictive of 1-year-old infants attachment (Steele, Steele, & Fonagy, 1996) so that children of Secure parents would be more likely to develop a Secure attachment too whereas children of Insecure parents would be probably Insecure too (van Ijzendoorn, 1995) and would experience less sensitive and responsive parenting from their Insecure parents than Secure children (Cohn et al., 1992; Slade, Belsky, Aber, & Phelps, 2002). Beyond these empirical findings, a “transmission gap” of pattern of attachment has been found in 25% of the cases thus highlighting the need to take into account the role of individual, dyadic and contextual variables to better understand the process of intergenerational transmission of attachment (van Ijzendoorn & Bakermans-Kranenburg, 1996).

In this perspective, many studies focused on the study of the role that early experiences with parents during childhood and attachment representations derived from these early relationships play on different levels of the family system. For instance, working models of attachment and attachment history were linked to the quality of the marital relationship during the transition to parenthood: indeed the experience of inappropriate and unresponsive caregiving during childhood was found to be associated with less positive functioning of the marital relationship (Belsky & Isabella, 1985; Cox et al., 1985) and, subsequently, with less positive caregiving of children (Cox et al., 1985; Serbin & Karp, 2003). Moreover the attachment style of each partner, as the combination of different patterns within the marital dyad, may be a predictor of the quality of parent-child interactions (Crowell, Fraley, & Shaver, 1999; Cohn et al., 1992): in particular parent-child interactions would be particularly affected when both partners have an Insecure attachment whereas the presence of at least a Secure partner in the marital couple seems to be a protective factor acting in a compensatory way, not only on the parent-child relationship but also on the quality of the marital relationship (Cohn, Silver, Cowan, Cowan, & Pearson, 1992).

The adoption of the systemic perspective in the study of early relational and interactive dynamics within the family has also encouraged research in this area to move from a dyadic to a triadic perspective on the evaluation of the role of early emotional-relational history of parents in relation to co-parenting behaviour and family interactions. The results are consistent with previous research: in fact family relationships of Secure adults were found to be more harmonious than those of insecure individuals (Cohn, Cowan, et al., 1992; Cohn, Silver, et al., 1992; Crowell et al., 2002) that on the other hand reported lower levels of family functioning (Dickstein, Seifer, Albus, & Magee, 2004) and positive climate within the family (Diehl, Elnick, Bourbreau, & Lavouvie-Bief, 1998) than Secure ones.

Considering instead the relationship between attachment, marital relationship and family functioning, the results are somewhat mixed: Paley and colleagues (2005) found that the association between marital difficulties and family functioning depended on the attachment of both partners; in fact, in families where fathers had an insecure attachment, negative escalation in the marital relationship was associated to less positive family relationships whereas when the fathers had a secure attachment this

association was not observed.

Less consistent findings are presented in a study by Talbot, Baker, & McHale, (2009) who examined effects of the quality of the marital relationship and of parents' attachment representations during pregnancy on the quality of triadic co-parenting processes after the baby's birth. They found that parents' attachment was predictive of the quality of triadic co-parenting at the infant's 3<sup>rd</sup> month of life even though not always in the direction expected: indeed particular families with Insecure mothers and, conversely, Secure fathers were more likely to show a higher degree of coparental conflict. On the other hand families with Insecure fathers showed lower levels of cohesion with Insecure father/Secure mother dyads showing the lowest levels of cohesion whereas Secure/Secure dyads the highest ones.

Summarizing these data, it would seem that parental competence would be partly rooted in the parents' emotional-relational history, in the caregiving practices and in their attachment styles and working models developed through the life cycle and transmitted, even though in a non-deterministic way, by previous generations (Scabini & Iafrate, 2003; Serbin & Karp, 2003) through a process that not only affects the child's well-being and development (Cassidy & Shaver, 1999; Gloger,-Tippelt, Gabriele/Huerkamp, 1998), but also later marital relationships and subsequent parenting competences.

Research on connections between early relational experiences within the family of origin and the quality of subsequent family relationships that the subject, once an adult, is able to build, surely needs further investigation in order to further include at least the triadic level of family relationships. On the other hand it might be interesting to expand the investigation to the links between the dimensional aspects of early experiences that converge to define parents' attachment patterns and the quality of subsequent relationships in order to grasp nuances and details that a categorical approach might fail to capture completely.

## **1.2 The role of parents' characteristics: b) maternal postnatal depression**

Another aspect that characterizes the individual dimension of family relationships during the transition to parenthood and the construction of interaction and family dynamics, is the psychological well-being of parents. The dyadic and mother-centred



perspective that characterized the research on the development of infant-caregiver early interactions as well as socio-emotional development in early childhood focused in particular on maternal psychological well-being.

Indeed, the birth of a child, especially the first child, represents an event with an extraordinary impact in many areas, not only for women but also for the marital relationship and the whole family system.

The normal psycho-physiological and environmental changes occurring in the early postnatal period can produce a number of difficulties for women in the transition to parenthood: in this stage many women face the risk of different degrees of psychological suffering (Campbell & Cohn 1991; Dennis, Janssen, & Singer, 2004).

Among the possible manifestation of female psychological difficulties in the period following the birth of a child, postnatal depression is one of the most investigated probably because of its relatively high incidence as well as because of its potential effects on all the levels of the family system. Indeed in Western countries, the Post-Natal Depression (PND), affects between 13 and 20% of women (Monti & Agostini, 2006; slightly different range was estimated by the American Psychiatric Association 2000; Halbreich, 2006; Ammaniti, Cimino, & Trentini, 2007).

Postnatal depression is defined as a non-psychotic depressive disorder that begins or extends into the postnatal period of mild or moderate severity, with symptoms similar to those of a depression that can occur during other life periods and determining a degree of impairment of the functioning of the woman. The depressed mother feels tired, fatigue and a lack of energy, and these manifestation are often not recognised to be something more than the normal adjustment to the birth of the child and his/her care, both by the mother and her environment.

Beyond the different kinds of manifestation there are some common symptoms in the disorder such as: depressed mood (despair, sadness, crying, etc.); anxiety (or panic attacks; excessive concern for own and the child's health); sense of inadequacy, (pessimism, guilt, self-blame, etc.); feeling of being exhausted; psycho-motor slowing, loss of interest for different kind of activities; hyper- or hypo- activity; mood alteration; sleeping and feeding disorders; thoughts about death and suicide (Monti, & Agostini, 2006).

The PND onset peak onset most frequently occurs between 8 and 12 weeks after the

delivery (Guedeney & Jeammet, 2001), but it can also occur during the second postnatal semester even if this is less studied in the literature (Monti & Agostini, 2006). The duration of the disorder and, consequently, its impact on the individual, on other family members and in dyadic and triadic interactions, are variable: from 25% to 60% of PND episodes have a remission in a time ranging from three to six months, while 25-15% within a year; in the remaining cases, the PND persists for some years (Monti & Agostini 2006).

From a multi-factorial point of view, PND ethiopathogenesis has been found to be associated with four kind of factors:

- 1) biological factors, linked to biochemical and hormonal changes in the early postnatal period, (Beard et al. 2005; O'Hara, Schlechte, Lewis, & Varner, 1991);
- 2) obstetric-gynaecological factors, such as the history of pregnancy and childbirth (Berle, Aare, & Mykletun et al., 2003; O'Hara, 1997), complications during pregnancy and/or the delivery (Johnstone et al., 2001) and women's perceptions about their pregnancy and the support they have received from their environment and the medical staff during the pre- and perinatal period (Monti & Agostini, 2006).
- 3) Individual-psychological factors: such as a history of depression before pregnancy (Beck, 2001; Robertson, Grace, Wallington, & Stewart, 2004), or episodes of depression or anxiety during pregnancy (O'Hara & Swain, 1996; Robertson et al., 2004) or a family and/or individual history of depression; temperamental and personality characteristics (such as anticipatory anxiety, fear of new situations, shyness, asthenia, neuroticism, interpersonal sensitivity, negative cognitive style, a negative attribution style and external locus of control, low responsivity, self-acceptance, empathy, altruism, and so on; Josefsson, Larsson, Sydsjö, & Nylander, 2007); the type of parental care received during infancy and the succeeding attachment style (Meredith, Noller, 2003) are all factors resulted associated to a higher likelihood of PND;
- 4) psychosocial factors: among these, the conflict that derives from the socio-cultural orientation towards the birth of a child and between the expectations associated with the pregnancy and its real experience (Beck, 2002); the experience of recent stressful life events (Brown & Harris, 1993); difficulties in the marital relationship and the lack of support from the partner (Beck, 2002); low social support and low socio-economic status (Boyd, Worley, 2006) are particularly relevant and investigated factors.

Summarizing these data, in the literature about the risk and protective factors of PND the social and family context and previous psycho-pathological disorders are considered the best predictive factors of PND (Verkerk, Denollet, Van Heck, Van Son, & Pop, 2005).

But what about the effects of the PND on the new family system? PND has been proved to have different consequences for different levels of the family: many studies have highlighted how the presence of a depressive symptomatology in the Postnatal period can exert its influence not only on an individual level, from time to time, considering, the mother, the child and the father, but also on the construction of mother-child interaction.

Of particular concern is the growing body of research suggesting that high levels of maternal depression can compromise sensitive caregiving (Goodman & Gotlib, 1999; Weinfield, Sroufe, Egeland, & Carlson, 1999). In fact, depressed mothers show a reduced sensitivity to the child's signals that results in hostile and intrusive interactive behaviour or, vice versa, in withdrawal and reluctance, asynchronous interaction, less responsiveness to changes of facial expression in their babies, several critical self comments, lack of emotional attunement and presence of negative affection (Monti & Agostini, 2006; Stanley, Murray, & Stein, 2004; Tronick, 2005). Moreover depressed mothers' speech seems to be characterized by an imbalance between emotional and information-related content than that of non-depressed mothers (Herrera, Reissland, & Shepherd, 2004). Considering all these data it is clear that maternal depression may constitute a risk and a limit for infants successful intersubjective experiences, with possible unfavourable consequences on brain and psychological development (Trevarthen & Aitken, 2001). The observation of interactions between depressed mothers and their children, revealed that depression significantly affects maternal behaviour, limiting the mothers' capacity for emotional expression and the quality of communicative exchanges (Tronick & Weinberg, 1997; Tronick & Gianino, 1986a).

According to Tronick's model, through the interactive experience with their depressed mothers, children would be more likely to develop dysfunctional representations of the interactions, of themselves and of their mothers: interactions would be represented as unrepairable and in consequence, a defensive relational model characterized by an excess or a lack of self-regulation would be developed that might be extended to other

relationships; at the same time they would develop a representation of themselves as non competent whereas the representation of their mothers would be imbued with sadness, anger and lack of confidence (Tronick & Gianino, 1986a).

In summary, depressed mother-infant dyads seems to show more signals of relational difficulties and moderately or pathologically compromised interactions (Monti, Agostini, & Marano, 2006) than non-depressed mothers-infant dyads.

Moreover maternal PND has been proved to be associated with many potential negative outcomes, such as the alteration of child emotional development and behavioural inhibition. In particular, as a consequence of the dysfunctional interactions with their mothers, infants seem to present less ability in attention and emotions regulation, lower performance on an object permanence task and lower scores on the Mental Development Index of the Bayley Scales (Murray & Cooper, 1996).

The anxiety of the mother may influence the development of a secure attachment, particularly when maternal depression is chronic or when the mother presents an insecure attachment too (McMahon, Barnett, Kowalenko, & Tennant, 2005) even though results on the impact of PND to child's attachment are somewhat mixed: some studies seem to confirm the presence of a significant influence, though modest in some cases, between maternal depression and the child's insecure attachment. For example, Murray and colleagues (Murray, 1992; Murray & Cooper, 2003) highlighted the prevalence in children of depressed mothers of the avoidant insecure attachment style. A meta-analysis conducted by Martins e Gaffan (2000) showed that children of depressed mothers were more likely to show avoidant and disorganized Insecure attachment compared to children of not depressed mothers. On the other hand, in the presence of maternal PND, child insecure or disorganized attachment would be more likely to occur in situations of low socio-economic status (Lyons-Ruth, Lyubchik, Wolfe, & Bronfman, 2002) and with chronic or severe maternal depression (Lyons-Ruth et al., 2002; Teti, Gelfand, Messinger, & Isabella, 1995). However, in these cases it is particularly difficult to distinguish between real effects of maternal depression and of other psychosocial risk factors (Downey & Coyne, 1990, Goodman & Gottlib, 1999).

But maternal PND can affect also fathers' well-being: indeed, fathers with partners that present PND are more likely to experience depressive episodes in the postnatal period compared to partners' of not depressed women (Paulson, Dauber, & Leiferman, 2006).

At the same time, the father may play a protective role in the development of the child in the situation of a mother with PND (Fivaz-Depeursinge et al., 2005). In this sense, the only study on the effect of PND in the development of triadic (mother-father-child) interactions within the family stressed that there were no differences between the triadic interaction in families with mothers with post-partum depression and in families with mothers without depression observed during a free play situation (Frizzo, & Piccinini, 2007).

This finding is particularly interesting, even though preliminary, because it is in contrast to the results obtained in previous studies focused on the dyadic level of interactions: the possible role of the interactive context (in this case related to the father's presence) as a moderator of PND impact, certainly deserves to be further investigated because it may provide useful reflections on the possibilities of intervention and prevention in this field.

### **1.3 The role of child's characteristics : age, gender and developmental skills**

As described in chapter 1, at birth, infants show a number of perceptive, cognitive and interactive skills that put them in a position to contribute actively to the construction of family interactions and consequently to develop their socio-emotional competences.

Many individual characteristics of the child during early childhood may influence the construction of family ties as well as altering existing relationships between the various subsystems (the marital relationship, the coparental relationship, etc.): first of all child's age and developmental stage, which brings with it new challenges not only for the baby but also for the interactive context that, from time to time, must re-adapt to new developmental needs, to capture the child's signals and further promote his development.

When considering the systemic level of family interactions, another feature particularly salient is the child's gender: indeed it conveys a set of physical, temperamental and behavioural attributes which not only are immediately manifest to the interactive partner but also involve parental representations concerning their gender identity, expectations, stereotypes and social representations and cultural models, which in turn potentially affect the level of interaction and subsequently the formation of the child's sense of self

and gender identity. In this direction, studies that have investigated the role of gender in child-parent dyadic interactions have generally confirmed the influence of this aspect underlining how cultural influences and variables related to the particular type of interactive context appear to act to produce experiences of affective communication, interaction and effective emotional repair potentially different in mother-son and mother-daughter dyads. Tronick and Cohn (1989) have indeed observed that in the first 9 months of an infant's life, mother-son interaction is characterized by a degree of coordination and synchrony significantly higher than that of the mother-daughter dyads, in particular mother-son pairs are in well-coordinated states about 50% more of the time than mother-daughter dyads at 6 and 9 months (Tronick & Cohn, 1989).

Moreover, the contextual interactive model of the socialization of gender-typed behaviour (Deaux & Major, 1987; Leaper, Anderson, & Sanders, 1998) stressed that the incidence of gender differences in caregiver-child behaviour should be considered as a complex interaction of context and of the partner's gender. Concerning the interplay between gender and interactive context, several studies (Lindsey & Caldera, 2006) showed the presence of gender-based differences in parent-child behaviour in relation to different types of playful contexts and activities (Leaper & Gleason, 1996; Leaper, Leve, Strasser, & Schwartz, 1995) as well as in relation to dyadic or triadic interactive contexts (Leaper et al., 1998). During triadic interaction, mothers of sons were found to be more supportive than mothers of daughters (Smetana, Abernethy, & Harris, 2000) and both parents were found to express more positive and negative (only the mothers) affects toward boys than toward girls during triadic interactions (Lindsey & Caldera, 2006).

However, studies that have considered the overall quality of triadic interactions in the first year of the child found no differences in the overall quality of family interactions controlling for child's gender (Carneiro et al., 2006; Simonelli, et al., in press).

Child's gender thus seems to constitute a significant aspect in influencing parental behavior in dyadic and triadic interactive context, though, in reference to the latter, certainly the data are only partially consistent and therefore more studies are needed to clarify the various positions.

If it is true, as many argue, that children are likely to spend a similar amount of time in triadic or group context as in dyadic interactions (Belsky, Crnic, & Gable, 1995; Clarke-

Stewart, Gruber, & Fitzgerald, 1994), it is important to further explore the effects that gender-based differences in patterns of interaction within the mother-father-child context might play in children's socio-emotional development.

## **2. Dyadic and relational contributions to the development of family interactions**

This paragraph will consider some of the dyadic and contextual factors that, as precursors or contingent factors, may facilitate or hamper the construction of family interactions functional to a child's development during early childhood and the preschool age.

First, the role of father involvement in the daily relationship with the child will be discussed because, in relation to socio-economic and cultural changes, it may represent a relevant source of support for the whole family system and for individual members of the family and its subsystems as well.

Then the focus will shift to the analysis of the potential role of the mother-father dyad subsystem: in considering its contribution to the quality of triadic interactions and to the development of child's socio-emotional competences, the role and functions of the "marital dyad" will be distinguished from those of the "co-parental dyad" (Katz & Gottman, 1996; McHale, & Cowan, 1996; McHale & Fivaz-Depeursinge, 1999).

If members of these dyads are obviously the same, the functions and motivational systems that constitute and maintain these two sub-systems are relatively independent and only partially overlapping (Margolin, Gordis, & John, 2001; McHale & Cowan, 1996). Furthermore, while the contribution of the marital dyad to the construction of family relationships is maintained at an essentially dyadic level, the coparental dyad functions at a systemic triadic level and is generally considered as a high-order level factor.

### **2.1. Father involvement**

Taking a theoretical and methodological triadic approach to the study of family interactions draws interest to the role of the father in childrearing practices and, consequently, to the early interaction with the baby, being also a potential mediation

factor of the mother-child relationship, through his supportive and cooperative function in parenting tasks (Labbrozzi, 2005; Lis & Zennaro, 1998).

In relation to the increasing change in the father's role and involvement in the relationship with the child and in the family daily management linked to the strong social and cultural changes that have affected the traditional family in recent decades, the study of the father's role is an area of interest and research still in expansion.

Many studies have considered the father's role in terms of father involvement (Lamb, 2000) that is however, a construct broadly and differently used across studies in order to operationalize several quantitative and qualitative measures referring to different components of the father-child relationship: such as the specific activities the father performs, the degree of paternal responsibility for childcare, the amount of time spent with the child, or the father's emotional involvement during father-child interaction (Barnett & Baruch, 1987).

Recognizing the multidimensional nature of father involvement and the several ways through which fathers can meet their children's needs, Lamb (1987) emphasized the role of three components of father involvement: 1) *interaction*, that is father's direct engagement in care or playful interactions with the child; 2) *accessibility*, e.g. paternal physical and psychological presence and availability; 3) *responsibility*, e.g. father's participation and degree of commitment towards indirect childrearing tasks.

Other researchers have distinguished between the types of activities in which fathers and their children engage (e.g., play, direct care) or between the quantity and quality of father involvement (Palkovitz, 1997) in daily childrearing practices (cleaning, diapering, feeding and so on) considered functions specifically involved in the father's parental role (Beitel & Parke, 1998; Cowan & Cowan, 1988).

If initially most of the studies had dealt with the father's role paying more attention to its influence on child development during the school age and adolescence, in recent decades research interest shifted toward the study of fatherhood during infancy and early childhood focusing on the affective and relational characteristics of father involvement and to its influence on a child's early social, emotional and cognitive development.

Some authors have therefore operationalized the degree of paternal involvement as a function of the father's participation in child care or housework as this was considered



a very important factor for women which also seems to affect marital satisfaction and the development of well-coordinated family relationships.

An expanded and more complete look at paternal involvement can be gained taking into account not only the various ways in which men demonstrate engagement and commitment to the child and the family (Lamb, 1995), but also examining in detail how women consider their partners' contributions to the baby and the family: indeed mothers' perception of their partners' commitment as parents and, in general, the quality of the marital relationship may be a predictor of actual father involvement in the child caregiving (Labbrozzi, 2005; Lamb, 1986; Lis & Zennaro, 1998). These data highlight the need to consider both perspectives (e.g. maternal and paternal) for the assessment of the paternal function as elements that may influence the construction and development of parenting as well as marital and family processes.

Considering the quantitative aspects of paternal involvement, studies concerning the amount of time spent by fathers in activities with their children during early childhood have shown a real paternal responsibility and competence in caregiving tasks, but, however, the amount of time was found to be substantially lower than the maternal one (Parke et al., 1979). From a qualitative point of view other differences between maternal and paternal involvement have been observed: indeed fathers were more likely to spend more time in play activities (Lamb, 1980) and to interact with their children in triadic or family contexts, rather than in dyadic situations (Belsky & Volling, 1987).

Considering the effect of paternal involvement on various levels of the family system in general, paternal involvement is associated with child's outcomes (Lamb, 2004), higher marital satisfaction in both partners (Levy-Shiff, 1994), the quality of mother-child relationship, and the fathers' own psychosocial well-being and adjustment (Palkovitz, 2002).

Considering the association between paternal involvement and child's outcomes, paternal interactive competences, observed during pregnancy and the first months of the baby, were associated with preschoolers' ability in story-telling about themselves and their families (von Klitzing & Burgin, 2005) thus highlighting the father's role in the structuring of the representational world of the child about himself, his caregivers and relationships. Moreover, fathers more involved in caregiving practices were more sensitive with their infants (Feldman, 2000; Roggman, Boyce, Cook, & Cook, 2002),

and their infants were more sociable as well (Frascarolo, 2004).

Other studies have confirmed the positive role of paternal involvement in child development and well-being from infancy onward: indeed fathers' involvement was found negatively related to children's hyperactivity, and, on the other hand, positively associated to children's pro-social behaviour (Flouri, 2007); furthermore, the proximity and involvement of fathers in childhood would foster psychological adjustment and well-being in adolescence and adulthood, particularly in female children (Amato & Rezac, 1994; Flouri & Buchanan 2002) and the building of personal successful relationships subsequently (Flouri & Buchanan 2003).

Summarizing these data, paternal involvement has been proved to play an important role in child development and adjustment from early childhood to adulthood, being associated with the child's psychosocial well-being and social, emotional, and cognitive functioning (Lamb, 2004).

On the other hand some children's characteristics, such as the child's gender, can influence paternal involvement: indeed fathers were found in general to be more involved with their sons than with their daughters from early infancy (Levy-Shiff, 1994) and this trend would become more evident as the child grows older (Lamb, 2000; Pleck, 1997).

Anyhow, as previously mentioned, paternal involvement may also play an important buffer effect in limiting maternal difficulties and the decrease of marital satisfaction during the transition to parenthood (Belsky & Pensky, 1988; Cowan & Cowan, 1992; Heinicke, 1984; Levy-Shiff, 1994) and contributing to the marital, father-child, and mother-child relational systems (Belsky, Rovine, & Fish, 1989; Levy-Shiff & Israelashvili, 1988; Ruble, Hackel, Fleming, & Stangor, 1988).

A bidirectional and positive relationship between paternal involvement and marital satisfaction seems to work to create a virtuous cycle through which a good marital relationship would foster positive and higher father involvement, and, in turn, an appropriate level of father involvement would promote the maintenance of a satisfactory marital relationship (Lamb, 2002; Cowan, Cowan, & Kenig, 1993; Doherty, Kouneski, & Erickson, 1998).

Moreover, high paternal involvement was associated with a higher maternal involvement with the effect of creating a functional context for the shared parenting and

caregiving of the child (Amato & Rezac, 1994).

All these data taken together seem to suggest that paternal involvement would also affect the family system as a whole: in this perspective, paternal involvement may influence a child's outcomes directly, as previously described, and at the same time, indirectly, through the support provided to the whole family system and the creation of more functional and harmonious relationships which in turn promote the child's development and adjustment (Kelly, 2000; Lamb, 1986).

Indeed, recent studies seem to confirm the positive effect of paternal involvement on the quality of triadic family interactions, both during early childhood and the preschool age of the child: either when assessed through fathers' discussion about their own experience with fatherhood and their child (Frascarolo et al., 2005), or in relation to fathers' representations and expectations about the future fatherhood (von Kitzling et al., 1999), or when the perception of fathers and mothers on the degree of paternal involvement in childrearing practices was taken into account (Petech et al., in press), the father's role was found to exert a positive effect on the whole family system.

However, considering the many direct and indirect effects of paternal involvement on different individuals, family subsystems and the family as a whole, it is surely desirable that further studies consider the developmental trajectories of paternal involvement and its links over time with the relational dynamics of the mother-father-child triad.

## **2.2. The quality of the marital relationship**

The functioning and characteristics of the marital subsystem is another factor that has been broadly investigated by research on the transition to parenthood and on the development of family relationships.

The marital relationship was regarded as one of the main sources of stress or support for new parents with the possibility, potentially, to exercise the most positive or negative effects on the parenting function and, consequently, on child's development (Belsky, 1981, 1984; Crouter, Belsky, & Spanier, 1983). At the same time it is necessary to remember that the quality of the marital relationship may itself be a function of the history and personality of each member of the couple influencing parenting directly but also indirectly, by affecting parents' well-being and consequently parenting itself

(Brown & Harris, 1978; Carveth & Gottlieb, 1979; Johnson & Lobitz, 1974; Wandersman, Wandersman, & Kahn, 1980).

The transition to parenthood and the transition from being a couple to being a family is a complex but potentially developmental challenge for both the individual and for the couple (Cowan & Cowan, 1992). Indeed, many studies highlighted that the quality of the marital relationship before the transition to parenthood seems to be involved in the emotional, relational and social changes occurring between the partners and with the broader context, in the evolution of the marital relationship after the baby's birth and, finally, in the quality of the child-caregiver relationship from infancy onward (Belsky, 1984; Easterbrooks & Emde, 1988; Engfer, 1988; Zennaro, Lis, & Mazzeschi, 2001).

Moreover, the quality of the marital relationship prior to conception is closely linked with the ability to better welcome the child's birth and the quality of subsequent family relationships (Cowan & Cowan, 1992) while the quality of the marital relationship during pregnancy is associated with the quality of the coparental competences assessed in the same period (only for fathers, however, Carneiro et al., 2006) and predictive of the quality of postnatal parenting (Cowan, Cowan, Heming, & Miller, 1991; Cox, Paley, Payne, & Burchinal, 1999).

This in turn seems associated with the capacity of each partner to address in a flexible and constructive way the changes occurring during the transition to parenthood and to establish and maintain a sub-system that includes only the couple, even within the new family triad.

Research on the evolution of the marital relationship during the transition to parenthood in fact confirmed that this period represents a time of crisis and change: several studies indeed highlighted that one of the most relevant changes that involves the marital couple is the significant and progressive decrease of marital satisfaction from baby's birth lasting for the subsequent years and longer, particularly for women, and an increase of marital conflict and negative affects (Belsky & Pasco Fearon, 2004; Cowan & Cowan, 1988; Cowan, et al., 1991; Twenge, Campbell, & Foster, 2003).

Moreover, after the child's birth, a decline of the "companionship" function of the marital relationship takes place: the couple usually spend less time together and engage in fewer joint and pleasure activities (Levy-Shiff, 1994); on the other hand mutual support and sense of belonging (partnership function) would increase (Belsky, Spanier,

& Rovine, 1983; Belsky, Lang, & Rovine, 1985).

As previously mentioned, many researchers have also confirmed the influence of the marital relationship before, during and after the transition to parenthood, on parenting (Belsky et al., 1995; McHale, Crouter, McGuire, & Updegraff, 1995; Pancer, Pratt, Hunsberg, & Gallant, 2000), on the quality of the parent-child relationship (Zennaro et al., 2001) and on the child's future development and adjustment (Fishman & Meyers, 2000; Goldberg & Easterbrooks, 1984; Howes & Markman, 1989).

There are three main explanatory hypotheses about the influence of the marital relationship and its direction on parenting and family relationship: according to the "Spill-over Hypothesis" (Easterbrook & Emde, 1988) parents who experience satisfactory marital relationships would be more available and sensitive to the needs of the child, stressing therefore that a positive couple relationship would in turn positively impact parenting skills. Conversely, high marital conflict and dissatisfaction would exert a negative impact on parenting and family relationships. By contrast, the "Compensatory Hypothesis" (Engfer, 1988) supports an inverse relationship between marital satisfaction and the quality of the parent-child relationship, by postulating that high marital distress may increase the attention of parents towards their children, because of the need to compensate in the child-caregiver subsystem the satisfaction lacking in the other one. Finally, according to the "Common Factor Hypothesis" (Binda, 1997) the personality characteristics of parents might be considered as explanatory variables underlying both the relationship with the child and that between partners. The hypothesis that seem most confirmed by the literature is the "Spill-over hypothesis" that fits also with Belsky's model on the determinants of parenting (1984) previously presented.

Taking a systems perspective to the study of triadic and family relationships, however, seems to bring out certain differences in the direction of the relationship between the quality of marital relationship and the quality of mother-father-child interactions following the birth of the child.

On the one hand, many studies found a significant relationship between the presence of marital distress, even when assessed, during pregnancy and the later quality of the coparental relationship (Katz & Low, 2004; Kitzmann, 2000; McHale, 2007) highlighting that unsatisfactory marital relationships would lead to parental competitive

behaviours (Belsky et al., 1995; Katz & Gottman, 1996; McHale, 1995) and less functional family relationships (Brody & Flor, 1996; Frosch, Mangelsdorf, & McHale, 1998; McHale, 1995; McHale et al., 1999).

On the other hand, recent studies have found little or no relationship between the quality of the marital relationship and the quality of mother-father-child interactions assessed through the Lausanne Trilogue Play paradigm during the transition to parenthood until the preschool age of the child (Carneiro et al., 2006; Petech et al., in press). Moreover, when a significant relationship between these variables was detected, it went in the opposite direction to that expected: Favez and colleagues (2006a) have indeed shown that during the infant's first year, couples with high marital satisfaction showed a trend in the quality of family interactions characterized by a decrease of these skills over time, assuming that this trend may be related to difficulties in the access and negotiation of coparental roles when the parental dyad is too centred and focused on the marital relationship (Favez et al., 2006a).

All these data taken together seem therefore to confirm that the process of crisis and decline faced by the marital relationship during the transition to parenthood and early infancy might be an adaptive process, functional to the introduction of the third (e.g. the baby) in the marital dyad, to the assumption of the parental role as well as to roles' negotiation within the co-parental relationship. If relations between dyadic subsystems (marital relationship, child-caregiver relationship) seem to emerge clearly highlighting the protective and fostering role of a good and positive marital relationship after the child's birth, these relationships are less clear when considering the systemic level of whole family interaction and relationships: further studies are needed in order to better clarify the nature and direction of their relationships, and the possible mediating role of other factors.

### **2.3 The coparental relationship**

The coparental relationship has been differently defined since its introduction by S. Minuchin's (1974) as a main concept of his theory of family structure. According to Minuchin, the term "coparenting" refers to the manner in which partners share the family management and the child's caregiving and rearing practices and mutually

support each other in this task. Essentially the coparental relationship is based on the partners' mutual support and commitment to being the parents of the child thus introducing the study of parenting as a triadic, high-order level function of the family system (McHale, 2007).

The growing interest in this level of analysis of family relationships and the gradual establishment of reliable methods to assess it has produced several studies that have considered the connections between the quality of the coparental relationship, the marital subsystem, and child's development and outcomes.

First of all, much data in the literature seems now to confirm the connections between the quality of the co-parental relationship and child's developmental outcomes and well-being: indeed coparental relationships characterized by cooperation and warmth would favour child's socio-emotional adjustment, in contrast, a dysfunctional coparental relationship can be a risk factor for the development in children of internalizing and internalizing problems, insecure attachment and adjustment difficulties (Fivaz, Frascarolo et al., 1996; Frosch, Mangelsdorf, & McHale, 2000; McHale & Rasmussen, 1998; McHale, 2007).

Given the potentially long-lasting effect of early coparenting processes on child outcomes, there has been a growing interest in identifying those factors operating before the transition to parenthood, which would act as the foundations for the development of different coparental relationships.

Several authors have indeed pointed out how at a representational level, co-parenting can be considered a function that is born and evolves from pregnancy, a period in which parents-to-be are involved in preparing and anticipating the future meeting with their child (McHale & Cowan, 1996; McHale & Fivaz-Depeursinge, 1999).

In this perspective most of the studies focused on maternal representations of the child-to-be and their influence on the mother-child relationship after birth (Ammaniti, Candelori, Pola, & Tambelli, 1999; Fava Vizziello & Antonioli, 1993; Stoleru & Morales, 1985; Zeanah & Barton, 1989) while a few studies also considered paternal representations. Among them, one study by von Wyl and colleagues (2008) showed that the parents-to-be' Triadic capacity, that is. their capacity to represent the family as a threesome and their disposition to integrate the child into their lives and in the relationship with their partners, was predictive of the quality of triadic interaction when

the child was 4 months old. Furthermore, the mothers' Triadic capacity was positively associated with their children's cooperative behaviour at 3 years.

Consistently McHale and colleagues (2004) found a significant association between the parents-to-be' expectations on family relationships and the subsequent coparental functioning during triadic interactions after the baby's birth: parents-to-be who had presented a more pessimistic representation of the future family were also those who showed a coparental relationship characterized by less family warmth, cooperation and greater disagreement.

An original and innovative perspective to the study of precursor of coparental skills has been provided by Fivaz-Depeursinge and colleagues (Carneiro et al., 2006): they supported the idea that, already starting from pregnancy, parents-to-be would be able to activate and manifest anticipatory parental behaviours that partners can implement before the baby's birth and that would reflect their interactive and cooperative competences with their real child, once they will become parents. This concept refers to an intermediate level between representation and interaction in the assessment of parenting, which affects the implementation by the parents-to-be (through the activation of their representational world during pregnancy) of *intuitive parenting behaviours* (Papousek, Papousek, 1987), which, somehow, prepare and anticipate the co-parental interactive style they will manifest with the child, within a triadic approach to the study of parenting. This perspective implies the idea that some characteristics of the emotional-relational inner world of parents-to-be can be activated also in absence of the real child, in order to co-construct and implement their parental representations through the interaction. Within this theoretical framework Fivaz-Depeursinge and the Lausanne group have therefore developed the Prenatal Lausanne Trilogue Play, an observational situation which is an adaptation of the Postnatal LTP and maintains its 4 interactive configurations. During the task, parents-to-be are asked to role play the first meeting with their baby-to-be, represented by a doll. This situation is considered capable of eliciting the activation of parental representations and behaviour as well as allowing the observation of competences of mutual support and cooperation of the parents-to-be (Carneiro et al., 2006).

The quality of coparental interactions assessed in this way during pregnancy was associated with the quality of triadic family interactions during the first year of the child



(Carneiro et al., 2006; Favez et al., 2006a; Favez et al., 2006b; Simonelli et al., 2008) and with other components of the family system such as the quality of the marital relationship during pregnancy (in particular of fathers-to-be, Carneiro et al., 2006).

All these data suggest that the way in which the parents-to-be interact in the presence of a third and talk about their representations of the future family relationships are closely linked with their ability to open up the marital couple to the arrival of the child and to later triadic interactive competences (Carli, 1999; Byng-Hall, 1995).

The evidence of a continuity between coparental interactions observed during pregnancy and subsequent mother-father-child interactions highlights the application and preventive value of this kind of approach, in identifying early on, couples who might meet difficulties in the coparental function and in promoting intervention before these difficulties can somehow threaten the socio-emotional well-being of the child and of the family itself.



## CHAPTER 4

### AIMS, DESIGN AND METHODOLOGY OF THE STUDY

#### 1. Aims of the research

The research was based on a longitudinal study of the development of triadic interactions from pregnancy to the child's preschool age in a contextual and systemic perspective. The overall objective was essentially exploratory, since, as previously reported, there are few studies conducted according to the LTP paradigm and focused on the development of triadic interactive competences regarding early childhood and the preschool age. We therefore proposed to provide a snapshot of the development over time of triadic interactive skills (indicating with the term “triadic” the interactions of the family triad) and of the specific socio-emotional characteristics underlying them; at the same time the aim was to provide a picture of what are the features of some possible forerunners of these skills which are pre-existing to the birth of the child and their role in facilitating the subsequent triadic family interactions. Finally, the role of some contextual factors that have been often considered as a source of stress and support for the developing family system (eg. the marital relationship, father involvement, the coparental relationship) were also taken into account in order to highlight their relationship with the development of triadic interactive competences over time and in particular with the level of triadic interactions at the preschool age.

The aims of the research were essentially three:

1) first, to analyse the development of triadic interactions within the family system from child's birth to the preschool age in order to assess if the quality of family interactions is or is not a stable and continuous phenomenon during this period.

Specific research questions were:

- a) Is the overall quality of triadic interactions stable from the infants' 4<sup>th</sup> month to the child's preschool age? Does it increase or decrease in this period?
- b) Are there any differences in the triadic competencies observed during the 4 interactive configuration of the LTP procedure? Are they stable? Are they continuous?
- c) Examining more deeply this first aim, what are the developmental trends of the social-

emotional competencies underlying the overall triadic interactive competencies from birth to the child's preschool age?

Hypothesis 1:

I expect to find:

a) a partial stability and a significant increase of the overall triadic interactive competencies from pregnancy to the preschool age: indeed according to previous research (Carneiro et al., 2006; Favez et al., 2006) the overall quality of family interactions was found stable from pregnancy to the child's 18-months but at the same time, studies in the Italian context highlighted a trends toward a significant increase of triadic interactive competences between pregnancy and the 9<sup>th</sup> month (Bighin, 2009; Simonelli et al., in press);

b) differences between the interactive competences assessed in the four configuration of the LTP: in particular, that the quality of triadic interactions observed during the 4<sup>th</sup> part (parents talk together and the child stays simply present) might be significantly lower than that assessed in the other three parts according to previous research both considering the period of infant's first year but also analysing triadic interactions of families with preschool age children (Petech et al., in press) and clinical families with older children (Simonelli, Fava Vizziello, Petech, Ballabio, & Bisoni, 2009).

c) a partial stability of the socio-emotional competences underlying the overall triadic competencies according to first evidence found during the infant's first year (Bighin, 2009): in particular it is expected that less complex competences linked to procedural knowledge (signals of availability to interact, partner's inclusion, roles organization) will be more stable than other competencies associated to the bi/tri-directional co-construction of interaction over time (e.g. co-construction and shared activities, parental scaffolding, sensitivity, family warmth and so on), as well as child's involvement. These competences are supposed to improve significantly over time and particularly the degree to which the child gets involved in the interaction with his/her parents and his/her competencies of self- and interactive regulation are expected to improve significantly as the child grow older.

2) The second aim of the study was to assess the relationship between the development of triadic interactive competences over time and:

a) individual characteristics of the child, namely the role of child gender;

- b) individual characteristics of parents, in particular: - parents' affective-relational history with their family of origin and maternal risk for postnatal depression;
- c) contextual sources of stress and support for the family system, in particular: - the quality of marital relationship; - the degree of father involvement in childcare; - and the quality of the prenatal coparental relationship.

Specific research questions were:

- a) are there any differences in the developmental trends of triadic interactive competences between families with a son or a daughter?
- b) is there any association between the quality of parents' attachment relationship with their caregivers during childhood in terms of loving, rejection, neglect, involvement and push to achieve, and the development of triadic interactive competencies? is maternal postnatal depressive symptomatology a risk factor for the development of triadic interactions?
- c) what is the trend of father involvement? Is it linked to the overall interactive outcomes in the period considered in the study or in specific phases? And what is the trend of the marital relationship from pregnancy to the child's preschool age? Is it linked to interactive outcomes in the overall period or in specific phases? Is the quality of prenatal coparental relationship associated with the subsequent quality of family interactions?
- d) what it might be a predictive model of the overall quality of triadic interactions at the child's preschool age?

#### Hypothesis 2:

It is expected to observe:

- a) no significant differences in the overall quality of triadic interactive competencies controlling for child gender in the period object of the study as showed by previous studies (Carneiro et al., 2006; Simonelli et al., in press);
- b) a positive association between positive and favourable characteristics of parents' affective-relational history with their own parents during childhood and the subsequent ability to coordinate and cooperate with the partner and the child in the interactive emotional exchange; on the contrary it is hypothesized that parents' less favourable experiences during childhood (neglect, rejection and so on) might be a risk factor for the development of family interactions; regarding the role of maternal depressive symptoms in the postnatal period, the goal is more exploratory, since very few studies focused on the analysis of the effect of postpartum depression on mother-father-child interactions, finding

that it does not seem not to be a risk factor in the context of triadic exchanges nor during the infant's first year of life (Petech, Simonelli, Poletto, Sparacino & D'Arpa, 2009) nor during the preschool age of the child (Frizzo & Piccinini, 2007);

c) according to previous findings (Carneiro et al., 2006; Petech et al., in press) the quality of the marital relationship should not be significantly and directly linked with the development of triadic interactions within the family system from the baby's birth to the preschool age; on the other hand, it is expected to find a significant and positive association between the quality of family interactions and the degree of father involvement as highlighted that those studies that investigated this relationship using the LTP paradigm in many studies (Frascarolo et al., 2005; von Kitzling et al., 1999; Petech et al., in press) as well as between the quality of the coparental relationship prenatally assessed and the quality of mother-father-child interactions during the period object of the study.

3) The third and last aim of the study was essentially exploratory and proposed to investigate the relationship between three kind of children's psycho-functional outcomes (sleeping, regulation and behavioural difficulties) at the preschool age considered particularly relevant for children and family's adjustment and well-being, and the individual, relational and contextual factors assessed from pregnancy to the preschool age as well as the association with the quality of triadic interactions over time.

### Hypothesis 3

It is hypothesized that parents' negative experiences during childhood and maternal postnatal depression (Murray & Cooper, 1996) as well, might be a risk factor for the subsequent development of emotional, functional or behavioural problems in children. On the other hand it is expected to find some positive association between marital adjustment (Fishman & Meyers, 2000), father involvement (Lamb, 2004) and triadic interactive competences and child psycho-functional outcomes and well-being.

## **2. Participants**

The sample consisted of 31 primiparous families from a non-referred population who volunteered to participate in a longitudinal research project on family interactions and child development. They were recruited during the pregnancy of their first child at child's

birth preparation classes of the Obstetrics and Gynaecological Clinic of Padua Hospital<sup>1</sup>. These 31 families are part of a larger group of families ( $N = 52$ )<sup>2</sup> and are those who participated in all the stages foreseen by the research.

The pregnancy and deliveries were medically uncomplicated and all infants were healthy. About the baby's gender, there are 13 boys (41.9%) and 18 girls (58.1%).

The fathers' mean age was 35.03 ( $SD=3.59$ , range 29-42) and mothers' 33.03 ( $SD=3.63$ , range 27-41).

Professional status, educational level and characteristics of the marital relationship of these groups are described in table 1 and 2. Regarding the educational level, fathers had a mean of 14.38 ( $SD=3.51$ , range 8-18) years of education, mothers a mean of 15.26 ( $SD=2.84$ , range 8-18) (table 2). The mean duration of the couple's relationship at the time of the first stage of the research was 9 years ( $SD=4.80$ , range <1 year to 17 years). Among these 31 couples, 28 (90.3%) were married and 3 (9.7%) were cohabiting.

Table 1. Professional status distributions ( $f$ , %) of women and men

Professional status	Women	Men
	$f$ (%)	$f$ (%)
Unemployed	3 (9.7%)	-
Worker	1 (3.2%)	2 (6.5%)
Employee	16 (51.6%)	12 (38.7%)
Professional	4 (12.9%)	9 (29%)
Various (employee in business/trade etc.)	6 (19.3%)	8 (25.8%)
Student	1 (3.2%)	-

Table 2. Educational level distributions ( $f$ , %) of women and men

Educational level	Women	Men
	$f$ (%)	$f$ (%)
Secondary school (8 years)	1 (3.2%)	4 (13.8%)
High School (13 years)	15 (48.4%)	13 (44.8%)
University degree (18 years)	15 (48.4%)	12 (41.4%)

<sup>1</sup> In this regard, thanks to Dott.ssa Enrichi, Dott.ssa Drago, Dott.ssa Trivellato and Dott.ssa Fede.

<sup>2</sup> In Appendix A socio-demographic characteristics of the whole families, drop-out rate and comparisons with the group of 31 families that completed the research are reported.

Families that completed the study do not differ significantly from families that left the research in these socio-demographic characteristics.

### **3. Design and procedure**

As previously mentioned the research was a longitudinal study developed in 6 stages (table 3). A multi-method approach was designed for the study including self-report questionnaires, interviews and observational procedures looking at different variables of interest for the research aim.

Families were told that they would be participating in a longitudinal research project on the transition to parenthood and the development of the family. They were informed that they would need to fill out various questionnaire, be interviewed and participate in laboratory sessions where they would be filmed in various family-interaction situations both prenatally and postnatally. During the first meeting participants signed the informed consent.

All the measures were then described and proposed during each family visit to the lab of the Department of Developmental and Socialization Psychology (University of Padua) for each stage of the research.

At each time point families visit the lab and the measures described in table 3 were proposed: each visit required an hour, an hour and a half.

Only in the case of the first postnatal month the Edinburgh Postnatal Depression Scale was sent at home and returned by mail.

Families participated voluntarily to the study and did not receive any compensation for their participation. When they completed the study they received a DVD with video-recordings of LTP sessions at each stages and a letter of thanks for their contribution.



Table 3. Stages and measures of the study<sup>3</sup>

	PERIOD	MEASURES
1	7th MONTH OF PREGNANCY	Socio-demographic Questionnaire (Fava Vizziello, Simonelli, 1997) Prenatal Lausanne Trilogue Play (LTP, Fivaz-Depeursinge, Corboz-Warnery, 1999) Dyadic Adjustment Scale (DAS, Spanier, 1976) Adult Attachment Interview (AAI, George, Kaplan e Main, 1985)
2	1st POSTNATAL MONTH	Edinburgh Postnatal Depression Scale (EPDS; Cox et al., 1987)
3	4th POSTNATAL MONTH	Postnatal LTP (Fivaz-Depeursinge, Corboz-Warnery, 1999) DAS (Spanier, 1976) Questionnaire on father involvement (Frascarolo, 1994)
4	9th POSTNATAL MONTH	Postnatal LTP (Fivaz-Depeursinge, Corboz-Warnery, 1999) DAS (Spanier, 1976) Questionnaire on father involvement (Frascarolo, 1994) EPDS (Cox et al., 1987)
5	12th POSTNATAL MONTH	DAS (Spanier, 1976) Questionnaire on father involvement (Frascarolo, 1994)
6	PRESCHOOL AGE (3-4YEARS; <i>M</i> =45.29 months, <i>SD</i> = 5.1)	Postnatal LTP (Fivaz-Depeursinge, Corboz-Warnery, 1999) DAS (Spanier, 1976) Questionnaire on father involvement (Frascarolo, 1994) Symptom Check-List modified (derived from Robert-Tissot et al. 1989)

## 4. Measures

**4.1 The Prenatal Lausanne Trilogue Play** (Fivaz-Depeursinge & Corboz-Warnery, 1999; Carneiro et al., 2006)

### 4.1.1 Setting and procedure

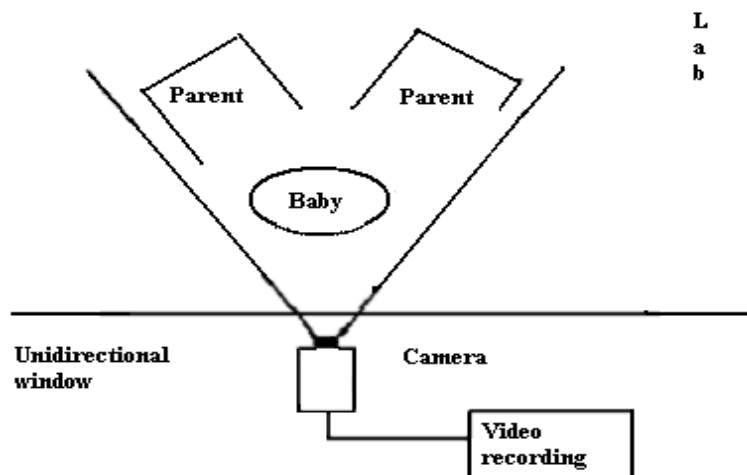
The Prenatal LTP consists of a role-play task during which the parents-to-be have to

<sup>3</sup> A sub-group of 15 families were also assessed through the Postnatal LTP at the child's 18<sup>th</sup> month.

imagine the moment of their first meeting with their baby after the delivery. Parents-to-be are seated in a triangular configuration, with a basket. The baby is represented by a "neutral" doll with the typical size and shape of a newborn, while the face has features and traits of a Caucasian baby "neutral" in relation to sex or particular eye, skin and hair colour. Such "neutrality" should favour parents-to-be to dive in the role-play situation previewed by the procedure.

Technical equipment required one camera placed behind a one-way mirror and tuned with a timer in order to videotape the whole procedure (figure 1).

Figure 1. Prenatal LTP setting (adapted from Carneiro et al., 2006)



The researcher asks the parents to imagine the moment when they will meet their baby for the first time after the delivery, helping them to enter in the role-play situation saying that *"the delivery has occurred and everything went well. The baby is born and is well and is in the other room and you will meet him/her for the first time. It will be a very important moment, during which you will be asked to make a game that will consist of four parts: in the first part, one of the parent will play with the "baby," while the other remains simply present; in the second part, the parents that was in the third party in the first part, will play with the baby while the other will stay simply present; in the third part you will play together with him or her, and finally, in the fourth part, you will let him/her "go to sleep" and then you will talk together about the experience you just went through"* (adapted from Carneiro et al., 2006; Favez et a., 2006).

The researcher helps the parents-to-be to “warm up” by role playing the nurse bringing the baby to them. The total duration of the play and transitions from one part to another are not determined by the researcher whereas the future parents are free to organize the situation even if they are asked to play for about 5 minutes.

#### *4.1.2 Coding system*

The Prenatal LTP coding system (Carneiro et al., 2006) consists of five observational variables ranging from 1 to 5.

The first three scales were elaborated by Carneiro and colleagues (2002) specifically to analyse the prenatal LTP and they are:

1. Co-Parental Playfulness: this scale assesses the capacity of the couple to create a playful space and to co-construct a game showing a positive involvement in the situation, but at the same time the consciousness of its fiction .

2. Structure of the Play: this scale evaluates the couple’s capacity to structure the four parts provided by the task and considers in particular whether it is possible to observe clearly the presence of the 4 parts and whether the duration of each part and of the whole game is appropriate according to scoring criteria defined in the manual.

3. Intuitive Parenting Behaviours: this scale assesses the quantity and quality of intuitive "parenting" behaviour of each parent-to-be, that is, those behaviours considered as potential precursor of subsequent parenting (Papousek & Papousek, 1987). These parenting skills are considered typical of everyone thus being activated in the adult also in the absence of a real baby, as in the situation of role play. In this perspective six behaviours are taken into account: a) holding and “face to” orientation; b) dialogue distance; c) baby-talk and/or smiles at baby; d) caresses, kisses and/or rocking; e) exploration of the baby’s body and comments on his/her state; d) preoccupation with the baby’s well-being: dimension that is often expressed verbally rather than with gestures.

These intuitive parenting behaviours are assessed as present or absent for each parent separately. First, a score for each parent's behaviour is assigned; then a global score is given to the couple overall behaviour.

4. Couple’s Cooperation: this scale assesses verbal and non-verbal behaviours of active collaboration between the partners during the game, considering in particular the presence of behaviours of mutual and active support with respect to the different roles required by

the task as well as the presence of interference, antagonism or devaluation between the two partners.

5. Family Warmth: it evaluates the emotional climate that characterizes the couple's game and the sharing of emotions and humour between the two partners but also toward the "baby".

Each scale refers to specific elements and levels of the family triad: scales 1, 2 and 4 focus on the co-parental couple (couple), scale 3 assesses each parent separately (individual) and scale 5 evaluates the family as a whole (family) (with scales 4 and 5 based on the *Co-Parenting and Family Scale*, CFRS; McHale, Kuersten-Hogan, & Laurenti, 2001).

The scores of the 5 scales are then added to obtain a global score (range 5-25) that expresses the quality of co-parental interactions (defined by the authors, Prenatal Alliance).

The higher the score, the better the quality of co-parental interactions.

Carneiro and colleagues (2006) provided preliminary findings about the reliability of the procedure and the coding system of prenatal LTP: in fact, interrater reliability (assessed using Pearson correlation coefficients) ranged from .60 to .88 for the five scales and was .88 ( $p < .001$ ) for the total prenatal score. All intercorrelations of the five prenatal scales were significant and ranged between .34 and .70. Moreover, the internal consistency of the five prenatal scales was good (Cronbach's  $\alpha = .79$ ). First evidences for the predictive role of the quality of prenatal interactions on the triadic interactions within the family system during the first 18 months of the child have been found (Carneiro et al., 2006; Favez et al., 2005).

Studies conducted in the Italian context to assess the applicability and reliability of the prenatal LTP and its coding system have obtained consistent results: - a good interrater reliability ( $k = .87$ ) on the Alliance classification; - the internal consistency of the 5 scales of the Prenatal LTP coding system was proved to be good ( $\alpha = .717$ ); - no statistically significant differences have been found either on the 5 Scale scores or on the total scores of Prenatal Alliance between the Italian and Carneiro and colleagues' (2006) sample with the exception of the scores of the Structure of the Play Scale: in particular, Italian parents play significantly longer than the Switzerland parents (Simonelli, Fava Vizziello, Bighin, De Palo, 2009; Bighin, 2009); finally, the Prenatal Co-parental Alliance seems to be predictive also in the Italian context of the quality of triadic interactions during the baby's first year of life (Simonelli et al., 2008).

In the present study all the videotaped Prenatal LTP have been rated by two independent judges that reached a good interrater reliability both on the Prenatal LTP total score ( $r=.770$ ,  $p<.001$ ) and on the 5 scales ratings (Co-Parent Playfulness: Spearman  $\rho=.66$ ,  $p<.01$ ; Structure of the Play:  $\rho=.60$ ,  $p<.01$ , Intuitive Parenting Behaviours:  $\rho=.768$ ,  $p<.01$ , Couple's Cooperation:  $\rho=.57$ ,  $p<.01$ , Family Warmth:  $\rho=.47$ ,  $p<.05$ ).

Internal consistency of the 5 scales of the Prenatal LTP coding system is good ( $\alpha=.73$ ).

## **4.2 Postnatal Lausanne Trilogue Play** (Postnatal LTP, Fivaz-Depeursinge, Corboz-Warnery, 1999)

The Postnatal LTP is a semi-standardized observational procedure that consists of a play situation involving the mother, the father and the baby (child) together according to a 4 part scenario: in the 1<sup>st</sup> part one of the parents play with the child while the other remains as an observer, in the 2<sup>nd</sup> part the parent that was only and observer in the 1<sup>st</sup> will play with the child, in the 3<sup>rd</sup> one, they would play together with and finally, in the 4<sup>th</sup> part, the parents will talk together for a while and the child will stay simply present.

### *4.2.1 Setting and procedure*

The Postnatal LTP provides different types of setting in relation to the child's age: - during the baby's first year of life, the parents are seated on chairs and the child is seated in a special adjustable seat forming an equilateral triangle. Specifically for the 3-4 months assessment no toys are provided and if the parents ask about this, they are invited to play without toys. When the baby is 9 months, the parents are invited not to play with toys but if the baby gets fussy or bored they are allowed to introduce some toys; - after the first year up to the preschool age, the parents and the child sit around a table with a standard set of toys (blocks, mobiles etc.) available for the play.

The researcher asks the families to interact and play as they would be at home, according to the 4 part scenario previously described.

Interaction is entirely video-recorded by two cameras, one focused on the parents and the other focused on the infant. The two video recordings are compressed to allow for simultaneous viewing and coding.

Instructions given to the parents are the following: *“In this exercise, we ask you to play together as a family. You will settle the baby in the seat and follow the instructions for the four separate parts of the exercise. In the first part, you will choose who starts playing with*

*the baby while the other is simply present. After a little while, when you feel ready, you can change roles. This is the second part. Later, you can choose the moment to pass on to the third part in which you will both play with your baby together. In the last part, you will talk a while together and it will be your baby's turn to be simply present.*"(Frascarolo et al., 2004, p. 307).

As for the Prenatal LTP, the total duration of the play and transitions from one part to another are not determined by the researcher whereas the future parents are free to organize the situation even if they are asked to play for about 10-15 minutes (during the infant's first year) and 15-20 minutes (for families with toddlers and preschoolers) .

#### 4.2.2 Coding system

The quality of triadic family interactions and competencies observed through the Postnatal LTP has been assessed by the Family Alliance Assessment Scale (FAAS, version 4.0; Lavanchy, Cuennet, Favez, 2006). The FAAS coding system operationally evaluates the interactions across 10 variables ranging 1-5; the sum of the scores on each variable in each part of the procedure lead to a global score (range 40-200) of the overall quality of triadic interactions.

The 10 interactive dimensions are the following:

- 1) Body postures: signals of availability to interact: it assesses the availability of partners to interact through the observation of body signals, facial expressions and attitudes that may generally express the involvement of partners in the interaction. Each person should be oriented in a manner facilitating the interaction. The criteria for assessing this dimension consider the torsos' and hips' orientation which should be directed towards the interactive triangle and the influence of body postures on the ongoing interaction.
- 2) Orientation of the gaze: it assesses if the gaze of each partner is focused on shared activities and if they are reciprocal during the interaction. The criteria for assessing this dimension regard: gaze orientation inside or outside the interactive space; and the influence of gaze orientation in the development of the interaction.
- 3) Inclusion of the partners: it evaluates the inclusion of each partner within the family system. The inclusion and/or exclusion are assessed through the observation of the signals implemented by each member of the family during the game.
- 4) Coparental coordination: it assesses the ability of parents to cooperate and to support each other during the interaction. Particular attention is paid to the presence of conflict and

interference between the partners during the game. There are two main criteria for coding this variable: - the support and cooperation between partners; and – the presence of conflict or interference between interactive partners.

5) Role organization: it evaluates the manner in which each partner plays the role previewed according to the 4 parts of the procedure. Scoring thus will focus on the ability of each partner to play the active as well as the observer role, particularly considering the respect and preservation of the distances and body orientation in relation to the 4 parts.

6) Parental Scaffolding: it evaluates the degree of adaptability and predictability of the parents towards the child and thus their ability to frame, “to scaffold” the interactive exchange with the child. Ratings are based on two main criteria: - the type of stimulation provided by parents to the child (uni-modal, multi-modal, etc.) and how they adjust that stimulation according to the child's feedback during the interaction (hypo-, normal or hyper-stimulation); - and how parents can manage the interactive rules with the child (laxity, coercive scaffolding, authoritative, and so on).

7) Child's involvement: it assesses the degree of child involvement during the play with parents. According to the child's age, these main coding criteria are differently considered: - child's communicational competences; - self regulation (by the first year); - negotiation about the limits (child in his 2<sup>nd</sup> and 3<sup>rd</sup> years); - autonomy in the play (from the 4<sup>th</sup> year of the child).

8) Sensitivity and affect regulation: it assesses the ability of parents to understand and interpret the emotional states of the child. Two main criteria are observed: - the ability of each partner to recognize and reflect others' emotional states (emotion recognizing and mirroring); - and the regulation of emotions, eg. the ability of parents to provide appropriate responses to the child's affective state (affect validation).

9) Co-constructed and shared activities: it evaluates the ability of partners to share, support and collaborate each other in the construction of the game.

10) Family warmth: it assesses the emotional climate established between the family members, considering in particular the overall affective tone of family interactions and the circularity of affects.

These 10 variables are coded for each part of the LTP procedure and range from 1 to 5; the sum of the scores on each variable (range 1-5) in each part of the procedure (range 1-5 x 4 parts= range 4-20) leads to a global score (10 x 4-20= range 40-200) of the overall quality

of triadic interactive competences. The higher the score, the better the triadic interactive competences of the family system and its degree of coordination and collaboration in co-constructing the play and in sharing affects.

Previous studies (Simonelli et al., 2008; Bighin, 2009) have provided preliminary evidence about the reliability and internal consistency of the measure in the Italian context confirming the monofactorial structure of the FAAS coding system both in the assessment at 4 and 9 months (Bighin, 2009).

In the present study Postnatal LTP was proposed at the 4<sup>th</sup>, 9<sup>th</sup> and 18<sup>th</sup> month (only to a sub-group) of the child and during the preschool age.

The video-recorded sessions have been coded blind by 2 judges which reached a good interrater agreement (table 4).

Table 4. Pearson's and Spearman's coefficients of interrater reliability on ratings of Postnatal LTP 10 scales and total LTP scores

	4 months		9 months		18 months	
	r	rho	r	rho	r	rho
Body postures		.784**		.635**		.758**
Orientation of the gaze		.705**		.675**		.793**
Inclusion of the partners		.730**		.636**		.765**
Coparental coordination		.797**		.704**		.822**
Role organization		.796**		.666**		.799**
Parental scaffolding		.832**		.507**		.705**
Child's involvement		.858**		.681**		.726**
Co-constructed shared activ.		.772**		.647**		.823**
Sensitivity affect regulation		.790**		.458**		.580**
Family warmth		.628**		.576**		.761**
Total LTP score	.887**		.798**		.933**	

\*\*  $p < .01$

Internal consistency was also good both at the 4<sup>th</sup> month ( $\alpha = .968$ ), at the 9<sup>th</sup> ( $\alpha = .947$ ) and 18<sup>th</sup> month ( $\alpha = .928$ ) assessment.

Preliminary analysis on interrater reliability, internal consistency and factorial structure of



the Postnatal LTP coding system applied at the preschool age will be presented in the next chapter, not being assessed in previous studies.

#### **4.3 Socio-demographic Questionnaire** (Fava Vizziello, Simonelli, 1997).

Each parent-to-be filled out during the first stage of the research the questionnaire regarding socio-demographic (age, professional status, educational level, duration of the marital relationship) and personal information.

#### **4.4 Dyadic Adjustment Scale** (DAS, Spanier, 1976; Italian version translated and validated by Gentili, Contreras, Cassaniti, & D'Arista, 2002)

The DAS is a 32-item self-report questionnaire assessing the degree of marital adjustment perceived by each spouse. "Adjustment" refers to the balance of a structure (in this case the marital relationship) that should be stable and flexible at the same time, facing life changes (Olson, Strauss, 1977). According to Spanier (1976) marital adjustment is a process which develops along a continuum so that it can be measured at each moment of the relationship.

Spanier (1976) identified four underlying dimensions of the marital adjustment:

- 1) the Dyadic Consensus (13 items): the degree to which the couple agrees on matters of importance to the relationship e.g. the frequency of agreement between partners;
- 2) the Dyadic Satisfaction (10 items): the degree to which the couple is satisfied with their relationship expressed in the frequency of quarrels, discussion of separation and positive interactions;
- 3) the Dyadic Cohesion (5 items): the degree of closeness and the frequency of shared activities experienced by the couple;
- 4) the Affective Expression (4 items): the degree of demonstrations of affection and the frequency of disagreements regarding expressed levels of affection and sex.

Items ratings vary with rating of agreements ranging from 0 (always disagree) to 5 (always agree), rating of frequency from 0 (all the time) to 5 (never) or from 0 (none) to 4 (all), dichotomous ratings ranging from 0 (yes) to 1 (no) and qualitative ratings ranging from 0 (extremely unhappy) to 6 (perfect). The 32 items are summed to create a total score ranging from 0 to 151, with higher scores indicating better marital adjustment.

The DAS has good psychometric characteristics: since its inception, numerous studies have

verified the reliability and validity of the measure and the presence of a stable factorial structure both of the total scale and of the sub-scales (Norton, 1983; Spanier, 1976; Spanier & Thompson, 1984). Moreover internal consistency was proved to be good with Cronbach's alpha ranging from .915 (Graham, Liu, & Jeziorski, 2006) to .960 (Spanier, 1976) and total DAS scores have proved to discriminate consistently distressed and non-distressed couples and couples with a high likelihood of divorce (Crane, Busby, Larson, 1991; Spanier, 1988; Spanier, Thompson, 1982). Typically, cut-off scores between 92 and 107 are used to differentiate between distressed and non-distressed couples (Sabourin, Valois, & Lussier, 2005).

Recently a study by Gentili, Contreras, Cassaniti and D'Arista (2002) had as its objective the Italian adaptation and validation of the DAS in our context. The inevitable cultural and social differences compared to the sample used by Spanier (1976) are reflected in different means and standard deviations in the Italian version of the scale, however, the scale shows good psychometric characteristics that justify its use in our cultural context. The scale in fact, reveals a good reliability (Cronbach's alpha=.930) and factor analysis also shows the same factors mentioned by Spanier (1976). It follows that the model that includes four dyadic dimensions of adjustment is also reflected in the Italian sample albeit with some differences. The results from this work indicate that the DAS, even in the Italian version can be favourably used in research and clinical settings (Gentili, et al., 2002).

Reliability of the DAS total score have been analysed for each stage of the research; a good internal consistency of the measure in every phase was found (table 5) with Cronbach's alphas similar to Spanier's (1976) and Gentili and colleagues' (2002) validation study and Graham and colleagues recent metanalysis (2006).

Table 5. Internal consistency of DAS total scores across time

	Cronbach alpha
7 <sup>th</sup> month of pregnancy	.852
4 <sup>th</sup> postnatal month	.872
9 <sup>th</sup> postnatal month	.928
12 <sup>th</sup> postnatal month	.918
Preschool age	.929

#### 4.5 The Questionnaire on Father Involvement (Frascarolo, 1994; Frascarolo, Chillier, & Robert-Tissot, 1996)

This is a 10-item self-report questionnaire assessing the degree of father involvement in daily childcare (such as diapering, bathing, feeding, and so on). The development of the questionnaire was inspired by the work of Le Camus (1987) and Pedersen and Robson (1969). For each activity, the father receives 0, 1, or 2 points according to the frequency of his participation in the task. If the question is not applicable (for example the question "How often do you give food to your son/daughter? father choose the answer " Never, because my wife is still breastfeeding him/her"), the father will not be penalized in the final score. In fact, the final score is obtained summing the scores obtained by fathers, divided by the maximum score he could obtain (number of questions applicable x2) and then multiplying by 100. The ratio of the sum of the scores and the sum of all the possible answers gives an overall score, defined as "variety index", ranging from 0 to 100. The higher the score, the higher the involvement of the father with the child. On the basis of the answers of a fathers' sample, Frascarolo (2004) defined a criterion in order to distinguish between "Traditional fathers" who had an index lower than the mean of the whole sample ( $M=69.12$ ,  $SD=21.9$ ) above the cut-off of 53.8 expressing less or not at all involvement in childcare, and "non-traditional fathers" who had an index higher than 84.5, showing an high involvement in caretaking.

In the present study the Questionnaire has been slightly modified adding one more item (total item number=11) and adapting questions for the preschool age assesement. It was administered both to the father and the mother at the 4<sup>th</sup>, 9<sup>th</sup>, 12<sup>th</sup> month and at the preschool age. Particularly, mothers were asked to assess the degree of involvement of their partners in childcare, so the questionnaire previewed the same questions and same scoring. Cronbach's alpha scores seem to highlight a good internal consistency of the measures time (table 6) with a mean alpha of .81.

Table 6. Internal consistency of the Questionnaire on Father Involvement across time

	Cronbach alpha
4 <sup>th</sup> postnatal month	.868
9 <sup>th</sup> postnatal month	.845
12 <sup>th</sup> postnatal month	.800
Preschool age	.731

**4.6 Edinburgh Postnatal Depression Scale (EPDS, Cox, Holden, & Sagovsky, 1987; Italian version, Benvenuti, Ferrara, Niccolai, Valoriani, & Cox, 1999)**

This is a self-report questionnaire widely used in clinical and research practice developed by John Cox and colleagues in order to investigate the presence of maternal depressive symptoms in the postnatal period (PPDS, Post-partum Depressive Symptomatology).

The EPDS consists of 10 questions and the mother is asked to choose 1 of 4 possible responses by assigning a score on a Likert scale ranging from 0 (no symptom) to 3 (maximum frequency/intensity of symptom), on the basis of how she has been feeling during the previous week.

Specifically, aspects investigated by the EPDS are: - inability to laugh; - inability to face things with joy; - unmotivated guilt; - feeling anxious and worried; feeling frightened or panic; feeling overwhelmed by things; - sleeping difficulties due to sadness and unhappiness; feeling sad; - crying; - thoughts of hurting herself.

Answers are scored 0, 1, 2, or 3 according to increased severity of the symptom and the total score is determined by adding together the scores for each of the 10 items, ranging from 0 to 30. Higher scores express an higher likelihood of postnatal depression.

Validation studies have utilized various threshold scores in determining which women were at risk for PND or need a clinical assessment. Cut-off scores ranged from 9 to 13 points. The cut-off indicated by the authors to identify pathological conditions of major post-partum depression is 12/13, while a value of 9/10 indicates the presence of a risk of depression which should be carefully considered (Cox et al., 1987). In this study we will refer to the cut-off of 8/9 identified in the Italian validation of the scale (Benvenuti et al., 1999; Carpiniello, Pariante, Serri, Costa, & Carta, 1997).

The EPDS was initially validated by Cox and colleagues with respect to its psychometric characteristics (1987) obtaining good values of reliability and specificity (0.86 and 0.78); a second validation study was made by Murray and Carothers (1990) that essentially confirmed the first results. Thereafter, the scale has been widely used and validated among numerous populations (Affonso, Anindya, Horowitz, & Mayberry, 2000; Eberhard-Gran, Eskild, Tambs, Opjordsmoen, & Samuelsen, 2001; Jardri, 2004), and in the Italian context too (Benvenuti et al., 1999; Carpiniello et al., 1997). The EPDS has also been proved to be a measure able to detect, already in the perinatal period (slightly before or after the delivery) women that successively will develop PPDS (Teissedre & Chabrol, 2004).

In the present study the EPDS has been administered to the mothers at the end of the 1<sup>st</sup> and at the 9<sup>th</sup> Postnatal month. Internal consistency of the measure was good both at the 1<sup>st</sup> (Cronbach's alpha=.86) and at the 9<sup>th</sup> month administration (Cronbach's alpha=.82).

#### **4.7 Adult Attachment Interview (AAI; George, Kaplan, Main, 1985)**

It is a semi-structured interview developed in order to elicit and classify adults' current state of mind regarding early attachment experiences within the family of origin.

The interview focuses on individual's answers about their childhood experiences with their parents and other important figures. Parents are asked to give general descriptions of early attachment relationships, to provide specific episodes in support of these descriptions, to report and recall eventual experiences of separation, rejection, or abuse, on how their parents responded in those situations, to report significant losses and traumas, and to reflect on the influence of their affective-relational history on their present lives.

The interview may last between 45 and 90 minutes and, according to George et al. (1996), AAIs are audiotaped and then transcribed verbatim.

According to the Adult Attachment Scoring and Classification System (AASCS; Main & Goldwyn, 1994, 1998) transcripts are then rated on two different group of scales (scores ranging 1 to 9): the Scales about Inferred Early Experiences (5 for the experience with the mother and 5 for the father) and the Scales about the Current State of Mind<sup>4</sup>.

The 5 Scales of Inferred Early Experiences are:

- 1) Loving Scale: it assesses the degree to which the subject's attachment figures were loving, supportive and effective during his/her childhood, particularly in relation to their practical and emotional availability in times of difficulty and need.
- 2) Rejection Scale: it evaluates the degree to which the parent refused and/or avoided expressions of affection and attachment by the child, in the sense of an active denial of expressions of affection, dependence and attachment;
- 3) Neglect Scale: it assesses the degree to which the subject reports that the parent was physically present but not psychologically available or accessible, thus being neglecting, busy and not involved in the care of the child;
- 4) Over-involvement/preoccupation Scale: it evaluates the degree to which the parent

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<sup>4</sup> In the present study I will focus only on the Inferred Early Experiences ratings, thus the State of Mind Scales and the categories of attachment will be only briefly described.

involved the child in his/her physical or psychological care placing the child in the state of feeling necessary for the parent's well-being, to the extreme situations of role reversal;

5) Push to achieve Scale: it assesses the extent to which during childhood the subject was pushed by the parent towards the achievement of ambitious goals, not appropriate to his/her developmental level and how this played a role in determining the maintenance of the relationship with the parent.

The Scales of the Current State of Mind are: 1) Insistence on lack of memory; 2) Idealization of caregivers; 3) Preoccupying anger; 4) Passivity; 5) Derogation of attachment; 6) Meta-cognitive monitoring; 7) Fear for the child's death; 8) Coherence of transcript; 9) Overall narrative coherence. Two additional scales assessing the presence of formal indices of disorganization and lack of resolution of loss or trauma experiences are also available.

These dimensional ratings serve as a reference in the overall assessment of the interview in order to assign the subject to one of the categories of attachment (see Hesse, 1999 for a description): Secure (Free, F), Insecure–Dismissing (Ds), and Insecure–Preoccupied (E), Unresolved/disorganized with respect to loss or trauma (U), or Cannot Classify (CC; Hesse, 1996).

Regarding the psychometric properties, many studies have highlighted that the AAI and its scoring system show: - good interrater-reliability (Hesse, 1999; van Ijzendoorn & Bakermans Kranenburg, 1997); - test-retest reliability (Bakermans-Kranenburg & Van Ijzendoorn, 1993; Benoit, Parker, 1994; Crowell, Waters, Treboux, O' Connor, 1995; Sagi et al., 1994); - discriminant validity (Bakermans-Kranenburg & Ijzendoorn, 1993; Sagi et al., 1994); - criterion validity (Benoit, Zeanah, Barton, 1989; Benoit, Zeanah, Boucher, & Minde, 1992; van Ijzendoorn & Bakermans- Kranenburg, 1996; Fonagy et al. 1996); - predictive validity (Main & Goldwyn, 1998; Main & Hesse, 1990; Steele et al., 1996; van Ijzendoorn, 1995). Less consistent findings have been found regarding the AAI construct and convergent validity (Crowell, Treboux, & Waters, 2005; Roisman et al., 2007; Hesse, 1999).

Studies on the AAI in the Italian context found consistent results with those obtained from international studies (Ammaniti, Speranza, & Candelori, 1996; Calvo & Fava Vizziello, 1997; Candelori & Ciocca, 1998; Delogu, Tortolani, & Zavattini, 2007; Fava Vizziello, Simonelli, & Petenà, 2004; Simonelli, 1998, 2000) confirming the validity of its use in

clinical and research fields.

In this study, the AAI was proposed to each parent-to-be during the last trimester of pregnancy, a period that is sought to elicit and activate particularly attachment representations linked to the family of origin. For the analysis of the research goals the quantitative evaluation of attachment experiences obtained through the Scales of Inferred Early Experiences will be considered.

Ratings on the 5 scales of Inferred Experience during childhood are made on the basis of judges' inferences and estimate about the probable experiences with each parent, specifically considering the degree to which each parent was loving, rejecting, neglecting, and role-reversing, and pressed the child to achieve. The inferred experience with each attachment figure is scored from 1 to 9 for each scale, with higher scores representing an higher presence of that specific relational characteristics in the individual experience. Then an average score for each of the 5 scales is obtained by calculating the mean of the scores for each significant figure in order to obtain a single index for each of the characteristics of the affective-relational history investigated (range 1-9).

The interviews have been coded blind by 2 judges<sup>5</sup> that have reached a good interrater reliability (table 7).

Table 7. Correlation coefficients of two blind judges scores on AAI Inferred Early Experience Scale

	r	rho
Loving	.700**	.684**
Rejection	.622**	.618**
Over-involvement/preoccupation	.641**	.602**
Neglect	.811**	.760**
Push to achieve	.661**	.535**

\*\*  $p < .01$

#### **4.8 Symptom Checklist modified** (derived from Robert-Tissot et al., 1989)

In its original format the Symptom Checklist is an interview consisting of 86 questions assessing infant behaviours and symptoms in domains such as feeding, sleeping, communication, autonomy, psychosomatic and behavioural problems.

<sup>5</sup> One judge was trained on the AAI coding system by Prof. Dazzi and Prof.ssa Jacobvitz, the other was trained by the first on the coding of the Inferred Experiences Scales.

Parents are asked to evaluate the frequency, the duration and intensity of the problem over the past four weeks. The responses thus may reflect both the actual behaviour of the child and the parent's perception. It has been published and validated and then modified with additional items to include behavioural disorders for preschool children (Luthi Faivre et al., 2005).

In the present study the Symptom Checklist was proposed in the form of a questionnaire filled jointly by both parents during the preschool stage of the research; however, the researcher was present to facilitate the compilation and clarify any doubts regarding the questions assessing functional problems, emotional problems and behavioural problems .

According to the aim of the study three areas of child's potential difficulties will be investigated: sleeping difficulties, regulation problems and behavioural problems.

On the basis of the analysis of reliability of these scales the number of items referring to different areas was redefined to reach an acceptable level of internal consistency: thus sleeping difficulties scale consists of three items (frequency of difficulties in sleeping, range 1-5, number of reason for sleeping difficulties, range 0-5, time to sleep again, range 1-5), with an acceptable internal consistency (Cronbach's  $\alpha=.748$ ). A mean score is then computed ranging from .67 to 5, thus the higher the score the higher children's difficulties.

Regulation scale consists of five items (investigating the presence of children's irritability, ability to calm down and respect parent's limit, estrangement, dictatorial tendency, distraction and excessively active behaviour; all items ranging 0-1, eg. 0=absence, 1=presence). The internal consistency of this scale is barely acceptable (Cronbach's  $\alpha=.653$ ). Also in this case a mean score is then computed ranging from 0 to 1, thus the higher the score the higher children's regulation difficulties.

Finally, behavioural problems scale consists of three item (frequency of anger, aggressiveness and opposition behaviours, each item ranging 1 to 5) and it has a good internal consistency (Cronbach's  $\alpha=.850$ ). Behavioural problems mean scores range between 1 and 5 and, again, the higher the score the more frequent behavioural problems in the areas investigated.



## CHAPTER 5

### RESULTS

#### 1. Preliminary analysis on Postnatal LTP measure

At a preliminary level interrater reliability was assessed for the variables that have provided the blind coding by two independent judges (AAI Scales of Inferred Experience during childhood; Prenatal and postnatal LTP) finding an acceptable to good degree of agreement in all the measures and phases of the research (chapter 4).

Internal consistency of each scale previewed by the study in each phase of assessment was analysed by calculating Cronbach's alpha index on the whole sample and was reported at the bottom of the description of each measure (see chapter 4). In general, all the scales used have an acceptable/good level of internal consistency that justifies their use for the aims of the present study.

However this preliminary section will be devoted to the analysis of interrater reliability, internal consistency and to the exploration of the factorial structure of the 10 observational variables of the LTP coding system assessing triadic interactive competences, with particular reference to the preschool age phase of assessment.

Indeed, while the LTP coding system in evaluating triadic interactive competences during the infant's first year of life was the object of a recent study (Bighin, 2009) that confirmed its internal consistency and mono-factorial structure, as regards to the the preschool age assessment currently there are not specific data attesting to the reliability of its application. Interrater reliability between two blind judges was calculated by Spearman's correlations for the 10 variables ratings ranging 1-5 and by Pearson's correlations for LTP total score (table 1). As it can be seen, interrater reliability range from acceptable to good both .

Table 2 shows descriptive statistics (mean, standard deviation) of the 10 observational variables of the Postnatal LTP coding system at the preschool age assessment: as previously described, each variable is rated for each part of the LTP thus ranging between 4 and 20.

Table 1. Interrater reliability on Postnatal LTP 10 scales and total scores

	<i>r</i>	rho
Body postures		.686**
Orientation of the gaze		.656**
Inclusion of the partners		.706**
Coparental coordination		.609**
Role organization		.594**
Parental scaffolding		.556**
Child's involvement		.507**
Co-constructed shared activ.		.691**
Sensitivity affect regulation		.581**
Family warmth		.342*
Total LTP score	.961**	

\*\*  $p < .01$  (two-tailed)

Table 2. Mean and Standard Deviation of the 10 observational variables of LTP coding system at the preschool stage of the research ( $N=31$ )

	<i>M</i>	<i>SD</i>
Body postures	16.29	2.37
Orientation of the gaze	16.58	2.19
Inclusion of the partners	16.71	2.56
Coparental coordination	15.55	2.73
Role organization	16.19	2.64
Parental scaffolding	17.10	2.09
Child's involvement	18.45	1.67
Co-constructed and shared activities	16.29	2.90
Sensitivity and affect regulation	17.87	2.28
Family warmth	16.39	2.44

In order to assess the factor structure of the 10 observational variables that lead to the Postnatal LTP total score an Exploratory Factor Analysis was performed using the Principal Components method of extraction and the Varimax rotation. First of all,

descriptive statistics were calculated and reported in table 3.

Barlett's test of sphericity is significant ( $\chi^2(N=31, 45)=298,12, p<.001$ ) and the measurement of the sample adequacy (KMO=.894) resulted adequate to proceed with the exploratory factor analysis. The analysis extracted a single factor explaining the 72.99% of the total variance (table 3).

Table 3. Components matrix of EFA on the Postnatal LTP

Body postures	.842
Orientation of the gaze	.928
Inclusion of the partners	.857
Coparental coordination	.809
Role organization	.847
Parental scaffolding	.867
Child's involvement	.729
Co-constructed and shared activities	.919
Sensitivity and affect regulation	.914
Family warmth	.810

One-factor solution, 72.99% of Variance explained

Even by Cattell's Scree-test the observation of the graph of decreasing eigenvalues confirmed the single factor solution which, besides being very parsimonious, it confirms also the theoretical assumptions of the measure (figure 1).

Moreover the internal consistency calculated by Cronbach's alpha was good ( $\alpha=.956$ ).

A further proof of the internal consistency of the measure was found observing the correlations matrix of the 10 LTP variables with the total LTP score (table 4): all the variables in fact correlate significantly with each other and with the LTP total score.

In summary, taking these data all together it seems that the measurement of triadic interactions through the LTP is reliable enough and leads to a single construct so that LTP total scores can be considered a reliable index of global triadic interactive competences also when applied during the preschool age.

Figure 1. Cattell's Scree-test on EFA performed on Postnatal LTP

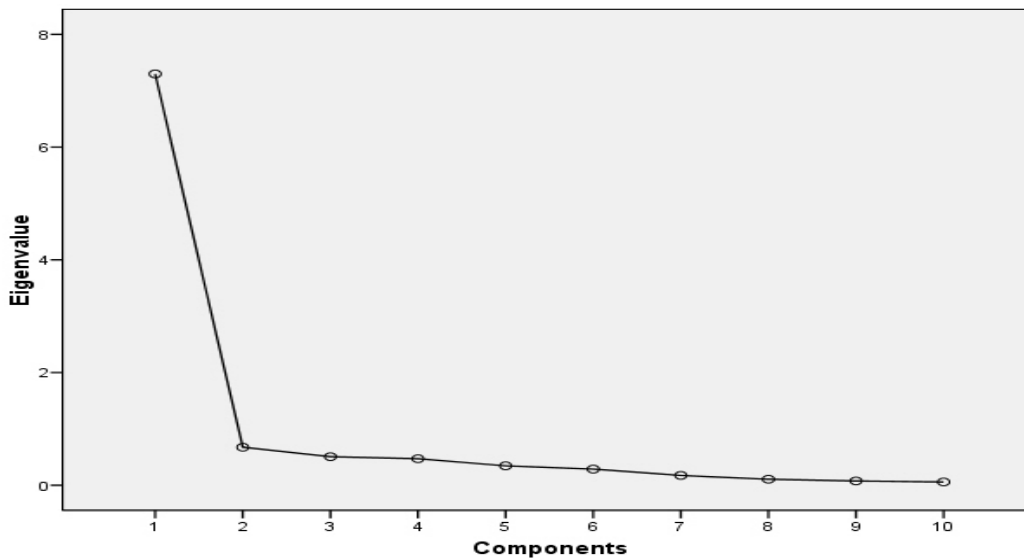


Table 4. Pearsons' correlations between Preschool age LTP variables and total score ( $N=31$ )

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
1. Body postures	-	.815**	.707**	.686**	.625**	.682**	.589**	.783**	.712**	.573**	.841**
2. Orientation of the gaze		-	.865**	.827**	.771**	.695**	.601**	.829**	.792**	.704**	.931**
3. Inclusion of the partners			-	.677**	.754**	.661**	.515**	.690**	.789**	.631**	.859**
4. Coparental coordination				-	.619**	.628**	.456*	.792**	.607**	.601**	.820**
5. Role organization					-	.777**	.570**	.672**	.803**	.624**	.847**
6. Parental scaffolding						-	.656**	.816**	.823**	.652**	.862**
7. Child's involvement							-	.660**	.691**	.543**	.716**
8. Co-construct. shared activities								-	.788**	.801**	.922**
9. Sensitivity affect regulat.									-	.782**	.909**
10. Family warmth										-	.814**
11. Total LTP scores											-

\*\*  $p < .01$ , \*  $p < .05$  (two-tailed)

## 2. Aim 1: the development of triadic interactive competences within the family system.

### 2.1. Stability and change of the overall triadic interactive competences from the infant's first months of life to the preschool age

The first aim of the study was to analyse the development of triadic interactions within the family system from the child's birth to the preschool age. The first research questions asked whether the overall quality of triadic interactions was stable from the infants' 4<sup>th</sup> month to the child's preschool age and whether it increased or decreased over this period. First of all, mean, standard deviation and a comparison of LTP total scores over time with the normal distribution (Kolmogorov-Smirnov test) were calculated (table 5).

Table 5. Mean, Standard Deviation and K-S test of total LTP Scores at each time point (N=31)

	<i>M</i>	<i>SD</i>	<i>N</i>	<i>K-S test</i>
4 months	152.39	23.63	31	Z=.883, <i>p</i> =.417
9 months	167.03	17.89	31	Z=.620, <i>p</i> =.837
18 months	171.60	14.02	15	Z=.563, <i>p</i> =.909
Preschool age	167.42	20.43	31	Z=.896, <i>p</i> =.399

Two-tailed *p* values

Results obtained support the use of parametric statistics to evaluate the research question. Moreover it can be observed that, as might be expected in a group of families from a non-clinical population, the mean of total LTP scores reflect the presence of appropriate and functional triadic interactive competences in all the phases investigated.

Turning then to the specific objective, to test the stability of the quality of triadic interactions from the infant's 4<sup>th</sup> month to the preschool age, a correlational analysis between total Postnatal LTP scores at each age was performed (table 6).

Table 6. Pearsons bivariate correlations between total LTP scores at the 4<sup>th</sup> and 9<sup>th</sup> month of the baby and at the preschool age ( $N=31$ )

	4 months	9 months	Preschool age
4 months	-	.275	.342
9 months		-	.361*
Preschool age			-

\*  $p < .05$ , two-tailed

As you can see, only the 9th month scores correlate positively and significantly with preschool age scores; in other words, families who showed high scores in the overall quality of triadic interactions at 9 months tended to show high scores also during the preschool age and vice versa, family who had lower scores at the 9th month were more likely to show lower competences during the preschool age of the child. Conversely, LTP scores at 4 months do not correlate significantly either with those at the infant's 9<sup>th</sup> month, or with those at the preschool age.

Considering further the relationships between triadic interactive competences at 18 months measured on a subgroup of 15 families, the results revealed no significant correlations between total LTP scores at the 18 months and those at 4 and 9 months and during the preschool age of the child (Appendix B).

In order to ascertain whether the development of triadic interactive competences is characterized by continuity over time, analysis then focused on the change of the quality of triadic interactions from the infant's 4<sup>th</sup> month to the preschool age.

To verify whether the trend was characterized by continuity or vice versa by an increase or decrease in the different phases of the study a repeated-measures analysis of variance (ANOVA) was calculated to compare total LTP scores across the three ages (within subject factor: "time", 3 levels, e.g. 4 months, 9 months, preschool age).

Results showed a significant main effect for "time" ( $F(2,60)=7,736$ ,  $p=.001$ ,  $\eta^2_p=.205$ )

Posthoc test, conducted using Bonferroni's correction of  $p$  values ( $p < .05$ ), revealed that total LTP scores increase significantly from 4 to 9 months ( $p = .010$ ) and from 4 months to the preschool age ( $p = .008$ ).

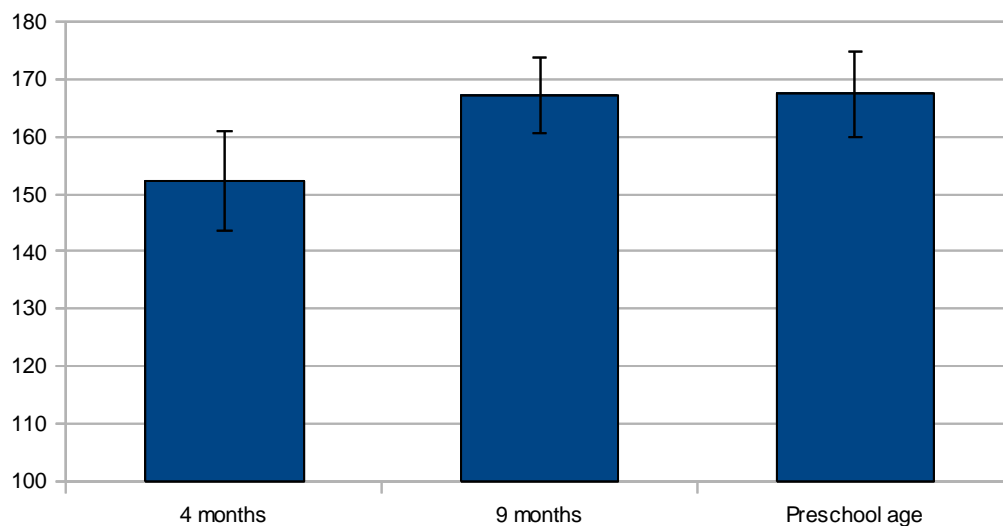
The development of the quality of triadic interactions seems to show a trend of significant

increase between the 4<sup>th</sup> and 9<sup>th</sup> months and a subsequent stabilization between 9 months and the child's preschool age.

This description is true even if the stage of the 18 months is taken into account (see Appendix B): the development of triadic interactive skills is characterized by a significant increase between 4 and 9 months, and by a continuity between 9, 18 months and the preschool age. In summary therefore, the results obtained in reference to the first research question showed that the overall family interactive competences are characterized by both a partial stability and discontinuity: between 4 and 9 months family triadic interactive competences are not stable but instead increase significantly.

Subsequently, these competences tend to stabilize and to maintain levels similar to those achieved at the end of the first year of life until the preschool age of the child.

Figure 2. Trend of total LTP scores at each time point ( $N=31$ )



## 2.2 The development of family interactions throughout different interactive contexts

The second research question proposed to investigate whether the triadic interactive competences showed by the families during the four configurations proposed by the LTP procedure were stable or changed over time. Table 7 presents descriptive statistics (mean and standard deviation) and the results of Kolmogorov-Smirnov test performed on the scores obtained in the 4 parts of the LTP at each time point. All the distributions of LTP

scores in the four configurations at each stage of assessment do not differ significantly from normal distribution supporting the use of parametric statistics for subsequent analysis.

Table 7. Mean, Standard Deviation and Kolmogorov-Smirnov test on the 4 LTP configuration scores over time ( $N=31$ )

	4 months		9 months		Preschool age	
	<i>M (SD)</i>	<i>K-S Test</i>	<i>M (SD)</i>	<i>K-S Test</i>	<i>M (SD)</i>	<i>K-S Test</i>
Part I	41.13 (4.98)	Z=.93, $p=.35$	43.74(.08)	Z=.43, $p=.59$	43.03(4.15)	Z=.43, $p=.99$
Part II	41.27 (4.94)	Z=.90, $p=.40$	41.61(5.61)	Z=.59, $p=.88$	43.26(4.75)	Z=.89, $p=.41$
Part III	37.80 (7.94)	Z=.94, $p=.33$	41.65(6.20)	Z=.60, $p=.86$	42.94(4.96)	Z=.84, $p=.48$
Part IV	32.18 (12.1)	Z=.96, $p=.31$	40.03(6.11)	Z=.70, $p=.71$	38.19(11.0)	Z=.91, $p=.38$

In order to analyse the stability of family interactive competences in the LTP 4 configurations over time, distinct longitudinal correlations were performed on the scores of the first two parts of LTP (2+1 configuration, table 8), of the third part (configuration "3 together", table 9) and of the fourth part of the procedure (2+1 configuration with the child in the third party position, table 10) obtained at 4 and 9 months and at the preschool age.

Table 8. Correlations between 2+1 configuration scores (1<sup>st</sup> and 2<sup>nd</sup> part) over time ( $N=31$ )

		4 months		9 months		Preschool age	
		1 <sup>st</sup> part	2 <sup>nd</sup> part	1 <sup>st</sup> part	2 <sup>nd</sup> part	1 <sup>st</sup> part	2 <sup>nd</sup> part
4 months	1 <sup>st</sup> part	-	.490**	.317	.111	.235	.187
	2 <sup>nd</sup> part		-	.320	.259	.220	.119
9 months	1 <sup>st</sup> part			-	.414*	.060	.060
	2 <sup>nd</sup> part				-	.061	.295
Preschool age	1 <sup>st</sup> part					-	.665**
	2 <sup>nd</sup> part						-

\*  $p<.05$ , \*\*  $p<.001$ , two-tailed



Table 9. Correlations between “3 together” configuration scores (3<sup>rd</sup> part) over time (N=31)

	4 months	9 months	Preschool age
4 months	-	.105	.031
9 months		-	.281
Preschool age			-

\*  $p < .05$ , \*\*  $p < .001$ , two-tailed

Table 10. Correlations between “2+1” configuration scores at each time point (4<sup>th</sup> part) (N=31)

	4 months	9 months	Preschool age
4 months	-	.222	.301
9 months		-	.289
Preschool age			-

\*  $p < .05$ , \*\*  $p < .001$ , two-tailed

No significant correlation was found between the triadic interactive competences related to each of the 4 different configurations over time<sup>6</sup>.

In general, family interactive competences showed in the different configurations previewed by the LTP procedure seem not to be stable between the 4<sup>th</sup> month and the preschool age.

To assess whether the interactive competences observed in the four different interactive frames would change significantly over time, a repeated measures analysis of Variance (ANOVA) was performed on the LTP configurations scores. Time and configuration effects were tested using a 3 (within subject factor, time: 4 months, 9 months, preschool age) x 4 (within-subject factor, LTP configuration: 1, 2, 3, 4).

Results showed a significant main effect of “time” ( $F(2,60)=7.736$ ,  $p=.001$ ,  $\eta^2_p=.205$ ) and “configuration” ( $F(1.856, 55.672)=20.546$ ,  $p<.001$ ,  $\eta^2_p=.406$ ) and a significant effect of the interaction between “time” and “configuration” ( $F(3.311,99.340)^7=3.518$ ,  $p=.015$ ,  $\eta^2_p=.105$ ).

<sup>6</sup> With the exception of the significant correlations observed between part I and II scores assessed at the same time point.

<sup>7</sup> Degrees of freedom of "part" effect and interaction were corrected (Greenhouse-Geisser) because the hypothesis of homosfericity was not confirmed.

With regard to “time” main effect, post-hoc test using Bonferroni's correction ( $p < .05$ ) revealed that configurations mean scores increase significantly from 4 to 9 months ( $p = .010$ ) and from 4 months to the preschool age ( $p = .008$ ), stating, as previously stressed, the presence of a significant increase in triadic interactive competences during the infant's first year of life and then a growing continuity till the preschool age.

Considering “configuration” main effect, post-hoc test showed that the 4<sup>th</sup> LTP configuration scores are significantly lower than those obtained in the 1<sup>st</sup> ( $p < .001$ ), the 2<sup>nd</sup> ( $p < .001$ ) and the 3<sup>rd</sup> one ( $p = .001$ ). Moreover, the 3<sup>rd</sup> part scores are lower than those obtained in the 1<sup>st</sup> configuration ( $p = .029$ ). This data seems to show a significant decrease in family interactive competences between the first two parts of the procedure (2+1 configurations) and the subsequent interactive configurations ( “3 together”, and “2 +1”) that actually appear to present greater difficulty in degree of coordination required to the family triad and (especially in Part IV) to the child in order to balance self-regulation and involvement during the interaction.

Finally, post-hoc test performed in order to better understand the significant effect of interaction between time and configuration highlighted: a significant increase of the quality of family interactions observed in the first (2+1) and in the fourth LTP configuration between the 4<sup>th</sup> and the 9<sup>th</sup> month (respectively,  $p = .033$  and  $p = .004$ ). Moreover, family interactive competences assessed during the “three together” configuration significantly improve between 4 months and the preschool age ( $p = .013$ ).

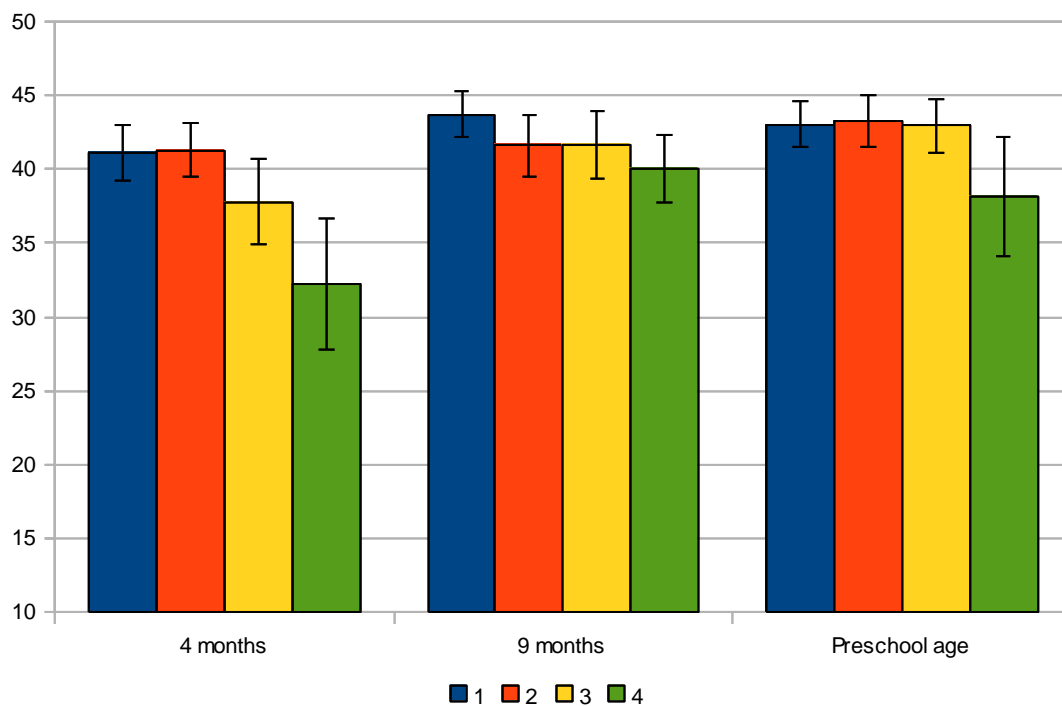
Figure 3 displays LTP scores by time and by configuration highlighting the general increase and improvement of triadic interactive competences over time related to the different interactive contexts provided by the LTP procedure. The developmental trend of triadic competences observed in the “3 together” configuration appears particularly interesting: indeed at 4 months they presented lower levels than those observable during the first two LTP configurations, but progressively they increase reaching similar levels by the preschool age.

Summarizing the results obtained in relation to the second research question, family interactive competences specific to each interactive configuration provided by the LTP procedure seem not to can be considered stable during the first years of the child. As previously noted considering the overall quality of family interactions, also the interactive competences of each interactive context show peculiar levels and trends over time with an

average increase over time: in particular the quality of interactions observed during the first 2+1 configurations presented quite high and homogeneous levels till 4 months with a significant improvement between 4 and 9 months (part 1) and a subsequent stabilization and continuity. Differently, interactive competences of “three together” configuration were lower than the previous ones at the first time point then showing a trend to increase that became significant by the preschool age and reaching similar high levels of the competences observed in the first configurations).

Finally, the quality of family interactions in Part 4 are the lowest at 4 months, then they increase significantly between the fourth and ninth month coming back to slightly lower levels by the preschool age of the child.

Figure 3. Triadic interactive competences by time and by configuration (N=31)



### 2.3 Developmental trends of socio-emotional competences underlying the quality of family interactions

Finally, the last research question of the first aim proposed the analysis of the developmental trends of the socio-emotional competences underlying the overall triadic

interactive competences from the infant's first months of life to the preschool age.

Descriptive statistics (mean and standard deviation) of the LTP 10 observational variables that produce the overall quality of triadic interactions at each time point were calculated. The scores' distribution of each variable was also checked by applying the Kolmogorov-Smirnov test (table 11) whose results support the use of parametric statistics for subsequent analysis.

In order to test the stability of these 10 characteristics underlying family interactive competences each variable was correlated across time (table 12).

Consistent with the results previously obtained, the 10 observational characteristics of the overall quality of triadic interactions show only partial stability over time: indeed the child's involvement at 4 months correlated positively and significantly with that assessed at the preschool age; family warmth at the infant's 4<sup>th</sup> month with that at 9 months.

Moreover, the orientation of the gaze, coparental coordination and role organization correlated significantly and positively between the 9<sup>th</sup> month and the preschool age.

Table 11. Mean, Standard Deviation and Kolmogorov-Smirnov test of the 10 observational variables of LTP coding system over time ( $N=31$ )

	4 months		9 months		Preschool age	
	<i>M</i> ( <i>SD</i> )	<i>K-S Test</i>	<i>M</i> ( <i>SD</i> )	<i>K-S Test</i>	<i>M</i> ( <i>SD</i> )	<i>K-S Test</i>
Body postures	15.87 (2.17)	$Z=.66, p=.78$	16.65 (1.99)	$Z=1.18, p=.12$	16.29 (2.37)	$Z=.73, p=.65$
Orientation of the gaze	15.22 (2.38)	$Z=.96, p=.31$	16.61 (1.99)	$Z=1.24, p=.09$	16.58 (2.19)	$Z=.87, p=.43$
Inclusion of the partners	15.32 (3.09)	$Z=.72, p=.68$	17.19 (2.17)	$Z=.85, p=.47$	16.71 (2.56)	$Z=.94, p=.33$
Coparental coordination	15.71 (2.70)	$Z=1.04, p=.22$	16.39 (2.56)	$Z=.62, p=.84$	15.55 (2.73)	$Z=.68, p=.75$
Role organization	14.77 (2.49)	$Z=.78, p=.57$	16.35 (1.96)	$Z=1.13, p=.16$	16.19 (2.64)	$Z=1.0, p=.25$
Parental scaffolding	15.39 (2.73)	$Z=.82, p=.52$	16.16 (1.98)	$Z=.99, p=.28$	17.10 (2.09)	$Z=1.3, p=.06$
Child's involvement	13.62 (3.07)	$Z=1.08, p=.19$	16.94 (2.05)	$Z=.91, p=.38$	18.45 (1.67)	$Z=1.16, p=.13$
Co-constructed and shared activities	14.48 (2.75)	$Z=.86, p=.45$	15.94 (2.55)	$Z=.81, p=.53$	16.29 (2.90)	$Z=1.17, p=.13$
Sensitivity and affect regulation	16.16 (2.73)	$Z=.68, p=.75$	17.65 (1.76)	$Z=.92, p=.36$	17.87 (2.28)	$Z=1.33, p=.06$
Family warmth	16.23 (2.6)	$Z=.79, p=.56$	17.16 (2.56)	$Z=.84, p=.48$	16.39 (2.44)	$Z=.74, p=.65$

\*  $p<.05$ , two-tailed

Table 12. Pearsons correlations between LTP 10 variables at each time point ( $N=31$ )

		9 months	Preschool age
Body postures: signals availability to interact	4 months	.259	.286
	9 months	-	.213
	Preschool age		-
Orientation of the gaze	4 months	.206	.242
	9 months	-	.366*
	Preschool age		-
Inclusion of the partners	4 months	.279	.143
	9 months	-	.335
	Preschool age		-
Coparental coordination	4 months	.344	.335
	9 months	-	.502**
	Preschool age		-
Role organization	4 months	.229	.200
	9 months	-	.412*
	Preschool age		-
Parental Scaffolding	4 months	-.012	.131
	9 months	-	.278
	Preschool age		-
Child's involvement	4 months	.081	.519**
	9 months	-	-.089
	Preschool age		-
Sensitivity and affect regulation	4 months	.040	.218
	9 months	-	.287
	Preschool age		-
Co-constructed and shared activities	4 months	.227	.265
	9 months	-	.277
	Preschool age		-
Family warmth	4 months	.455*	.335
	9 months	-	.128
	Preschool age		-

\*  $p < .05$ , \*\*  $p < .001$ , two-tailed

Next, to analyse the developmental trends of these 10 basic features of triadic interactive competences from 4 months up to the preschool age, a repeated measures Multivariate Analysis of Variance (MANOVA) was performed considering the scores of the LTP 10 observational variables as dependent variables and "time" (3 levels: 4 and 9 months and the preschool age) as one within-subject factor.

First, results found a significant main effect of "time" at the multivariate level ( $F(20,104)=4.402$ ,  $p<.001$ ,  $\eta^2_p=.458$ ) that in general the 10 dimensions considered to vary over time. Table 13 shows the results of the analysis of the effect of "time" at the univariate level and post-hoc tests using Bonferroni's correction.

Most of the variables show a significant change over time characterized by an increase in the corresponding competence: as it can be observed also in figure 4, with the exception of body postures, coparental coordination and family warmth, all the other characteristics of family interactive competences significantly increase between 4 months and 9 months and/or the preschool age.

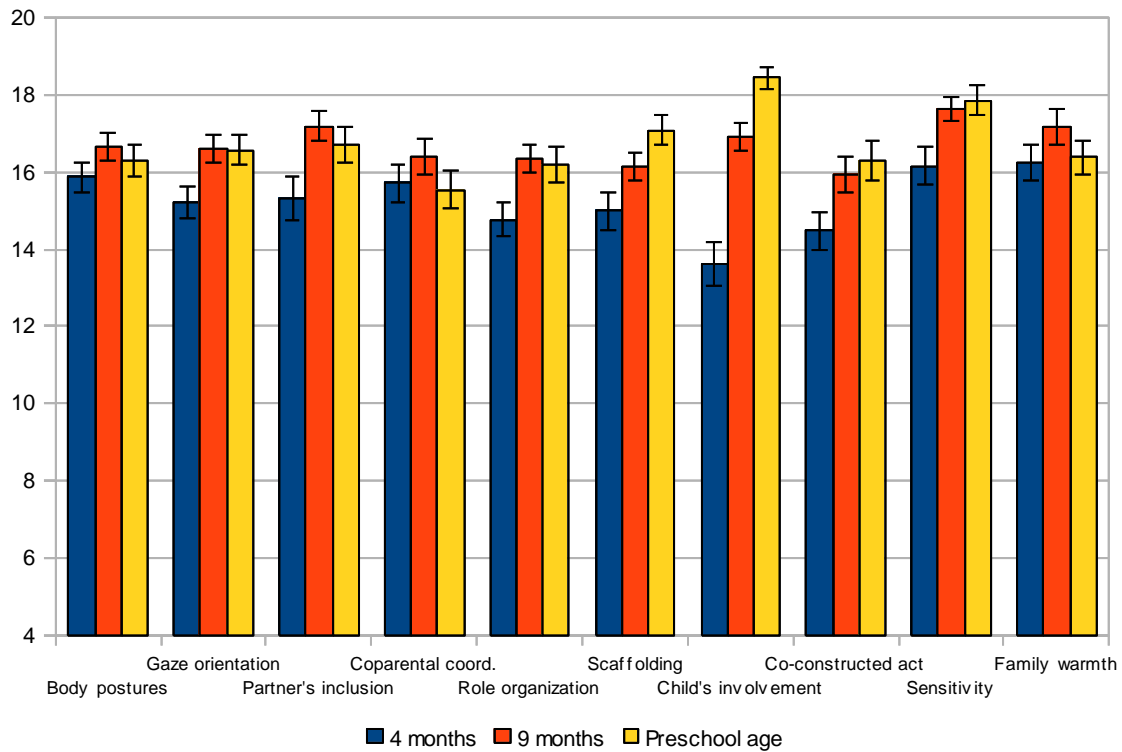
Moreover, the child's involvement in the interaction, that is the child's ability to activate a mutual affective communication with his parents and the child's self-regulation skills, increase significantly both between 4 and 9 months, and between 9 months and the preschool years, highlighting how, despite the fact that the child can be an active partner in mother-father-child interactions as early as the first months of life, his skills in social interaction become more and more refined during development.

Table 13. Repeated Measures MANOVA of LTP observational variables: *F* and post-hoc values at Univariate level (*N*=31)

	Univariate effect of Time	Post-hoc test
Body postures	$F(2,60)=1.305, p=.279, ns.$ $\eta^2_p=.042$	-
Orientation of the gaze	$F(2,60)=5.567, p=.006$ $\eta^2_p=.157$	4 months<9 months ( $p=.026$ ) 4 months<preschool age ( $p=.034$ )
Inclusion of the partners	$F(2,60)=5.501, p=.006$ $\eta^2_p=.155$	4 months<9 months ( $p=.009$ )
Coparental coordination	$F(2,60)=1.422, p=.249, ns.$ $\eta^2_p=.045$	-
Role organization	$F(2,60)=5.664, p=.006$ $\eta^2_p=.159$	4 months<9 months ( $p=.011$ )
Parental scaffolding	$F(2,60)=7.465, p=.001$ $\eta^2_p=.199$	4 months<preschool age ( $p=.003$ )
Child's involvement	$F(2,60)=41.838, p<.001$ $\eta^2_p=.582$	4 months<9 months ( $p<.001$ ) 4 months<preschool age ( $p<.001$ ) 9 months<preschool age ( $p=.014$ )
Co-constructed and shared activities	$F(2,60)=5.083, p=.009$ $\eta^2_p=.145$	4 months<preschool age ( $p=.019$ )
Sensitivity and affect regulation	$F(2,60)=6.143, p=.004$ $\eta^2_p=.170$	4 months<9 months ( $p=.044$ ) 4 months<preschool age ( $p=.015$ )
Family warmth	$F(2,60)=1.722, p=.187, ns$ $\eta^2_p=.054$	-



Figure 4. Developmental trends of LTP 10 observational variables over time ( $N=31$ )



Summarizing, the results obtained in relation to the first aim of the study highlight that the development of triadic interactive competences from the infant's first months of life to the preschool age seem to follow two distinct evolutionary phases: the first phase, ranging from the baby's 4 to 9 months, appears to be a period of relative flexibility and instability of the quality of triadic interactions, both when considered globally, and when considering specific interactive contexts, and finally when looking at the underlying characteristics and competences put into play by the family triad during the interaction. This period seems also marked by a general increase and improvement of family interactive competences which settle on a medium-high level and then become more and more functional to establish an interactive context favouring child's socio-emotional development.

The second phase involve the period between the 9<sup>th</sup> month and the preschool age of the child: this period seems characterized by a progressive stabilization and continuity of the overall and specific interactive competences of the family. The daily and repeated experience of triadic interactions, parents' acquisition and consolidation of new and more complex skills, as well as the progress of the child's development in several domains, are likely to converge in defining interactive and communication routines linked to "schemes

of being in three" (Stern, 1985) and would allow the implementation of competences acquired.

### **3. Aim 2: The role of individual, relational and contextual factors in the development of triadic interactive competences.**

The second aim of the study was to investigate the relationships between individual characteristics of the parents and the child, relational and contextual factors and the quality of family interactions from infant's first months to the preschool age in order to identify possible correlates of triadic interactive competences over time and their influence on triadic interactive competences within the family system observed during the preschool age of the child.

#### **3.1 The role of child's gender**

The first research question of the second aim proposed to investigate the relationship between the quality of triadic interactions during the child's preschool age and individual characteristics of the child, namely the role of child gender.

The specific research question was whether there were any differences in the developmental trend of triadic interactive competences between families with a son or a daughter.

13 (41.9%) families have a son and 18 (58.1%) a daughter.

Table 14 shows the descriptive statistics (mean and standard deviation) and the values of the Kolmogorov-Smirnov test to verify the distribution of total scores LTP at each time point in relation to child's gender that support the subsequent use of parametric statistics.

Table 14. Mean, standard deviation and Kolmogorov-Smirnov test of total LTP scores considering separately families with sons ( $N=13$ ) and with daughters ( $N=18$ )

	4 months		9 months		Preschool age	
	<i>M</i> ( <i>SD</i> )	<i>K-S Test</i>	<i>M</i> ( <i>SD</i> )	<i>K-S Test</i>	<i>M</i> ( <i>SD</i> )	<i>K-S Test</i>
Sons	151.51 (18.64)	Z=.70, $p=.71$	166.69 (20.20)	Z=.52, $p=.95$	172 (18.66)	Z=.74, $p=.65$
Daughters	153.02 (27.18)	Z=.67, $p=.76$	167.28 (16.62)	Z=.61, $p=.85$	164.11 (21.52)	Z=.82, $p=.51$

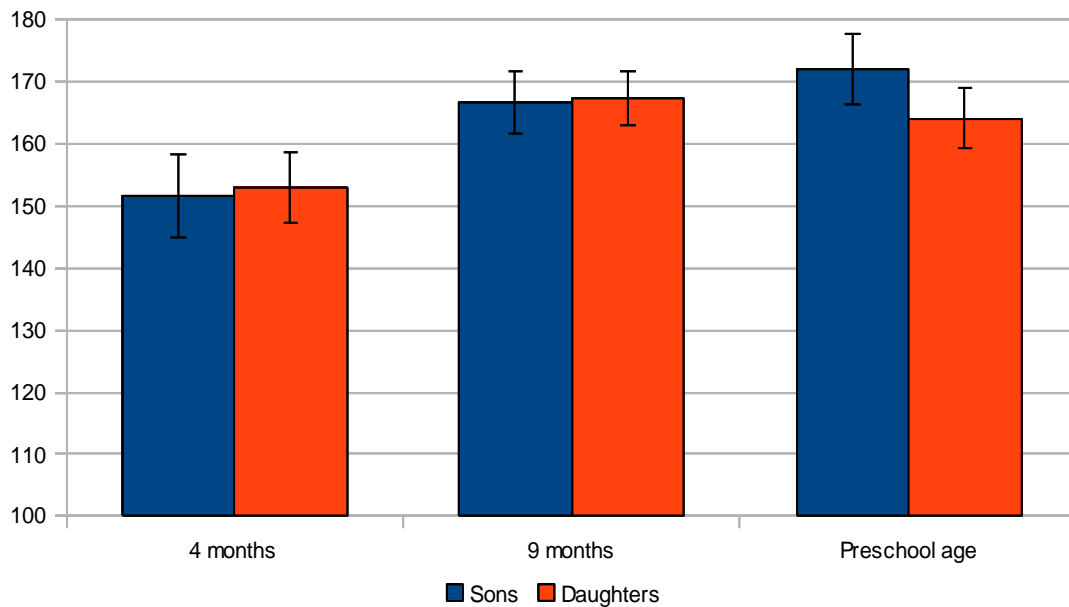
To verify whether the quality of triadic interactions differs over time in relation to child's gender an Analysis of Variance with a 3x2 mixed including the total LTP scores as the dependent variable, one within-subject factor (time: 3 levels, 4 months, 9 months, the preschool age) and one between-subject factor (child's gender: 2 levels, male, female).

Results highlight a significant main effect of “time” ( $F(2,58)=7.904$ ,  $p=.001$ ,  $\eta^2_p=.214$ ) with a significant increase in the quality of family interactions between the 4<sup>th</sup> ( $M=152.39$ ,  $SD=23.63$ ) and the 9<sup>th</sup> month ( $M=167.03$ ,  $SD=17.89$ ,  $p=.012$ ) and between the 4<sup>th</sup> month and the preschool age ( $M=167.42$ ,  $SD=20.43$ ,  $p=.006$ ). No significant effects of “gender” ( $F(1,29)=.116$ ,  $p=.736$ , *ns.*,  $\eta^2_p=.004$ ) and of “gender x time” interaction ( $F(2,58)=.681$ ,  $p=.510$ , *ns.*,  $\eta^2_p=.023$ ) were found.

Given the small and not completely homogeneous number of the two groups the same analysis comparing the two groups' total LTP scores in the three ages was replicated by the non-parametric analysis (Mann-Whitney test). The results obtained confirm those previously detected: indeed no significant differences emerged between families of sons or daughters in the overall quality of triadic interactions at 4 months ( $U=103.5$ ,  $p=.589$ ), 9 months ( $U=110.50$ ,  $p=.794$ ) and at the preschool age ( $U=88.5$ ,  $p=.253$ ).

From a qualitative point of view, it can be observed that during the infant's first year both groups of families follow a similar pattern of increase, whereas during the preschool age families with daughters show slightly lower scores, albeit not significantly different from male children's families (figure 5). It therefore seems that triadic interactive competences do not differ significantly, either average considered, or considering the different ages between families with male and female children.

Figure 5. The quality of triadic interactions over time in families of boys ( $N=13$ ) and girls ( $N=18$ )



### 3.2 Parents' individual characteristics and family interactions over time.

#### 3.2.1 The role of parents' affective-relational history

The second research question was to analyse the relationship between the quality of parents' attachment relationship with their caregivers during childhood in terms of love, rejection, neglect, involvement/role reversal and push to achieve, and the quality of triadic interactions within their own family from infant's first months to the preschool age.

Table 15 presents descriptive statistics (mean and standard deviation) and Kolmogorov-Smirnov test results performed on mothers' and fathers' mean scores obtained in the five AAI's Scales of Inferred Experience during childhood (range 1-9) assessed during pregnancy. Scores reported represent the average score for each scale, obtained by mothers and fathers of the group studied in reference to their experience with each parent.

Table 15. Mean, Standard Deviation and Kolmogorov-Smirnov test on mothers' ( $N=29$ ) and fathers' ( $N=27$ )<sup>8</sup> scores on the 5 AAI Scales of Inferred Experiences during childhood

	Mothers		Fathers	
	<i>M (SD)</i>	<i>K-S Test</i>	<i>M (SD)</i>	<i>K-S test</i>
Loving	5.03 (1.65)	Z=-.88, $p=.42$	4.85 (1.56)	Z=-.94, $p=.34$
Rejection	2.48 (1.36)	Z=1.21, $p=.11$	2.22 (1.36)	Z=1.58, $p=.013$
Involvement	2.07 (1.03)	Z=1.05, $p=.22$	1.67 (.99)	Z=1.59, $p=.013$
Neglect	2.48 (1.71)	Z=1.13, $p=.16$	2.37 (1.58)	Z=1.15, $p=.14$
Push to achieve	1.55 (1.33)	Z=2.26, $p<.001$	1.30 (.58)	Z=2.08, $p<.001$

Two-tailed  $p$  values

The distributions of the “push to achieve” scale scores in the group of mothers and fathers and the “rejection” and “involvement” scores in the group of fathers differ significantly from normal distribution. Therefore to test this research question, subsequent analysis will use a non-parametric approach (and, for comparison, the analogous parametric statistics).

In order to analyse the relationship between the characteristics of parents' affective-relational history and the quality of family interactions at each time point a correlational analysis was performed between the mothers' and fathers' scores on the 5 scales of Inferred Experience during childhood and total LTP scores (tables 16, 17).

Concerning the women's group, results highlighted a significant and positive correlation between involvement/role reversal scores assessed during pregnancy and total LTP scores at the preschool age, thus the higher the degree of mothers' involvement and preoccupation in the relationship with their own parents during childhood, the higher the quality of triadic interaction within their own family at the child's preschool age.

Conversely, no significant relationship was found between the characteristics of fathers' affective-relational history and triadic interactive competences across time.

<sup>8</sup> Complete data are not available for all subjects because of technical problems in audiotaping AAIs.

Table 16. Pearson and Spearman correlations between total LTP scores at each time point and mothers' scores on the 5 Scales of inferred Experience during childhood ( $N=29$ )

Mothers		Total LTP scores		
		4 months	9 months	Preschool age
Loving	r	-.157	-.030	-.147
	rho	-.227	-.033	-.194
Rejection	r	.055	.106	.112
	rho	.101	.149	.211
Involvement	r	.223	.319	.463*
	rho	.284	.286	.515**
Neglect	r	.076	.007	.136
	rho	.175	.031	.286
Push to achieve	r	.222	.270	.275
	rho	.258	.342	.205

\*  $p < .05$ , \*\*  $p < .001$

Table 17. Pearson and Spearman correlation between total LTP scores at each time point and fathers' scores on the 5 Scales of inferred Experience during childhood ( $N=27$ )

Fathers		Total LTP scores		
		4 months	9 months	Preschool age
Loving	r	.189	-.041	.077
	rho	-.053	.093	.123
Rejection	r	-.151	<.001	.129
	rho	-.036	.092	.191
Involvement	r	-.367	-.067	.060
	rho	-.097	-.127	-.002
Neglect	r	-.342	-.002	.038
	rho	.030	-.049	.036
Push to achieve	r	.080	.059	-.317
	rho	.075	.049	-.245

\* $p < .05$ , \*\*  $p < .001$ , 2-tailed

### 3.2.2 The role of parents' characteristics: maternal Postnatal depressive symptomatology and the development of family interactions.

A further research question proposed to assess whether mothers' Postnatal depressive symptomatology might be a risk factor for the development of triadic interactions.

The presence of postnatal depressive symptoms was assessed at the 1<sup>st</sup> and the 9<sup>th</sup> postnatal month by the Edinburgh Postnatal Depression Scale (EPDS).

Table 18 presents the descriptive statistics (mean and standard deviation) and the results of Kolmogorov-Smirnov in relation to EPDS scores at 1 and 9 months (range 0-30) and table 19 shows frequencies and percentages of mothers who scored above the cut-off for screening depressive symptoms in the postnatal period (EPDS total score > 9.5) identified for the Italian population from the validation study (Benvenuti et al., 1999).

Table 18. Mean, *SD*, Kolmogorov-Smirnov test of mothers' total EPDS scores at the 1<sup>st</sup> (*N*=30) and 9<sup>th</sup> month (*N*=29)

	1 months	9 months
<i>M</i>	8.5	7.55
<i>SD</i>	5.53	4.67
<i>K-S test</i>	<i>Z</i> =.533, <i>p</i> =.939	<i>Z</i> =.710, <i>p</i> =.695

Table 19. Frequencies and percentages of mothers' with (“depressed”) and without (“not depressed”) significant postnatal depressive symptomatology between the 1<sup>st</sup> and 9<sup>th</sup> month

	1 months f (%)	9 months f (%)
Depressed	11 (36.7%)	11 (37.9%)
Not depressed	19 (61.3%)	18 (62.1%)

36.7% of women at the 1<sup>st</sup> postnatal month and 37.9% at 9 months presented significant depressive symptoms, that is they had EPDS scores above the cut-off for screening on the Italian population (Benvenuti et al., 1999), similarly to percentages found in other studies within the Italian population (Agostini et al., 2005).

In relation to the stable rates of depressive symptoms between 1 and 9 months the stability of the actual risk of depression between the infant's 1<sup>st</sup> and 9<sup>th</sup> month was assessed in order to verify whether the mothers who had significant depressive symptoms at 1 months were probably those who also had them in the subsequent assessment at 9 months (table 20).

Table 20. Contingency table of the development of mothers' postnatal depressive symptomatology between the 1<sup>st</sup> and 9<sup>th</sup> month ( $N=28$ )

		9 months	
		Depressed	Not depressed
1 months	Depressed	8 (28.57%)	2 (7.14%)
	Not depressed	2 (7.14%)	16 (57.14%)

Mc Nemar test was applied to verify the significance of the change in the manifestation of depressive symptoms between the two phases. The observation of table 20 and McNemar test results ( $p=1.000$ , *ns.*) show no significant change of depressive symptoms over time: the mothers who had scores above the cut-off at the 1<sup>st</sup> month are then more likely to present a significant depressive symptomatology at the 9<sup>th</sup> month, even though a small percentage of women move from a situation of absence of significant symptoms to a situation of greater risk for developing a real PND (7.14%) and vice versa (7.14%).

In order to test the role of maternal postnatal depressive symptoms on the development of triadic interactive competences the presence of significant differences in LTP total scores at 4, 9 months and at the preschool age will be assessed comparing triadic interactive competences of families where mothers presented stability in the depressive symptomatology between the first and 9 months ( $N = 8$ ) and families in which, if present, such symptoms are limited to a few months period ( $N=20$ ).

Table 21 shows descriptive statistics of total LTP score at the three ages in the two group of families.

Given the lack of homogeneity between the two groups size a non-parametric approach was preferred whereby total LTP scores of the two groups were compared by the Mann-Whitney test (table 22).



Table 21. Mean, standard deviation of total LTP scores of families with mothers with stable depressive symptomatology ( $N=8$ ) and families whose mothers did not show stable depressive symptoms between the 1<sup>st</sup> and the 9<sup>th</sup> postnatal month ( $N=20$ )

	4 months	9 months	Preschool age
	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>
Stable depr. symptoms	159.38 (25.48)	175.63 (10.53)	178.13 (12.37)
No stable depr. Sympt	150.85 (24.03)	164.15 (20.25)	162.25 (21.58)

No significant differences were found between the two groups of families in the overall quality of triadic interactions. At a qualitative level, it can be observed that families with mothers at risk of PND present generally higher levels in the quality of family interactions at each stage of assessment.

Table 22. Differences on total LTP scores at the 4<sup>th</sup> and 9<sup>th</sup> month and at the preschool age between families with mothers with a stable depressive symptomatology in the Postnatal period ( $N=8$ ) and families with mothers without stable symptoms ( $N=20$ )

		Mean Rank	Mann-Whitney test
4 months	Stable depressive symptoms	16.75	U=62, $p=.36$ , <i>ns.</i>
	No stable depressive Symptoms	13.60	
9 months	Stable depressive symptoms	17.75	U=54, $p=.19$ , <i>ns.</i>
	No stable depressive Symptoms	13.20	
Preschool age	Stable depressive symptoms	19.00	U=44, $p=.067$ , <i>ns.</i>
	No stable depressive Symptoms	12.70	

Two-tailed  $p$  values

Given these results it does not seem that the presence of a stable depressive symptomatology in the mother may be a risk factor for the development of triadic interactive competences during the period considered in the present study, not showing significantly different outcomes when considering the quality of triadic interactions

reached by the families over time.

### 3.3 The role of relational and contextual sources of stress and support

#### 3.3.1 The quality of marital relationship on the development of triadic interactive competences over time.

To verify the relationship between the quality of the marital relationship during the transition to parenthood until the preschool age of the child and the quality of family interactions across the three ages, the first step was to analyse the trends of marital adjustment from pregnancy to the child's preschool age.

Preliminary descriptive statistics (mean and standard deviation) and Kolmogorov-Smirnov test were calculated to verify the distribution of mothers' and fathers' scores obtained on the Dyadic Adjustment Scale proposed at the 7<sup>th</sup> month of pregnancy and to 4, 9, 12 months and, finally, at the preschool age and assessing marital adjustment (table 23).

Table 23. Mean, Standard Deviation and Kolmogorov-Smirnov test on mothers' ( $N=31$ ) and fathers' ( $N=31$ ) total DAS scores over time

	Mothers		Fathers	
	<i>M (SD)</i>	<i>K-S Test</i>	<i>M (SD)</i>	<i>K-S test</i>
7 month of pregnancy	121.49 (9.12)	$Z=.99, p=.28$	120.16 (12.99)	$Z=.61, p=.85$
4 months	119.88 (11.86)	$Z=.53, p=.94$	120.55 (13.83)	$Z=.56, p=.92$
9 months	116.16 (14.87)	$Z=.71, p=.69$	118.79 (17.96)	$Z=.83, p=.49$
12 months	114.93 (14.76)	$Z=.49, p=.97$	114.78 (16.17)	$Z=.46, p=.98$
Preschool age	111.02 (15.45)	$Z=.42, p=.99$	114.39 (17.35)	$Z=.73, p=.67$

Results obtained through the Kolmogorov-Smirnov test support the use of parametric statistics to evaluate the research question.

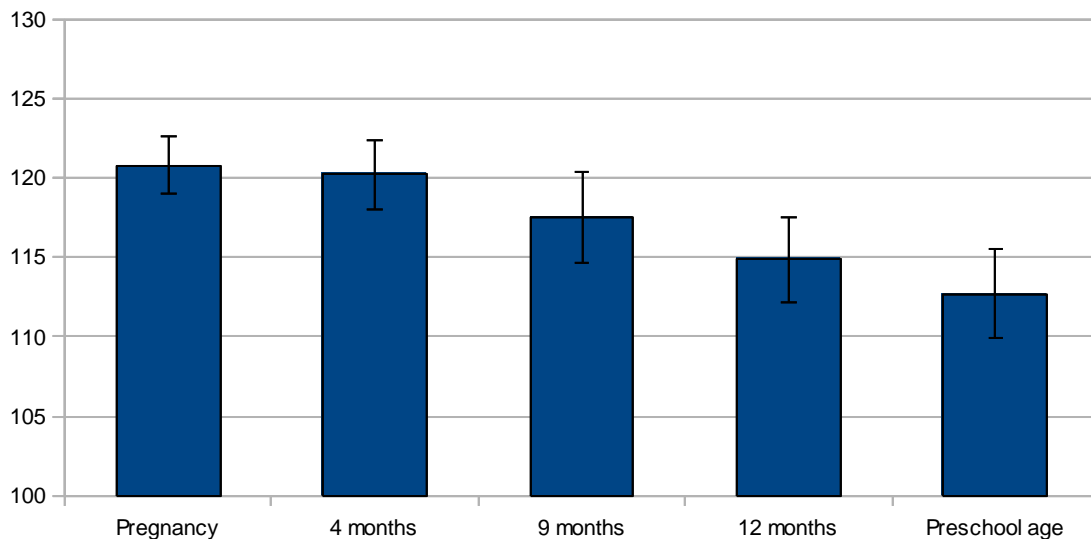
To analyse the evolution of the women's and men's perception about the quality of the marital relationship over time an Analysis of Variance with a mixed 5 x 2 design was performed on the total DAS scores including two within-subject factor: “time” (5 levels,

pregnancy, 4, 9, 12 months and the preschool age) and “partners' gender” (2 levels: male, female).

Results showed a significant main effect of “time” ( $F(4,120)=8.093, p<.001, \eta^2_p=.212$ ) whereas no significant effects of “partners' gender” ( $F(1,30)=.839, p=.367, ns., \eta^2_p=.027$ ) and of the interactions between “time” and “partners' gender” ( $F(4,120)=2.172, p=.076, ns., \eta^2_p=.068$ ) were found.

Consequently marital adjustment was found to vary significantly with time: in particular, Post-hoc test applying Bonferroni's correction ( $p<.05$ ) highlighted that total DAS scores at the 7<sup>th</sup> month of pregnancy ( $M=120.82, SE=1.78$ ) are significantly higher ( $p=.011$ ) than those assessed at the 12<sup>th</sup> postnatal month ( $M=114.86, SE=2.69$ ) and during the preschool age ( $M=112.71, SE=2.82$ ) ( $p=.002$ ); moreover 4<sup>th</sup> month DAS scores ( $M=120.213, SE=2.19$ ), are significantly higher than those of the 12<sup>th</sup> month ( $p=.032$ ) and the preschool age ( $p=.011$ ). A decline of the quality of marital relationship seems thus to begin after the 4<sup>th</sup> month of the baby becoming significant at the 1<sup>st</sup> year of the baby and lasting till the preschool age of the child (figure 6).

Figure 6. Trends of marital adjustment from pregnancy to the preschool age of the child ( $N=31$ )



This trend is quite the opposite of that observed for the development of triadic interactive competences.

Then, in order to assess the relationship between the quality of the marital relationship and the quality of family interactions during the period studied, Pearson's correlations were performed on men's and women's total DAS scores and total LTP scores at each time point (table 24) .

Table 24. Bivariate correlations between total LTP scores at each time point and women and men' DAS total scores at the 5 measurement point ( $N=31$ )

Marital Adjustment		Triadic interactive competences		
		4 months	9 months	Preschool age
Pregnancy	Women	-.057	.027	.328
	Men	-.257	.216	.100
4 months	Women	-.335	.009	.212
	Men	-.231	.137	.166
9 months	Women	-.156	-.020	.154
	Men	-.319	.132	.110
12 months	Women	-.151	.104	.087
	Men	-.094	.281	.255
Preschool age	Women	-.202	.114	.174
	Men	-.362*	.080	.102

\*  $p < .05$ , two-tailed  $p$ -values

A significant and negative correlation was found between the men's perception of marital adjustment at the preschool age and the quality of family interactions at 4 months: the higher the quality of family interactions at the infant's first month of life, the lower the quality of the marital relationship reported by fathers at the child's preschool age.

These findings seem to support the idea that the family system and the marital subsystem would have relatively independent trajectories during the transition to parenthood and during the early years of the child.

### **3.3.2 The role of relational and contextual sources of stress and support: father involvement and the development of triadic interactive competences over time.**

A further research question regarded the role of paternal involvement in childrearing practices on the development of triadic interactive competences.

Father involvement was measured at the 4<sup>th</sup>, 9<sup>th</sup>, 12<sup>th</sup> month and at the preschool age through the Questionnaire of Father Involvement (whose scores range from 0 to 100): it was administered to both partners, so that fathers answered thinking about their degree of involvement and mothers answered in relation to their perception of their partners involvement in childcare.

A preliminary analysis previewed the calculation of descriptive statistics (mean, standard deviation) and the verify of the normal distribution of father involvement scores of mothers and fathers at each time point (table 25).

Table 25. Mean, Standard Deviation and Kolmogorov-Smirnov test on mothers' ( $N=31$ ) and fathers' ( $N=31$ ) total father involvement scores over time

	Mothers		Fathers	
	<i>M(SD)</i>	<i>K-S Test</i>	<i>M(SD)</i>	<i>K-S test</i>
4 months	59.24 (25.23)	Z=.56, $p=.91$	66.62 (20.56)	Z=.59, $p=.87$
9 months	56.54 (22.26)	Z=.46, $p=.98$	63.01 (21.06)	Z=1.15, $p=.14$
12 months	59.42 (20.17)	Z=.64, $p=.81$	64.18 (18.82)	Z=.75, $p=.62$
Preschool age	56.48 (23.81)	Z=.63, $p=.82$	61.92 (17.36)	Z=.63, $p=.83$

Two-tailed  $p$  values

Again, the distributions of mothers' and fathers' scores on father involvement in the different stages do not differ significantly from normal distribution, therefore subsequent analysis will employ parametric statistics.

The first research question had essentially an exploratory objective, namely to analyse the trend of father involvement over time controlling for parents' gender.

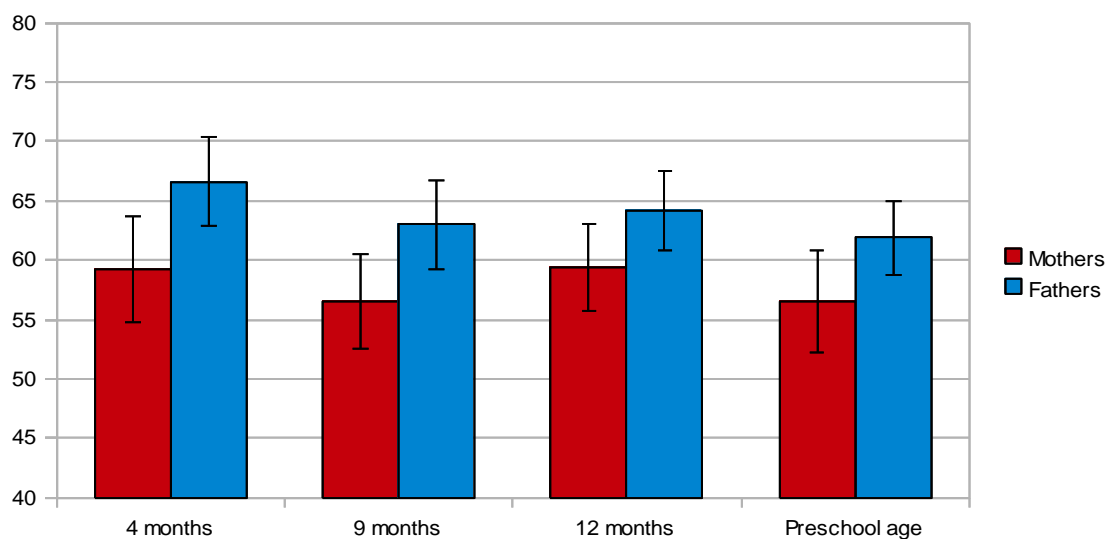
To this purpose, an Analysis of Variance on father involvement scores as dependent variable was performed. A 4 x 2 mixed design was defined with two within-subject factors: "time" (4 levels, 4, 9, 12 months and the preschool age), and "parents' gender" (2 levels). Results show no significant main effect of "time" ( $F(3,90)=.689$ ,  $p=.56$ , *ns.*,  $\eta^2_p=.022$ ), a significant main effect of "parents' gender" ( $F(1,30)=9,208$ ,  $p=.005$ ,  $\eta^2_p=.235$ ) and no significant effect of the interaction between "time" and "parents' gender" ( $F(3,90)=.198$ ,  $p=.898$ , *ns.*,  $\eta^2_p=.007$ ).

Mothers' and fathers' perceptions about the degree of father involvement in child care differ significantly and Post-hoc test revealed that averagely men ( $M=63.93$ ,  $SD=2.79$ )

perceive themselves significantly more involved in their child care than do their female partners ( $M=57.92$ ,  $SD=3.51$ ,  $p<.05$ ).

To analyse from a qualitative point of view the trajectories of paternal involvement in the period between infant's 4 months and the child's preschool age (Figures 7) we can see how this trend is quite linear in comparison to that previously observed both for the development of triadic interactive competences and marital adjustment.

Figure 7. Mothers' and fathers' trends of father involvement over time ( $N=31$ )



In general an average degree of paternal involvement at all ages (scores higher than 50% of possible activities and frequency) is observed, with slightly higher level at 4 months, a decrease at 9 months a weak increase a 12 months and then the return to an intermediate value during the child's preschool age.

Although women reported lower level of their partners' involvement in child care over time their scores still follow the trend of those of their partners: correlational analysis indeed confirmed that, at each time point mothers' and fathers' scores correlate positively and significantly (at the 4<sup>th</sup> month  $r=.565$ ,  $p<.01$ , at the 9<sup>th</sup> month,  $r=.719$ ,  $p<.01$ , at the 12<sup>th</sup> month  $r=.732$ ,  $p<.01$  and during the preschool age  $r=.849$ ,  $p<.01$ ).

Analysing then the relationship between father involvement and family interactions, bivariate correlations between mothers' and fathers' total scores of father involvement at each time and total LTP scores at 4 and 9 months and at the preschool age were performed

(table 26).

Table 26. Bivariate correlations between total LTP scores at each time point and women (N=31) and men's (N=31) father involvement scores

Father involvement		Triadic interactive competences		
		4 months	9 months	Preschool age
4 months	Women	.009	.388*	.274
	Men	.267	.345	.619**
9 months	Women	.018	.415*	.490**
	Men	.054	.140	.421**
12 months	Women	-.009	.352	.337
	Men	.214	.193	.403*
Preschool age	Women	.248	.474**	.455*
	Men	.131	.371*	.458**

\*  $p < .05$ , \*\*  $p < .01$  (Two-tailed  $p$  values)

Many significant and positive correlations between paternal involvement, perceived by both partners and the quality of triadic interactive competences were found over time.

It is interesting that father involvement in all stages correlated positively with the quality of family interactions and mainly at the preschool age, highlighting, even if at a bivariate level, that the two constructs are closely linked and have reciprocal positive associations during the period investigated.

### **3.3.3 The role of relational and contextual sources of stress and support: is the quality of the coparental interactions during pregnancy associated with later triadic interactive competences?**

The final question on the evaluation of the role of relational and contextual factors concerned the analysis of the relationship between the quality of the coparental interactions assessed at the 7<sup>th</sup> month of pregnancy through the prenatal LTP and the subsequent quality of family interactions.

A preliminary analysis previewed the calculation of descriptive statistics (mean, standard deviation) and the verification of the normal distribution of Total Prenatal LTP scores.

Mean of total Prenatal LTP scores was 16.79 ( $SD=3.802$ ); Kolmogorov-Smirnov test highlighted that the scores' distribution did not differ significantly from the Normal distribution ( $Z=.723, p=.672$ ), thus supporting the application of parametric statistics.

Subsequently, in order to analyse the relationship between the quality of the coparental interactions before the transition to parenthood and triadic interactive competences after the baby's birth, Prenatal and Postnatal LTP scores were correlated (table 27).

Table 27. Pearsons bivariate correlation between total Prenatal LTP scores and total Postnatal LTP scores at the 4<sup>th</sup> and 9<sup>th</sup> month of the baby and at the preschool age ( $N=29^9$ )

	Postnatal LTP		
	4 months	9 months	Preschool age
Prenatal LTP	.124	.063	.172

\*  $p<.05$ , \*\*  $p<.01$  Two-tailed p values

No significant correlations were found between the quality of coparental interactions and the subsequent quality of mother-father-child interactions: this would seem to suggest that the quality of the coparental interaction would not constitute a potential precursor associated with subsequent interactive competences expressed by the parents dyad in the interaction with the real child.

#### **4. Summarizing the role of prenatal and postnatal individual, relational and contextual factors: what might be a predictive model of triadic interactive competences at the child's preschool age?**

The third aim of the study was to develop a predictive model of triadic interactive competences at the child's preschool age that could better summarize and explain the results so far reported. In summary, the variables significantly associated with the quality of family interactions at the preschool age were: - triadic interactive competences at the infant's 9 month ( $r=.361, p<.05$ ); - fathers' involvement scores at the 4<sup>th</sup> month ( $r=.619, p<.05$ ), at the 9<sup>th</sup> ( $r=.421, p<.01$ ), at the 12<sup>th</sup> month ( $r=.403, p<.05$ ) and during the preschool age ( $r=.458, p<.01$ ), as well as women's scores about their partners' involvement

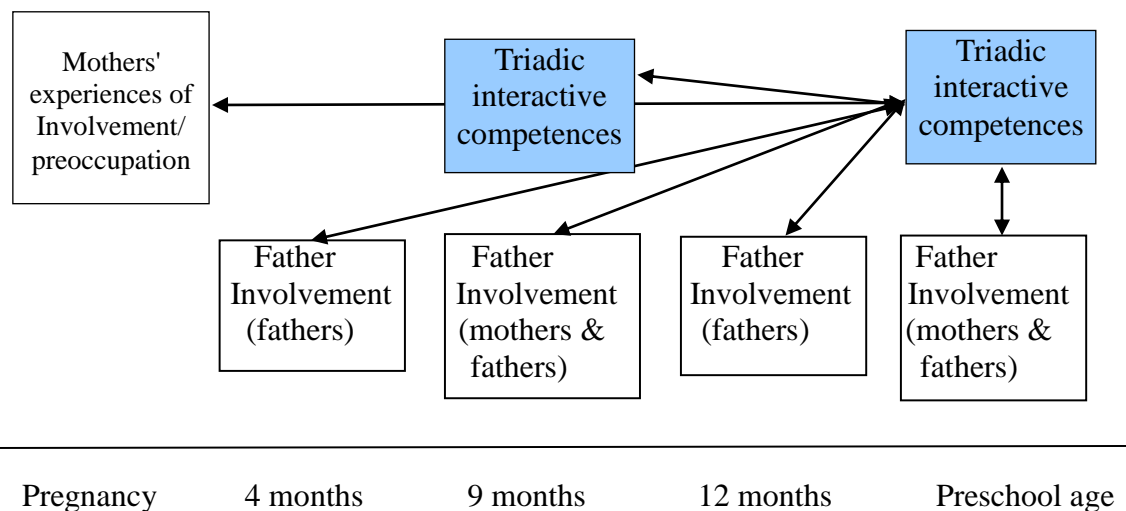
<sup>9</sup> Complete data are available for 29 families because of technical problems during video-recording.



in childcare at the 9<sup>th</sup> month ( $r=.490$ ,  $p<.01$ ) and during the preschool age ( $r=.455$ ,  $p<.05$ ); and finally, mothers' scores on the AAI involvement/role reversal scale assessed during pregnancy ( $r=.463$ ,  $p<.05$ ).

Figure 8 visually represents the significant relations found between individual and relational variables and the quality of triadic interactions at the preschool age, which will be studied in more depth in subsequent analyses.

Figure 8. Pattern of significant relationships between individual, relational and contextual factors and triadic interactive competences at the child's preschool age.



In order to analyse more thoroughly the contribution of each variable on the quality of family interactions observed during the preschool age a Hierarchical Multiple Regression model was defined.

According to theoretical hypothesis and methodological issues of the longitudinal design, the definition of the Regression model proposed to take into account the different levels of complexity of the family system previously described and previewed the gradual inclusion of the most proximal (from a theoretical and temporal point of view) and systemic-relational variables and subsequently the more distal and individual variables.

A Hierarchical Multiple Regression analysis was performed considering triadic interactive competences (total LTP scores) at the preschool age as the dependent variable and including progressively three blocks of variables: in the first block triadic interactive competences at 9 months was included; in the second block father involvement assessed at

4, 9 and 12 months and at the preschool age (stepwise method of selection was used in order to select only the statistically significant variables because of their reciprocal correlations); in the third block mothers' involvement/role reversal with their own parents assessed during pregnancy was included.

Table 28. Hierarchical Multiple Regression Analysis: Predicted: Triadic interactive competences at the preschool age ( $N=29$ )

Variables	<i>B</i>	<i>SE B</i>	$\beta$
1 Triadic interactive competences (9 months)	.409	.199	.368*
2 Triadic interactive competences (9 months)	.199	.182	.179
Father involvement 4 months (fathers)	.532	.162	.537**
Father involvement 9 months (mothers and fathers mean)	excluded		
Father involvement 12 months (fathers)	excluded		
Father involvement 4 months (mothers and fathers mean)	excluded		
3 Triadic interactive competences (9 months)	.088	.175	.079
Father involvement 4 months (fathers)	.505	.151	.510**
Mothers' involvement/preoccupation	6.852	2.994	.344*

Model 1 –  $F(1,27)=4.241$ ,  $p=.049$ ,  $R^2=.136$

Model 2 –  $F(2,26)=8.256$ ,  $p=.002$ ,  $R^2=.388$ ,  $\Delta R^2=.253$ ,  $\Delta F=.003$

Model 3 –  $F(3,25)=8.148$ ,  $p=.001$ ,  $R^2=.494$ ,  $\Delta R^2=.106$ ,  $\Delta F=.031$

\*  $p<.05$ , \*\*  $p<.01$

The analysis selected LTP total scores (set a priori), father's involvement at 4 months and mother's involvement/role reversal during their childhood: as it can be seen (table 28), the results show that the final model explains 49.4%, of variance, that is a significant

proportion of the variance of triadic interactive competences at the preschool age ( $F(3,25) = 8.148, p = .001$ ).

However, not all the predictors give a significant contribution to explaining the dependent variable: in fact, only the father's involvement at 4 months and the involvement experienced by the mother in infancy with attachment figures and assessed in pregnancy may be considered significant predictors of the quality of triadic interactions during the child's preschool age (respectively,  $\beta = .510, p < .01$  and  $\beta = .344, p < .05$ ). These factors seem therefore to exert a positive effect on the quality of triadic interactions in the medium term.

### **5. Children's psycho-functional outcomes during the preschool age: correlates and predictors from pregnancy to the preschool age.**

The last aim of the study was to investigate the relationship between children's psycho-functional outcomes at the preschool age and the family, marital and individual variables considered in the study across time.

The specific children's outcomes considered were sleeping, regulation and behavioural problems assessed by calculating the mean of related items of the Symptoms check-list adapted to the purpose of the study and filled in jointly by both parents. Sleeping problems mean scores can range between .67 and 5, regulation problems between 0 and 1 and behavioural problems between 1 and 5.

Table 29 presents descriptive statistics (mean, standard deviation) and the verification of the normal distribution of the scores.

Table 29. Descriptive statistics of children's psycho-functional outcomes at the preschool age

	<i>M (SD)</i>	<i>K-S Test</i>
Sleeping problems	1.23 (0.65)	$Z=1.23, p=.10$
Regulation problems	0.22 (0.27)	$Z=1.69, p=.01$
Behavioural problems	1.98 (1.02)	$Z=1.11, p=.17$

Two-tailed *p* values

The distribution of regulation difficulties scores differ significantly from the normal distribution, accordingly subsequent analysis will use non-parametric statistics. As

expected from children of a non-referred sample of families, the graphical observation of the scores distributions highlight that in general children tend to have a low prevalence of the symptoms investigated (figure 9, 10, 11).

Figure 9. Distribution of mean scores on sleeping difficulties

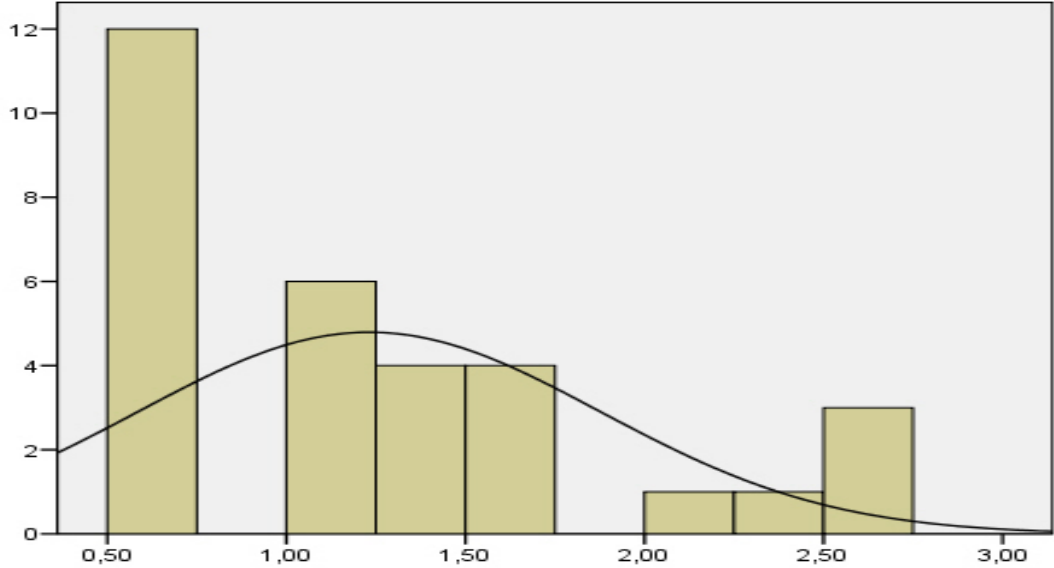


Figure 10. Distribution of mean scores on regulation problems

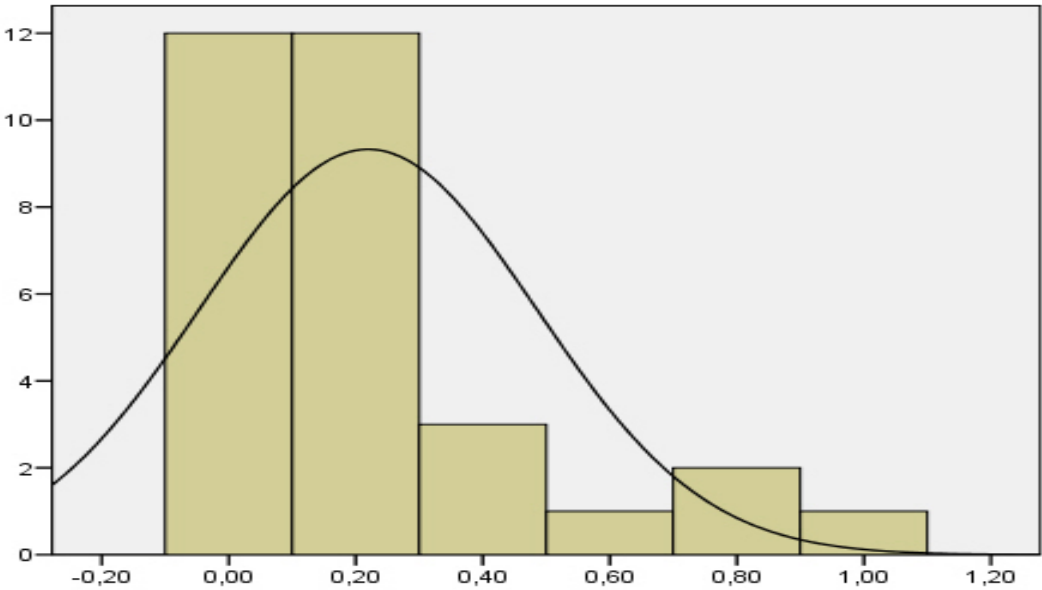
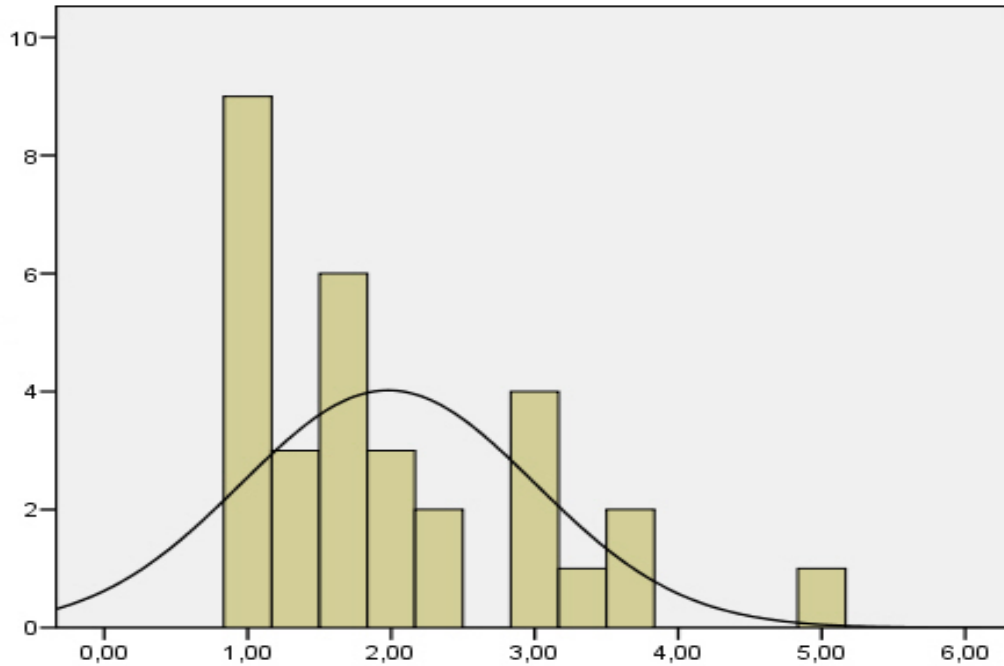


Figure 11. Distribution of mean scores on children's behavioural problems



First of all, Mann-Whitney non-parametric statistics was used to compare boys and girls scores in these three domains: no significant gender differences were found in the presence of sleeping ( $U=93$ ,  $p=.446$ , *ns.*), regulation ( $U=105.5$ ,  $p=.624$ , *ns.*) and behavioural problems ( $U=74$ ,  $p=.08$ )<sup>10</sup>.

Considering sleeping difficulties and their relationship with family, relational and individual variables no significant differences were found between the children of mothers with ( $M=1.63$ ,  $SD=.77$ , Mean rank=18.88) and without ( $M=1.13$ ,  $SD=.58$ , Mean rank=12.75) stable depressive symptoms during their first year of life and sleeping difficulties: indeed Mann-Whitney test performed given the small number and non-homogeneity of the two groups ( $U=45$ ,  $p=.07$ , *ns.*) did not find significant differences.

A Stepwise Multiple Regression analysis was performed in order to assess the role of family, dyadic and individual variables in explaining sleeping difficulties at the preschool age: triadic interactive competences at the three ages, fathers' and mothers' marital adjustment and father involvement at each time point, the quality of coparental interactions and mothers' and fathers' affective-relational history variables assessed during pregnancy (excepted those non-normally distributed, see par. 3.2.1) and child's gender were all

<sup>10</sup> T-test performed on sleeping difficulties and behavioural problems yielded the same results (respectively:  $t(29)=.188$ ,  $p=.852$ , *ns.*, and  $t(29)=-1.597$ ,  $p=.121$ , *ns.*)

included as predictors.

The resulting model explained 30% of the variance ( $R^2=.304$ ) and was significant ( $F(1,24)=10.48, p<.001$ ). The analysis extracted only one variable, that is "marital adjustment" reported by fathers at the preschool age, as a significant related factors to children's sleeping difficulties at the same time point ( $t=-3.237, p=.004, \beta=-.551$ ). All the other variables were excluded from the model. Thus, although at an exploratory level, results shows that the higher the marital adjustment perceived by fathers at the preschool age, the less the children's sleeping difficulties in the same phase.

Regarding regulation problems, Spearman correlations between regulation difficulties and family, relational and individual variables considered in the study (table 30) showed a constant and negative relationship between marital adjustment and regulation difficulties. Moreover, mothers' experience of neglect during childhood were positively correlated with regulation problems whereas no significant relationships were observed with triadic interactive competences, the quality of coparental interactions and father involvement except with fathers' perception of their involvement in childcare at 9 months, which correlates negatively. Table 30 summarizes only the significant correlations found.

In general these findings seem to highlight a close and negative relationship between children's regulation difficulties and marital adjustment perceived by both parents over time, so that the higher the marital adjustment, the fewer regulation difficulties in children at the preschool age. Moreover, father involvement at 9 months also showed a negative relationship with regulation problems, with more involved fathers more likely to have children with less regulation difficulties at the preschool age. One individual variable, that is mothers' experiences of neglect during childhood presented a positive association with children's later regulation problems, so the higher the degree of neglect experienced in the relationship with their parents the higher the likelihood of their children having difficulties with self-regulation. Finally, children of mothers with a stable depressive symptomatology during their first year of life ranked significantly higher (Mean rank=21.19) in regulation difficulties during the preschool age than children (Mean rank=11.83) whose mothers did not have stable depressive symptoms ( $U=26.5, p=.004$ ).

Table 30. Summary of Spearman significant correlations between regulation problems and family, dyadic and individual variables

	Regulation problems	<i>N</i>
Mothers' experiences of neglect (AAI)	.466*	29
Marital Adjustment mothers (pregnancy)	-.526*	31
Marital Adjustment fathers (pregnancy)	-.374*	31
Marital Adjustment mothers (4 months)	-.426*	31
Marital Adjustment mothers (9 months)	-.527*	31
Marital Adjustment mothers (12 months)	-.649**	31
Marital Adjustment fathers (12 months)	-.512**	31
Marital Adjustment mothers (Preschool age)	-.614	31
Marital Adjustment fathers (Preschool age)	-.479**	31
Father involvement (9 months)	-.382*	31

\*  $p < .05$ , \*\*  $p < .01$  Two-tailed  $p$  values

Finally, considering children's behavioural problems (aggressiveness, opposition, anger expressions), no significant differences were observed in behavioural problems of children of mothers with a stable depressive symptomatology ( $M=2.33$ ,  $SD=1.44$ , Mean rank=16.76) during their first year of life and children ( $M=1.71$ ,  $SD=.75$ ; Mean rank=13.60) whose mothers did not show significant depressive symptoms, through the calculation of Mann-Whitney test ( $U=62$ ,  $p=.35$ , *ns.*).

A Stepwise Multiple Regression analysis (table 31) was performed in order to assess the role of family, dyadic and individual variables in explaining behavioural problems at the preschool age: triadic interactive competences at the three ages, fathers' and mothers' marital adjustment and father involvement at each time point, the quality of coparental interactions and mothers' and fathers' affective-relational history variables assessed during pregnancy (excepted those non-normally distributed, see par. 3.2.1) and child's gender were all included as predictors.

The third model explained a more significant proportion of variance (63.5%) than the previous two ( $\Delta F=.006$ ,  $F(3,22)=12.73$ ,  $p < .001$ ). The analysis extracted as potential predictors of children's behavioural problems: "marital adjustment" reported by mothers at

4 months ( $\beta=.684, p<.01$ ) and 12 months ( $\beta=-.891, p<.01$ ) and mothers' experiences of neglect during their childhood ( $\beta=.434, p<.01$ ). All the other variables were excluded from the model. Thus, although at an exploratory level, results shows that the higher the marital adjustment perceived by mothers at the infant's 4 months and the lower marital adjustment perceived by mothers at 12 months at the preschool age as well as the higher level of experiences of neglect in the relationship with their parents the higher children's behavioural problems at the preschool age.

Table 31. Stepwise Multiple Regression: predicted children's behavioural problems

		B	SE	$\beta$
1	Marital Adjustment mothers (12 months)	-.034	.01	-.568**
2	Marital Adjustment mothers (12 months)	-.060	.01	-.993**
	Marital Adjustment mothers (4 months)	.044	.02	.582*
3	Marital Adjustment mothers (12 months)	-.054	.01	-.891**
	Marital Adjustment mothers (4 months)	.052	.01	.684**
	Mothers' experiences of neglect (AAI)	.216	.07	.434**

\*  $p<.05$ , \*\*  $p<.01$

Model 1 –  $R^2=.323, F(1,24)=11.44, p=.002$

Model 2 –  $R^2=.482, \Delta R^2=.159, \Delta F=.014, F(2,23)=10.69, p=.001$

Model 3 –  $R^2=.635, \Delta R^2=.153, \Delta F=.006, F(3,22)=12.73, p<.001$

Summarizing all these data, it seems thus that the quality of triadic interaction and paternal involvement in the period under study are not closely associated with children's outcomes referring to sleeping difficulties and regulation and behavioural problems at the preschool age. On the other hand, less functional characteristics of parents' affective-relational history with their own parents during childhood have proved to be associated with a higher presence of children's difficulties only if this observation is limited to bivariate association. In general the quality of the marital relationship over time and particularly mothers' perceptions of their marital adjustment from pregnancy to the preschool age, and fathers' perception of the marital relationship in the last phase of the research were found associated to be associated with their children's outcomes: in particular the parents' perceptions of better marital relationship would foster more positive outcomes in their children in the medium term. However, considering the particular characteristic of the



outcomes variables and the absence of relevant and high frequencies of the symptoms investigated in the children of the participating families, consistent with their belonging to a non-referred population, leads to the consideration of these results as an essentially exploratory and preliminary attempt for successive investigation and replication using larger groups.



## CHAPTER 6

### DISCUSSION AND CONCLUSION

#### **1. The development of triadic interactive competences from infant's first months to the preschool age.**

The first aim of the study involved the analysis of the development of triadic interactive competences from infant's early months of life to the preschool age. The specific research questions set out to verify whether the development of socio-emotional competences within the family system during this period would be a phenomenon characterized by stability and continuity over time, or, conversely, given the higher complexity required by a triadic interactive context as that represented by mother-father-child system, whether the co-construction and coordination necessary for affective communication might constitute a challenge for all the family members requiring an increasing flexibility and a discontinuous trend in the mutual attempt to adapt to different developmental stages involving primarily the child, but affecting also individuals and family sub-systems.

The results showed that the development of interactive skills of the family triad seem to be characterized by different developmental phases and by a pattern of instability and change followed by periods of relative stabilization and consolidation of the interactive competences developed, closely associated with the particular child's evolutionary stages.

Indeed the development of triadic interactive competences from the infant's first months of life to the preschool age seem to follow two distinct evolutionary phases: the first phase, ranging from the baby's 4 to 9 months, appears to be a period of relative flexibility and instability of the quality of triadic interactions, both when considered globally, and when considering specific interactive contexts, and finally when looking at the underlying characteristics and competences put into play by the family triad during the interaction. The infant's first year also seems to be a period marked by a general increase and improvement of family interactive competences which settle at a medium-high level and then become more and more functional to establish an interactive context favouring child's socio-emotional development.

The second phase involves the period between the 9<sup>th</sup> month and the preschool age of the

child: this period seems characterized by a progressive stabilization and continuity of the overall and specific interactive competences of the family. The daily and repeated experience of triadic interactions, parents' acquisition and consolidation of new and more complex skills, as well as the progress of child's development in several domains, are likely to converge in defining interactive communication routines linked to "schemes of being in three" (Stern, 1985) that would allow the further implementation of the competences so far acquired.

Indeed triadic interactive competences assessed at 9 months are positively related to those observable at the child's preschool age and do not differ significantly. Even taking into account the quality of triadic interactions at the child's 18 months, an intermediate step particularly important for its developmental acquisitions, these observations do not change: while being able to assess mainly from a qualitative point of view (because of the small sub-group of families involved) the trend of stability and continuity between the quality of family interactions in the first year of life, those assessed at 18 months and finally, at the preschool age, in general, the gradual stabilization of triadic interactive competences after the infant's 9 months seems to be confirmed.

These results are partly consistent with the theoretical hypotheses and the data in the literature: first, data collected differ from the results obtained by the group in Lausanne, which in some studies had indeed shown the stability of quality of family interactions from pregnancy to the child's 18 months (Carneiro et al., 2006; Favez et al., 2006); conversely, studies in the Italian context, more focused on the analysis of change, previously highlighted a trend towards a significant increase of triadic interactive competences between pregnancy and the 9<sup>th</sup> month (Bighin, 2009; Simonelli et al., in press). The results obtained are thus only partly overlapping with those of the group in Lausanne, since stability and continuity of triadic interactive competences in this study were detected only after the infant's 9 months. However, this developmental trend seems to be relatively consistent with the particular challenges that individual members of the family and the family system as a whole face in the period under study. The baby from birth is an active partner in the interactive and communicative exchanges and during the first years of life is engaged in developing an incredible number of new motor, perceptual, cognitive, and of course social and emotional skills. The parental dyad should work, in line with Fivaz-Depeursinge and Corboz-Warnery (1999), as a structuring subsystem, which has the role

and potential of framing and promoting the development of the infant, his new learning and experiences and the acquisition of ever more social and emotional competences. These skills should promote and allow the child's inclusion in more complex interactive and relational contexts such as the peer group and the relationships with other significant adults that become increasingly a significant part of children's experiences, particularly with the entrance to the kindergarten during the preschool age. It is clear that the infant's first months of life and the transition from primary to secondary intersubjectivity may be a period of relative change and instability through the process of mutual knowledge, understanding and the definition of patterns of affective communication which are more and more coordinated and effective.

An interesting point concerns the development of family interactions in relation to the different interactive configurations provided by the LTP paradigm, which can be considered as the four basic ways of "being in three" (Fivaz-Depeursinge, Corboz-Warnery, 1999): in particular, the "three together" interactive configuration is a more complex context and represents the triadic situation for excellence: at 4 months the family expresses a lower level of competences in coordination and cooperation on the realization of the interactive aim. Maintaining a systems perspective, this might be related on one hand, to the parents' acquisition still in progress of the ability to coordinate in performing their coparental function and, on the other hand, to the higher level of resources required by the infant to interact with two partners at the same time. However, it appears interesting and consistent with the research that highlighted infant's early triadic and triangular capacity (Fivaz et al., 2005; Lavanchy, 2002; McHale et al., 2008; Tremblay-Leveau & Nadel, 1995, 1996), that triadic interactive competences even though lower than those observed in the 2+1 previous configurations, still remains at average and not dysfunctional levels. Moreover, the quality of family interactions in the "three together" context shows a linear increase over time reaching levels significantly higher than those at 4 months only at the preschool age, a phase in which they settle down to levels similar of those observed in 2+1 configurations.

Finally, family interactive competences show a less linear trend across time in the last configuration proposed by the LTP, that is the context in which, after having been engaged in the interaction with both parents (part 3), the child is asked to remain simply present while the mother and the father interact with each other. Independently of ages, the

competences required in this context present lower levels than those observed in the previous interactive configurations: this seems to highlight the higher complexity of the interactive context in which the child is temporarily "excluded" (in the sense of not actively involved) in the interaction with parents. At the same time, it can not be excluded that time (duration of the procedure) and individual factors (attentional, self-regulation and motivational factors) might contribute to explain this decline. Anyway, the same trend of decline within the four LTP configuration was observed also in previous studies (Simonelli et al., 2009) applying the same paradigm to clinical families with school-age children and adolescents. Looking at different child's ages, at 4 months triadic interactive competences show lower levels than previous configurations, a result consistent also in relation to the still limited infant's capacity for self-regulation: indeed infants often interfere and try to call back their parents with vocal, gestural and facial expressions or showing signs of distress; conversely parents, mainly in this phase, appear more child-centred as might expected, thus often showing difficulties to balance the involvement in the interaction with the partner, the monitoring of the infant's affective state and the possible need to intervene when the baby manifests signs of fatigue and distress. However, the performance of the family in this interactive configuration was found to increase significantly between 4 and 9 months as shown by the increased capacity for self-and hetero-regulation of the mother-father-child triad in managing the interactive task. Finally, during the preschool age, triadic interactive competences in the fourth configuration is lower though not significantly: through the observation of the videotaped sessions, it is clear that although the child enjoys greater autonomy which allows him to continue playing by himself while his parents interact with each other, in parallel, the child's higher movement autonomy and complete language acquisition allow him to interfere more actively in the ongoing interaction between his parents emphasizing how the negotiation of limits is a central theme of the family at this time.

Then, considering the developmental trends of the specific socio-emotional competences that concur to determine the overall quality of family interactions, these seem characterized by only partial stability and continuity over time: considerations previously made in relation to the overall quality of triadic interactions are similar for some of these skills.

A particularly interesting aspect that seems to support some of the previous considerations concerning the quality and level of context-specific interactive competences regards child's

involvement: indeed, on one hand, the degree of child's involvement at 4 months is associated in a positive way to the preschool age one, thus identifying a medium-term relationship between infant's early interactive competences in family interactions and his subsequent ability to engage and negotiate limits in the interaction with his parents at the preschool age. On the other hand, child's involvement was the only competence that was proved to increase in a linear and significant way over time, that is both between 4 and 9 months and between 9 months and the preschool age.

Some less linear trends of specific interactive competences in this second phase can be observed from a qualitative point of view for body postures, coparental coordination and family warmth. These might be due to different developmental stages: the 18 months and the preschool age constitute stages of major change which might particularly affect social (and consequently mother-father-child) interactions. In fact the achievement of walking, an ever greater autonomy and concern for the environment, as well as the increasing development of language, symbolic thought, and of the narrative-self and the gradual expansion of the social world of the child who is to be included more frequently and longer in group context requires flexible and potentially new resources of the family. All these changes might constitute a new challenge for the whole family system that, on one hand, can count on the skills of coordination, cooperation and affective communication previously developed and consolidated, on the other hand, some of these competences are likely to be more flexible and at the same time, might suffer under the impact of this new challenge, becoming a little less functional at these stages.

Summarizing these data it seems therefore interesting to note that the first year of life constitutes a period of relative flexibility and change in triadic interactive competences: this flexibility and potential for change and improvement appears to be an interesting indication for its implications and applications, both in prevention and intervention programs and plans. In this perspective early family relationships can be not only considered as a primary relational context for child's socio-emotional development and adaptive outcomes, but also as a primary context for change and intervention: the first year of life appears to be a developmental window not only for achieving the several developmental goals of the child but also for the explanation of the potential and emergent socio-emotional competences of the family system as a whole.

## **2. The role of individual, relational and contextual factors in the development of triadic interactive competences.**

The second aim of the study was to analyse the relationship between the quality of family interactions over time and individual, relational and contextual factors as well as the role of these variables on triadic interactive competences observed at the preschool age. In general results were in line with most of the hypotheses.

First, child's gender did not appear to play a significant role in the development of family interactions as shown in previous studies (Carneiro et al., 2006; Simonelli et al., in press).

Second, regarding the individual characteristics of parents, contrary to the hypotheses parents' affective-relational history experienced in the relationships with their parents during childhood assessed during pregnancy seem not to be closely associated with the subsequent quality of family interactions: in fact, only mothers' experiences of involvement and concern for their parents' welfare during childhood was found positively related to the quality of family interactions at the preschool age. In a direction contrary to expectations, experiences considered as a potential risk for the individual well-being and adjustment in later relationships was proved to exert a positive effect in the explanation of the parenting role within the family context. It could be argued that early experiences of care and concern, even though experienced in the relationship with the caregivers and then in an asymmetrical situation inverse than the current relationship with the child, can foster the development of more functional triadic interaction within the whole family system in the medium-term.

In line with what was expected, no significant differences were found in triadic interactive competences in relation to the presence of stable maternal depressive symptoms in the postnatal period. As pointed out by previous studies (Petech et al., 2009; Frizzo, Piccinini, 2007) it appears that maternal depression, recognized as a risk factor for development of interactions and affective communication within the mother-child dyad, does not exert a negative effect on the development of family interactions, which leads one to hypothesize that the presence of a third, in this case the father, in the construction of interactive exchanges with the child may be a factor supporting and protecting the quality of family interactions and the development and manifestation of parental skills in the communicative exchange with the child. It should however be noted that in the present study, the presence



of a risk for maternal postnatal depression was assessed through mothers' self-report of symptoms and the comparison with cut-off for the screening whereas the parameters for the clinical evaluation of the presence of postnatal depression were not included therefore these data should be further developed using not only self-report but also standardized clinical evaluations.

Then the role of relational and contextual factors on the development of triadic interactive competences was analysed. The first aspect considered was the marital relationship: in line with the literature (see Twenge et al., 2003 for a review) results showed that the marital relationship faces a period of “crisis” and change during the transition to parenthood showing a gradual decline of marital adjustment from infant's 4 months that becomes significant at the first year and persists until the preschool age. Yet in line with the assumptions and a few previous studies (Carneiro et al., 2006; Petech et al., in press) no significant relationships were found between the quality of marital adjustment as perceived by both spouses and the quality of family interactions during the period under study. The only exception is the negative relationship between the quality of family interactions at 4 months and fathers' perception of marital adjustment at the preschool age.

In general, however, the observation of opposite trends of the marital relationship and of family interactions over time (the first declining, the other increasing) and the relative absence of significant relationships between these two aspects seems to support the idea that the marital subsystem and the family system have relatively independent trajectories during the transition to parenthood and during the early years of the child. In this perspective it might be argued that the decline of the quality of the marital relationship, in the case in which no significant levels of distress and crisis were experienced, might represent a developmental and physiological phenomenon associated with the need of the marital dyad to open up to a third, that is the child and to assume and engage in the parental and co-parental role (Favez et al., 2006a).

Conversely, as expected, fathers' involvement in child care was proved to be closely and positively associated with the quality of family interactions during the period under study. Fathers' and their partners' evaluations of the degree of paternal involvement in childrearing practices, although showing significantly different averages (with the fathers reporting higher levels of involvement than their partners did), were positively associated at various developmental stages with triadic interactive competences. This data seems to

confirm the role of the father as an early support and resource for the whole family system and to confirm the interdependence between these two factors over time in setting up an environment favouring positive and functional interactive experiences for the child.

Finally, contrary to previous research (Carneiro et al., 2006; Favez et al., 2006a, 2006b; Simonelli et al., 2008) no significant relationships was found between the quality of co-parental interactions assessed during pregnancy and the subsequent ability of the family triad in coordinating and cooperating in achieving the interactive goal.

Summarizing these findings it emerged that essentially only two aspects among those considered, one related specifically to the mother and one to the father, seem to be the factors most predictive of triadic interactive skills during the preschool child. In fact, both maternal experiences of involvement and concern for the their parents' welfare during childhood and fathers' involvement during infant's early months of life seem to play a positive role in building better and more functional family interactions and mother-father-child socio-emotional competences in the medium term. Mothers' early activation of a component of care in the relationship with their parents and the active involvement and support provided by fathers in the infant's early months of life seems to indicate that, first, less favourable experiences during childhood would not necessarily negatively reverberate on later relationships and, on the other hand, that promoting an early active paternal involvement in childcare even in phases in which the babies are generally more dependent on their mothers, might exert a positive effect in creating a functional social environment within the family system.

### **3. Children's psycho-functional outcomes during the preschool age: correlates and predictors from pregnancy to the preschool age.**

Finally, the last goal of the study provided the exploratory analysis of the relationship between individual, relational and family level variables assessed in the period from pregnancy to the child's preschool age and children's psycho-functional outcomes related to three areas of functioning, that is sleeping difficulties and regulation and behavioural problems. Accordingly, the first point concerns the lack of significant relationships between children's psycho-functional outcomes at the preschool age and the quality of family interactions during the period under study: in contrast to the hypotheses, but

consistent with the study of Favez et al. (2006), the quality of triadic interaction does not seem to play a significant role in relation to children's difficulties in the functions considered.

In general, consistent with findings from several studies (Fishman & Meyers, 2000) marital relationship was proved to affect children's outcomes in sleeping, regulation and behavioural problems, with the possibility to exert a positive or negative effect on the basis of the quality and adjustment perceived by spouses in the relationship over time.

In particular, marital adjustment as reported by fathers at the preschool age was found to be negatively associated with children's sleeping difficulties in the same phase. The higher the marital adjustment, the lower the degree of children's sleeping difficulties in children reported by parents, on the other hand fathers less satisfied with their marital relationship were more likely to have children with a higher level of sleeping difficulty. The direction of this relationship can not be defined in causal terms given the assessment of these two variables at the same stage so it can be hypothesised a mutual relationship according to which fathers with children with more sleeping difficulties might have difficulties in the marital relationship too.

The quality of the marital relationship as reported in several stages by both the mothers and fathers, and the degree of paternal involvement at infant's 9<sup>th</sup> month of life were also negatively associated with children's regulation problems at the preschool age. Children of parents that during the transition to parenthood and the child's early years reported higher marital adjustment, as well as children of fathers who were more involved in their caregiving in the first year of life are less likely to show regulation difficulties at the preschool age.

Conversely, fathers' representations of experiences of neglect and psychological unavailability in the relationship with their parents during childhood resulted positively associated with children's difficulty in this area. This finding seems to point out that negative and less favourable experiences in early relationship may exert significant long-term effects on later relationships and, probably through the parenting style and the quality of father-child interactions, on children's regulation competences.

Furthermore, in line with the literature (Murray, Cooper, 1996; Monti & Agostini, 2006), the presence of stable maternal depressive symptoms in the postnatal period seems to be a potential risk factor for children's later adjustment, since children whose mothers showed

that stability presented an average higher degree of regulation difficulties according to their parents report. However, these findings were limited to a bivariate level of analysis and the subsequent conclusions must be treated with caution given the difficulty due to the nature of the variable under study to take into account the contemporary effect of each variable and to check their actual predictive role.

Finally, the predictors of children's behavioural problems refer once more to parents' affective-relational history and to the dyadic level of the marital relationship. Indeed mothers' representations of their experience with parents during childhood as characterized by neglect and lack of availability was found to be positively associated with children's behavioural difficulties. Moreover, marital adjustment perceived by mothers at 4 and 12 months were additional predictors of children's outcome in this area: it is interesting how, in relation to different developmental stage of the child, the direction of the effect of marital adjustment changes so that higher level of marital adjustment at 4 months would predict a higher degree of behavioural difficulties in children. Conversely, a better marital adjustment at the infant's first year would predict less children's behavioural problems at the preschool age. Taking into account the potential explanation of the progressive decline of marital adjustment during the transition to parenthood, one might speculate that high levels of marital adjustment in the infant's early months of life might constitute an expression of the difficulties of the marital dyad to move partially the affective-relational investment from the couple to the child and the family as a whole and then to assume the parental role in a period particularly relevant for current and subsequent developmental achievements of the child. Conversely, consistent with both the literature and previous discussion, a better and more satisfying marital relationship perceived by mothers would foster more functional behavioural outcomes in children (Easterbrooks & Emde, 1988).

In general these results seem to highlight how children's psycho-functional outcomes in these three domains seem to be related to individual and dyadic level variables. As noted by numerous studies performed in the attachment theory perspective (see Cassidy & Shaver, 2009 for a review), parents' representations of their early relational experiences with attachment figures seem to exert an effect in the long term, influencing not only subsequent relationships but also the developmental outcomes of the next generation. Moreover negative experiences in early relationships with parental figures, especially neglect, were found as a risk factor for children's difficulties.

Furthermore, the close association between the quality of the marital relationship and children's outcomes seems to support the spillover hypothesis (Katz & Gottman, 1996) according to which a greater marital adjustment would exert a protective effect on child development and distress and dissatisfaction in the marital relationship would be more likely to produce negative outcomes in children's development.

In conclusion then, this work set out to give a contribution to the implementation and verification of a theoretical and methodological paradigm especially interesting and still little studied, that of the Lausanne Trilogue Play, for the assessment of interactive competences within the family system: the analysis of trajectories of these competences over a relatively long period revealed that the development of family interactions seem to be characterized by a non-linear and dynamic process involving phases of change and stages of stabilization in relation to specific developmental ages and interactive frames (Fogel, 1993) developed and co-constructed by the family system during the early years of the child. In this process the child itself demonstrates how his contribution to the interactive exchange becomes increasingly significant, through his ability to send signals and to communicate affectively with the interactive partners and through the acquisition of an increasing capacity for self-regulation, autonomy and negotiation of limits which are some of the basic socio-emotional competences for social interaction and therefore for the child's inclusion in more complex interactive environments. In this process the role of the third, that is the father, and his early involvement in the care and hence in the interaction with the child is crucial and seems to have a positive effect on the whole family system encouraging the expression of the best interactive potential in the medium term.

#### **4. Merits, limits and future directions**

The present research was aimed at making an original contribution to the study of the role of individual, dyadic and family level variables in the development of family interactions and their underlying socio-emotional characteristics and components and in children's psycho-functional outcomes through the longitudinal evaluation of the developmental trajectories of the individual and relational variables considered particularly relevant in determining the well-being and adaptation, not only of individuals but of the family system

as a whole. Maintaining the involvement of the families for such a long period of time and with long meetings at the Department laboratories without any tangible reward for their contributions apart from the video-recording of the various phases of the study represented a major challenge, first of all for the families participating in the study but also for the researcher. On the other hand, the results thus far obtained are considered important in providing a range of indicators and possible lines of development of the phenomena studied, as well as ideas for new studies that can overcome the limitations of this work.

Some limits of the work must in fact be recognized: first, the small size of the group studied, linked to a significant percentage of drop-out during the period under study. While it is believed that the longitudinal design allows a deeper analysis of developmental phenomena, on the other hand the long-term commitment required by the families and the involvement of all their members brings with it the possibility that participants will leave the study at different stages. Additionally, families participated voluntarily in the study so that the group studied is self-selected and potentially representative of those couples that already starting from pregnancy would have chosen to engage in a common project that would have seen them involved, first as a couple and then as a family, at various ages of the child. The small sample size and its self-selection were then considered as limits to the general extrapolation of these results, although the study is considered to have the potential for stimulating future research and the expansion of the group studied in order to allow the testing of more complex models including effects and mutual relationships of the several variables considered over time.

Moreover the lack of connections between the overall quality of family interactions and children's outcomes found in the present study highlight another potential limit of the study and stimulates further questions for future research. Indeed if previous studies by the group in Lausanne and also performed in the Italian context on groups of families belonging to clinical populations highlighted the potential of the LTP paradigm in identifying functional and dysfunctional trajectories of the family system and their connections with the child's developmental and psycho-pathological outcomes (Fivaz-Depeursinge & Corboz-Warnery, 1999; Fivaz et al., 2008; Phillip et al., 2009), this study showed no significant connections between these two aspects.

Some possible explanations could concern methodological issues: as the triadic interactive competences were evaluated through an observational measure, children's functional

difficulties were detected on the basis of the parents' reports and then in relation to conscious perception and the parents' ability to identify and report children's signals of difficulty. Moreover, the functional areas here considered might not be the developmental and functional areas most associated and influenced by family level variables. In future studies it might be interesting to consider the role that the quality of family interactions plays in fostering the social competence of children interacting with peers and other significant adults as well as their adjustment to different relational contexts such as kindergarten and later school, and their relationship with empathy and prosocial behaviour. To improve methodology and its useful application in clinical settings, future studies should consider larger samples more representative of the general population, the comparison with clinical or at risk groups and use more standardized measures to assess children's developmental outcomes and symptoms in order to better understand the role of the family interactive context in promoting child development and adjustment in the short and long term.





## APPENDIX A

### a) Participants (whole sample $N=52$ )

The total number of families that participated to the research was 52. They were all recruited during the pregnancy of their first child at child's birth preparation classes of the Obstetrics and Gynaecological Clinic of Padua Hospital. The pregnancy and deliveries were medically uncomplicated and all infants were healthy. The sample included 28 boys (53.8%) and 24 girls (46.2%).

The fathers' mean age was 34.6 ( $SD=4.11$ , range 26-42) and the mothers' 32.58 ( $SD=4.16$ , range 23-42).

Regarding the professional status, 36.5% (19) of fathers were working as professionals, 32.7% (17) as employees, 7.7% (4) as worker and the rest (23.1%, 12) work in business or trade. Regarding the mothers, they were working mainly as employees (55.8%, 29), 15.4% (8) in the trade field, 11.5% as professionals, 3.8% (2) as part-time employees, 3.8% (2) as workers, 1 mother was not working and was a University student, while 7.7% (4) of mothers were unemployed.

Regarding the educational level, fathers had a mean of 14 ( $SD=3.64$ , range 8-18) years of education, with 42.3% having a high school degree and 36.5% a university education. The rest (17.3%) had a secondary school diploma. Mothers had a mean of 15.25 ( $SD=2.70$ , range 8-18) years of education, with 46.2% having a university education and 50% with high school education and the rest with a secondary school diploma.

The mean duration of the couple's relationship at the time of the first stage of the research was 8.37 years ( $SD=4.99$ , range <1 year to 24 years). Among these 52 couples, 88.5% (46) were married, 11.5% (6) were cohabiting. Among those married, 2 women had had a previous marriage, while among the cohabiting couples one man was previously married.

### b) Drop-out rates and comparisons.

Table 1 describes the drop-out rates over time. The overall percentage of dropouts is 40.38%, a relatively high proportion, however, although the largest percentage is observed in the last phase of the study and this could be also linked to the temporal distance between the two phases.

The following tables (2-6) show the comparisons between the families who completed and families who did not complete the study in relation to socio-demographic characteristics assessed at the first stage of the research. No significant differences were observed.

Table 1. Frequencies and percentage of drop-out over time

	f (%) at each stage on the total <i>N</i>	f (%) between each stage on the reduced <i>N</i>	f (%) cumulative	<i>N</i>
7 <sup>th</sup> month of pregnancy	-	-	-	52
1 <sup>st</sup> postnatal month	1 (1.92%)	1 (1.92%)	1 (1.92%)	51
4 <sup>th</sup> postnatal month	-	-	-	51
9 <sup>th</sup> postnatal month	4 (7.69%)	4 (7.84%)	5 (9.61%)	47
12 <sup>th</sup> postnatal month	3 (5.77%)	3 (6.38%)	8 (15.38%)	44
Preschool age	13 (25%)	13 (29.54%)	21 (40.38%)	31
Total	21 (40.38%)			

Table 2. Descriptive statistics and t-test comparison between mothers and fathers' age and the duration of the marital relationship in families that complete (*N*=31) and drop-out (*N*=21) the study

	Full participation	Drop-out	T-test comparison <sup>11</sup>
	<i>M (SD)</i>	<i>M (SD)</i>	
Age (mothers)	33.03 (3.63)	31.90 (4.85)	t(50)=.959, <i>p</i> =.34, <i>ns.</i>
Age (fathers)	35.03 (3.59)	33.95 (4.79)	t(50)=.929, <i>p</i> =.36, <i>ns.</i>
Marital relationship (years)	9 (4.8)	7.44 (5.23)	t(50)=1.11, <i>p</i> =.27, <i>ns.</i>

<sup>11</sup> Mann-Whitney non parametric test was also calculated given the small and different size of these two groups: results are consistent with those presented in table 2: indeed, no significant differences were found considering mothers' age ( $U=270.5$ ,  $p=.303$ , *ns.*), fathers' age ( $U=280$ ,  $p=.394$ , *ns.*) and the duration of the couple's relationship ( $U=244$ ,  $p=.128$ , *ns.*).

Table 3. Professional status distributions ( $f$ , %) of women in families that complete ( $N=31$ ) and drop-out ( $N=21$ ) the study and their comparison

Professional status	Full participation	Drop-out
	$f$ (%)	$f$ (%)
Unemployed	3 (9.7%)	1 (4.8%)
Worker	1 (3.2%)	1 (4.8%)
Employee	16 (51.6%)	13 (61.9%)
Professional	4 (12.9%)	2 (9.5%)
Part-time employee	-	2 (9.5%)
Various (employee in business/trade etc.)	6 (19.3%)	2 (9.5%)
Student	1 (3.2%)	-

*Fisher exact test=4.93,  $p=.60$ , ns.*

Table 4. Professional status distributions ( $f$ , %) of men in families that complete ( $N=31$ ) and drop-out ( $N=21$ ) the study and their comparison

Professional status	Full participation	Drop-out
	$f$ (%)	$f$ (%)
Unemployed	-	-
Worker	2 (6.5%)	2 (9.5%)
Employee	12 (38.7%)	5 (23.8%)
Professional	9 (29%)	10 (47.6%)
Various (employee in business/trade etc.)	8 (25.8%)	4 (19%)
Student	-	-

*Fisher exact test=2.52,  $p=.52$ , ns.*

Table 5. Educational level distributions ( $f$ , %) of women in families that complete ( $N=31$ ) and drop-out ( $N=21$ ) the study and their comparison

Educational level	Full participation	Drop-out
	$f$ (%)	$f$ (%)
Secondary school (8 years)	1 (3.2%)	
High School (13 years)	15 (48.4%)	11 (55%)
University degree (18 years)	15 (48.4%)	9 (45%)

*Fisher exact test=.764,  $p=.87$ , ns.*

Table 6. Educational level distributions (*f*, %) of men in families that complete (*N*=31) and drop-out (*N*=21) the study and their comparison

Educational level	Full participation	Drop-out
	<i>f</i> (%)	<i>f</i> (%)
Secondary school (8 years)	4 (13.8%)	5 (23.8%)
High School (13 years)	13 (44.8%)	9 (42.9%)
University degree (18 years)	12 (41.4%)	7 (33.3%)

*Fisher exact test*=.947, *p*=.70, *ns*.

## APPENDIX B

### **Analysis on the development of triadic interactive competences from the 4<sup>th</sup> month to the preschool age including the 18<sup>th</sup> month stage (N=15).**

Stability and change of the overall quality of triadic interactive competences were also tested including the 18<sup>th</sup> month stage of assessment on a sub-group of 15 families. Table 1 presents descriptive statistics of LTP total scores over time.

As it can be observed (table 2) no significant correlations were observed between total triadic interactive competences at the child's 18 months and those assessed in the other stages of the studies.

Table 1. Mean and standard deviation of total LTP scores at each time point (N=15)

	<i>M</i>	<i>SD</i>
4 months	157.07	24.72
9 months	172.87	14.88
18 months	171.60	14.02
Preschool age	164.60	20.96

Table 2. Spearman bivariate correlation between total LTP scores at the 4<sup>th</sup> and 9<sup>th</sup> month, preschool age and total LTP scores at 18<sup>th</sup> month of the baby (N=15)

	18 months
4 months	.414
9 months	.513
Preschool age	.125

*p values (two-tailed)*

To verify whether the trend was characterized by continuity or vice versa by an increase or decrease in the different phases of the study a repeated-measures analysis of variance (ANOVA) was calculated to compare total LTP scores across the four ages (within subject factor: "time", 4 levels, e.g. 4 months, 9 months, 18 months, preschool age). Results showed a significant main effect for "time" ( $F(3,42)=3.714$ ,  $p=.019$ ,  $\eta^2=.210$ ). Given the small size of this sub-group the analysis was repeated by the non-parametric test of

Friedman which yielded a similar result ( $\chi^2=7.752$ ,  $df=3$ ,  $p=.051$ ).

Post-hoc analysis comparing pairs of data performed both with a parametric (T-test comparison) and a non-parametric statistics (Wilcoxon pairs comparison) in order to control  $p$ -values according to the Bonferroni's correction ( $\alpha=0.05/6=0.008$ ), highlighted that the LTP total scores assessed at the 4<sup>th</sup> month of the baby are significantly lower than those at 9 months ( $Z=-3.009$ ,  $p=.003$ ) and at the preschool age ( $Z=-3.019$ ,  $p=.003$ ). No significant differences were observed between the 4<sup>th</sup> and 18<sup>th</sup> month ( $Z=-2.131$ ,  $p=.033$ ), the 9<sup>th</sup> and 18<sup>th</sup> month ( $Z<.001$ ,  $p=1.00$ ) and the preschool age ( $Z=-.065$ ,  $p=.948$ ), and, finally, between the 18<sup>th</sup> month and the preschool age ( $Z=1.080$ ,  $p=.280$ )

Also considering the 18<sup>th</sup> month stage, the development of triadic interactive competences over time was found to increase significantly between the 4<sup>th</sup> and the 9<sup>th</sup> month and then to stabilize till the preschool age.

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