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THE FAMILY TRIAD – THE INTERACTION BETWEEN THE CHILD, ITS MOTHER, AND FATHER FROM BIRTH TO THE AGE OF 4 YEARS

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ABSTRACT

The aim of this thesis was to describe how early triadic interaction between the newborn child and its mother and father begins, develops, and matures over the child's first 4 years of life. Systemic family theory and developmental theory are combined to go beyond the "mother-child" dyad to the "mother-father-child" triad. Lausanne Trilogue Play (LTP, originally Lausanne Triadic Play) was developed by Elisabeth Fivaz and her team in Lausanne, Switzerland, and used to carry out standardised studies of child-mother-father interaction. The family is placed in a triangle that allows all three partners optimal access to each other.

The focus of this thesis was to describe triadic interaction when all members of the triad interact with each other. It is based on a pioneering longitudinal and prospective study. It was begun with interviews when the parents were expecting their first child. The development of triadic interaction was then monitored by repeated, videotaped LTP observations when the child was 3, 9, 18, and 48 months of age. The study is part of an international collaboration to describe the development of triadic interaction in four groups: 20 Swiss German-speaking families, 20 Swiss French-speaking families, 20 American families (Seattle, Washington, USA), and 20 Swedish families. In Sweden, consecutive Swedish-speaking couples were recruited by midwives at a maternity health care clinic in Stockholm. Twelve boys and 8 girls were born.

To analyse the children's communicative skills in relation to their behaviour at age 4 years, the preschool teachers were asked to fill in the Preschool Behaviour Questionnaire (PBQ). The author developed the Child-Parents-Interaction Coding System (CPICS) to analyse quantitative and qualitative variables in triadic interaction. The CPICS was used to analyse LTP observations of the Swedish families over time and to compare the Swedish and American groups of families.

One child, a girl, exhibited atypical development. At the age of 5 she was referred to a child and adolescent neuropsychiatric department where, at the age of 7 years, she was diagnosed with an autism spectrum disorder. She was excluded from the group analysis and instead presented as a case report.

When the children were 3 months of age, parents held back concerning *contribution* (the starting point for a sequence of interactions) and allowed the "child's just being" to launch conversation. This pattern persisted up to 48 months, with the parents giving the child space. Types of child contributions varied over time. When the child was 3 months old, its parents treated all its behaviours as contributions for starting points of conversation, while child contributions at 48 months generally had a communicative character. Co-parenting seems to set the structure for early communication by using various nonverbal, vocal, and verbal methods to support the child in turn-taking sequences.

A cultural difference in the tempo of play between American and Swedish families was found. Although both groups of families interacted in a synchronized and reciprocal way, the pace of play in triadic interaction was faster in American families. Positive correlations between complex triadic interaction (number of turn-taking sequences) at 3, 9, and 18 months (significant at 9 months) and preschool teachers' assessments of children's social competence at 48 months suggest some predictive power of this variable in the assessment system. The autistic girl and her parents exhibited deviations in early triadic communication – most clearly when she was 9 months old. Findings are discussed regarding their importance concerning early interventions in the family system.

Keywords: family triads, Lausanne Trilogue Play - LTP, Child-Parents-Interaction Coding System – CPICS, development of triadic communication, contribution, synchronization, social competence

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CONTENTS

LIST OF ABBREVIATIONS

CBCL	Child Behaviour Checklist questionnaire
CPICS	the Child-Parents-Interaction Coding System
DSM-IV-TR	Diagnostic and Statistical Manual of Mental Disorders, fourth edition
ENRICH	the ENRICH Marital Inventory
LTP	Lausanne Trilogue Play (originally Lausanne Triadic Play)
PBQ	the Preschool Behaviour Questionnaire
SCL-90	Symptom Checklist-90
TBQ	Toddler Behaviour Questionnaire

1 INTRODUCTION

The overall aim of this thesis was to describe and explore how communication between the newborn child and its parents develops by going beyond dyadic mother-child interaction and including the father – by studying the development of interaction in the triad of the newborn child, its mother, and its father. A longitudinal prospective study encompassing data from pregnancy until 7 years of age has been carried out. This thesis is based on the data from the time of pregnancy and child ages 3–48 months.

Interaction and its relation to developmental psychology have been studied for many decades. According to McHale (2004), although Winnicott (1960) stated in the 1960s that "there is no such thing as a baby only a baby and a mother", the field has only recently moved beyond the individual, "one-person developmental psychology" to "two-person psychology" and today's "polyadic psychology". Stern (2004) recently emphasised that even when a person is alone he or she is addressing his or her mental activity to someone else, which may be a fantasy person, a person of special importance, or to a context he or she is influenced by.

Aside from the interaction between various dyads in a family, van Ijzendoorn & De Wolff (1997) have suggested that triadic parent-infant relationships should also be investigated. They do not question the importance of dyadic attachment relationships but consider that the expanded, triadic form would give research on early developmental processes new perspectives.

My own interest in research on triadic interaction and communication between children and parents originates in my clinical work with families in transition to parenthood and with children with behavioural disorders and their parents. With better knowledge of how triadic interactions in non-clinical families develop, greater understanding of problematic interaction and communication will be possible, resulting hopefully in new tools for treatment and support.

1.1 BACKGROUND

The study of child development has entered a fascinating phase where new knowledge on how actions, perception, cognition, and emotions develop is coming to light. Daniel Stern, in his book *The Present Moment* (2004), discusses the importance of the "micro moments of *now*" – how these moments might live for only a few

seconds but still contain the individual's experience of the past, the present moment in relation to others, and inner representations of the future, how the child thus develops, being influenced and formed in its interactions with others.

A systems approach in dyadic interaction and rhythm are two important aspects that are vital for infant-adult interaction/communication and behaviour and for adult conversation/communication and behaviour (Fogel 1992b): the infant influences the mother and the mother influences the infant (Beebe et al 2000). The systems approach enables the researcher to go beyond observations of the mother-infant dyad to understand child development and includes early communication/interaction in the mother-father-infant triad.

Daniel Stern ventures even farther in the preface of the second edition of the book *The Interpersonal World of the Infant* concerning child development. He asks, "Is the triad for an infant, a set of three interrelated dyads, or is it an entity in itself that can be represented"? (page 34). Parke (1988) postulates that studying the triad cannot be reduced to exploring various dyadic components, because the triad has a developmental trajectory of its own. In the dyad, coordination of communication is vital to finding a rhythm, the interaction *flow*, the "musicality of the dyad", which also seems to exist in the triad. For an interaction to be considered well synchronised, it must have a certain flow, which allows space for all three participants to take part in a balanced way.

Elisabeth Fivaz-Depeursinge and her team in Lausanne (Fivaz-Depeursinge & Corboz-Warnery 1996) invited me to collaborate with them in a study on the mother-father-child triad using a systemic and developmental approach that matched the perspective I had from my clinical and professional work. They had developed Lausanne Triadic (later called Trilogue) Play (LTP), which captures not only various dyads but the triad as a whole with all its subsystems. It is a structured task in which the family plays and interacts in four phases: one parent and child, the other parent and child, all three, and finally the couple interact with each other. The non-active partner is simply present. The LTP session permits an assessment of *alliance* – defined as cooperation and coordination – and the method allowed me to make microanalytic observations of triadic interaction.

In a triadic interaction of this kind, sensitivity toward the child can be affected by the capacities of the individual partners and by marital relations between the parents as well. The combined interactions influence the family process in a sophisticated way. The need to further explore the effect such circumstances of co-parenting and

family functioning have on triadic interaction and the child's later socio-emotional development inspired me to learn from John Gottman and his group in Seattle and their focus on the marital relationship on a microanalytic level. In retrospect, this seems to be reasonable in light of current observations by Carneiro of a link between prenatal co-parenting and good postnatal family functioning at 3 months (Carneiro et al 2006).

1.2 FAMILY POLICY AND CULTURAL ISSUES

Fathers' roles in Swedish families have changed dramatically over the past 40 years. National laws and the strong Swedish women's liberation movement (which targets gender equality in higher education and the labour market) have helped to bring about these changes.

Today, the average Swedish mother is actively employed outside the home, and the average Swedish father takes a more active part in early childrearing than did fathers in previous generations. When the baby is born, the father is by law allowed 10 days leave from work and is paid 80% of his salary up to a certain income; highly paid parents are not fully reimbursed. In addition, the law grants each family 390 days at 80% reimbursement of the salary of the parent who chooses to stay home. Since 2002, each parent must take at least 60 of these days. This means that the father *must* take 60 days' parental leave. If he does not, the family will forfeit them as the mother is not allowed to use "his" days.

Cross-cultural research can have important clinical implications, particularly since some theorists have argued that culture organises behaviour in fundamentally unique ways (Rogoff 1990). Lamb and his colleagues (1982a, 1982b) found that, regardless of whether the family was traditional (mother as primary care-taker) or non-traditional (father as primary care-taker for 1 month or more), Swedish fathers differed from traditional US fathers in that US fathers played more with their infants. Swedish fathers were <u>not</u> more likely to engage in physically stimulating play with their babies than mothers. This disagrees with the bulk of the literature on the unique role of fathers in play with infants (Parke & Brott 1999). A comparison of this research with Lamb's research revealed that Swedish parents held and played with their babies less than US parents (Lamb et al 1983). Hwang (1986) found that when both parents were present in Swedish families, mothers were more likely to show affection for their infants and make bids for their attention than fathers.

Based on these findings, that US parents overall and US fathers in particular tend to play with their infants more than Swedish parents, it seems plausible that cultural differences in triadic interaction may exist.

1.3 THEORETICAL FRAMEWORK

Development – systemic circular thinking

This thesis is based on system theory where the following components constitute the theoretical framework. Based on these concepts, variables were defined and used to assess various aspects of interaction in the triads in qualitative and quantitative ways.

Parent-infant interaction

In the 1970s a tool new to the investigation of mother-infant interaction – microanalysis – became the method of choice (Brazelton, Kozlowski & Main 1974; Stern 1971; Trevarthen 1974). The theory of child development at that time effected a shift from the "one-way influence model" where the parent affects the child to a bi-directional model of interactive exchange in which the child and the parent influence each other (Bell 1968, Thomas & Martin 1976). This model led to the hypothesis of a balance between simultaneous interactive regulation and self-regulation (Beebe & McCrorie 1999, Tronick 1989). Incapacity or loss of flexibility on either side could result in pathology as described by Tronick (1989) in a study of infants to mothers with maternal depression. Tronick found that infants withdrew and became preoccupied with self-regulation when mutual regulation exchange failed to develop.

From birth, babies have the capacity to respond to stimuli from the outside world, such as voices, different sounds, facial expressions, hugs and touching, and emotional reactions from the parents. Early imitation has been proposed to be an early form of intersubjectivity (Meltzoff & Moore 1977, 1999), and many researchers agree that infants are born with minds that are especially attuned to other minds as manifested through their behaviour (e.g. Stern 1971, Tronick 1989). The proto conversations between young infants and their parents and the tight mutual coordination of the timing of movements and facial expressions in infant-mother interaction enable the parents to mirror the infants' affect, and by this, the "sense of shared experience", which is part of "primary intersubjectivity" (Rochat & Striano 1999, Trevarthen & Hubley 1978, Trevarthen 2000).

When the child is around 9 months old, it begins to use the child-parent dyad – or a dyad with another adult – to focus on something outside and share this focus. This

age has been called the 9-month revolutionary age (Tomasello 1999), when the capacity of mentalisation, "Theory of Mind", also starts. When the child begins to develop its understanding, others act as "intentional agents" – which means they have goals and intentions –the child can acknowledge and understand this in others. The child use gestures to indicate to the other member of the dyad that he or she should "tune in", with a focus on the outside event. The term "joint attention" is usually used to describe this capacity. But this ability to use the dyad as the base for exploring "the third" also happens in the triad with another person as the third.

Intersubjectivity continues to develop into other forms as the child grows older, and Daniel Stern has termed it the *intersubjective matrix*; a crucible in which interacting minds take on their current forms. Two minds create intersubjectivity as, equally, intersubjectivity shapes the two minds. *Intrapsychic* has developed into *intrasubjective* (Stern 2004).

The discovery of mirror capacity, probably due to "mirror neurons" in the brain, has prepared the ground for new hypotheses. Imitation is part of this function, and seeing somebody smiling makes us smile more. It seems as if this happens only when we observe someone else doing something, and it has been proposed that our brain experiences the action as if we were doing it ourselves (Damasio 1999, Gallese 2001).

If we live in such a complicated intersubjective world, Daniel Stern asks, how do we keep from being totally and continuously influenced by other's experiences and feelings? He outlines three possible answers: by being selective, by making sure that the activation of mirror neurons does not constantly spill over to the motor neurons so that reflexive imitation is an on-going behaviour, and by dosing resonance with others (Stern 2004).

Rhythm in interaction

According to Trevarthen (2000), by the age of 2 months, infants should be able to adjust their interactions with their parents and other people and have true mutual communication with others. Studies of interaction between infants and their mothers indicate that the dyad can be regarded as a unit with rhythmic temporal synchrony. Early communication between parents and their babies seems to involve pausing for a response on the part of the parents and the baby. These pauses before responding and the rhythm of interaction when talking and answering may be important in early reciprocal interactions.

The coordination of timing between parent and infant starts to develop long before there are words. There is a "melody" to build on when the verbal develops. Stern (1985) speaks of this as learning and forming non-verbal ways of "being with". It is a process by which we anticipate the partner's pattern in relation to our own.

This early interactional rhythm obviously defined various ways of "being with", and the patterns of vocal rhythm organise the infant's experience of relatedness and development. Patterns of timing coordination could be looked upon as a "life-span" measure. The patterns form one base for the infant's representations of self-in-relation-to-other (Beebe, Jaffe & Lachmann 1992; Stern 1985).

Regulation

Regulatory disorders usually have underlying deficits in self-regulation, and sensory processing is coupled with inattention, poor emotional and behavioural control, and feeding problems. Infants with regulatory problems can develop normally in infancy, but symptoms like emotional and behavioural control evolve over time (DeGangi et al 2000).

The infant has inborn brain functions for processing information and finding patterns and order (Schore 1994). This capacity helps the infant not only to engage in activity that stimulates itself but also to build expectancies and act on those expectancies (Haith, Hazan & Goodman 1988).

In summary. The person's behaviour – memorised behaviour – and the partner's behaviour are supposed to form an interaction. In the study of communication, communication cannot be viewed as a simple process but as "moment-to-moment units" that are nested within larger units (Beebe 2000). Self- and interactive regulation are concurrent and reciprocal processes, each one affecting the other (Gianino & Tronick 1988). When infants loose eye contact with the parents, the parents use tactics like calling the baby, gestures, or facial expressions to bring the baby back into the parents-infant interaction. It may be that some level of probing for the infant's attention by the parent may be important for repair. Positive emotional communication involves sensitivity to the infant's cues and to the need for breaks and for gentle repair to bring them back into interaction (Tronick & Cohn 1989). The infant supposedly desires coordinated interaction and also seems to have strategies for repairing an interaction after an episode of mis-coordination.

Family system

Minuchin (1974, 1985) described the importance of the family system and the relevance of co-parenting for child development and socialisation. The systemic perspective basically says that the whole is more than the sum of its parts (Öquist 1992). A newborn family is an entire system and these parts: child-mother, child-father, child-mother-father, and the couple dyad. These systems regulate and mutually influence each other. Each system is sensitive to changes and developments in the other systems.

Minuchin describes the family's combined interaction in all systems as forming a process on a higher level, because what is between the partners will be an important part of how the entire system forms, develops, and functions. We could perhaps add a fifth part to the newborn family system: the parent "mother and father". It could be hypothesised that the mother-father dyad is different than the man-wife dyad; the parent dyad begins to form with the pregnancy and birth of the first child. Mother- and fatherhood constellations begin to develop, and parenthood identities form.

Each individual and each subsystem plays a significant role in how triadic interaction develops. It is not enough to observe and describe these various processes to be able to understand the process of development that the child undergoes. Fivaz-Depeursinge (1996) suggests that the relations that are established in a triad have their own features and that development of the different relations must be studied in the context of the entire child-mother-father system. Triadic play interactions evoke interactive skills that differ from dyadic parent-child interactions (McHale & Fivaz-Depeursinge 1999). Until the interactions of the entire family unit are assessed, we cannot know how the various subsystems – co-parental, marital, parent-infant, and individual – function.

Transition to parenthood

The transition from marriage to parenthood is considered to be one of the most difficult transitions in life and is often referred to as a "crisis". In many couples, the wife experiences the first decline in marital satisfaction after the arrival of the first baby (Cowan & Cowan 1992). But the lowest point in marital satisfaction was found to be a year after the birth of the first child (Shapiro, Gottman & Carrere 2000). It is important to mention that remaining childless does not ensure marital stability. The divorce rate for childless couples was reported to be 50% and for couples who became parents only 25% (Cowan & Cowan 1992).

When a couple is expecting their first-born, the primary task of forming a dyad as a couple is now challenged and the relationship must make room for two subsystems: the marital and the parental. The time of pregnancy becomes not only the period in which the baby develops and prepares for birth but also a period where the parents prepare to be mothers, fathers, and parents. Studies reveal how parents – usually the mother – build an inner picture of the baby that is most clear around the 6th month of pregnancy and then becomes more vague with time, perhaps as a protective function to be able to welcome the real baby.

Maternal psychopathology has been associated with difficulties in parenting, but the impact of paternal psychopathology has received less attention. Studies of the father found that paternal psychopathology also affected child and family development during pregnancy (Perren et al 2003, 2005). During preparation for parenting, the parents were interviewed about the *imaginary baby* and *family*; parent psychopathology was found to influence both factors. Even though mothers had higher stress and depressive symptoms during pregnancy and early parenthood than fathers, fathers also reported more symptoms than before pregnancy. This emphasises that we must acknowledge not only that the newborn child is influenced by the mother-child or father-child dyad but that the child is a member of a triad consisting of the mother, the father, and the child.

The inner world of the expectations of the mother and father of how life as a family will be – the partner as a parent – are important questions that research has begun to focus on. Studies of marital satisfaction have mainly focused on women's unhappiness with men's lack of involvement in the household (McHale 1997). Men's and women's worries about difficulties in their co-parental relationship were associated with current marital quality. Marital dissatisfaction could arise in the early postpartum months and years when perceptions of an unequal division of labour were expressed prenatally (McHale et al 2004). In marriages with higher marital quality it was possible to voice concerns.

A few studies have focused on fathers' representations and formed the hypothesis that the fathers' inner representation of being three is one of the most important variables for whether the newborn family will be a harmonious threesome (von Klitzing et al 1999). McHale et al (2003) demonstrated significant associations between parents' prenatal expectations about the future family process and observed co-parental functioning in trilogue interactions after birth. In interviews where mothers and fathers were more pessimistic about their future family process, there

was less family warmth, less cooperation, and more disagreement than shown by the more optimistic parents in LTP several months after birth.

Another study of marital interaction prenatally found that the couple's interaction in the first few months of their marriage predicted how much their first-born infant cried during parent-infant play, and the couple's relationship in the newlywed and pregnancy period predicted later quality of father involvement (Shapiro 2005). Early infancy is especially interesting to study, because co-parenting and family patterns seem to be maintained by both parents and are stable over time (Fivaz-Depeursinge & Corboz-Warnery 1999).

Studies that focus on couples and begin before pregnancy are rare but important for our understanding of what in the couple relation buffers them during the transition to parenthood. What predicted stable or increasing marital satisfaction were whether spouses expressed fondness and admiration for their partners, how aware the spouses were of their partner's world, and what degree of unity each spouse expressed (Shapiro et al 2000).

Marital relationship and co-parenting

As mentioned above, the transition to parenthood is a challenge for the couple relationship. Studies such as Cowan & Cowan's (1992) found, in general, a marked decrease in positive exchanges between spouses and an increase in conflict after the child's birth. Those couples with high marital satisfaction before birth still had high satisfaction after birth. Especially important protective factors were the expression of affection and complicity between the partners (Shapiro, Gottman & Carrere 2000).

Co-parenting processes include how parents interact with each other when the child is present – how they work together and coordinate their roles as parents. But strong co-parental alliances are those in which the co-parents provide support and solidarity for one another's parenting efforts with the children (McHale 2004). Other studies propose that the mother's sanctioning of the father's participation in family life and the father's proactive family engagement are particularly important for co-parenting (Allen & Hawkins 1999).

Since most cultures place responsibility for the child on the mother, she can also decide what access the man will have to the children (Lamb & Oppenheim 1989). The mother's role of gatekeeper to their partners' involvement with the children could be related to the withdrawal of the father. Talbot and McHale (2004) discussed this role of the mother in their study of the individual features of mother and father.

Several studies have found links between marital quality and co-parenting behaviour as well as the particular child, depending on child age, gender, and birth order (Lewis 1988, McHale 1995, McConell & Kerig 2003).

But even if the marital relationship affects the quality of parenting, not all couples who have a stressed relation act out their conflict in their co-parenting. And some couples with co-parenting problems are still happy with their marriage. In microanalysis using the LTP situation it has been observed how parents can be good at co-parenting, even when marital communication is poor (Fivaz-Depeursinge & Corboz-Warnery, 1999).

The couple relation and the parenting relation are really two different systems that, although there is partial overlap, are independent of each other. Observations of family interactions with both parents allow an evaluation of whether parents support or compete with each other's initiatives with the child. The Child-Parents-Interaction Coding System (CPICS) is a tool with which such initiatives and turn-taking sequences can be analysed (Hedenbro & Lidén 2002).

Research in co-parenting began in divorced families (Hetherington, Cox & Cox 1979). Later, studies were made in intact families, and although patterns in the families vary, there are some basic elements, of which one is the involvement of interaction. One general supposition is that happily married couples are capable of greater warmth and sensitivity when interacting as a family with their children. McHale and Cowan (1996) have studied how marital conflict is transferred to co-parenting, rendering the system more hostile and competitive. They emphasise that the context in which family patterns are assessed is important to take into consideration. One parent's adjustment to the other parent in triadic interaction plays an important role in how each parent acts. It is not at all certain that interaction in the mother-child dyad will be the same as when the father is also present.

McHale & Rasmussen (1998) have suggested that asking parents about their co-parenting would be a valuable tool that would complement investigations of the marital relationship. For example, women's reports of interparental conflict were found to be associated with high levels of observed antagonism and low warmth and cooperation during family group interaction (McHale, et al 2000). These significant associations remained even after controlling for marital quality.

The couple relationship is especially strongly related to involvement, satisfaction, and quality of fathering (Parke 1999). Men in unhappy marriages who withdraw from the marriage also withdraw from the children (Gottman 1994). More recent studies

have shown that husbands' communication with their wives during pregnancy in the conflict situation at 6 months of pregnancy not only predicted the father's involvement with their 3-month-old babies but was also positively correlated with the infants' smiling and crying (Shapiro 2005). There is also some evidence that infants to fathers in unhappy marital relationships did not refer socially to their fathers in novel situations (Dickstein & Parke 1998).

The association between marital difficulties and problematic parent-child relationships is much weaker for mothers than for fathers (Margolin, Gordis & John 2001). It could be hypothesised that the differentiation between marital and parental subsystems is stronger for mothers. Mothers seem to engage in parenting regardless of their marital satisfaction. Mothers tend to get closer to their children when the marriage is unsatisfactory while fathers withdraw.

In summary. In the threesome, the infant is "embedded" in the parents' relationship. The "space" given to the infant and the atmosphere that the infant is becoming part of and affecting are phenomena that require investigation. Marriage affects children, and parenting seems to be the key factor in this (Gottman & Katz 1989, Katz & Gottman 1997). A harmonious, supportive marriage makes parents more sensitive, responsive, and involved. The quality of interaction in the parents' relationship has a "spill over effect" on the child (Katz, Gottman 1996). Spill over effects concern the transfer of moods, emotions, or behaviour in good or bad ways from one subsystem, for example, the husband-wife, to another subsystem, for example, the mother-child. In this way, spill over effects affect child development.

Family triangular interactions and child functioning

Triadic interactions have mainly been described in situations when the infant focuses on an object; signals interest, pleasure, or frustration; turns to the parent who is following the action; and shares a joint focus with the parent. Toward the end of the first year, these interactions have become part of "secondary intersubjectivity" because the child shows the capacity to share attention and intention with others (Tomasello 1995).

But from the moment of birth, the infant is exposed and embedded in larger contexts and interactions than strictly dyadic interaction, so triangular interactions become important for development (Dunn 1991, Schaffer 1984, Fivaz-Depeursinge et al 2004). Longitudinal observations have found differences between infants growing up with parents who support each other in their parental function versus parents in

conflict. The infants from good co-parenting relationships engaged more easily in triangular interaction and received more sensitive and adjusted responses than infants who grew up with conflictual parenting. (Fivaz-Depuersinge & Corboz-Warnery 1999, McHale & Cowan 1996).

In the development of family therapy, triangulation was considered to be a situation in which one person was positioned to ease tension between two other people (Bowen 1972). This has been considered a risk situation for the child's emotional development because this could lead to a situation where the child acts as a go-between or becomes the centre of its parents' focus (Minuchin 1974). In a competitive relationship, parents could compete for the infant's attention and not support each other' contributions, thereby being intrusive and overstimulating (McHale & Rasmussen 1998).

Studies indicate how the influence of early family factors in the first year of life, such as warmth – defined as affection and tenderness between the parents and toward the child (McHale & Cowan 1996, McHale & Fivaz-Depeursinge 1999) – correlate with children's socio-emotional development and later with peer interactions (Behar 1977; McHale & Cowan 1996; McHale, Krasnow & Slavick, 1997, McHale & Fivaz-Depeursinge 1999).

Methods for studying triadic interactions between children and their parents

When I was planning the study, I visited the Lausanne group in Switzerland and the Seattle group in the US and I joined the "Trilogue group" that they had started for research on triadic interaction. Both the Seattle and the Lausanne groups had developed methods for describing triadic interactions; a third method was used in the Swiss Basel group. Despite the merits of these methods, they lacked variables for making microanalytic analyses of various dyadic subsystems, that is, events such as initiatives and turn-taking in triadic interactions. In my clinical experience it was important to be able to measure events that were immeasurable with these (or any other) methods; a system that could describe the affective level and different partners' participation in dialogues and trilogues in a microanalytical way – "moment by moment" – was needed.

2 THESIS AIMS

Based on the theoretical framework outlined above, the focus of the longitudinal study that is the basis of this thesis was to describe dyadic and triadic interactions between non-clinical parents and children in a triadic setting using a microanalytic technique. The overall aim was to investigate how communication is established between the newborn and its parents. To do this, a method and a manual for analysing triadic interaction and a sample from the general population for prospective, longitudinal follow-ups were needed.

In other words, the aims were to:

I. Develop a method and a manual for analysing triadic interaction.

II. Explain how dyadic and triadic interaction, that is, communication and conversation, develop in a non-clinical sample over time between parents and children aged 3–48 months.

III. Discover whether there are any cultural differences regarding triadic interactions between Swedish and US families.

IV. Determine whether there are any correlations between early triadic interaction and later child outcome.

3 MATERIAL AND METHODS

3.1 PARTICIPANTS

Midwives at a maternity health care clinic in a Stockholm suburb were informed about the project. They were asked to give written information about the project to all families visiting the clinic over a 5-week period. Families that could speak Swedish and where the parents were living together and expecting their first-born were asked to participate. In Sweden, almost all expectant parents visit maternity health care clinics. Fathers accompany mothers to some of the appointments.

Twenty of 22 consecutively informed couples agreed to take part in the study. One family did not want to take part in the study after the baby was born and participated only in the first interview during pregnancy. Since this occurred at an early stage of data collection, another family was enrolled in the study. A total of 20 newborn babies, along with their mothers and fathers, entered the study for the prospective, longitudinal series of observations.

Expectant fathers' mean age was 30 years (range 24–42), and expectant mothers' mean age was 27 years (range 21–32); 9 of the men and 10 of the women had completed college or university education. Five of the men and eight of the women had completed senior high school, and the remaining six men and two women had completed lower or compulsory school. Nineteen of the 20 men in the sample were of Swedish ethnic and cultural background and one man was originally from Australia. Eighteen of the 20 women were of Swedish ethnic or cultural background, one mother was originally from Finland, and one from Brazil.

Forty per cent of these couples were married; the rest were living together. It is normative in Sweden for committed, unmarried couples to cohabit and plan to become parents together. Twelve of the infants in the present study were boys, and eight were girls. One baby was born 10 weeks premature. Her age has been corrected in the study. All of the other babies were born healthy: one via caesarean section and the others via vaginal delivery.

Average marital satisfaction as determined with the Swedish version of the ENRICH Marital Inventory (Wadsby, 1998) at the interview during pregnancy was 488.3 (SD=35.8) for men and 495.7 for women (SD=39.0). Marital satisfaction in these families was fairly high, which is considered normal during pregnancy (Raush et al 1974; Shapiro, Gottman & Carrère 2000).

This study is a part of an international multicentre study with samples from Lausanne (French-speaking Swiss families), Seattle (English-speaking US families), and Basel (German-speaking Swiss families). Each of these cities recruited 20 families through newspaper advertisements and university students.

As described below, the design included the Preschool Behaviour Questionnaire (PBQ) (Hagekull & Bohlin 1992, 1996) – a measure of children's behaviour and competence – to investigate if any correlations exist between early triadic interaction and later child outcome. During longitudinal follow-up of the children, one child, a girl, exhibited atypical development and was diagnosed at age 7 with an autism spectrum disorder; she was excluded in the longitudinal data analysis. Her case was described and compared to the other children as a case study in paper IV. These circumstances illustrate how outcome of a triadic interaction that deviates from that of a normal family with a child in these ages can be discussed in relation to early triadic interaction and later child outcome.

3.2 PROCEDURE AND LONGITUDINAL DESIGN OF THE STUDY

The LTP setting

In the LTP setting (Fivaz-Depeursinge, Frascarolo & Corboz-Warnery 1996), the parents and the baby are placed in separate seats in a triangle with the parents' seats oriented toward the baby. The baby is placed in a special chair that can be adjusted to three positions, facing either parent or between them. The chair is adjustable so the baby can sit in a comfortable position. When the family has become used to the setting, observations begin. Observations are videotaped using two time-synchronised cameras – one facing the parents and one facing the baby. The LTP setting with this chair is appropriate from 8 weeks of age until the child begins walking. The parents are given these tasks, which cover each of the four possible configurations of a triadic relationship:

1) One parent plays with the infant in the presence of the other parent.

2) The parents switch roles.

3) Both parents play with the infant.

4) The parents interact with each other in the presence of the infant.

The instructions and setting in the three first tasks are designed to make the parents focus on the child. Because it is a standardised setting that allows for observation of all four subsystems described in family system theory, the LTP is a good setting in

which to study the triad. The LTP provides an opportunity to assess interactions in the triad between and among the mother, father, and child.

This study focuses on the task of the LTP setting in which all three members of the triad – mother, father, and infant – play together (Part 3).

3.3 STUDY DESIGN AND DATA COLLECTION

The design of the study was longitudinal and prospective. Data were collected over 7 years to cover various aspects of the parents' situation and their children's development. In this study, the focus was on triadic interaction and the development of communication. Data describing interactions until the children reached 48 months of age were used for the analyses (see appendix).

Pregnancy week 20–25

The couples were interviewed in the studio in a situation structured just enough to make comparisons possible; otherwise, as little structure as possible was used so that it would be easier to access the parental inner world. The interviews were conducted by well-trained clinicians and videotaped. Interview topics were their own childhood experiences; their history as a couple; pregnancy and emotions related to this; and inner representations of themselves as a mother or father, of the child, of the future family, of their partner as a parent, and of relationships with the future grandparents. As a complement to the interview, each partner drew a symbol on a paper representing the family when the child is born. The parents were given the information about the task and, within a few seconds, they drew the symbol. This procedure was designed to try to catch non-verbal inner representations. At this meeting each partner independently filled out the ENRICH (Wadsby 1998), which covers ten areas: Personality, Communication, Conflict Solving, Economy, Free Time, Closeness and Sexuality, Children and Parenting, Family and Friends, Role of Man and Woman in the Household, Beliefs. The couple also filled out the Symptom Checklist-90 (SCL-90) (Derogatis et al 1973).

Infant aged 4 weeks

The family visited the studio for the second interview. This interview focused on the pregnancy period since the last meeting, the delivery, and the first few weeks as a family. It was a semi-structured interview. The families were happy to come and eager to talk of their experiences. The interview last 1.5–2 hours.

Child aged 2, 3, 8, 9, 18, and 48 months

The family visited the studio and the LTP Situation was used. This is a videotaped, semi-structured situation that facilitates the examination of the triad as a whole and an organisation of its parts (Fivaz-Depeursinge, Frascarolo & Corboz-Warnery 1996). Parents were instructed on how to use the baby seat and encouraged to adjust it for their baby's comfort. Parents were asked to schedule their studio visit for a time that was good for their baby, when they were likely to be alert and recently fed. Toys were not present until 18 and 48 months. At 18 and 48 months a toddler chair replaced the baby seat.

Child aged 3 and 9 months

One week after the studio visit the families were videofilmed in their homes. The three members were instructed to play together for 10 minutes; no further instructions were given. The purpose of this was to observe whether the patterns in the studio were similar to those at home. It became obvious that the patterns were similar but that the family shifted faster and more often between the four LTP phases during play at home. During videofilming in the families' homes at 9 months, each parent was also filmed in two dyadic situations with the infant and without the other parent present: one play situation and one where the parent changed the child's diaper. At 9 months, the parents were also asked to fill out the ENRICH questionnaire again.

Child aged 18 months

The parents took part in a "meta-emotion" interview (Gottman 1996). This is an interview that is conducted separately with the man and woman, and its purpose is to understand how they think and feel about emotions. It is an extended interview and covers questions about childhood, the child's current emotional life, as this parent understands it. The interview focused on past and present emotions of love, pride, anger, sadness, and joy and what the parents think and feel about their child's emotions. The parents also fill out the Toddler Behaviour Questionnaire (TBQ) that measures temperament factors (Hagekull 1985).

In addition, instead of filling out the ENRICH questionnaire again – since this instrument was too extensive for the families to fill out with the child present – the family filled out a questionnaire concerning "family climate". This new instrument captures the most important issues in family life (Hansson 1989).

Child aged 20 months

Three children and their parents came at the same time to the studio. The parents were invited to sit in the corner of the room and have a cup of coffee; in another corner, a set of toys were placed so that the children could play. The session took 1 hour. The purpose was to observe and understand how the children created triadic play; how they solved conflicts; and how they used their parents in social referencing, going to them or exploring and playing themselves. The families were grouped in the order they had been admitted to the study, so the groups could contain both boys and girls. Due to sickness, three groups had only two children.

Child aged 48 months

The children were again invited to participate in an LTP situation similar to the one described earlier. I chose to see the children again at age 48 months, which was the age that the Lausanne team used. Much time had passed: four families had divorced and one family had moved from the area. The other 15 families came to the studio. The mother, father, and preschool teacher filled out the Preschool Behaviour Questionnaire (PBQ) (Hagekull & Bohlin 1996). The PBQ covers eight areas: Ego Strength; Internalizing or Externalizing Problems; Concentration Problems; Aggressiveness; and Social, Peer and Adult Competence.

Child aged 5 years

The children were filmed in their preschool together with at least two friends. The purpose of this was to see whether any patterns of interaction with peers could be linked back to early interactions in the family.

Child aged 7 years

A home visit was made to videofilm interaction in the entire family at a dinner table. One family had two more children, while one family still had only the child that had taken part in the study. All other families had one more child. Two of the families who were divorced also participated, but only one of the parents was with the child. The parents were also asked to fill out the Child Behaviour Checklist (CBCL) questionnaire (Achenbach & Edelbrock 1983).

3.4 SELECTION OF VARIABLES FOR THE LONGITUDINAL AND PROSPECTIVE ANALYSIS

When the children were 3 months and the first LTP sessions were analysed, the data were published in a research report (Hedenbro 2006) and used to evaluate which data were important and suitable for statistical analysis of the longitudinal data set. Four quantitative and two qualitative variables (defined in the CPICS manual) were extracted:

Quantitative variables

- Contributions
- Turns and turn-takings
- Affirmation
- Clarifications

Qualitative variables

- Synchronisation
- Inclusion/exclusion

These are the more important results from the research report.

Contributions (quantitative)

Number of contributions in triadic interactions

In most families (17/20), the children made more contributions than the parents. Children often made several different contributions at the same time, such as a neutral facial expression combined with vocalisation.

The rate of contribution was higher for the fathers than the mothers in 11/20 families. In 2 of these 11 families, the mothers took no initiatives in triadic interaction. In 7 families the mothers took the initiative more frequently than the fathers.

Frequencies and kinds of contributions made by children

The children made 11 kinds of initiatives/contributions: positive facial expression; negative facial expression; neutral facial expression; seeking eye contact; physical movement; directing attention toward an object; directing attention toward one of the parents; emitting positive vocalisation; emitting negative vocalisation; neutral

vocalisation; and coughing, sighing, and hiccupping. All initiatives/contributions were categorised as positive, negative, or physical.

More than one kind of contribution was usually used at the same time. This was especially true for neutral facial expression, which was the most frequent contribution. This contribution was followed most frequently by physical movement, whereas seeking eye contact and positive vocalisation were rarely used. Number 11 was added to the list when it was obvious that coughing, sighing, and hiccupping were very common at this early age and that the parents responded to these actions so that it became a starting point for communication.

Turns and turn-takings (quantitative)

Percentage of contributions in each triad that leads to turn-taking sequences

Following the child's contribution, the mother had a turn-taking sequence in 16/20 families and the father in 14/20 families. When the mother initiated communication, it was followed by turn-taking sequences in 10 families as opposed to in 6 families when the fathers took the initiative. In 1 family, no turn-taking sequence at all were observed. In another 2 families, only in one of the four possible subsystems was the contribution followed by turn-taking, and these turns were in response to the child's contribution. In 1 of these families, the mother was involved in the turn-taking and in the other, the father was involved.

In 2 families, contributions led to turn-taking sequences in all four possible subsystems. When the child made the initial contribution, sometimes the mother responded and sometimes the father responded, and when either the father or the mother made the initial contribution, the child responded.

Mean per cent of initial contributions followed by turn-taking sequences in the triad

Turn-taking sequences took place following 31% of the child's contributions, 28% of the mother's initiatives, and 21% of the father's initiatives.

Mean per cent of turns within turn-taking sequences in the triad

If the child started the turn-taking sequence with a contribution, the mean number of turns that followed in the same sequence was 3.55. If the mother started the sequence, an average of 3.51 turns followed, and if the father started the sequence, an average of 3.97 turns followed.

Affirmation (quantitative)

Mean values of verbal and non-verbal affirmation

The parents used verbal and non-verbal methods to affirm and support contributions from the children. The means of the parents' use of verbal or non-verbal affirmations were assessed. Mothers and fathers used non-verbal affirmation more often than verbal affirmation. Verbal affirmations seemed to be used to reinforce non-verbal affirmations. Parents often affirmed children's contributions more than once. Sometimes both parents affirmed the same contribution.

In nine families the mothers tended to use non-verbal affirmations more often than the fathers; in seven families the opposite trend was found. A similar situation was found in relation to the use of verbal affirmations.

Clarification (quantitative)

Use of clarifications related to number of parental initiatives

Parents who started a turn-taking sequence seemed to have various methods of encouraging children to join in and take a turn. The parents used clarification as one of the tools to achieve this. Clarification is the repetition of a verbal or non-verbal initiative or contribution. The clarifier may repeat the original initiative or contribution exactly or in a slightly varied form; for example, words may be stronger or clearer in tone or gestures larger or more emphatic. Clarification often involves more than one repetition. In most families, the mother and the father used clarification. But in three families the fathers did not use clarification, and in two families the mothers did not use clarification.

Fathers' mean number of initiatives was 6.10; their mean number of clarifications was 6.45. For the mothers the corresponding means were 5.63 and 6.16, respectively.

Synchronisation (qualitative)

Synchronisation was used as per Kantor & Lehr (1975) who defined synchronisation as the process of regulating and directing the way in which time is being used. It involves five sub mechanisms: control, prioritisation, a structure of guidelines, coordination, and reminding. Does a dance of interaction arise when the parties are allowed space to express themselves? Do the turns of the parties interlace or do they appear to be one-way dialogues? Both child and parents contribute to the synchronization of the dyad and the triad. Are all dyads in the triad activated? Synchronisation is qualitatively

assessed and coded on a scale with four categories (1–4): Five families were classified as “1”, nine as “2”, four as “3”, and two as “4” (not being at all synchronised).

Inclusion/exclusion (qualitative)

Co-parenting demands a high degree of sensitivity. The partners must have a sense of respect for each other’s contributions and a sensitivity that supports each other’s interaction or contribution. *Inclusion* occurs when each parent gives space to the other parent’s interaction/activity with the child. *Exclusion* occurs when one parent physically excludes the other parent from interaction/activity with the child. Inclusion: Mothers in 17 families included the fathers, while fathers in 18 families included the mothers.

In summary

We observed that the tempo of interaction can vary for each partner; however, when sensitivity to each person’s contribution exists, it helps the family make the early adjustments necessary to find a common tempo. A common way participants use to help each other in triadic interaction is to show an interest in the contributions of the others so that this will result in a turn-taking sequence.

Two important steps in turn-taking sequences were observed with great regularity in most triads. Step one typically occurs when the baby either makes a contribution or reacts to a parental contribution. Step two is often verbal or non-verbal affirmation by one or both parents.

Although non-verbal affirmation is much more common, verbal affirmation is also often used. When a parent initiates the sequence, clarification often follows the contribution. This helps get the infant’s attention and encourages the infant to join in the interaction. It is also similar to the normal behaviour of a child who repeats its contribution to get a parent’s attention.

It seems that as early as age 3 months, babies have developed an internal sense of the threesome or triad besides a sense of the twosome or dyad. The baby knows that the three members of the triad are interacting together and is already able to focus attention on both parents in an LTP setting. For example, when one parent makes an initiative or contribution, the baby may look at that parent and then almost immediately glance at the other parent as well.

It is essential to triadic interaction that parents include each other via non-verbal and verbal signs. Out of 20 families we found only 3 mothers that excluded the

fathers and 2 fathers that excluded the mothers. To further investigate how inclusion or exclusion of a partner can affect triadic interaction, we looked at turns that followed contributions made by the child, mother, or father. It is interesting to note that in two of the families in which exclusion was practiced, both parents excluded each other; in one of these families, very few turn-taking sequences occurred while in the other family no turns were taken. In the third family, it was the mother who excluded the father and the outcome was that the father's contributions were not followed by turn-taking sequences, whereas the mother's contributions were followed by turn-taking sequences. Following the child's contribution, there was no turn-taking at all.

Sensitivity to the partner's contribution and on-going interaction may be essential to the flow of complex triadic interaction; triadic interaction tends to occur less often when one partner excludes the other or when both partners exclude each other. More turns followed the child's contributions in families with well-synchronised interaction than in families without well-synchronised interaction. It can also be postulated that the parents' sensitivity to each other's contributions, their tempo, and their cooperation may influence their interaction with their newborn children. Good cooperation between parents who have a positive relationship might be more likely to support a baby's participation and training in turn-taking sequences.

The observations indicated that 3-month-old infants, supported by their parents, are capable of taking an active part in triadic interaction. Parents use non-verbal, vocal, and verbal forms of communication to set the structure for early communication and turn-taking sequences that will later develop into dialogues and trilogues. The observed trilogue patterns seem to be similar to those seen in dyadic communication.

In good triadic communication it seems to be important for the parents to balance their initiatives to make space for the child's participation. Babies are individuals who have differing levels of ability to adapt to the flow of interaction in triads and to literally and figuratively make their voices heard. These differing levels of ability seem to influence the interaction of parents with the child and with each other. This is in line with the suggestions from Parke (1988) and Fivaz-Depeursinge et al (1996, 1999).

3.5 STATISTICAL ANALYSIS

Because of the complexity of these data, the analyses were run in cooperation with Statisticon AB, who are skilled in statistics and mathematics.

Qualitative and quantitative data were analysed in cooperation with Statisticon AB. The analyses were performed in the statistical programs SAS (SAS Institute, Inc.) and R (http://www.r-project.org/).

The statistical analyses were mainly descriptive. Means and standard deviations were calculated. Inter-rater agreement was measured with Pearson's correlation coefficient; some tests were also checked with the Intra Class correlation (ICC) coefficient. Friedman's test was used to evaluate changes over time within a group (children, mothers, or fathers). The Mann-Whitney two-sample test was used to evaluate differences between groups. Spearman's rank correlation was used to analyse associations between continuous variables. A p-value < 0.05 was considered significant.

4 RESULTS

4.1 DEVELOPING A METHOD AND A MANUAL FOR ANALYSING TRIADIC INTERACTION (PAPERS I, III)

Paper I

Paper I describes the CPICS, the method by which LTP sessions can be evaluated in a quantitative and qualitative way where each partner's contribution is in focus on a micro level.

The CPICS was developed to assess the results of videotaped LTP sessions in a systematic way. As already described, the instrument and its categories are based upon existing theories and hypotheses for describing communication between the newborn child and its parents. The CPICS can be used with quantitative or qualitative parameters, for clinical purposes, and for research. It was developed for cross-sectional comparisons and for monitoring development of communication in the triad (by repeated assessments of the same triad) in projects using prospective longitudinal designs.

This procedure is used: Each LTP part is videotaped. The video-counter is used to register the start and stop of events and the length of time for single events and sequences. Assessments are made from the tapes, and 10–20 minutes of interaction are analysed. The observers should be trained using the manual and an instruction videotape.

The reliability of the assessments of various observers was tested in 80 families: 20 Swedish families, 20 US families, and 20 German-speaking and 20 French-speaking Swiss families. The children participating in the assessments were on average 3 months of age.

Two well-trained Swedish observers (none the author of this thesis) independently evaluated the videotapes. Observer agreement was measured using Pearson correlation coefficients. Significant observer agreements were found in several comparisons, while low correlation coefficients were found in others (Table 1).

Table 1. Reliability tests. Rater agreement (Pearson correlation), international study, LTP part 3.

LTP part 3, triadic interactions	20 Swedish families	20 US families (Seattle)	20 Swiss families, German-speaking (Basel)	20 Swiss families, French-speaking (Lausanne)
Child-parent				
Mother non-verbal affirmation	0.61	0.89	0.65	0.69
Mother verbal affirmation	0.52	0.92	0.86	0.55
Mother affirmation	0.77	0.91	0.82	0.61
Father non-verbal affirmation	0.57	0.63	0.25	0.80
Father verbal affirmation	0.56	0.73	0.74	0.70
Turn takings	0.69	0.75	0.47	0.78
Number of turns	0.71	0.83	0.62	0.80
Number of contributions	0.82	0.76	0.61	0.85
Father-child				
Child response	0.58	0.73	0.38	0.40
Clarification	0.79	0.54	0.89	0.77
Awaits	0.58	0.13	0.89	0.77
Mother interrupts	0.83	0.73	0.52	0.56
Father affirmation	0.80	0.71	0.56	0.74
Turn-takings	*	0.91	0.45	0.46
Number of turns	0.54	0.56	0.46	0.25
Number of contributions	0.54	0.78	0.51	0.55
Mother-child				
Child response	0.94	0.69	0.30	0.30
Clarification	0.89	0.87	0.48	0.78
Awaits	0.47	0.84	0.54	0.55
Mother affirmation	0.90	0.36	0.52	0.35
Father interrupts	0.83	0.81	0.74	0.78
Father affirmation	0.80	0.54	0.11	-0.02
Turn-takings	0.68	0.41	0.30	0.39
Number of turns	0.71	0.72	0.91	*
Number of contributions	0.70	0.79	0.70	0.82
Synchronisation				
Synchronised triad	0.75	0.98	1.0	0.97
Mother includes father	0.44	1.0	1.0	0.69
Father includes mother	0.64	1.0	1.0	1.0

*very few observations

Paper III

When the CPICS was used to assess 3-month-old children, the hypothesis was that communication and assessment categories would become more easy to describe as the child and its abilities developed. In the longitudinal prospective follow-up at age 9 months, 18 months, and 48 months, new calculations of inter-rater agreement (Pearson

correlations between two coders) were made. At each age, the CPICS protocols were independently coded by two persons, none the author of this thesis. With two exceptions, reliability was satisfactory (Table 2).

Table 2. Pearson correlations between two coders.

	Contribution	Turn-taking	Turns	Mothers' affirmations	Fathers' affirmations
3 months	0.82	0.69	0.71	0.75	0.74
9 months	0.85	0.58	0.77	0.53	0.74
18 months	0.83	0.96	0.99	0.95	0.98
48 months	1	0.99	0.97	1	0.98

In summary

The CPICS system was found to be an instrument with good observer agreement and easier to use when the children became older. Until more studies with the system have been published, variables with observer agreement > 0.69 are suggested as acceptable for scientific studies of groups. In clinical use, all categories should be used with caution until reassessments have verified their reliability and validity.

4.2 EXPLAINING HOW DYADIC AND TRIADIC INTERACTION – COMMUNICATION AND CONVERSATION – DEVELOP IN A NON-CLINICAL SAMPLE OVER TIME BETWEEN PARENTS AND CHILDREN AGED 3–48 MONTHS (PAPER III)

Paper III

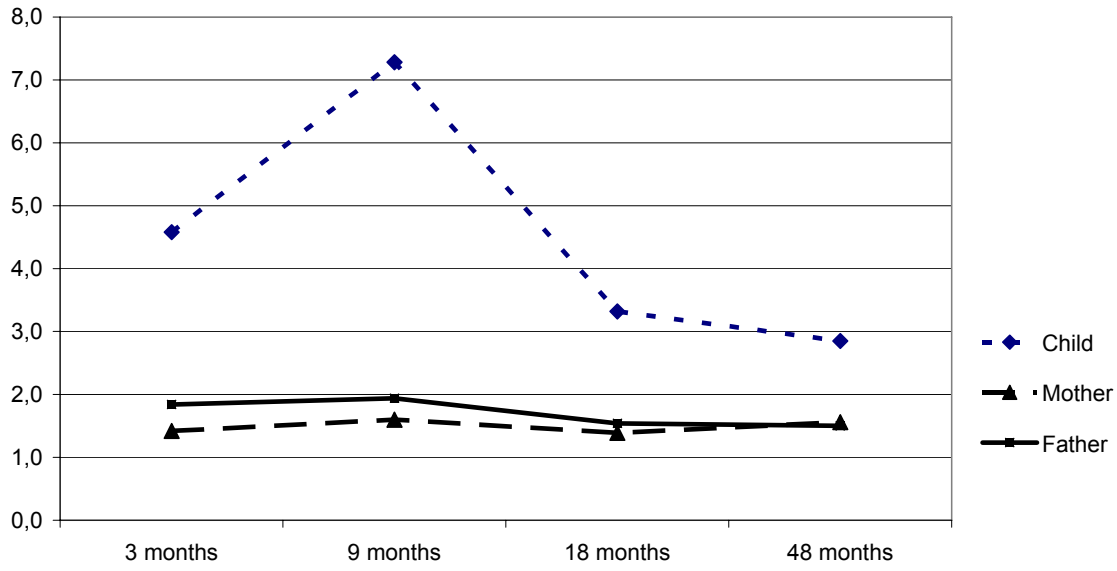
The development of dyadic and triadic interaction was analysed over time when the children were 3, 9, 18 and 48 months old using the variables *contributions*, *turn-taking sequences*, *turns*, and *affirmations*. One of the children, a girl who was later diagnosed with an autism spectrum disorder, was found to be an "outlier" in the statistical analyses and was excluded from analyses. The group of families in the study was reduced to 19.

Contributions

While differences in frequency of contributions between the four assessed ages of the children were non-significant for the parents, differences for the children were

significant ($p = 0.000$). The frequency of contributions was significantly higher at 9 than at 3, 18, and 48 months ($p = 0.003$, 0.000, and 0.000, respectively). The frequency of contributions was also significantly higher ($p = 0.001$) at 3 months than at 48 months. Children's contributions were significantly more frequent than parents' at each age assessed (p for the differences at all ages = 0.000), while differences between the parents were non-significant (Figure 1).

Figure 1. Mean Number of Contributions at Each Age of the Child for each participant of the triad



Types of contributions made by children

Parents reacted to 11 types of child contributions with affirmation.

More than one kind of contribution was commonly used at the same time. This was especially true of neutral facial expressions, the most frequent contribution, which was often combined with another, more active contribution, such as physical movement or vocalisation.

At 3 months, a neutral facial expression was followed in frequency by physical movement, whereas seeking eye contact and positive vocalisation were rarely used. When the infant was 9 months, the most common contribution was attention directed toward an object, followed by neutral facial expression. Physical movements were also frequent, as was attention directed toward a parent. Positive and negative vocalisations were now more frequent than neutral vocalisations.

At 18 months, toys were part of play and interaction, and it was not surprising that contributions that include attention directed toward an object were most common.

Seeking eye contact decreased to 0, which might be because of the toys, and the mean incidents of coughing, sighing, and hiccupping decreased to 0.1. Positive vocalisation and neutral vocalisation increased while negative vocalisation decreased in frequency. At 48 months of age, positive vocalisation continued to increase as did neutral vocalisation. Coughing, sighing, and hiccupping – definitely non-intentional behaviours – were almost non-existent at 18 months. Clear communicative contributions – verbal and non-verbal – were now more common (Table 3).

Table 3. Child contributions at 3, 9, 18, and 48 months.

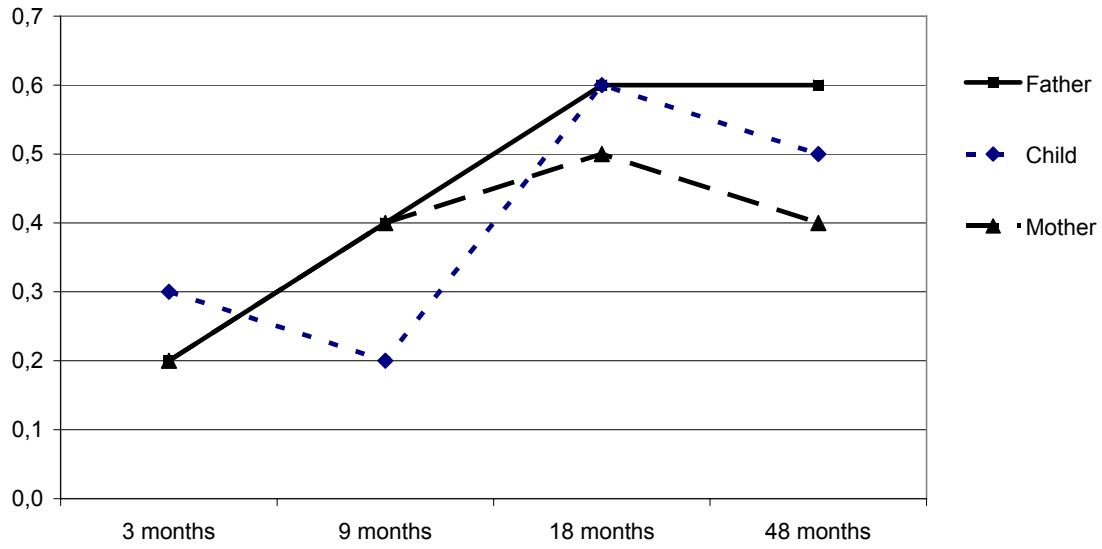
Age	1. Pos. face exp.	2. Neg. face exp.	3. Neu-tral face	4. Seeks eye contact	5. Phys. move-ment	6. Attention to object	7. Attention to parent	8. Positive vocalis.	9. Negative vocalis.	10. Neutral vocalis.	11. Cough sigh, etc
3 mo.	1.5	2.5	9.2	0.6	7.0	7.0	4.0	0.6	2.7	2.7	1.9
9 mo.	5.0	2.0	12.2	0.4	9.6	13.2	7.2	2.2	2.3	1.8	1.6
18 mo.	3.3	1.5	1.5	0.0	6.1	14.3	3.8	3.0	1.7	3.7	0.1
48 mo.	3.0	0.1	9.8	0.0	1.0	13.0	6.4	5.5	0.3	5.0	0.2

Turn-taking sequences per contribution

The overall difference in frequency of turn-taking sequences over time for the child ($p = 0.006$) was significant and for parents non-significant. Turn-taking sequences were more frequent at 18 and 48 months.

At 9 months, the number of turn-taking sequences for the child was significantly lower than for the parents ($p = 0.017$). No other significant differences were found. To determine whether variation in length of recordings of the LTP situation (LTP permits parents to decide the length of time that they will interact) had biased the results, the means for contributions per minute and turn-taking sequences per affirmation were calculated for each age after cases under and over the median length of time at the respective ages were selected. For children, there were small, inconsistent differences between shorter and longer recordings for both variables. For parents' contributions, there were slightly lower frequencies during longer recordings, and for turn-taking sequences, there were slightly higher frequencies for longer recordings. The results suggest that after the corrections were performed, the variation in length of recordings had only small and unsystematic effects (Figure 2).

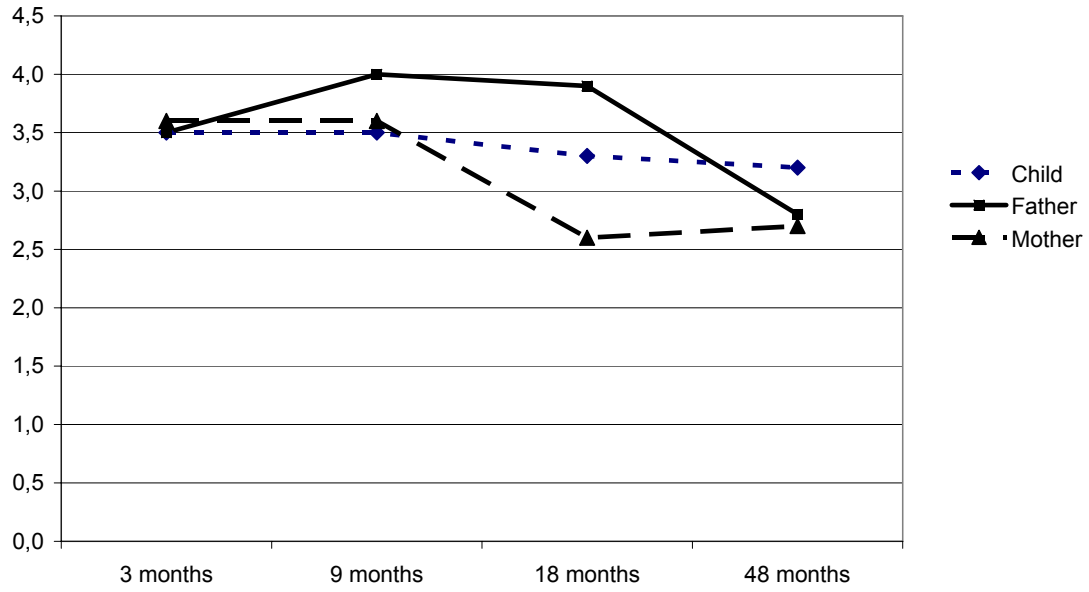
Figure 2. Mean Number of Turn-taking Sequences at Each Age of the Child for Each Triad Member



Turns per turn-taking sequence

No significant difference was found for any triad member (Figure 3).

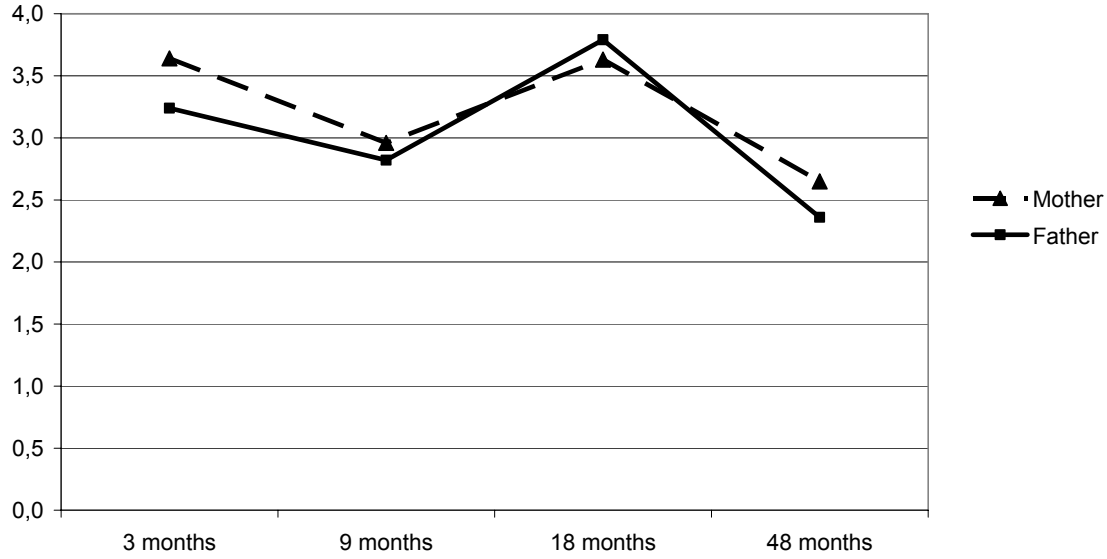
Figure 3. Mean Number of Turns at Each Age of the Child for Each Triad Member



Affirmations per minute

There were no significant differences between parents at any time (Figure 4).

Figure 4. Mean Number of Affirmations by Father and Mother at Each Age of the Child



In summary

Results indicated that parents consistently held back concerning *contribution* – a term used to describe a starting point for an interaction sequence. Parents allowed the "child's just being" to launch conversation, a possible sign of good co-parenting. Types of child contributions varied over time. When the child was 3 months old, its parents acted as though all its behaviours were intentional contributions, while child contributions at 48 months generally had a communicative character. The overall difference in frequency of turn-taking sequences over time for the child (p = 0.006) was significant and for parents non-significant. Turn-taking sequences were more frequent at 18 and 48 months.

4.3 DISCOVERING WHETHER THERE ARE ANY CULTURAL DIFFERENCES REGARDING TRIADIC INTERACTIONS BETWEEN SWEDISH AND US FAMILIES (PAPER II)

Paper II

The goal of this study was to examine the tempo of triadic play in Swedish and US families by comparing 20 families from each culture when infants were about 3 months old. The LTP system was used; all play sessions were coded separately in Sweden and the US using coding systems that had been developed in each country.

Seattle coding system analyses. The tempo of play, defined as the number of changes in activity per minute, was examined cross-culturally over the first three phases of the LTP in a series of *t*-tests. US mother-baby interactions had a significantly faster tempo of play than Swedish mother-infant interactions (US M = 4.23; Swedish M = 2.3, t (38) = 2.67, $p = 0.01$, two-tailed). The tempo of father-baby play was not significantly different across groups (t (38) = 1.78, NS, two-tailed). US families again demonstrated a significantly faster tempo during the mother-father-baby phase of play than Swedish families (US M = 4.43, Swedish M = 2.5, t (38) = 2.97, $p = .005$, two-tailed).

Stockholm coding system analyses. The Stockholm group examined the micro-elements and sequences of interaction in another series of *t*-tests. Significantly more turn-taking sequences initiated by the baby (per cent contributions that led to turn-takings of total contributions) were evident in US compared to Swedish families (US M = 39%, Swedish M = 27%, t (38) = -3.55, $p = 0.01$, two-tailed). There were no significant differences across cultures in contributions leading to turn-takings for mothers or fathers (t (38) = 0.04, NS; t (38) = -1.1, NS). Babies in both countries made significantly more contributions overall than either their mothers (US t (19) = 8.0, $p < 0.001$, two-tailed; Swedish, t (19) = 4.73, $p < 0.001$, two-tailed), or their fathers (US t (19) = 8.47, $p < 0.001$, two-tailed; Swedish, t (19) = 4.6, $p < 0.001$, two-tailed).

An examination of turns, the core micro-elements within turn-taking sequences, revealed the Swedish babies exhibited more turns within a turn-taking than US babies (US $M = 14.3$, Swedish $M = 18.78$, t (38) = 2.26, $p = 0.03$, two-tailed). But US fathers exhibited significantly more turns within the larger turn-taking than Swedish fathers (US $M = 7.9$, Swedish $M = 0.8$, t (38) = 2.98, $p = 0.007$, two-tailed). Swedish and US

mothers differed non-significantly in the number of turns they exhibited (t (38) = -0.77, NS).

To continue this micro-analysis, turns that took the form of affirmations, validating infant contributions, were examined. These analyses revealed that US mothers did significantly more non-verbal affirming during triadic play than Swedish mothers (US M = 17.1, Swedish M = 6.6, t (38) = -4.03, p = 0.0004, two-tailed) with no significant difference in mothers' verbal affirming (t (38) = -1.97, *ns*, two-tailed). US fathers also did significantly more non-verbal affirming than Swedish fathers (US M = 15.8, Swedish M = 6.3, t (38) = -5.38, $p < 0.0001$, two-tailed), but there was no significant difference in the verbal affirmations used by fathers across cultures (t (38) =1.02, NS).

In summary

Results indicated that both coding systems described a distinct difference in the tempo of play between US and Swedish families. Overall, while there were many similarities between countries, US families were found to have a faster pace in triadic play than Swedish families.

4.4 DETERMINING WHETHER THERE ARE ANY CORRELATIONS BETWEEN EARLY TRIADIC INTERACTION AND LATER CHILD OUTCOME (PAPERS III, IV)

In paper III, one of the aims was to study positive correlations between triadic interaction at 3, 9, and 18 months and the preschool teachers' assessments of children's social competence at 48 months. Paper IV describes the development of triadic interactions in a child with an autism spectrum disorder compared to the development of average children. This study originated when one of the families entering the study had a baby with atypical development and was (at age 7) diagnosed with autism according to the Swedish version of the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV-TR).

Paper III

As stated, this study attempted to determine whether children's abilities to participate in conversation between 3 and 18 months would predict communication abilities at 48 months with the hypothesis that children's abilities to perform turn-taking sequences should predict peer competence and social competence at 48 months.

To assess competence, the PBQ was used when the children were 4 years old. The PBQ has 43 questions that fall into eight categories, which include peer competence and social competence. The PBQ has been used in large groups of 4-year-old children in Sweden and validated in a study of 92 children, who were assessed by a preschool teacher (Hagekull & Bohlin, 1996). The preschool teachers, who were responsible for the children in this study, filled out the PBQ. The analysis found positive correlations between peer competence and social competence as per the PBQ and number of children's turn-taking sequences at the earlier ages, which however, was only significant at 9 months (Table 4).

Table 4: Spearman correlations between number of turn-taking sequences at 3–18 months, and peer competence and social competence at 48 months.

	Peer competence at 48 months	Social competence at 48 months
Turn-taking sequences at 3 months	0.20	0.26
	$p = 0.229$	$p = 0.161$
Turn-taking sequences at 9 months	0.59	0.48
	$p = 0.008$	$p = 0.028$
Turn-taking sequences at 18 months	0.40	0.34
	$p = 0.070$	$p = 0.104$

1-tailed significance

Paper IV

This article describes early triadic interaction in the family of a girl diagnosed with an autistic disorder (DSM-IV 299.00) and mental retardation at age 7 years. By chance, the girl and her parents were 1 of 20 Swedish families studied in paper III. Quantitative and qualitative observations were made when the children were 3, 9, 18, and 48 months of age. Because the girl developed an autism spectrum disorder, these variables from CPICS were included in the analyses of all children: *eye contact* and *shared focus*. We did so based on theoretical considerations and empirical findings in other studies.

At 18 months, the mother and father shared the daughter's focus 30% of the time, while parents in the comparison group shared their children's focus a mean of 71% of the time. At 48 months, the parent's proportion had increased to 79%, whereas the mean in the comparison group remained 71%. At 18 months there was no eye contact between mother and child or father and child in the case family while in the

comparison group, eye contact between mothers and children took place on average 4.7% of the total observation time, and eye contact between fathers and children on average 4.9% of the time. At 48 months, the percentage of eye contact in the case family had increased to 2% between mother and child and 3% between father and child. In contrast, there was no eye contact between any of the mothers and children in the comparison group and almost none (0.03%) between the fathers and children.

The observations indicate further that the differences between the autistic child and the typically-developing children in the sample were most obvious at age 9 months (Table 5,6,7,8).

Table 5. Children's frequency of behaviour at 3, 9, 18, and 48 months. Figures show total number for case child and mean number for comparison children (standard deviations in parentheses).

	Case child				Comparison group			
	3	**9**	**18**	**48**	**3**	**9**	**18**	**48**
Contributions	11	40[a]	24	14	14.3 (9.2)	19.8 (10.3)	15.2 (11.8)	14.0 (9.2)
Attention to object	3	32[a]	23	13	7.2 (7.4)	12.3 (8.8)	13.8 (10.8)	13.0 (8.9)
Positive vocalisation	2	9[a]	3	3	0.5 (0.9)	1.9 (2.3)	3.1 (3.1)	5.6 (6.2)
Sighs, Cough, etc.	0	10[a]	3[a]	0	1.9 (2.5)	1.2 (1.9)	0.0 (0.0)	0.2 (0.6)
Turn-taking sequences	9[a]	4	2	6	3.7 (2.7)	3.9 (2.3)	6.2 (3.4)	6.7 (4.0)
Turns	52[a]	11	8	20	11.9 (8.4)	14.1 (12.2)	22.1 (16.5)	21.6 (14.2)

[a] > 1 SD

Table 6. Mothers' frequency of behaviour at 3, 9, 18, and 48 months. Figures show total number for case mother and mean number for comparison mothers (SD in parentheses).

	Case mother				Comparison mothers			
	3	**9**	**18**	**48**	**3**	**9**	**18**	**48**
Contributions	8	22[a]	10	9	4.6 (3.4)	4.1 (1.9)	5.6 (4.0)	7.0 (4.8)
Initiates object	0	9[a]	9	7	0.5 (0.9)	0.5 (0.9)	4.6 (3.7)	6.5 (4.5)
Attention to child	3	12[a]	3	7	2.8 (1.9)	1.9 (1.2)	4.4 (3.6)	4.5 (2.9)
Positive vocalisation	2[a]	0	1	0	0.0	0.0	0.0	0.2 (0.6)
Negative vocalisation	2[a]	6[a]	2[a]	0	0.8 (0.9)	1.2 (0.8)	0.4 (0.8)	1.7 (4.4)
Neutral vocalisation	7	19[a]	4	7[a]	4.1 (3.0)	3.8 (1.7)	4.7 (3.3)	3.1 (2.2)
Turn-taking sequences	5[a]	4[a]	3	2	1.3 (1.9)	1.6 (1.1)	3.0 (2.6)	2.5 (2.8)
Turns	15	14[a]	5	3	7.0 (17.7)	5.2 (3.9)	7.8 (8.0)	7.8 (10.8)

[a] >1 SD

Table 7. Fathers' frequency of behaviour at 3, 9, 18, and 48 months. Figures show total number for case father and mean number for comparison fathers (SD in parentheses).

	Case father				Comparison fathers			
	3	**9**	**18**	**48**	**3**	**9**	**18**	**48**
Contributions								
Attention to child	3	12[a]	3	7	2.8 (1.9)	1.9 (1.2)	4.4 (3.6)	4.5 (2.9)
Negative vocalisation	1	0	2[a]	0	1.1 (1.0)	1.7 (1.8)	0.5 (0.8)	1.2 (3.2)
Affirmation	5	9[a]	8	7	4.8 (2.9)	3.6 (2.3)	8.2 (5.9)	5.6 (3.4)

[a] >1 SD

Table 8. Synchronisation in the case family.

	Dyad Mo-Ch	Dyad Fa-Ch	Triad
3 months	Mostly	Mostly	Partly/Mostly
9 months	No	Partly	Partly
18 months	No	No	No
4 years	No	Partly	Yes

In summary

Positive correlations between complex triadic interaction at 3, 9, and 18 months – such as synchronised family interaction and preschool teachers' assessments of children's social competence at 48 months – indicate that the establishment of synchronised triadic interaction where parents support child turn-taking predicts good social competence in the preschool years and that atypical development of triadic interaction could indicate a developmental disorder in the child.

5 GENERAL DISCUSSION

The overall aim of this thesis was to describe how communication develops from infancy up to 4 years of age in the mother-father-child triad. But the thesis should be viewed more as an attempt to describe the intrinsic and complicated events that lead to "communication" (both true conversation and how gestures, facial expressions, sounds, and so on contribute to communication) rather than as a factual description of what actually happens.

As discussed below in the section on "limits", the thesis included 20 Swedish families in a longitudinal follow-up and another 60 families [40 from Switzerland (German- and French-speaking) and 20 US families] in a study on inter-rater correlations for the CPICS manual to describe and assess triadic interaction with qualitative and quantitative criteria; cultural similarities and differences were studied with 20 Swedish and 20 US families. Since one Swedish family was excluded during the longitudinal follow-up when the child was discovered to have an autism spectrum disorder, the Swedish group was reduced to 19 families.

Despite these limitations, the thesis – its design and its methods, to use non-clinical families from the average population, and the criteria for the variables – makes replication of the results possible. Until such replications have been made, the results should be looked upon as simply a small step in our understanding of the complexity of how communication develops. Four important aspects of this study require further discussion.

5.1 THE TRIADIC PERSPECTIVE

My belief in the importance of studying the family as a whole, of being able to understand the dynamics that all individuals are part of and are affected by, and that have an affect on the family process, developed from my clinical experience with families that have emotional problems or children with behavioural disorders. In my clinical practice I have met many families who have sparked my interest in how the marital relationship, co-parenting, and children's characteristics are interrelated. Observations of clinical video-sessions indicated the importance of "micro moments" and how family behaviour was influenced by something invisible, something in the inner world of the partners and the quality of the relation between them.

Clinical experience also indicated the importance of including dyadic (dialogue) and triadic (trilogue) variables in the study of child development in relation to dyadic and triadic interaction; those daily moments in family life with changes from dialogues to trilogues – how smoothly this happens affects all family members. The triadic approach does not question dyadic attachment relationships but can add further perspective to research on early development processes. The situation in Sweden is somewhat different from in most other countries; the roles of the mother and father have changed in past decades, and the father has become more and more involved in child care. Despite this, roles are still unclear, and at times it is difficult for the families and partners to handle child-rearing.

Parental interaction also depends on the level of satisfaction or "quality" in the marriage with the importance of this variable growing from the prenatal period to the early postpartum months (McHale et al 2004). This further stresses the importance of including variables such as marital quality and co-parenting when exploring triadic interaction. Inclusion and synchronization are the two factors in this thesis that focus on parents' cooperation and respect for each others' participation. The inner world of how the mother and father expect life as a family to be and how the partner will function as a parent is focused on in the interviews in the data collection and are important questions to explore further in future research. Some studies have focused on fathers' representations and postulated that the fathers' inner representation of being three is one of the most important determinants of the newborn family's harmony (von Klitzing et al 1999). A study by McHale et al. (2002) found significant associations between parents' prenatal expectations about the future family process and observed co-parental functioning in trilogue interactions after birth.

An example of a daily life situation illustrates the complexity of triadic interaction:

> The baby is fed and is feeling energetic; it is pleased at being engaged in a dialogue with the mother. The father is nearby, watching with pleasure and emotional engagement how the mother and baby interact. The father makes a sound of pleasure and affirms the baby's babble; the baby looks back at him with a smile. The mother moves her body and face so that it makes room for the father and the baby to engage in dialogue. Looking at the mother's facial expressions, one can see that she enjoys how the father and baby interact. Turns and turn-takings start. After some turns, the baby looks back at the mother and the three now join to establish a "rhythm of triadic interaction" with joy and laughter. The mother and the father look at each other and smile wordlessly, sharing the pleasure of mutual interactions. The baby looks at the parents, sharing or maybe only realising the affect of that moment and then again invites the parents into conversation.

The short moment of being three may form a pattern "of being with" in the mother-father-child threesome. But, the situation can also be much more stressful and difficult, which is something we often see clinically. When, for example, the child is unhappy and cries, the quality of triadic interaction will be challenged and is important for how to solve the situation.

Recently, the team of Fivaz-Depeursinge (2005) has published a handful of studies on triangular relationships and come to the conclusion that they are part of normal interaction. The infant, and later the child, uses triangular interactions from as early as 3 months of age to make bids for sharing emotions with both parents, for example, and create functional supportive alliances between the individuals in the triad.

In most functional alliances, the parents and the child all appear to be included, and they maintain their appropriate roles in communication. The parents, for instance, support each other in front of the child while in non-functional alliances, one partner could be excluded and triadic interactions could be reduced to dyadic interactions (Fivaz-Depeursinge & Corboz-Warnery 1999).

These kinds of alliances represent two different triangulation processes: the functional alliance conforms to normative interaction while the non-functional alliance corresponds with the concept of "triangulated child" used in Minuchin's theory. Family therapists have long held that the child can – in different ways – be triangulated and put in the position of being affected by or used in the couple relationship; this indicates the importance of understanding triadic interactions in psychopathologic matters.

In summary

From a theoretical point of view, it seems that parents not only affect their children but are also affected by them; focusing on the triad in research and in clinical work seems to be essential to reach an understanding of family processes and child development. With an understanding of triad interaction, the next logical step seems to be to include siblings in intrinsic family interactions.

5.2 HOW DO WE SUPPORT CHILDREN AS THEY DEVELOP THEIR COMMUNICATION AND SOCIAL SKILLS?

Key issues for children's later achievements are social competence and the ability to communicate and take part in conversations and contexts with more than one person. Communication comes from the Latin c*ommunicare*, which means *sharing* or *doing together*. It is within this reciprocal interaction that infants develop social cognition by matching "self" with the experience of others; within this context they can later grasp various characteristics of others and their intentions and beliefs. The role of fathers in the development of social competence has been emphasised; strong correlations between father-child interaction and children's behavioural adjustment concerning social competence and behavioural problems were found at 3–3.5 years of age (Braune-Krickau et al 2005).

As members of a social species, humans grow and live in multi-person relationships, and infants are usually more frequently embedded in multi-person contexts than in strict dyadic interactions from the moment of birth (Dunn 1991; Schaffer 1984). The development of the capacity to handle triangular interactions – of an understanding of multi-person relationships – is presumably part of the socialisation of the child (Fivaz-Depeursinge et al 2004). It would be tempting to propose the Family Trilogue as the arena for developing these skills. In this study, findings indicate that this may be so. Early triadic interaction where the parents support child contributions in a way that leads to turn-taking correlates with social competence in preschool years. This is an important finding with implications for clinical work. In the future, this could mean that supporting and affirming the child's focus, contributions, and initiatives could help family interaction in a positive way where the parents do not compete with each other's initiatives in communicating with their child.

The triadic perspective is also important from a socio-communicative perspective because the triad is the first group in which the infant participates, and it is an arena in which the child can take its first steps in developing social competence – by learning from being part of a triadic formation with its mother and father from infancy. The intimacy that is established in the threesome allows the infant to be actively involved in people's joy, conflicts, and dialogue.

Person-person-object studies using the triadic perspective where the child focuses on an object with a grown-up have been conducted to explore how the intentional

stage and secondary intersubjectivity develop (Bakeman & Adamson 1984, Trevarthen & Hubley 1978, Nadel & Trembley-Leveau 1999).

A triangular form of social referencing – as in the mother-father-infant triad at 9 months – has also been observed in trilogue play (Fivaz-Depeursinge & Favez 2006). For example, when the infant is momentarily puzzled or surprised and looks at the parent with a question in its face, it may or may not get a satisfying response to its implicit question and, depending on the "answer", will turn to the other parent with the same question.

Bretherthon argues that social referencing can be understood as one aspect of the infant's ability to "interface minds" through intentional communication, a primitive ability to take on the role of the other (Bretherton 1992).

In summary

The most important question in triangular interaction may be how the infant incorporates the interaction of the threesome in its development of intersubjectivity. Elisabeth Fivaz-Depeursinge has asked: "Is there a threesome intersubjectivity?"

5.3 WHAT CAN WE UNDERSTAND FROM TRIADIC INTERACTION? HOW DOES IT DEVELOP? AND HOW DO WE SUPPORT IT WHEN THE CHILD HAS SPECIAL NEEDS?

To study early signs is of special interest in making early intervention possible. In this study, the data that existed from the time of the pregnancy for the child who was later diagnosed with an autism spectrum disorder allowed a more suitable intervention to be made. Synchronised interaction seems to be an important factor for autistic children. Siller and Sigman (2002) reported two major findings from their study on the behaviour of parents of autistic children during play interactions. First, like caregivers of typically-developing children, caregivers of autistic children "synchronised their behaviours to their children's attention and activities" (p.77). Second, the level of synchronisation achieved seemed to be essential to the children's future development of joint attention and language skills. A positive correlation between the caregiver's level of synchronisation and the child's outcome was demonstrated.

The study found that the match between caregiver utterance and the child's focus of attention is better for undemanding synchronisation utterances than for demanding utterances. This is in line with the findings in this thesis, that initiating the turn-taking

sequence with the child's contribution is more helpful. But it might be easy to take too many initiatives, perhaps as a way to compensate for difficulties in communicating by following the child.

The results of recent research underscore how raising children with autism can be especially demanding for parents. Findings by Dawson et al (2000) indicate that children with autism have impairments in the ability to pay attention to others, affect responsitivity, and joint attention behaviours. Maestro et al (2002, 2005) found specific deficits in the ways these children respond to social stimuli and an absence of the typical shift in the infant's attention from objects to human beings.

In a recent study with home videos of twins where one twin was later diagnosed with autism, implications for parenting and intervention are made. The video shows how a father's natural, intuitive, affectionate responses to the reduced capacities and uncertain feedback of an 11-month-old infant developing autism becomes confused by the withdrawal and detachment of the infant. If normal but unhelpful feedback continues, the infant's asynchronous motives and behaviours may be further undermined. Instead, changes in the father's behaviour must be initiated while the infant still has vital motor and attentional capacities, which form a child-centred, person-sensitive "Zone of Proximal development" for that child's brain (Trevarthen & Daniel 2005).

A sense of timing and a structured environment is necessary to meet the need of the developing autistic child, and it is the affectionate caregiver who is the best attuned therapist for a particular child. These are some of the guidelines mentioned by Trevarthen and Daniel (2005): have a sympathetic, child-centred, non-judgmental approach; avoid relying on a "checklist diagnosis"; pay close attention to whatever motivates the child; channel interested and expressive behaviours toward rhythmic emotional interaction; be sensitive to whatever mode of contact the child naturally favours; and illustrate mature communicative behaviours of intersubjectivity, including the fun of ritual games and the cooperative use of objects in shared environments.

Our case study found obvious signs of deviant triadic interaction at 9 months, indicating that clinical interventions should start.

In summary

Two parents can support each other in parenting. In families where the mother is depressed, the father can take the role of primary caregiver until the mother recovers.

When the infant shows signs of problematic communication patterns, not only the mother but also the father and the triad are important for finding the best way to achieve supportive interaction for the child. So the child-mother-father triad is a future important arena for further studies and interventions when child development is atypical.

5.4 WHAT CAN WE LEARN FROM STUDYING CULTURAL PATTERNS IN TRIADIC INTERACTION?

In our cross-cultural study, the tempo of play was significantly faster in US than in Swedish families (Hedenbro et al 2006). But the babies in both cultures had the same expressed affect. So they did not seem over-stimulated by the faster pace of play in the US families, or disinterested in the slower pace of play in the Swedish families. These results are consistent with the findings of Arco and McCluskey (1981), who found that infants responded positively to play when parents were asked to play at a natural pace, since the families in our study (in both cultures) were instructed to play naturally.

Results reflecting the micro-elements of interaction within activities or turn-taking sequences indicate that Swedish babies have more exchanges of turns in each turn-taking sequence, and that US parents do significantly more non-verbal affirming of infant contributions during three-together play. This higher rate of non-verbal affirmation may help US families keep “in step” with the faster tempo of play through responsiveness to infant signals.

US families did many more things within a play session (more activities or sequences), while Swedish families spent more time within each activity (more turns). This could be seen as analogous to a group of Americans talking about five different topics in a 15-minute period while a group of Swedes spend the same 15 minutes exchanging ideas about one topic. We see our stereotypes of the two cultures reflected in these results, with the US question being, “Can we do it faster?” and the Swedish question being, “Can we go deeper?”

These findings suggest that differences in tempo do not necessarily reflect temporal or interactive synchrony within the dance of family play. This difference in tempo resembles the difference between a waltz and a jitterbug, where coordination and familiarity with dance steps are important for “the entire dance” rather than pace.

Given that infants in Sweden and the US expressed similar enjoyment levels, it is possible that infants adapted to a culturally influenced tempo of play by the time they

are 3 months. Our findings also suggest that the babies actively contributed to the pace of play through their contributions. This is consistent with research of Feldman and her colleagues (1996), who suggest that development of the infant's regulation abilities drives temporal interactive synchrony. It is possible that, due to either genetic factors or the prenatal environment, infants in these two cultures come into life pre-wired for different pacing and related stimulation in their interactions, and that parents in both cultures adapt their pace of interaction in response to their infant's cues. Parents in the US and Sweden may have also developed methods of being sensitive and responsive to their infants in ways that coincide well with the tempo the family adopted.

In summary

It seems necessary to consider cultural differences when assessing triadic family interactions. Our results on cultural differences also sheds light on the importance of being "in step" in triadic communication. This indicates that there must be a balance between the contributions of the parents and the child so that an exchange can take place. This is different from that of an interaction – which we often see as clinicians – that is unable to find a way to be mutual and include each partner in the way that is possible for the partner.

6 CLINICAL IMPLICATIONS AND PRACTICAL APPLICATIONS

These aspects of the results may be of clinical importance.

6.1 DYADIC AND TRIADIC RHYTHM

In early infancy, a rhythm must be established in dyadic and triadic (child-mother-father) interaction. In triadic interaction, a rhythmic temporal synchrony like that of a dyad must occur – sometimes in one of the dyads in the triad and sometimes when all three in the triad actively communicate. As with dialogue play, the goal of trilogue play is to share the experience of positive affect and to handle negative affect states like tiredness and frustration. The capacity to regulate affects as a group is one of the foundations of family communication (Carneiro, Corboz-Warnery & Fivaz-Depeursinge 2006).

Research on mother-child interactions indicates that the infant also affects family interaction. In triadic communication, the infant will probably need to be more attentive to "join in" with the two partners. In clinical work, though, the clinician must pay attention not only to triadic interaction when everyone is involved but also to how the parents handle being in the role of the "third part", which means being part of the threesome but not active.

The capacity for triadic relationships could be said to be the capacity of the father, the mother, and the child to anticipate their family relationships without excluding either themselves or their partners from the relationship. That two can be talking without being interrupted, and the third plays a supportive role; that one individual can be listened to and all three actively share is important for family life.

6.2 INFANT CONTRIBUTIONS TO INTERACTION, PARENT ROLES AND STYLES, AND CO-PARENTING

Little research has been published on the contributions of the infant to the formation of interaction and the roles and styles of mothers and fathers and their co-parenting. This is surprising since we see interaction as bi-directional. How early temperament or regulatory abilities influence the emergent co-parental process is a future crucial topic of research (Hedenbro & Tjus in press).

When infants are less responsive, parents may compensate by being overly sensitive to the infant during the first few months instead of supporting development. This might also contribute to less positive co-parenting and family processes. Sanson and Rothbart (1995) found that parents of more irritable or difficult babies were especially positive in the early postpartum months but later withdrew or exhibited negative involvement.

Contradictory to this, a recent study found no strong correlation between parents of difficult babies and higher levels of reported stress (Perren et al 2005). "Intuitive parenting" (Papousek & Papousek 1987) could also loose its purpose when confronted with responses from a child that is maladjusted and unsynchronised. Instead of meeting the child's needs, "intuitive parenting" could become compensating (Papousek 2005 personal communication).

6.3 THE CRUCIAL AGE OF 9 MONTHS

Many researchers consider 9 months to be a stage where development moves up to a new level. We also observed deviations and strengths at this age. In this phase, although the child seems to develop and become more competent, it is also more vulnerable. Observations support this, and interventions seem to be crucial at this age. If reciprocal and synchronised interaction has not formed at this age, it will become more difficult to develop. The child is "looking out into the world", and as parents, we must join that focus – which could be objects or the other parent – and participate in the moment of sharing. Co-parenting is essential here.

As we have seen in this thesis, the parents are careful in taking initiative and prefer to allow space for the child to take the lead. And it was this drawing of the child's contributions and initiatives further into turn-taking that was most significant for the child being later assessed as more socially competent than its peers who were not supported in this way. Non-verbal and verbal affirmation can promote a child's ability to take initiative. When parents take the initiative, they seem to be probing for responses by clarifying, and this may be helpful for the child. But studies of children with communication difficulties have found that it is even more important to follow the child's actions, emotions, and intentions to start a synchronised interaction.

It is therefore important for the clinician to observe both parents in interaction. When the parents feel that they are not communicating well with their child, it could be hypothesised that it is easier for one parent or the other to take over and attempt communication on their own instead of acting together with their partner. To be "in

step" in interaction is more important than the tempo. It is important for clinicians to realise that families who are unable to maintain a joint focus on a triadic level, or parents who derail one another's exchanges with the child, may be creating family dynamics in which the socio-emotional development of the child is at risk (McHale& Fivaz-Depeursinge1999).

6.4 EARLY INTERVENTION

When material was collected for this study, interviews with the couples during pregnancy were used and appreciated by the parents. These focused on inner representations of themselves as a mother or father, of the child, and of the future family. In the Swedish system, we are able to meet with the couple like this, and this most likely is a help for the couple to begin sharing such thoughts and feelings. Methods for early observations and interventions based on triadic interactions should be developed.

In clinical work, interaction guidance is fairly common, and "The Triad Model" is being used more and more in Sweden today for assessment, intervention, and evaluation (not yet documented).

7 LIMITATIONS, STRENGTHS AND FUTURE DIRECTIONS IN RESEARCH

The limitation of this thesis is that it was based on a small sample of 20 Swedish families, although 60 families from three other sites were included to develop the CPICS coding system. Larger samples are needed to validate the findings. Despite these limitations, the thesis – its design and its methods, to use non-clinical families from the average population, and the criteria for the variables – makes replication of the results possible. Until such replications have been made, the results should be looked upon as simply a small step in our understanding of the complexity of how communication develops.

The combination of quantitative and qualitative data in the CPICS, which allows analyses of dyadic and triadic interaction, makes the method flexible.

7.1 FUTURE DIRECTIONS

As this thesis only focuses on children up to the age of 4 and data have so far been collected up to age 7, there are numerous additional focuses, variables, and data to analyse. Below are a few of these.

Third-party role

In part four of the LTP situation, the parents are instructed to talk to each other and ignore the child as much as possible. The child is now playing the third-party role and, in a way, is still part of the triad but is being forced to observe the mother-father dyad. In this situation, the infant or child can take *social contact initiatives,* one of the strategies it can use to develop its social competence – if correctly appreciated by the parents.

They can do this in various ways, for example, with a smile or a vocalisation, possibly in combination with seeking eye contact. When the infant is 3 months, the mean number of contact initiatives is 3.2 (std 4.9, min 0, max 20.5). At 9 months the mean for seeking contact is 3.9 (std 3.1, max 11, min 0). At 18 months the mean number of contact initiatives is 10.6 (std 9.2, min 0, max 36). At 4 years the mean is 11.0 (std 5.1, min 5, max 17). But interestingly, we observed that at both 18 and 48 months, the children in the families where tri-directional synchronised interaction had

occurred continued to play on their own when the parents talked to each other in part four. These results will be pursued to understand their relation to triadic interaction in the family.

This third party role also allows this question: the age of approximately 9 months, as in this thesis, is an age of special interest, and mentalisation abilities have developed on a higher level. The child is part of the threesome and is aware that something is going on not only between oneself and the parents but between the parents themselves. How does the child understand this, and is there A Family Theory of Mind?

Marital relationship and co-parenting

Many studies highlight the importance of quality in the marital relationship and co-parenting for child development. In this thesis, interviews during pregnancy and after birth – as well as questionnaires relating to marital satisfaction and parental health – were used and will be analysed. In the LTP sessions and using the CPICS where variables relating to co-parenting are defined, opportunities exist to further explore the relationship between co-parenting and triadic interaction.

Meta-emotions

Affects and emotions are considered vital for development. An interview was conducted with both parents about their thoughts and emotions concerning their family of origin, their life right now with their partner, their friends, the situation at work, and the emotions of their child. These interviews will be analysed in relation to other child outcome factors.

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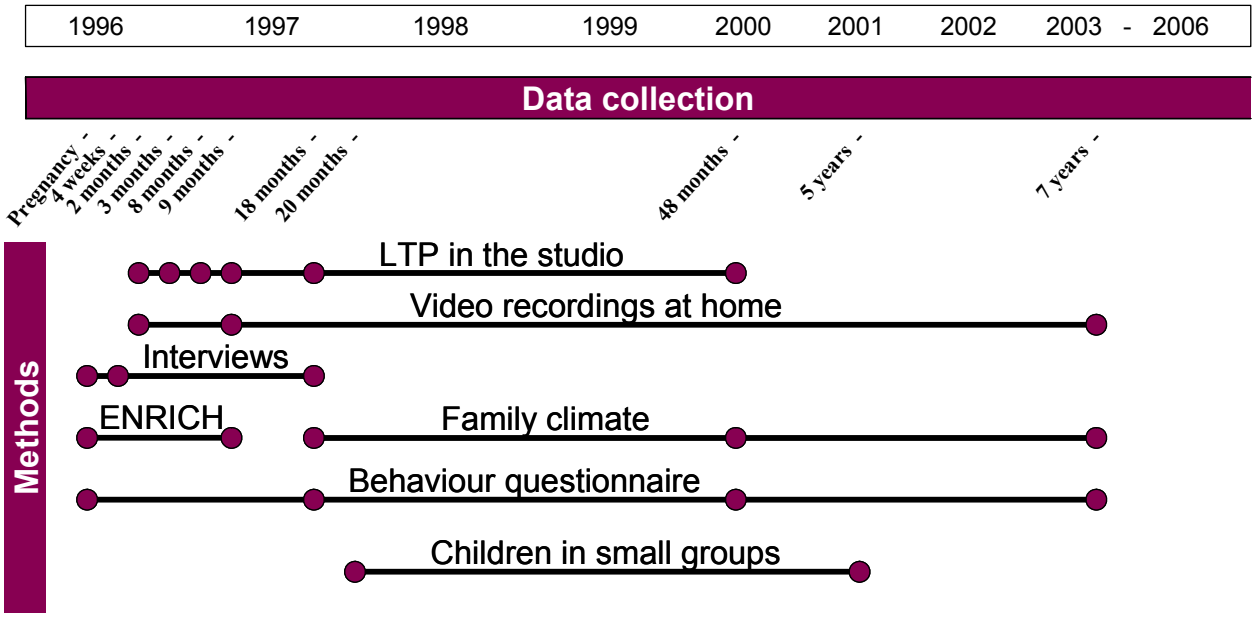
10 APPENDIX


1996
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Data collection
Pregnancy -
4 weeks -
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3 months -
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9 months -
18 months -
20 months -
48 months -
5 years -
7 years -
Methods
LTP in the studio
Video recordings at home
Interviews
ENRICH
Family climate
Behaviour questionnaire
Children in small groups