

**Maternal Shape Flow Movements in Mother-Infant Interactions with Babies in Distress:  
Micro-Analysis Utilization of the Kestenberg Movement Profile (KMP)**

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Requirements of the Degree of Doctor of Psychology in the  
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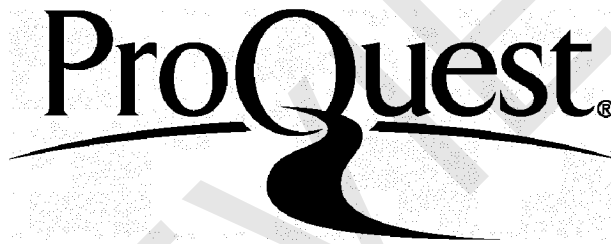
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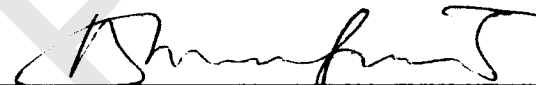
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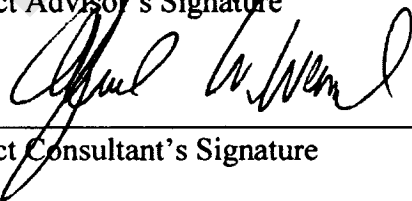
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## ABSTRACT

Micro-analytic studies of dyadic interactions reveal that mother-infant attunement is a complex and intricate system of self- and inter-regulative processes (Beebe, Jaffe, & Lachmann, 2000; Beebe et al., 2003; Stern, 2002; Trevarthen & Delafield-Butt, 2014; Tronick, 2007). Distress levels of both mother and the baby have an impact on the flow of such interactions (Beebe, 2006; Beebe et al., 2008). This study utilized aggregate and time-series analyses to investigate maternal movement qualities related to the shape flow system of the Kestenberg Movement Profile (KMP, Kestenberg-Amighi, Loman, Lewis, & Sossin, 1999) as they were associated with infant behavioral distress. The process of developing statistically sound adaptation of the KMP observational coding system for use with digital recording/notational software contributed to further expansion of the KMP as a measure of non-verbal communication within the individual profile as well as in the interactional model. Video-recordings of 75 mothers playing with their 12-month-old babies in a face-to-face situation were coded through Noldus Observer XT in 30 frames per second format. Results indicated that infant behavioral distress was likely to be followed by maternal movements in lower face characterized by shrinking and/or unipolar shape flow qualities, likely contributing to soothing facial gestures. In turn, maternal facial gestures characterized by unipolar shape flow qualities had predictive power for infant becoming distressed, suggesting that such maternal movements, when not matched with the infant's readiness to respond, may have a dysregulating effect on the baby. Findings support the view of a dyadic system of interaction within a co-regulation model with the potential for both partners to recognize and respond to each other's affective states in under a second. Implications for further research are discussed.

## **CHAPTER I**

### **INTRODUCTION**

It has been long observed and documented that early childhood patterns of interactions with primary caregivers play an important role on how the child continues to relate to self, others and the surrounding environment (e.g., Ispa et al., 2004; Lyons-Ruth, Yellin, & Melnick, 2003; Tronick, 2007). In western civilizations, these early interactions have been studied largely within the framework of parent-child interactions, particularly mother-infant processes of sharing emotional, mental, physical, and cultural perceptions of the world (see Maccoby, 1992). Since the 1930s, numerous theories have emerged and attempted to examine major variables within the relationship between mother and child (Beebe, 1988; Beebe, 2003; Belsky, 1984; Brazelton & Yogman, 1986; Fogel, 1992; Fonagy, 1998; Georgely & Watson, 1996; Kestenberg, 1965; Lyons-Ruth, 1999; Threvarthen, 1979; Tronick, 1979). The body of literature on dyadic interaction and implications of the quality of this interaction for further functioning in life has strong common trends in observing, evaluating, and intervening in parent – child interactions.

This study's purpose is, within given design constraints, to contribute to the investigation of co-created relational experience in mother-infant interaction, particularly in regard to moments when the infant is in distress. Specifically, this study attempts to meaningfully identify facial movement patterns of the mother that are contiguous in time with identifiable infant distress. In addition, this study aims to investigate the benefits of using real-time frame-to-frame observation and coding, along with time-series

microanalysis. The implications of understanding these early stages of interactive experience have a great potential to extend understanding of patterns of adult interactions (Beebe & Lachmann, 2014; Seligman & Harrison, 2012). Major components of such interaction are recognized and given consideration: a) the infant's internal and external regulatory perceptions, sensations, and actions; b) the caregiver's internal and external regulatory processes; and c) the entity of co-created internal and external representations and consequent actions within and between the child and caregiver. For the purposes of this study, caregiver role is examined through the role of the mother, thus limiting the scope of discussion and generalization to mother-infant dyads. Future research will clarify which findings can be applied to other dyadic relationships, for example, between father and child, stranger and child, siblings, etc. As mother-infant interactions have been observed and documented in the field of psychology, some common themes and directions have emerged and further developed. It is rather common to compare typical and non-typical situations relevant to the focus of the study in order to identify common patterns of behavior and factors that influence deviations from these common patterns. This study will examine movements of maternal lower face in response to the infant's behavior in general and when the infant is observed being in distress. We hope to discover predictable non-verbal patterns of maternal empathic response in situations of witnessing her child in distress as well as predictable patterns of an infant's tendency to show overt signs of distress in response to maternal facial gestures.

## **CHAPTER II**

### **LITERATURE REVIEW**

Microanalysis of dyadic interactions in infancy opens a window into discovery of distinctive patterns that bear on dyadic repair, elicited when the interactive system or its individual components appear to be unbalanced. Advancements in the study of parent-child interaction have come a long way in supporting the systems-model of a co-creating relationship as it is represented in the process of mother-infant interaction. However, it has not always been viewed in this manner.

#### **Historical Views on Child Rearing**

From a historical perspective, recent appreciation for intersubjectivity, empathy, attunement, and co-regulation in dyadic interactions, linking early healthy interaction to later healthy development of the child, stand in sharp contrast to centuries of various perspectives. Even though there were substantial differences in views of child development and parent-child interaction in some of the earliest civilizations, related to their cultural and evolutionary progress, the long history of misattribution and malevolence that permeated widespread mistreatment of children leads the way to the importance of understanding high incidences of abuse and maltreatment still present in the modern time. On the brink of the 20<sup>th</sup> century, Anna Burr (1909) reviewed 250 autobiographies and noted that not one contained happy memories of childhood. In this case the adult views of their childhood memories were examined. Interestingly, since the earliest times, the father's role in parenting was recognized, but hardly articulated in



terms of his responsibilities. A self-taught historian, deMause (1976) examined the history of childrearing practices over time in order to provide better understanding of the history of evolution of civilization in the West. Upon reviewing ancient histories he concluded that childrearing was cruel and emotionally distant because parents were unable to establish psychological identification with their children's needs. According to deMause, "the further back in history one goes, the lower the level of child care, and the more likely children are to be killed, abandoned, beaten, terrorized, and sexually abused" (p.504). He stated that the "infanticidal" mode dominated the period from antiquity to the fourth century AD, when children's "socially unacceptable" behaviors were perceived as representative of evil and as such had to be controlled or eliminated. Child killing and sexual abuse persisted in various forms well into the nineteenth century, evidenced in such practices in central Europe as sealing infants in the walls of foundations of buildings and bridges to strengthen the structure. Other researchers warned against generalizing such dehumanizing practices towards children to all nations and cultures of that time. Thus, French (1995) differentiated views of parent-child interactions in ancient Egypt, Mesopotamia, and Greece. She identified the outlook of adult societies as the major factor in parent-child relational practices. Attitudes towards children varied among societies and were not always reflective of maltreatment. Particularly, in the Greek civilization, which is often referenced as the beginning of the modern Western history, there was a very clear understanding that parenting and childrearing were crucial ingredients in creating and maintaining an ideal political society. Greeks observed and conceptualized their knowledge about stages of child development and children's needs, including attaching special importance to infancy. In her historical analysis, French

described Plato's argument in these terms: "through its perceptions of pleasure and pain that an infant first begins to gain a conception of good and evil, of right and wrong" (p.274). This view seems to resonate with some major modern theories of interactions between a child in the earliest stages of development and the world as it is represented by the child's caregiver.

From the fourth to the thirteenth century, according to deMause (1976), parents began to accept that children had souls and it was no longer appropriate to kill them. This period was widely known as the Middle Ages, when Christianity flourished (Black, 1990). Considering their children as possessing evil tendencies from birth, parents regularly abandoned their offspring by selling them into slavery, sending them to a wet nurse, the monastery or convent, passing them to foster families, to the homes of nobles as servants or apprentices or simply by creating extreme emotional distance from them at home. Although explanations for such practices ranged from open devaluation of the child to concealing it under noble causes of better health and education, the amount of early contact between parent and child was minimal.

### **"Enlightening" in the Parent-Child Understanding**

The next three centuries brought improvement to acceptance of parent-child interactions, including increased physical contact and more responsibility a parent was willing to take on for the child. However, as deMause (1976) described, children were still perceived as "containers of dangerous projections" and were often beaten, restrained and controlled through early extreme swaddling and enemas. It was at that time, when the English philosopher, John Locke proposed the idea of "tabula rasa" or the fact that

children were not innately bad, but open to experience from the outside world (Locke, 2003).

The eighteenth's century brought the emergence of empathic reactions to children as beings, reducing cases of physical abuse. Hypothesizing about the interactions between parents and children, deMause (1976) argued that internal states of the infant were recognized and attempted to be controlled mentally and psychologically, often by intrusive parenting which emphasized obedience based on threats, guilt, and other punishment. At that time, the field of pediatrics was born and child rearing manuals became increasingly common. The general trend was towards improved child care and reduced infant mortality. The attitude of the need for control of the child was substituted by motivation to guide the child into the optimal direction of development by providing external support, thus considering the child as a passive recipient of teachings and environmental influences. Since the mid-twentieth century a new view began to emerge, in which it was recognized that the child knew better than the parent what his/her needs were at each stage of his or her development (deMause, 1976). The emphasis since has been on empathizing between the parent and the child and their working together to fulfill the child's needs. Relating to the child in this way was described as requiring an enormous amount of time, energy, and patience from the parent and leading to raising a gentle, sincere, independent child with a strong will and little fear of authority.

### **The Parent-Child Research "Boom"**

Although interest in child development and its contributions to adult growth existed since the emergence of a greater realization of the importance of childhood period, more advanced research of factors influencing child development began in the

early nineteenth century with the emergence of two major theories: behaviorism, which viewed socialization of children as the process of learning with the earliest teachers being the parents, and psychoanalysis, which emerged from the attempts to analyze children in the years following World War I (Maccoby, 1992; Scharfman, 1989). The interactions between parent and child from the behaviorist perspective were mechanistic transmissions of culture and knowledge to the child that could be easily unlearned as they were naturally learned by the child. Value was neither given to individual contributions of the participants nor to the meaning of the interaction processes itself. Psychoanalytic theory (see e.g., Freud, 1930), on the other hand, emphasized the importance of the relationship that developed between the child and his or her caregiver, particularly the mother. Both theories initiated an active period of research that continued and expanded into 1940's, 1950's, and 1960's. Maccoby (1992) observed that the most important development of this period was the effort to reconcile the behaviorist and psychoanalytic approaches. In fact, she suggested that there was a common effort to derive hypotheses from psychoanalytic theory and to reformulate them into testable propositions stated in behavior-theory terms.

The hallmark of this new movement was the project on child rearing and its effects undertaken by Sears and Whiting at the Yale Institute of Human Development (Sears, Whiting, Nowlis, & Sears, 1953). The researchers conducted a series of studies that looked at a number of predictive constructs, such as biological needs, reinforcement and punishment, and such outcome variables as aggression, seeking of parental nurturance or dependency, sex typing and manifestations of fixations at one of the early psychosexual stages that were delineated in psychoanalytical theory. The studies dealt

primarily with children below age of five. The results of the project yielded minimum connections between reported parenting practices and the children's personality characteristics as defined by the authors. The major contribution was the first formal book on child-rearing practices as seen from the perspective of mothers (Sears et al., 1953).

Elements of the two major theories of the time continued to be researched in the later years; however several profound changes were made in the study of parental attitudes and parents' relationships with their children. With the cognitive revolution of 1950s – 1960s, many different theories began to develop independently of one another, being largely domain specific and not always compatible. Developmental psycholinguistics was one of the first models that proposed that the parents were not the only holders of the power in the interaction process. Chomsky (1959) proposed and researched the idea that the language as the primary socialization tool emerged in the first years of life and had little to do with the mechanistic reinforcement from parents. He postulated that everyone was born with an innate language acquisition device and that children did much of the work of language acquisition themselves. Children were being recognized as active agents in their learning and communicating with the world not only in language, but also in the earliest modes of relating with other people.

Bowlby (1969) drew on ethology in his development of attachment theory, which emphasized an evolutionary meaning of human development. Particularly, he suggested that parent and infant were in a state of prepared readiness to develop reciprocal behaviors because human children have the longest dependency period before they become independent and self-sufficient adults. As Bowlby (1982) explained in his

historical sketch on “Attachment and Loss,” his theory was developed as a variant of object relations theory and proposed the concept of a behavioral system, in which attachment behavior was defined as “any form of behavior that results in a person attaining or maintaining proximity to some other clearly identified individual who is conceived as better able to cope with the world” (p.668). He postulated that such a system served the function of obtaining homeostasis in which the limits were maintained by behavioral instead of physiological means. Bowlby, in part, contrasted his theory to what he defined as “models of object dependency”, e.g. on the source of food as discussed in Klein’s works (Klein, 1932) or on the source of “sex fantasies satisfaction” as being the focus in Freud’s theory (Freud, 1925; 1930).

Ainsworth (1968) elaborated on the quality of caregiver-child relationship, specifically maternal behavior on the normal course of development of the youngster. She developed the Strange Situation experimental situation in which the attachment of the child to his or her mother was evaluated using observation of how the child reacted to the mother after a short separation. Even though not explicitly articulated at that time, the researchers were looking at the child’s ability to self-regulate and take regulative cues from the mother (Ainsworth, Blehar, Waters & Wall, 1978; Vaughn & Waters, 1990). It was assumed that the child was exhibiting the behavior that was representative of the general mother-child interactive pattern. Through experimental and quasi-experimental methods these researchers concluded that dependency did not necessarily carry negative connotation in the psychology of child development, but was more reflective of the evolutionary adaptive attachment that a child establishes with his/her mother. The degree and functionality of this attachment was thought of being dependent on maternal

responsiveness to the child's needs with the understanding that her support would reinforce the nurturance and development of the child, but would need to be dropped out if the child to become able to function independently (Bowlby, 1969; Ainsworth, 1969). Ainsworth (1969) identified secure and insecure types of attachment based on the quality of interaction and relatedness between the mother and child. According to this theory, maternal responsiveness served as predictable positive or negative reinforcement for the child's behaviors and expressions of needs and wishes. This view did not focus as much on the child's role in the interaction, but the mother's level of sensitivity to her child's needs. Other theorists argued that attachment relationship itself was the necessary mediator of the child's ability to develop functional skills. Parental responsiveness was not seen as reinforcing condition but as nurturing environment necessary for the child to reach his/her potential (Sroufe & Waters, 1977).

In the 1960's, not directly related to developmental literature, but relevant to how the parent and the child saw and learned each other's actions and motivations, a social learning theory was proposed by Albert Bandura (1965). He postulated that children learned the consequences of their behavior not only from acting the process out, but also through vicarious learning, i.e. by observing others behaving in a certain way and being reinforced for their behavior. In this view, adults still played the main role in teaching children appropriate interactions and were responsible for the socialization outcomes. Bandura used the term 'imitation' which later was replaced by 'modeling'. In the recent decades, this notion was expanded and took on a slightly different psychological meaning in the parent-child research. Particularly, it added to the idea of the child being an active participant in interaction, capable of imitating or attuning as a part of his/her relationship

with a caregiver. Belsky acknowledged the primary importance of personal psychological resources of the parent in his early works (Belsky, 1984), went on to extensively research the notion of child's temperament, i.e. individual characteristics of the child that directly and indirectly influenced his or her ability to respond to the mother's mode of parenting and responsiveness to the needs of her child (Belsky, 1999).

### **“Modern History” of Research on Parent-Child Interaction**

Many theories were developed through integration of research on attachment, on the responsiveness of the caregiver to the child, and on the innate child's characteristics and capabilities of relatedness. Because of the complexity of the topic, most of them focused on specific areas or methods of relating. With advances in neuroscience, theoretical frameworks have been more open to integrate findings from other disciplines and theories. Major modern theories of mother-child interactions recognize the complexity of child role, mother role and their interactive coordination as a part of the process.

Imitation became one of the key elements gathering research attention pertaining to matching or attunement between the mother's and the child's overt behavior. For example, Meltzoff's theory has proposed that infants identify with people by engaging in imitative interactions with them. It emphasizes structural similarities between actions of self and others (Meltzoff & Brooks, 2007). However, follow-up research has showed mixed results. For example, in one such study mothers signaled shared feeling-states in different manners at different ages of their child, predominantly imitating during the first 3 months and showing more affect attunement after that (Jonsson, Clinton, & Fahrman, 2001). At the same time, the concept of cerebral representation of self and other as a