

Sequential Shape Flow Facial Patterns
Among 12-Month-Olds Correspondent to Maternal Dependency and Self-Criticism:
A Microanalytic Application of the Kestenberg Movement Profile
By
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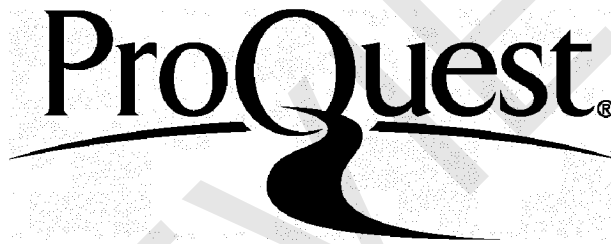
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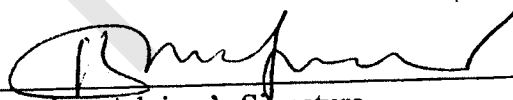
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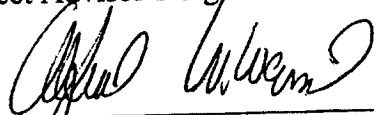
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PREVIEW

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PREVIEW

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ABSTRACT

The study of infant self-regulation through the microanalytic lens of *self-contingency*, or the predictability of a person's behavior over time, during mother-infant interaction, has yielded important findings regarding the effects of maternal depression (Beebe et al., 2007, 2008; Beebe, Lachmann, Jaffe, et al., 2012; Reale, 2011). Elements of a systematic nonverbal assessment tool derived from movement language – the Kestenberg Movement Profile (KMP; Kestenberg, 1975) – were employed to expand upon these findings. Specifically, the shape flow facial patterns of 71 infants, during face-to-face interaction with their mothers when they were 12-months of age, were coded frame-by-frame. Frequency analyses identified trends between specific types of infant facial movements and maternal depressive vulnerability, as assessed by the Depressive Experiences Questionnaire (DEQ; Blatt, D'Afflitti, & Quinlan, 1976), while lag sequential analyses, using the Yule's Q, identified relationships between infant self-contingency across sequences of facial movement and maternal DEQ scores. The findings support dyadic and dynamic systems models, underscore the significance of sequence in movement, and illustrate the sensitivity and versatility of the KMP for future research.

CHAPTER I

INTRODUCTION

Prior to recent times, a prevalent perception of the infant was that of a “passive and helpless creature whose activity was essentially random” and whose behavior “depended on external stimulation” (Vasta, Miller, & Ellis, 2004, p. 138). Consequently, much of the earlier research pertaining to infant growth and development focused on the mother’s contribution (see Orlansky, 1949, for a sample review). Major theorists, regardless of their conceptual orientation, praised the attentive and adaptive “good-enough mother” (Winnicott, 1953). They did so for valid reasons. As Spitz concluded from his pioneering research, “the central psychosocial factor in the infant’s life is its emotional interchange with its mother” (1949, p. 153). Maternal involvement, mirroring, and responsiveness are among the many variables implicated in later outcomes of infants (e.g., Beckwith & Cohen, 1989; Bell & Ainsworth, 1972; Bigelow & Walden, 2009; Bornstein & Tamis-LeMonda, 1997; Crockenberg, 1983; Crockenberg & Smith, 2002; Goldberg, Lojkasek, Gartner, & Corter, 1989; Landry, Smith, Miller-Loncar, & Swank, 1998; Landry, Smith, Swank, Assel, & Vellet, 2001; Legerstee & Varghese, 2001; Spencer & Meadow-Orlans, 1996).

While, to date, there is still no denying the importance of maternal care, what has changed over the years is the perception of the infant and the infant’s role (see Lewis, 1967). Such a shift coincided with discoveries of the infant’s earliest capabilities. Neonates, previously believed to be “blank slates,” were found to be competent,

organized, and social (Meltzoff, 1985; Nugent, 2013). Not only could they see, hear, touch, smell, and taste, but they could also use their senses to orient to their surroundings, synthesize perceptual information, discriminate between faces, respond differentially to positive and negative stimuli, adapt to circumstances, and more (e.g., Brazelton, Scholl, & Robey, 1966; Campbell, 1968; Fantz, 1961, 1963; Field, 1985; Hershenov, 1967; Steinschneider, Lipton, & Richmond, 1966; Wertheimer, 1961).

In 1951, Sears was one of the first to highlight the idea that infants exert an influence on their mothers. Arguing for the possibilities of “mutual interference,” he described how, in a dyad, the behavior and expectancies of one person are essential to fulfilling the goals of the other (p. 480). Later, Gewirtz (1969) argued for a careful and detailed, process-oriented examination of the interaction, and Bell (1968) maintained that the one-way model is too limited. Reviewing the literature of the time, including that which pertained to the differential treatment of siblings by parents, Bell stated that “the effect of children on parents can no longer be dismissed as only a logical but implausible alternative explanation of a correlation” (1968, p. 81).

Accordingly, methodologies have evolved alongside models of mutual influence and regulation (e.g., Beebe & Lachmann, 1988; Cappella, 1981; Stern, 1974; Tronick, 2007), and even alongside what are known as “transactional models of development” that build on the centrality of reciprocity (Sameroff, 1975; Wilmot, 1975; for a review, see Sameroff & Mackenzie, 2003). Whereas, previously, researchers predominantly attempted to evaluate the effects of maternal characteristics on infants through assessment and self-report measures (what is known as the “macro” approach), currently they also conduct in-depth analyses of mother-infant interaction, with an emphasis on the

sequential patterns involved (what is known as the “micro” approach; e.g., see Mesman, 2010). Affect, gaze, spatial orientation, touch, and vocalizations are all among the many facets studied. Based on the results, the interaction is what is now considered to be at the forefront of infants’ cognitive, emotional, and social development. Its quality bears on findings in attachment (Beebe et al., 2010; Beebe, Lachmann, Markese, et al., 2012), intellectual competence (Beckwith & Cohen, 1989; Coates & Lewis, 1984; Olson, Bates, & Bayles, 1984), perceptions of competence (Beckwith & Cohen, 1989), problem solving abilities (Lewis, 1989), behavioral and physiological characteristics (Costa & Figueiredo, 2012), and language use and skill (Beckwith & Cohen, 1989; Wallace, Roberts, & Lodder, 1998).

A major influence of the quality of the mother and infant interaction is on the infant’s ability to self-regulate. Specifically, infants appear to further develop regulatory capacities from interactions with their caregivers¹ (Calkins, Smith, Gill, & Johnson, 1998; Carleton & Padolsky, 2012; Gillespie & Seibel, 2006; Kopp, 1982; Shonkoff & Phillips, 2000). Their self-regulation is thought to be dependent on mutual regulation (Beebe & Lachmann, 1994; Fogel, 1992a; Sander, Julia, Stechler, & Burns, 1972). Regulatory capacities are important for study in that they are implicated in individuals’ abilities to be successful personally, academically, professionally, and socially throughout the life span (e.g., Carlo, Wolff, & Beal, 2012; Feldman, 2009; Lundqvist-Persson, 2001).

Indeed, when they are first born, infants cannot care for themselves. They have some innate regulatory capacities in the form of rhythmic tension and body contour changes, evident, for instance, across reflexes, sucking behaviors when hungry, and

¹ “Further” is used in this statement so as not to undermine the infant’s inherent capabilities.

crying, but, primarily, they rely on others for comfort, food, warmth, and pain relief. Gradually, with increasing age, biological and neurological maturity, and exposure to set routines and communications, children acquire the ability to manage for themselves what others have done for them; there is a shift from greater external to greater internal self-regulation over the course of the first few years (Kopp, 1982). Such a shift is theorized regardless of the perspective taken to account for its development. As Bronson (2000) summarizes, self-regulation develops as children gain ego strength from successful coping (psychoanalytic perspective); as they learn through reward and punishment (behavioral perspective); as they observe and evaluate behavior (social learning perspective); and as they organize information by making use of environmental feedback (information processing perspective). Processes such as imitation (Meltzoff, 2013) and kinesthetic identification (Kestenberg, 1985a) are also hypothesized to contribute to the development of self-regulation; the infants' mothers are often the infants' primary models. During this complex process, every moment thus appears to have significance.

To study infant self-regulation within moment-to-moment occurrences, researchers have increasingly turned to microanalytic methods (e.g., Beebe et al., 2010, 2012; Reale, 2011). Such methods – second-by-second, frame-by-frame analyses of videotaped mother-infant interactions – are critical in identifying the subtleties and intuitive processes contributing to harmonies and disturbances among dyads that might otherwise be overlooked by macroanalytic methods (e.g., Beebe, 2006, 2014; Beebe, Knoblauch, Rustin, & Sorter, 2003; Beebe & Steele, 2013; Koulomzin et al., 2002). Yet, they are also critical in the advancement of effective intervention (Beebe, 2003, 2010; Cohen & Beebe, 2002; The Boston Change Process Study Group [CPSG], 2002).

Parallels have been drawn between mother-infant interaction and adult face-to-face communication, further elucidating processes specifically involved in adult treatment as well (Beebe, 2014; Beebe & Lachmann, 2014; Lachmann, 2001).

One microanalytic conceptualization of self-regulation bears upon the predictability of a person's behavior over time, or *self-contingency*, in the presence of a particular partner (Beebe, Lachmann, Jaffe et al., 2012). As noted:

Self-contingency...generates expectancies of the degree to which one can anticipate the rhythm of one's own behavior: how predictable, how stable, how variable one's behaviors are, from moment to moment. It spans the range from midrange degree of predictability, to overly stabilized, tending toward steady state, to insufficiently predictable or labile, tending toward loss of predictability. The process of self-contingency is so basic that it is rarely noticed, like breathing. It accrues to one's experience of temporal coherence over time. (Beebe, 2014, p. 18)

Defined in this manner, self-contingency appears to be at the core of internal, everyday experience. For infants in particular, it plays a role in the development of a sense of self (Rochat, 2001).

The importance of self-contingency has been especially underscored in the research of Beebe and colleagues (e.g., 2007, 2008), while the predominant focus of other parent-infant dyadic research is typically social interactive contingency. *Interactive contingency* has been defined as the "adjustments of one individual's behavior that are correlated with the partner's prior behavior" (Beebe et al., 2010, p. 9). Such an interactive approach gleans valuable information about the dyadic process between the members, but

simultaneously misses valuable information about the internal processes within the individuals while in interaction with one another. For instance, the differentiation of the degree of infant self-contingency (and also maternal self-contingency) across various modalities has been implicated in findings regarding maternal depressive vulnerability and symptoms (Beebe et al., 2007, 2008; Beebe, Lachmann, Jaffe, et al., 2012), maternal anxiety (Beebe et al., 2011), and future attachment status (Beebe et al., 2010; Beebe, Lachmann, Markese, et al., 2012; Jaffe, Beebe, Feldstein, Crown, & Jasnow, 2001). A derived finding underscores the linking of midrange contingencies with optimal development, as contingencies that are either too high or too low can compromise developmental progress. A midrange degree of self-contingency is thus theorized to be ideal (Beebe et al., 2007, 2008). Future studies may test this finding for additionally delineated behaviors, and for distinct contexts and activities.

Given that much of the communication with infants is non-verbal, studying infant self-contingency warrants an analysis of movement qualities. As Sullivan and Lewis (2003) summarize, facial expressions and other nonverbal cues signal information about the infant's arousal level, the infant's positive or negative responses to stimulation, the infant's motivational state, and, even the neurological and cognitive status. Exclusive reliance on the verbal may thus fail to fully capture the interactive mentalizing processes involved (Shai & Belsky, 2011). The body is, after all, a container and conveyer of emotion; body movement and emotion are undeniably linked (Fuchs & Koch, 2014; Sheets-Johnstone, 1999).

Theoretically, from such a perspective, any expression or movement, regardless of its content, is meaningful and telling. Beebe and colleagues (2007, 2008), for instance,

obtained their findings from studies of head orientation and touching behaviors, among other actions. Because there are countless possibilities, however, uncovering which patterns are the most meaningful for study, and which manners of classifying these patterns are the most predicatively robust, is a worthwhile endeavor.

In the current study, the utility of a systematic coding system – the Kestenberg Movement Profile (KMP; Kestenberg, 1975; Kestenberg & Sossin, 1979) – is explored. Of the many ways available to code nonverbal behavior, the KMP offers the means to catalogue infant movement through a specific lens suitable for identifying self-regulatory states and processes. The specific purpose of the study is to determine the relationship, if any, between maternal depressive vulnerability and the infant's movement repertoire, especially in movement domains posited to be meaningful reflections of affectively-infused relational patterns (Sossin, 2002). It is also to uncover movement sequences that are particularly robust in predicting maternal state of mind (Sossin & Birklein, 2006), to investigate whether there is an optimal level of self-contingency to be achieved (e.g., a midrange; Beebe et al., 2007, 2010), and to obtain additional information bearing on normative, reliability, and validity data when using the KMP for 12-month-olds. The KMP, though employed for many years to assess development, coping skills, and psychological imbalances, will, from the perspectives of theory, clinical applications, and future research, benefit from stronger and clearer empirical anchors.

CHAPTER II

LITERATURE REVIEW

The idea of self-regulation is an old one. As a concept, it appeared in the psychological literature in the work of James in 1890, as Fox and Riconscente (2008) point out, and as an acknowledged term at least as early as 1906 (see “Restoration of function”). Back then, it was used primarily to refer to one’s ability to exert rational, voluntary control over an action or actions, and was presented/studied in terms of its role in effective personality functioning and change in psychotherapy (e.g., see Bergin, 1969; Collier, 1957; Lazarus, 1975; Thorne, 1946). Since the latter half of the 20th century, however, self-regulation has become regarded as a more complex process – likely on account of its inclusion in Piaget’s theory of cognitive development (1964), Vygotsky’s and Luria’s cultural-historical theories (Luria, 1971; Vygotsky, 1934/1962), and Bandura’s theory of social learning (Bandura, 1971). With its scope expanded, its modern reference is to the adaptive maintenance of the behavioral, physiological, and psychological activities that allow living organisms to function effectively. These activities include the preservation of normal body temperature, the management of autonomic arousal, the conformation to day-night rhythms, and the conversion of food into energy, along with the varying capacities to pay attention, utilize executive skills, manage emotions, express feelings, modulate the intensity, frequency, and duration of actions, and control impulses (Bornstein & Suess, 2000; Bronson, 2000; Kopp, 1982; Porges, 1996; Shonkoff & Phillips, 2000).

Although influenced by nature and nurture alike, self-regulation is believed to have its roots in early childhood development and social interaction, particularly between a mother and infant (Calkins, Smith, Gill, & Johnson, 1998; Field, 1994; Gillespie & Seibel, 2006; Kopp, 1982; Shonkoff & Phillips, 2000). Maternal autonomy support, emotional availability, mind-mindedness, parenting style, and sensitivity regarding infants less than 15 months old are just some of the characteristics that have been found in longitudinal studies to predict self-regulation at a later age (Bernier, Carlson, & Whipple, 2010; Keller et al., 2004; Spangler, Schieche, Ilg, Maier, & Ackermann, 1994; Volling, McElwain, Notaro, & Herrera, 2002). Understanding the process therefore requires an understanding of the mother-and-infant interaction, and the ways in which the dyad functions together.

Accordingly, this chapter will provide a brief overview of what is currently known about mother-and-infant interaction. Theoretical frameworks for dyadic models will be presented and discussed, along with the mechanisms for affect and state transmission. In the process, areas of problematic functioning will also be considered, particularly within the context of maternal depression. Finally, prior methods for analyzing and assessing the interactions will be reviewed, so as to set the stage for the new development of studying infant self-regulation at the frame-by-frame level using the Kestenberg Movement Profile (KMP).

While, theoretically, many activities and capacities could be explored within the conceptual frame of self-regulation, in this study, as in the studies of Beebe and colleagues, self-regulation refers only to “the stability of one’s own rhythms of behaving” (Beebe et al., 2012, p. 387). Specifically, for the purpose of analysis, it is narrowly