

Parent-Infant Holding Patterns and Their Impact on Infant Perceptual and Interactional Experience

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Full Text: Headnote ABSTRACT: The significance of parent-infant holding for infant development is emphasized from a psychobiological point of view as an essential ingredient of bonding. The theoretical perspective of direct perception in a perceiver-environment ecosystem (Gibson) is discussed together with current findings in infant research, as they may apply to explain how differential parent-infant holding patterns influence the infant's perception of his environment. Impacts of holding patterns on parent-infant-interaction are also mentioned. General qualities of facilitating holding patterns are elaborated. Based on a review of the literature and on our own observations from videotapes some tendencies in paternal and maternal holding characteristics are mentioned. Implications and suggestions for further research is discussed. In this paper we will categorize and discuss some of the qualities of holding that may facilitate infant development-motorically, interpersonally and perceptually. Furthermore we will examine how differential paternal and maternal holding patterns may affect the infant's experience. Perhaps our current considerations will serve as a theoretical platform for further research on the influences of parent-infant holding. Too little is known and documented pertaining the direct impact of qualitatively different holding patterns upon infant motor development, infant perception and parent-infant interaction. Although the fact, but not the style or degree of holding is ubiquitous to human infant care, it has been the object of surprisingly little direct study. Ethological Views From a biological perspective, the human infant is predisposed to be held and carried by his caretaker, rather than to be raised in a protected nest (Hassenstein, 1987). Some phylogenetically rooted behavior patterns are likely to induce the mother's holding of her baby. Certain reflex patterns, including the infant's rhythmic searching movements for the nipple (Prechtl &Schleidt, 1950; Eibl-Eibesfeldt, 1975), the soon to follow spatially oriented head movement of rooting, the grasping reflex and the tonic neck reflex (Kestenberg &Buelte, 1977a), predispose the infant to certain patterns of being held, and of holding, that are accomodated in different qualitative patterns of holding in particular mother-infant dyads. From the famous studies of Harry Harlow (e.g. Harlow &Zimmerman, 1959), we learned how integral the experience of holding a soft representation of the caregiver-in her absence-was to the rhesus monkey. However, the inadequacy of the process when not held and supported in return by a real other, as well as the repercussions of additional social deprivations also became quite salient. Anthropological Views There are considerable differences across human cultures, historical periods and individuals in terms of both quantitative and qualitative aspects of parent-infant holding. As Western cultures moved toward the reliance upon cradles and carriages, mothers in many other cultures, such as the Japanese, were carrying their babies on their backs in carriers (Hass, 1970). In their observations of Balinese infants, Mead and Macgregor (1951) noted "low tonal organization" and "flexibility" in the infants of Bali as compared to American infants. They attributed these and other consequential differences in motor patterns largely to the manner in which adults were holding infants in their culture. By means of sling or arm, the Balinese mother and infant were observed to be factually close but without active supporting and holding on by either one. "Peripheral responsiveness predominates over grasping behavior" in this relationship, and Mead and Macgregor hypothesized a cyclic, mutually reinforcing pattern in the mother-infant dyad along with a lack of cooperative activity and a yielding, acquiescent manner. In the last two decades carrying infants has apparently become more popular in Western societies than it used to be, as measured by the common use of "snugglies" and other carrying devices that have been designed to provide as much parent-infant contact as possible. However, the development of the infant's capacity of self-soothing and of creating a transitional object (Winnicott, 1971), which can be seen as

cultural phenomenon with biological roots, preresquires a balance between the infant being with the caretaker and being by his or her own, such as when the baby is lying in the crib and playing. Psychodynamic Views on Holding From a clinical perspective there has been an appreciation of parent-infant holding. Physical proximity is essential for the infant's attachment to his or her caretaker (Bowlby, 1969). Based on attachment concepts, holding therapy has recently been developed and applied as a treatment method for clients with severe emotional disorders (Welch, 1988; Laibow, 1988). Inspired by clinical material from adult psychoanalyses Winnicott (1965) conceptualized the holding environment as the good enough childcare setting that has to be provided to facilitate the child's growth from birth on. Winnicott understood physical holding as the mother's primary mode of demonstrating her love for the infant. He wrote: "There are those [mothers] who can hold an infant and those who cannot; the latter quickly produce in the infant a sense of insecurity, and distressed crying." (1960, p. 49) Clearly, Winnicott appreciated the complexity and significance of the holding process; in fact he termed it the "richest type of experience" (1988, p. 119), especially wherein the baby gains confidence and can be supported in states of regression to "unintegration." In this vein Winnicott also understood the impact of the mother's anxiety, which is so readily transmitted to the infant in the holding situation, in effect prohibiting the infant's attainment of relaxation. Furthermore, Winnicott elaborated on the infant's basic fears, i.e. the fear of infinite falling, of collapsing and of falling apart (Winnicott, 1965)-fears that call for holding and support. The "held infant" who is theoretically intrinsic to these clinical concepts of attachment and object-relationships, or, in other words, who conceptually anchors therapeutic work with older children and adults, is what Stern (1985) called the clinical infant, i.e. the infant reconstructed from adult clinical material. On the other hand there is the observed infant (Stern, 1985), the target in experimental and observational infant research. In these research settings the infant is usually not held by a caretaker. Therefore we know little about the direct impact of holding on infant motor development, infant perception and parent-infant-interaction. Some studies showed that newborn infants, who were held in an upright position at the caretaker's shoulder, showed significantly more visual alerting than sitting in an infant seat, held horizontally, or lying in a crib (Korner &Thoman, 1970; Korner &Grobstein, 1973; Frederickson &Brown, 1975). In a longitudinal case study Nguyen-Clausen (1984) examined the impact of parental holding on an infant's gross-motor development in the first year of life and reported considerable effects. In an observational case study Kestenberg and Buelte (1977) reported a unilateral delay in the gross motor development of an infant, who dragged one leg when she started crawling. They ascribed this delay to a one-sided maternal holding failure they had observed during the first half year, in which the mother had always been clutching the same leg of the baby against her trunk, thus immobilizing it. Kestenberg's Movement Perspective of Holding Observing infants and mothers¹ with a clinical eye, based on studies of bodily movement (Kestenberg, Marcus, Robbins, Berlowe &Buelte, 1975; Kestenberg &Sossin, 1979), Kestenberg and her co-workers elaborated on the mutual holding of parent and infant. They observed that during holding the infant's body alternately grows towards and shrinks from the caretaker's one. Mutual adjustment in these rhythms of shape-flow has been elaborated as the sensorimotor base of the development of mutual trust (Kestenberg and Buelte, 1977; Kestenberg, 1984). Linking her observations with treatment issues in adult therapy, as well as with clinical experiences in preventive parent education, Kestenberg, in the first place, created a conceptual synthesis of the "clinical" and the "observed" infant in the domain of holding (Kestenberg &Buelte, 1977b; Kestenberg, 1989). Based on these movement studies we may be able to operationalize the abstract concept of the holding environment in terms of observable movement patterns, which are used by parents when they match the child's needs for support in a literal as well as in a wider sense of holding. These patterns have been described elsewhere (Kestenberg et al., 1975; Kestenberg &Buelte, 1983) as being phase-specific rather than general. In the first year of life, before the infant starts to locomote, physical holding with full weight support is dominant. In Kestenberg's understanding holding and support are carefully distinguished, the former describing a spatial alignment or relatedness, the latter referring to active counteracting of weight. Referring to both the parent-child and the psychotherapeutic relationship she wrote:

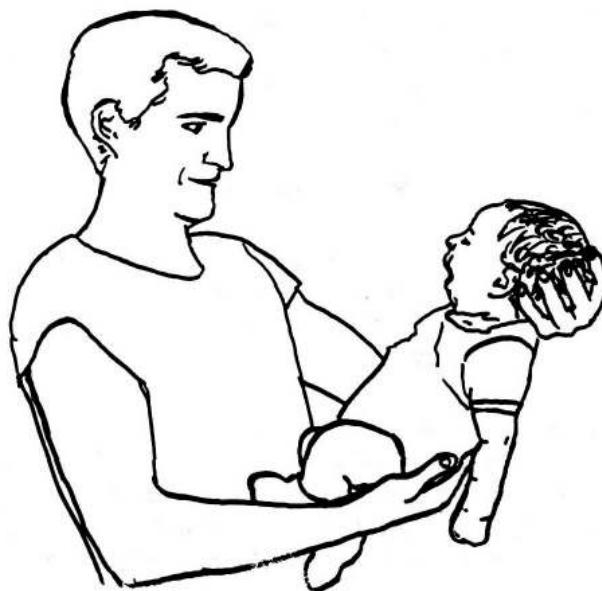
"One can support without holding and hold without support." (1989). After the first year of life, for instance, excessive physical holding may restrict a child's explorative competence. In an observational study with 15-month old toddlers Belsky (1980) found a negative correlation between the frequency of maternal holding and the children's concentration span during play. Theoretical notes on infant perception According to the ecological perspective of perception percepts are produced in a perceiver-environment system, in which the perceiver does not passively receive sensory information that he or she has to process cognitively in order to make sense out of it, but rather obtains it actively and directly (Gibson, 1979; Michaels & Carello, 1981). In this view of direct perception meaningful information about the environment is perceived in terms of motor actions that may be applied to or are "permitted" by objects, spaces or events. In Gibson's (1979) words we perceive affordances. For example, we may not directly perceive a cup or a chair, but something to drink from or something to sit or stand on. Direct perceptions are "written" in the language of motor actions and are therefore a function of motility and exploration. Paul Schilder (1935) anticipated these findings when he wrote, "Perceptions are only formed on the basis of motility and its impulses (p. 15)." From this theoretical point of view we conceptually understand the result of the following study on the relation between locomotion and fear reactions in infants (Berthenthal and Campos, 1986). In a series of experiments with a visual cliff the authors tested the fear reactions of (a) prelocomotor infants, (b) prelocomotor infants who had had artificial locomotor experience in a walker, (c) infants who had started crawling (locomotor infants), (d) a nine-month old infant who had always been immobilized by a full-body cast, and (e) the same child after the cast had been removed and he had a two-week crawling experience. Irrespective of the various maturational ages, only those infants who had locomotor experience (b, c and e) showed fear reactions when they were put on the deep side of the visual cliff. The authors concluded that there is a causal relation between locomotor experience and the fear of heights. Conceptually we may say, that the depth is not directly perceived as a certain depth, but as a "space to fall down," however, only by those who have a concept of falling based on active locomotor learning. The infant's subjective experience during holding In normal motor development an infant sits without support at about 6 months, pulls himself to standing at about 8, and stand alone at about 11 months (Bayley, 1969). During the time before, however, "many of the earliest activities of infants are concerned with achieving and holding stable postures against the influence of gravity." (Holt, 1975, p. 2). We may therefore assume that in the first few months of life a supported and stabilized upright posture during parent-infant holding provides a range of motility-based perception, which the infant by himself only achieves considerably later. If the infant, for instance, tenses his back and pelvic muscles with high intensity and is then picked up by his caretaker and stabilized in an upright position, his vestibular and proprioceptive sensations as well as his visual perceptions will go far beyond what his own motor skills would permit. This may be the motor-perceptual base of the abstract notion of infantile omnipotence (Winnicott, 1965). As shown in this example, however, it is not the holding or the physical contact itself that make the infant's omnipotent experience; rather it is the parent's responsiveness to the infant's cue as well as the stabilizing and supporting quality of the holding pattern. Observers of mother-infant interaction have documented the remarkable manner in which this special dyad becomes a mutually regulated system achieving, to a certain degree, a type of harmony variously termed "affective synchrony," (Brazelton, Tronick, Adamson, Als & Wise, 1975) "affective resonance," (Stern, Barnett & Spieker, 1983; Stern, 1985) or "attunement" (Kestenberg, 1975, 1985). These constructs become fundamental components in relation to the higher-order constructs of attachment and bonding. Through the reciprocity and mutuality of the holding experience, a significant facet of the infant's self organization evolves. General qualities of facilitating holding patterns What are the aspects of holding patterns that facilitate motor development and enhance mutually enjoyable parent-infant interaction? Which holding patterns match these criteria, which do not? We may describe as general qualities: 1. Sufficient stabilization and support of the trunk, which is achieved by (a) having the infant sit on the forearm (figure 1) or by (b) supporting the spine at the sacrum (figure 2). Proper support helps the infant to learn how to coordinate proprioceptive and efferent messages in the service of stabilizing

himself and connecting different body parts, one supporting another. A stabilized trunk is the base for reaching-out movements, with which the infant makes contact to outer objects (von Hofsten & Lindhagen, 1979). Furthermore the infant's tactile and proprioceptive sensations when being supported this way may foster the integration of the pelvic region as the center of self-support into his budding body-image.

FIGURE 1



FIGURE 2



2. Stabilization of the body's head by (a) letting it lean on the parent's shoulder (figure 1), or (b) supporting it at the occiput (figures 2 and 4), which prevents vestibular sensations that may create fear of falling in the infant. Moreover, simultaneous support of sacrum and occiput (sacro-occipital support, figure 2) enhances sensations of being connected, which may prevent or counteract fears of falling apart (Winnicott, 1965). 3. Fostering motility by not restricting peripheral movements of the limbs. As Schilder (1964) wrote, "The child needs security in posture and freedom of action that brings him into relation to the object and the world." (p.

181). Through this freedom of action the infant gets the sense of agency, which according to Stern (1985) is one of the bases of the core self. Considering voluntary motor actions as ego-functions, the holding parent, by stabilizing the infant's body without immobilizing it, becomes the infant's auxiliary ego (Spitz, 1959). In a clutching, immobilizing holding pattern (figure 3) the infant may be more restricted in his motor actions and, as a result, in his perceptual experience than if being left alone. In this case the parental function of the auxiliary ego may be regarded insufficient, at least in the context of holding. Furthermore, immobilizing holding patterns, by creating a false security system (Kestenberg & Buelte, 1977b) may have an impeding effect on the early development of psychic structures in the infant. 4. Fostering mutuality in the flow of interactions. The parent's supporting arm being mobile rather than tightened facilitates his or her adjustment to the infant's rhythm of growing and shrinking, which, as mentioned above, has been elaborated by Kestenberg (1985) as the sensori-motor base for the development of basic trust (Erikson, 1950). When the infant is held sitting on the parent's forearm (figure 1) rather than being pressed against the parent's trunk (figure 3), he can initiate to push himself away, which prepares separation (Kestenberg & Buelte, 1977b), and to come close again according to his emotional needs.

FIGURE 3

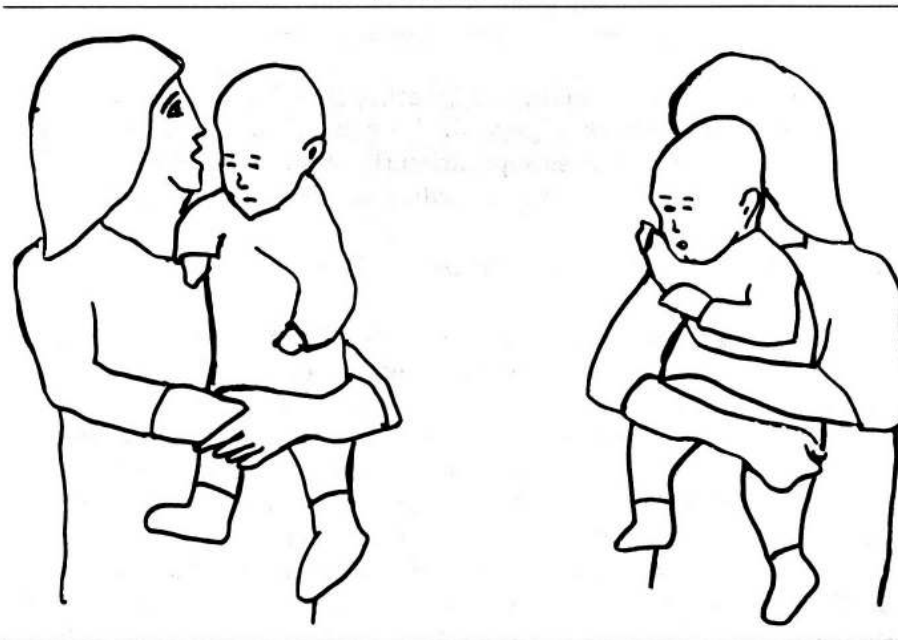


FIGURE 4



What is the most supportive carrying position? As illustrated above, there is a variety of holding patterns in the context of caretaking and play that match these attributes. Carrying the infant is a holding situation in which the same pattern is likely to be maintained for long periods of time. It has been stated elsewhere (Hassenstein, 1987) that the anatomically most suitable position would be carrying the infant by one's side on the hip, with the infant spreading his legs. This pattern is particularly believed to prevent congenital hip luxation (Bueschelberger, 1964). Based on our consideration above (motility of the parental holding arm, support of the infant's spine, support of the infant's head), we come to the conclusion, that the frontholding position with the infant sitting on the caretaker's forearm (figure 1) may be more appropriate.² Before the age of ten weeks infants are not able to hold their heads steady when carried. Being held on the hip the infant's head would frequently fall from one side to the other. In the normative study by Gesell and Thompson (1938) all infants predominantly turned their heads to one side at the age of 4 weeks. It seems that the caregiver's shoulder is anatomically designed to let the carried infant lean his head on it. Furthermore, when the infant is carried on the hip, the rhythmical hip movements of the walking parent may prematurely stimulate the infant's genital zone (Kestenberg, personal communication). Maternal and paternal holding characteristics It is recently that fathers have been recognized as significant attachment figures for infants in the first year of life (Lamb, 1980). Newborn babies bond to their fathers, and bonding to their newborns enhances the self-esteem of fathers (engrossment, Greenberg and Morris, 1974). It appears that most theories of attachment and object-relationships have not caught up with these findings. The authors in most studies on father-infant interaction (for a review see Ricks, 1985) agree that in general there are more similarities than differences between the interactive styles of fathers and mothers; but the few significant differences that have been found led to the conclusion that fathers provide an own and unique source of stimulation for the infant. In general fathers were reported to involve more playful patterns and more links to the outside world when they interacted with their infants than mothers did (Lamb, 1976; Lewis & Weinraub, 1976; Kotelchuck, 1976; Belsky, 1980). What do we know from father-infant research about holding in particular? In a number of studies on both parents' interaction with their newborn babies fathers were more likely to hold their newborn babies and to rock them in their arms than mothers were (Parke, O'Leary & West, 1972; Parke & O'Leary, 1976). Observing 20 infants and their parents at home Lamb (1980) found that fathers

held their infants more often than mothers to play with or to respond to them, whereas mothers held their infants more often than fathers for caretaking and for disciplining purposes. Based on participant observations³ Kestenberg, Marcus, Sossin and Stevenson (1981) stated that fathers more typically than mothers increase the distance to their babies through the way they held them. For example, fathers typically have their newborn babies lie on the folded arms at waist height (figure 5), or more frequently toss them up in the air (figure 6), whereas mothers reportedly prefer a holding pattern with the baby close to their breasts and faces (Kestenberg et al., 1981). We have started to study parent-infant holding in greater detail from videotapes. We are filming parent-infant couples in our Center whenever holding naturally occurs in order to get a wide range of holding situations including those when a parent is holding an infant while focusing his or her attention on something else. Our observations suggest that ventral/ventral body contact is more frequent in maternal than in paternal holding. Furthermore it is more frequently in mother-infant couples that we have seen holding patterns, in which both partners are posturally aligned in the near space of their kinespheres, i.e. in a space of about the width of one's hand around one's body (Laban, 1960). These observations turn out to be consistent with the concepts discussed above and in the near future we hope to get big enough samples to be able to consider all important variables in our studies.

FIGURE 5



FIGURE 6



Implications and suggestions for further research We may hypothesize that differences in maternal and paternal holding patterns account for significantly different environmental stimulation for the infant. Thus the absence of either paternal or maternal holding would result in an early lack of significant experiences. Empirical and clinical research is needed to support the assumption that father-infant holding enhances outgoingness and separation from very early on more than maternal holding does, whereas in the infant's experience maternal holding is more associated with closeness and togetherness. This would imply that infants raised by only one caretaker lack specific complementary experiences that are at the core of a balance between separation and togetherness in the sense of life-long issues. Further research on differential maternal and paternal holding patterns has to consider a number of interdependent variables: a. the infant's sex. There is some evidence that both fathers and mothers tend to hold a baby of the opposite sex more than one of the same sex (Parke & Sawin, 1980). The infant's sex may also determine qualitative differences. b. the infant's age in months. According to the infant's motor development, as well as to the individual developmental line of separation-individuation, parent-infant holding characteristics are likely to change. c. the infant's ordinal position in the family. There is some empirical evidence that during the perinatal period mothers hold firstborn babies closer than later-borns, whereas fathers tend to hold laterborns closer than firstborns (Parke and Sawin, 1980). d. dyadic vs. triadic situation. The absence or presence of the other parent affects both paternal and maternal interactive styles including tactile stimulation. For example, in a study based on home observations fathers handled their infants more vigorously, when the mother was present than in a dyadic situation (Pedersen, Anderson & Cain, 1980). e. the purpose of holding. Patterns differ depending on whether the infant is being held for nursing or feeding, playing, roughhousing, carrying or soothing.

SUMMARY AND CONCLUSION We have discussed the impacts of parent-infant holding on the infant's perceptual and interactional experiences from a theoretical point of view. We described qualities of facilitating holding patterns as well as differences between the holding patterns of fathers and mothers. We claim that the qualities of holding have a significant impact on various aspects of early psychological development. We are still far from fully understanding this area of early infant experience. A lot of more research is needed. However, we may already conclude that in clinical parent-infant programs, parent education and early intervention special attention should be given to facilitating holding patterns. Teaching parents how to hold their babies should be done in a non-verbal approach, focusing on their own kinesthetic experience as well as on the natural and spontaneous flow of interactions, rather than on their intellectual understanding of concepts (Kestenberg & Buelte, 1977).

Footnote 1 At the Center for Parents and Children, sponsored by Child Development Research, Sands Point, NY. 2 This applies only to full-term infants.

Prematurely born infants should initially be carried with their spine flexed, as in the intrauterine position, because premature extension of the trunk may lead to muscle hypotonus. 3 At the Center for Parents and Children, sponsored by Child Development Research, Sands Point, NY. REFERENCES Baley, N. (1969). *The Baley Scales of Infant Development* New York: Psychological Corp. Belsky, J. (1980). A family analysis of parental influence on infant exploratory competence. In F.A. Pederson (ed.), *The Father-Infant Relationship*, New York: Praeger Publishers. Berthenthal, B.I. & Campos, J.J. (1986). An epigenetic perspective on the development of fear. *World Congress of Psychiatry, Vol. 7, Developments in Psychiatry*, 1281-1283. Bowlby, J. (1969). *Attachment and Loss. Vol 1: Attachment* New York: Basic Books. Brazelton, T.B., Tronick, E., Adamson, L., Als, H., & Wise, S., (1975), *Early mother-infant reciprocity, Parent-Infant-Interaction*, CIBA Foundation Symposium, New York: CIBA American, Elsevier. Bueschelberger, H. (1964). *Aetiologie, Prophylaxe und Fruehbehandlung der Luxationshuelte. Beitrage zur Orthopaedie und Traumatologic*, 11, 535-548. Eibl-Eibesfeldt, I., (1975). *Ethology: The Biology of Behavior*, 2nd ed., New York: Holt, Rinehart & Winston. Erikson, E.H. (1950). *Childhood and Society*. New York: Norton. Frederickson, W. & Brown, J. (1975). Posture as determinant of visual behavior in newborns. *Child Development*, 46, 579-582. Gesell, A. & Thompson, H. (1938). *The Psychology of Early Growth*. New York: MacMillan & Co. Gibson, J.J. (1979). *The Ecological Approach to Visual Perception*, Eaglewood, NJ: Prentice Hall, Inc. Greenberg, M. & Morris, N. (1974). Engrossment: The newborn's impact on the father. *American Journal for Orthopsychiatry*, 44, 520-531. Hass, H. (1970). *A Human Animal* New York: Tutnam. Hassenstein, B. (1987). *Verhaltensbiologie des Kindes* (rev. ed.). Muenchen: Piper. Harlow, F.S., & Zimmermann, R.R. (1959). Affectional responses in the infant monkey, *Science*, Vol. 130, p. 421-432. Holt, K. (1975). How and why children move. In K. Holt (ed.), *Clinics in Developmental Medicine*, (No. 55), Philadelphia: Lipicott. Kestenberg, J. S. (1975). *Children and Parents- Psychoanalytic Studies in Development*, New York: Aronson. Kestenberg, J.S. (1985). The flow of empathy and trust in mother and child. In E.J. Anthony and G.H. Pollack (eds.), *Parental Influences in Health and Diseases*, Boston: Little Brown. Kestenberg, J.S. (1989, March). What are the ingredients of bonding, prenatally and postnatally. Paper presented at the International Congress on Pre and Perinatal Psychology and Medicine, Jerusalem. Kestenberg, J.S. & Buelte, A. (1977a&b). Prevention, infant therapy and the treatment of adults: 1. Towards understanding mutuality. 2. Mutual holding and holding oneself up. *Int. Journal of Psychoanalytic Psychotherapy*, 6, 339-396. Kestenberg, J.S. & Buelte, A. (1983). Prevention, infant therapy and the treatment of adults, III: Periods of vulnerability in transitions from stability to mobility and vice versa. In J. Call, El Galenson, R. Tyson (eds.), *Frontiers of Infant Psychiatry*, New York: Basic Books. Kestenberg, J.S. & Sossin, M. (1979). *The Role of Movement Patterns in Development* New York: Dance Notation Bureau. Kestenberg, J.S.; Marcus, H.; Sossin, M.; Stevenson, R. (1981). The development of paternal attitudes. In S. Call, A. Gurwitz, J. Ross (eds.) *Anthology of Fatherhood* New York: Little Brown. Kestenberg, J.S.; Marcus, H.; Robbins, E.; Berlowe, J. & Buelte, A. (1975). Development of the young child as expressed through bodily movement, I. In J.S. Kestenberg, *Children and Parents: Psychoanalytic Studies in Development*, New York: Aronson. Korner, A.E. & Grobstein, R. (1973). Visual alertness as related to soothing in neonates: Implications for maternal stimulation and early deprivation. In L.J. Stone, H.T. Smith, L.B. Murphy (eds.) *The Competent Infant Research and Commentary*. New York: Basic Books. Korner, A.E. & Thoman, E. (1970). Visual alertness in neonates as evoked by maternal care. *Journal of Experimental Child Psychology*, 10, 67-78. Kotelchuck, M. (1976). The infant's relationship to the father: Experimental evidence. In M.E. Lamb (ed.), *The Role of the Father in Child Development*, New York: Wiley. Laban, R. (1960). *The Mastery of Movement* London: MacDonald & Evans. Laibow, R.E. (1988). Prenatal and perinatal experience and developmental impairment. In P.G. Fedor-Freybergh & M.C Vogel (eds.), *Prenatal and Perinatal Psychology and Medicine*. Lamb, M.E. (1976). Twelve-month olds and their parents: Interaction in a laboratory playroom. *Developmental Psychology*, 12, 237-244. Lamb, M.E. (1977). Father-infant and mother-infant interaction in the first year of life. *Child Development*, 48, 167-181. Lamb, M.E. (1980). The development of parent-infant attachment in the first two years of life. In F.A.

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