

Maternal Depression Effects on Infants (*)

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Early social perception and affective behavior studies indicate that infants are born with the ability to mimic a wide range of facial expressions suggesting an innate aptitude to decode the world around them (Field, Woodson, Greenberg & Cohen 1982; Meltzoff & Moore, 1977). As early as the first day or two of life, neonates can distinguish their mother's face and voice from that of a stranger (De Casper & Fifer, 1980; Field, Cohen, Garcia & Greenberg, 1984). By two to three months of age, infants are actively involved in dyadic interactions with their mothers or caretakers (Brazelton et al., 1974; Field, 1977; Stern, 1974). At approximately four months of age, infants can discern simple distinctive constructs of their native language and by 12 months they have amassed a collection of important interactive skills (Tanguay, 1989).

Certain developmental theories stress the critical influence of the formative years in laying down the framework for later socialization. These include, but are not limited to, Freud's theory of ego development, Gibson's theory of perceptual learning, Attachment Theory, Social Learning Theory and the Social Competence

Model (Miller, 1983). Two factors make the infant more vulnerable to involuntarily learning maladaptive behaviors than older individuals: (1) he has no basis on which to evaluate actions and behaviors, and; (2) there is generally a single, primary caretaker during the first months of life. If the infant is learning to decode his surroundings and developing a repertoire of behaviors for imitating his mother's behavior, and if the mothers behaviors are deviant, it seems quite plausible that the infant will adopt these deviant behaviors as his own.

The relevance of studying the effects of a depressed style of mothering on the development of infants and children is important to both sides of the nature/nurture controversy. Methodological procedures have not yet been able to tease apart the genetic, prenatal and postnatal (environmental) influences on the offspring of depressed mothers. This paper reviews the limited literature regarding the effects of maternal depression on the interactional style and development of their infants.

The incidence of maternal depression has been estimated to range from 12-20% for mothers of children less than five years of age (Garrison & Earls, 1986). Postpartum depression has been estimated to range from 25-30% during the first three months after delivery (O'Hara, Neunaber & Zekoski, 1984). Postpartum depression, even though transient in most cases, may influence the infant's earliest social development and interactions.

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1. EARLY EFFECTS ON INFANTS

Field et al. (1985) have postulated that depression in infants may have, at least partially, a prenatal origin. Their experimental group consisted of mothers who had been identified as depressed during a prenatal examination and were later diagnosed as suffering from postpartum depression. Shortly after birth, the neonates were administered the Brazelton Neonatal Assessment Scale (Brazelton, 1973) and were found to have lower activity levels and responsivity to social stimulation than neonates born to nondepressed mothers. At three months postpartum the depressed mothers showed flat affect, lower activity levels and less contingent responsivity than nondepressed mothers when interacting with their infants. The infants of the depressed mothers also showed flat affect and more fussiness than infants of non-depressed mothers. Field et al. (1985) proposed that the «depressed» style of the experimental infants at three months may have been a result of either a behavioral style that persisted from birth or one that developed through the daily contact with a depressed mothering style.

2. EARLY MOTHER-INFANT INTERACTIONS

In an attempt to identify whether or not interaction with a depressed mother is stressful, several studies have been designed in which the mother was asked to «look depressed» (Cohn & Tronick, 1989; Cohn & Tronick, 1983; Field, 1984). Interestingly, the infants of the depressed mothers showed no disruption in affect or stress, while the infants of the nondepressed mothers became agitated, showed definite disruption in affect and an increase in stress levels. Even after the nondepressed mothers reinstated their normal behavior, their infants remained distressed. Not only were changes in behavior significant, but the way in which the infants organized their behavior also changed significantly. The distressed infants' behavior state changed from playful to protesting. The organization shifted from the original cycling between playing and gazing at mother to cycling between protesting, wariness and looking away from mother (Cohn & Tronick, 1989).

Using a different paradigm, Field, Vega-Lahr, Scafidi and Goldstein (1986) demonstrated that while both emotional and physical unavailability are stressful for the infant, emotional unavailability is considerably more stressful than physical separation. Four-month-old infants were subjected to their mothers' still-face (total unresponsiveness) and a brief physical separation in a laboratory setting. The infants exhibited more protest/despair behaviors in the still-face situation and were harder to comfort than in the separation situation.

Face-to-face interactions of postpartum depressed and non-depressed mother-infant pairs at two months were examined to identify whether or not infants of depressed mothers were less positive and more negative than infants of nondepressed mothers and if the level of affective expressions matched between mother and infant (Cohn, Campbell & Matias, 1990). Home visitors rated the depressed dyads as more negative than the nondepressed dyads. Analyses of the face-to-face interactions indicated that by two months of age bidirectional influence existed between mother and infant. These interactions also showed that depressed mothers and their babies were equally as responsive to each other as were nondepressed mothers and their babies — it was only the type of affective expressions that differed between the depressed and nondepressed groups. An unexpected finding was that working depressed mothers acted more like their nondepressed cohorts than their nonworking depressed cohorts. Two possibilities postulated by Cohn et al. (1990) for this difference were that the working depressed mother may learn how to better manage her affective expressions as a result of increased exposure to other people. The infant necessarily has another role model during the working hours and may not act as depressed as infants who spend all day with a depressed mother (and therefore initiate more positive interactions with the mother).

Many studies in the recent past have focused on quantifying the behavior exhibited by depressed mothers when interacting with their infants (Cohn & Tronick, 1989; Cohn, Matias, Tronick, Cornell & Lyons-Ruth, 1986). Face-to-face interactions between mother and baby were videotaped and then coded to identify various

mood states; results from these studies are remarkably consistent. Nondepressed mothers spent about half their time in a positive affective state playing with their babies, while depressed mothers were generally either withdrawn or intrusive. Withdrawn mothers spent approximately 80% of their time disengaged from their infants' activities and were responsive only to infant distress. Intrusive (i.e., aggressive) mothers expressed anger and irritation or roughly handled their babies more than 40% of the time. Both withdrawn and intrusive mothers spent less than 10% of the time playing with their babies.

Meanwhile, the mood states of the infants varied accordingly with their mother's behavioral style. Infants of the positive mothers spent less time protesting ($\leq 5\%$ of the observed time) and more time attending to their mother's actions (approximately 30% of the time) than infants of depressed mothers. Infants of the disengaged mothers protested nearly 30% of the time and watched their mothers $\leq 5\%$ of the time. Infants exposed to the intrusive mothering style rarely protested ($\leq 5\%$ of the time) but spent the majority ($>65\%$) of their time avoiding their mothers. Of clinical importance was the finding that infants of depressed mothers appeared depressed irrespective of depressed maternal style.

Naturalistic observations of these mothers revealed that the anger seen in the laboratory was inversely correlated with sensitivity and warmth and positively correlated with flat affect. Also in the naturalistic setting, the angry/intrusive mothers spent more time out of the room than did the nondepressed or withdrawn-depressed mothers. The authors conclude that «These findings make it clear that infants' affective behavior and experience are specific to the affective quality and reciprocity of mothers' behavior.» (Cohn & Tronick, 1989).

Similar to the abovementioned research were two investigations of behavior state matching and synchrony in mother-infant interactions (Field, Healy & LeBlanc, 1989; Field, Healy, Goldstein & Guthertz, 1990). Initial examination of the mothers' behaviors indicated that depressed mothers are not homogeneously withdrawn or disengaged as is often thought. Cross-spectral analyses of these data showed a

trend for greater behavioral synchrony in the nondepressed mother-infant pairs than in the depressed mother-infant pairs. Field et al. (1990) concluded that the early interactions between mother and infant were more synchronous in the nondepressed dyads than in the depressed dyads.

In addition to behavioral synchrony, physiologic coherence between mother and infant has been examined via measurement of heart rate during mother-infant face-to-face interactions (Field, Healy & LeBlanc, 1989). Several findings pertaining to behavior synchrony were replicated: (1) depressed dyads spent more time in negative behavior states than nondepressed dyads, and; (2) nondepressed dyads spent more time sharing positive behavior states than depressed dyads. Nondepressed dyads also showed a greater coherence in infant/mother heart rate than the depressed dyads; this was not surprising considering that nondepressed mothers are supposedly more sensitive and responsive to their infants' cues. Mother-infant heart rate data had moderately high coherence values (appearing as curvilinear relationship) which suggested that at both ends of the depression spectrum, mother and infant physiology were in synchrony, either in negative or positive shared behavior states.

3. MOTHERESE

Infants rely on their primary caretaker, usually the mother, to supply them with the proper stimuli to decode their environment and to help them embark on the path to socialization. One of the first acts of socialization that the infant is exposed to is «motherese». Motherese is essentially infant-directed speech which is distinguishable by its uniquely exaggerated intonation, timing and rhythm. Depression not only impacts on physical behaviors and levels of activity, but on motherese as well (Bettes, 1988).

Many aspects of motherese furnish infants with vital information used for cognitive and emotional development. The rhythm is regular and provides very brief pauses (usually less than one second) and utterances. The duration of the interaction segments is consequential

because evidence indicates that optimal infant learning occurs when reinforcement occurs within one-second intervals. Pauses help the infant organize and separate events. However, if the pause lasts three seconds or more, the infant generally disengages from the interaction.

Nondepressed mothers consistently adjust their vocalizations according to their babies' reactions, while depressed mothers seem unable to do so. Depressed mothers, in general, fail to supply their infants with any prosodic communication due to their own flat affect. In addition, the motherese of depressed mothers is not rhythmic but instead quite variable which may serve to confuse the meaning the infant is trying to attach to a certain vocalization or action. This lack of appropriate affective signals may contribute to disorganization of affect and state modulation (Bettes, 1988).

4. Pervasiveness of Infant Behavioral Style

Infants have been observed to adjust their own behavior according to their mother's behavior to regulate state, as seen in the experiences of simulated depression with infants of nondepressed mothers discussed above. Therefore, infants of depressed mothers were exposed to nondepressed strangers to see if their affect would become momentarily more expressive as a result of a positive experience (Field et al., 1988). Three to six-month-old infants of depressed and nondepressed mothers were videotaped in face-to-face interactions with their mothers and with nondepressed women unknown to the infant.

The nondepressed affect of the stranger did not influence the affect of the infants of depressed mothers. The only change in behavior was that of increased gazing at the stranger — which was not surprising in light of infants' and children's propensity to look intently at novel stimuli. This study suggested that the depressed affect of infants of depressed mothers generalizes to brief interactions with other individuals, regardless of whether they are depressed or not. A very interesting, unexpected finding was that the strangers showed more negative affect during interactions with the

infants of depressed mothers than when interacting with infants of nondepressed mothers.

5. ATTACHMENT BEHAVIORS

Mothers' positive affect and behavior organization appear to affect the quality and organization of their infants' behavior (Cohn & Tronick, 1989; Smith & Pederson, 1988). The appropriateness and speed of maternal response clearly influence mother-infant attachment. Three specific types of mother-infant attachment styles that have been studied with depressed mothers are the secure, the anxious-resistant and the anxious-avoidant. Mothers who responded quickly and efficiently had securely attached infants, whereas mothers who gazed helplessly at their infants and made no soothing effort had anxious-resistant infants (infants who showed angry, resistant behaviors interspersed with attachment behaviors). Mothers who responded often but inappropriately had anxious-avoidant infants who essentially snubbed or avoided their mothers. The demands made by these infants on their mothers were quantified, and no significant difference was found that could be attributed to the style of attachment. This finding implies that the stress caused by the infants did not differ among the groups (Smith & Pederson, 1988).

Lyons-Ruth and her colleagues (1986), studied the effects of depressed maternal behavior on infant attachment at one year of age. Hostile and intrusive behaviors towards infants are much more common among depressed mothers than nondepressed mothers. In spite of the increase in these negative behaviors, mother who were only mildly to moderately depressed had securely attached infants, while the severely depressed mothers had infants showing unstable, avoidant attachment behaviors.

6. THE EFFECTS OF EARLY CHILD-REARING PRACTICES ON TODDLERS

Along the developmental continuum from infant to toddler, certain parenting patterns have been identified as common characteristics of

depressed parents (in this case manic-depressive parents) that cross generational boundaries. These characteristics include the denial of affective feelings, helplessness and dependency on family members, isolation, parental displacement of low self esteem on their children, fears of genetic transmission of the disorder and passive or absent fathers (Davanpor, Zahn-Waxler, Adland & Mayfield, 1984). While these characteristics may be seen in unaffected families, the combination of a genetic predisposition and these environmental influences may impact on the developmental health of the offspring. Both the manic and depressive episodes experienced by these parents resulted in disorganization of the family's internal, as well as external interactions. The unpredictability of the possibly anxiety-provoking and alienating behavior of the manic phase alternating with the withdrawn, helpless phase of depression left the affected parent unavailable to his/her family on those occasions. Also, many of the mentally healthy spouses in these marriages ultimately became depressed; the infants and children of these marriages were exposed regularly to variable, unexplained mood shifts and were left without a consistently stable, available parent.

Mothers from the affected families were less attentive to their infants' health needs, were less likely to encourage exploration and indulge their infants' curiosity and reported a more negative affect towards their infants than did mothers from normal families. These mothers were also found to be less actively involved with their child, more disorganized, unhappy and ineffective. Mothers of affected families reported a significantly stronger emphasis on wanting their infants to «perform in front of others». The authors speculate that this may reflect the parents' needs to see their child «do well» as an affirmation of their own efficacy. The importance of a stable relationship during infancy that provides warmth, security and consistent messages about the environs is well documented in the literature. Being raised by parents who supply inconsistent cues about the environment, themselves and the growing infant in addition to suppressing exploration of surroundings and other relationships, appear to severely affect the process of ego and

boundary development and socialization (Davenport et al., 1984). The detrimental effects of this deprived environment have been seen in toddlers, not in the form of DSM-III diagnosed psychopathology, but manifested as behavioral disturbances (Cytrn et al., 1984).

7. SUMMARY

Formation of the infant behavioral style appears to begin, at the latest, at birth. The development of either a more protesting type behavior, as seen in the distressed anxious-resistant infants, or an avoidant type behavior, as seen in the anxious-avoidant infants, seems to be a direct function of mothering style. While the mechanisms by which infants organize their own behavioral patterns are yet unknown, it seems clear that mothers help their infants regulate and organize their responses and actions. If the mother is affectively unavailable, the infant must find ways to self-regulate which may unsuccessfully result in distress and depressed affect. As research in this area continues exploring the many facets of mother-infant interactions, the more influential aspects of maternal behavior on infant development (whether prenatal or postnatal) should become more salient.

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ABSTRACT

Infants are extremely vulnerable to learning maladaptive behaviors from their depressed mothers. Since a mother's influence on her infant's social development and interactional style begins at birth, it is important to investigate the developmental effects of both transient postpartum depression and chronic depression on the infant. This comprehensive review of the limited research available supports the theory that infants develop different interactional styles depending on their mother's affect. The literature also suggests that a depressed maternal style is much more distressing to infants than physical unavailability. Pervasiveness of the infant's depressed inter-

actional style to other individuals regardless of their affect may be indicative of long-lasting social competencies. More research is needed to identify the salient influential features of a depressed mothering style on infant development as well as longitudinal studies to examine the impact of maternal depression on later development of social skills.

RESUMO

As crianças são extremamente vulneráveis e susceptíveis de aprender comportamentos desajustados por influência das mães. Uma vez que a influência da mãe sobre o desenvolvimento social e o estilo de interacção do bebé se inicia à nascença, é importante investigar o efeito que a depressão pós-

parto transitória, e a depressão crónica têm sobre esse desenvolvimento. Esta revisão exaustiva da pouca investigação que existe sobre o problema, apoia a teoria de que os bebés desenvolvem diferentes estilos de interacção em função do afecto da mãe. A literatura também sugere que um estilo maternal depressivo é muito mais perturbador para os bebés do que a não disponibilidade física. O facto de as crianças de mães depressivas manterem um estilo de interacção depressivo quando interagem com outros indivíduos, independentemente do afecto que estes revelem pode ser indicativo de competências sociais perduráveis. É necessária mais investigação para identificar os aspectos salientes da influência do estilo maternal depressivo no desenvolvimento do bebé, assim como estudos longitudinais para examinar o impacto da depressão materna no desenvolvimento de *skills* sociais posteriores.