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ABSTRACT

This paper reviews research on the relationship between infant temperament and maternal caregiving, and discusses conflicting findings. After emphasizing the central importance of independent measures in tests of interactions between temperament and caregiving, the paper reports two studies designed to clarify the relationship. In Study One, 48 mothers and infants participated in an investigation of the extent to which maternal sensitivity at the end of the infant's first year could be predicted from prenatal maternal attitudes, infant irritability during the neonatal period, or an interaction between both. Findings were consistent with the view that the impact of infant temperament on caregiving depends on caregiver characteristics, such as developmental history, personality, experience, and stress. An association between infant irritability and maternal insensitivity appeared to evolve over time. In Study Two, conducted from infants' 3rd to 24th month, 40 mothers and their infants participated in an investigation of the antecedents of angry and punitive maternal behavior and the predictors of child anger, noncompliance, low confidence, and social withdrawal. Findings suggested that the origins of anger, noncompliance, and low confidence in children cannot be attributed solely to patterns of maternal care. Concluding discussion explores implications of the findings for studies of attachment and recommends directions for future research. (RH)

An Interactive Approach to the Study of Infant Temperament, Maternal Caregiving, and Behavioral Outcome

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Although this symposium focuses on the neonatal precursors of differences in attachment, the primary focus of my presentation will be the association between temperament and caregiving, and only secondarily the association between temperament and attachment. I am taking this approach because I think infant temperament may affect attachment at least in part through the effect it may have on caregiving and because I think we are more likely to come to an understanding of how development occurs if we focus jointly on temperament and caregiving as contributors to the developmental process.

Infant Temperament and Maternal Caregiving

What sort of association would be expected between temperament and caregiving? One possibility is that different temperaments elicit distinct patterns of caregiving which then account for differences in the child's development. If this were the case we might expect irritable babies to elicit unresponsiveness. Tired of the demands of an irritable baby, mothers may gradually respond less frequently, less quickly, or less appropriately when their babies cry.

Sixteen studies have tested the hypothesis that some aspect of negative emotionality in infancy predicts maternal behavior. Of those, all but two (Vaughn, Taraldson, Crichton & Egeland, 1981; Wachs & Gandour, 1983) report at least one significant association. However, the associations are sometimes in one direction (nine studies reveal associations indicating that babies identified as irritable or as having difficult temperaments experience less responsive caregiving or less stimulating contact with their mothers), and sometimes in the opposite direction (seven studies reported that mothers of difficult or irritable babies are more engaged with their babies than are mothers of easy or less irritable babies).

There are a number of possible explanations of these conflicting findings, but the one I find most theoretically interesting is that the conflicting directions reported for simple associations between infant temperament and maternal behavior are a function of an interaction between temperament and some other characteristic of the caregiver or the caregiving environment. That is, specific infant temperaments may elicit patterns of caregiving unsuited to meeting the child's needs only under certain conditions, for example, when the mother is unable for some reason to meet the distinctive needs of her baby by virtue of the attitudes and dispositions she brings to parenting or by virtue of the conditions of her current life. We might predict that a mother would be unresponsive to the crying of her irritable baby if she believes that by responding she might spoil him, or if she is living under particularly stressful conditions. If this view is accurate we would expect to find interactions rather than one to one relationships between characteristics of the infant and the caregiving provided by the mother. This is essentially the position that Lerner and Lerner (1983) have taken in their application of Thomas and Chess' (1977) "goodness of fit" concept to parent-child relations. According to the Lerners, the same temperamental attribute may be associated with negative parent-child interactions, or with positive interactions depending on the parents' values and expectations concerning the attribute. Thus, the parent of an irritable baby might provide more responsive caregiving if either personal or cultural beliefs predispose her to view the irritability as a challenge or as evidence of special need.

A third possibility is that temperament and caregiving practices are essentially independent, but combine to produce different behavioral responses and problems in the child. To extend our example, no correlation would be expected between infant irritability and maternal responsiveness. However, if an irritable baby happened to be paired with a mother who was unresponsive to his crying because of her own personality or circumstances, the baby might become either extremely demanding or extremely withdrawn from its mother over time. Maternal unresponsiveness to a less irritable baby would not be expected to have the same results. Implicit in this latter prediction is an assumption of "organismic specificity"-- that babies with different temperamental characteristics will respond differently to similar environments (Wachs & Gandour, 1983).

It is important to point out, however, that support for the organismic specificity hypothesis does not imply lack of support for the goodness-of-fit model. Wachs points out that the two models may well be complimentary rather than orthogonal, with the questions of which model is best depending upon which environmental circumstances the researcher finds. To be properly tested the specificity model requires a lack of differences in the caregiving environments of infants with different temperaments (since specificity assumes differential reaction to the same environment, based on the infant's temperament). In contrast, to be optimally tested, the goodness-of-fit approach requires different babies in different environments. Each predicts interactions, but under different circumstances.

During the rest of my presentation I will present the results of two studies that have employed one or the other of these approaches to the study of infant temperament and maternal caregiving. I want to introduce these studies, however, with a discussion of a critical design issue. Central to investigating the impact of the child's temperament on caregiver-child interaction is the use of a measure of temperament that is independent, or at least relatively independent of caregiver behavior. If it is not independent.

any observed association between "temperament" and caregiving is open to the interpretation that caregiver behavior rather than the infant's temperament accounts for the observed relationship. Herein lies the problem in much of the research designed to assess the association between infant temperament and caregiver-infant interaction: to the extent that temperament is assessed through maternal report, the mother's personality, expectations, and biases may influence her ratings of her child's behavior. Alternately, the child's behavior, though accurately recorded, may have been shaped, in part, by the mother's behavior. This lack of independence is not unique to maternal reports of infant temperament, moreover. Any behavioral assessment of temperament beyond the neonatal period may assess infant characteristics that have developed in response to the caregiving environment.

An essential requirement of any study designed to test interactions between temperament and caregiving, therefore, is that measures of infant characteristics and maternal characteristics be independent--that is, the procedures must substantially reduce the possibility that the maternal characteristic identified as possibly interacting with infant temperament is a response to the baby's behavioral characteristics and that the baby's characteristics have not been shaped by the mother. This can be achieved in several ways. Measures of maternal attitudes or personality can be obtained prenatally and measures of infant behavior collected during the early postnatal period, before the mother has had much parenting contact with the baby. An alternative is to assess some infant behavior, such as infant crying, later in the first year of life in a way that eliminates or reduces differences that are a function of maternal behavior. One such measure is "time to calm"--the average amount of time a baby cries after a mother first responds to her baby's crying. It is a measure of infant crying from which differences due to maternal responsiveness to crying have been eliminated, although the mother's skill in soothing undoubtedly contribute to differences in calming.

The results of two studies which have employed one or the other of these approaches to the study of infant temperament reveal no simple association between infant temperament (irritability) and either mother or infant behavior, but do show the expected interactions. In the first study (Crockenberg & McCluskey, 1986), 48 mothers and infants were studied, beginning during the mother's pregnancy and continuing through the first year of the baby's life. At issue was the extent to which maternal sensitivity at one year was predictable from prenatal maternal attitudes, infant irritability assessed during the neonatal period, or from an interaction between maternal attitudes and infant irritability. Maternal sensitivity was assessed in the Strange Situation. The results of an analysis of partial variance revealed a main effect of prenatal maternal attitude ($p < .025$) and an attitude by irritability interaction ($p < .01$). High irritability in conjunction with low prenatal responsiveness was associated with low maternal sensitivity at 12 months. A reanalysis of three-month data revealed also that an interaction between prenatal responsiveness and neonatal irritability predicted maternal responsiveness to crying, but, in contrast to the 12 month data, it was the mothers with a combination of unresponsive attitudes and less irritable infants who were particularly unresponsive.

These findings are consistent with the view that the impact of infant temperament on caregiving depends on other characteristics of the caregiver. However, the association between irritability and insensitivity also appears to evolve as the mother-child relationship progresses over the course of the baby's first year. The finding that at three months after birth mothers of irritable babies responded significantly more quickly than did mothers of less irritable babies when their babies cried suggests that in the first three months the baby's characteristics may have a demand effect on maternal behavior that partially obscures differences associated with the attitude mothers bring to the situation. By 12 months this responsiveness to irritable babies is no longer apparent, and mothers of irritable babies behave in a manner more congruent with their prenatal attitudes.

In the second study (Crockenberg, 1987), 40 mothers and their children were studied beginning at three months post-partum and continuing until the children were two years old. The antecedents of angry and punitive maternal behavior and the predictors of child anger and noncompliance, low confidence, and social withdrawal were investigated. Time to calm assessed when babies were three months old was the measure of infant temperament. Infant irritability did not predict maternal behavior, either singly or in interaction with other variables. Nor was infant irritability, taken as a main effect, related to child behavior. However, the association between maternal behavior was stronger for children identified as irritable at three months postpartum: when irritable infants had angry and punitive mothers they were more likely to be angry and noncompliant and to exhibit less confidence than less irritable infants who experienced the same pattern of parenting.

We may infer from these findings that the origins of anger and noncompliance and of low confidence in children cannot be attributed solely to patterns of maternal care. Rather the development of these characteristics may be viewed as an interactive or multiplicative function of the mother's behavior and the child's early temperament. Evidence that the impact of parenting style is dependent on the characteristics of the infant is consistent with Wachs and Gandour's (1983) hypothesis of "organismic specificity"--that infants with different temperamental characteristics will respond differently to similar environments.

Implications for Attachment Research

If the association between temperament and caregiving, or temperament and behavioral development is typically interactive, what can we expect with respect to the association between temperament and the security of the infant-mother bond?

I think we can expect that few studies will report a main effect of infant temperament on the security of the infant's attachment to its mother. When they do, it may be because the characteristics of the mothers or the environments are such that they support a temperament effect. That is, the observed association between temperament and attachment security may occur because in the sample as a whole the mothers are more likely to respond one way or the other to that particular characteristic. What we observe is one half of an interaction.

For example, irritable infants may develop insecure attachments when their mothers are particularly stressed, or when their backgrounds predispose them to be unresponsive to crying or to other demands on their time. In samples in which mothers as a group have a high probability of reacting this way--abusing mothers, mothers rejected as children, very young mothers--irritable infants may more frequently than less irritable babies develop insecure attachments. Alternately, if mothers as a group are predisposed, perhaps for cultural reasons, to be responsive to a crying baby, irritable babies may be more likely than less irritable babies to develop secure attachment relationships with their mothers.

The conflicting directions reported earlier for the simple associations between infant temperament and maternal behavior illustrate this phenomenon. Of the eight studies that reported results consistent with a negative effect of a difficult temperament on maternal care, three used samples of mothers whose circumstances (economic, mental health, age, or some combination thereof) defined them as high-risk for poor parenting (Kelly, 1976; Milliones, 1978; and Linn & Horowitz, 1983). In the studies that reported what appeared to be a positive effect of difficult temperament on maternal caregiving, none of the samples were so obviously disadvantaged. Moreover, in two studies the authors suggested that the cultural groups studied held values consistent with increased attention and involvement when the baby's characteristics require it (Caron & Miller, 1981; Klein, 1984).

In the absence of main effects of temperament, temperament and caregiving may interact to predict security of attachment. That is, irritable babies with unresponsive mothers, or with mothers who were particularly stressed, or who have little support, may be more likely than irritable babies with more responsive or less stressed mothers to develop insecure attachments. My 1981 study illustrates this possibility: when irritable infants had mothers with poor social support, they were more likely than irritable babies whose mothers had good social support to be classified as insecurely attached. As we would expect from the "organismic specificity" hypothesis, low social support did not have the same impact on less irritable babies.

Still another possibility is that we would find no main effect of temperament on attachment security and no temperament/caregiving interaction, but rather a main effect of maternal caregiving. This pattern of results would certainly lead some people to conclude that infant temperament bears no relation to security of attachment. Before we can rule out infant effects, however, and here we come full circle, we would need to know the antecedents of maternal caregiving behavior. In the Crockenberg & McCluskey (1986) study discussed above, we reported that irritability interacted with maternal attitudes to predict maternal sensitivity. Maternal sensitivity in turn predicted resistance during the reunion episodes of the strange situation, a measure of insecure attachment (Crockenberg & McCluskey, 1985). It is reasonable to infer, therefore, that the infant's temperament contributed indirectly to the course of the attachment relationship.

Conclusion

In conclusion, I would like us to design research that will test the contributions of both temperament and maternal characteristics to differences in maternal caregiving, and the contributions of both infant temperament and maternal caregiving to differences in attachment security. Such an approach is essential, I think, if we are to expand our understanding of the way in which secure and insecure attachments develop.

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