

## The role of infant soothability in the relation between infant negativity and maternal sensitivity

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### Abstract

Maternal perceptions of infant soothability moderated the relation between negative infant temperament and maternal sensitivity. Infant negative temperament and maternal sensitivity were significantly positively related when maternal perception of infant soothability was high and significantly negatively related when maternal perception of infant soothability was low.

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There is some evidence to suggest that infants manifesting high degrees of negative reactivity are more likely to experience a suboptimal relationship with their mothers (see Crockenberg, 1986 for review). Crockenberg and Acredolo (1983) found that maternal report of infant distress to limitations at 3 months was concurrently related to low degrees of maternal contact with her infant after controlling for earlier maternal contact. Mangelsdorf, Gunnar, Kestenbaum, Lang, and Andreas (1990) revealed that infant proneness to distress was contemporaneously related to lower levels of maternal warmth at 9 months. Additional evidence indicates that temperamental negativity in infancy (Van den boom & Hoeksma, 1994) and early childhood (Braungart-Rieker, Garwood, & Stifter, 1997) predict subsequent low levels of maternal sensitivity.

In contrast, there is other evidence to suggest that higher degrees of infant distress are associated with more sensitivity from the caregivers. Sroufe (1985) suggested that parents adapt to their child's changing needs, thereby giving attention to children who demand it. Crockenberg and Smith (1982) reported that neonates identified as irritable, as measured on the Newborn Behavior Assessment Scale (NBAS), received more visual, vocal and tactile stimulation from their parents during caretaking and non-caretaking situations at 3 months of age. Indeed, it has been demonstrated that the amount of distress in the infant cry is salient to young women, whether or not they are mothers (Gustafson & Harris, 1990) and that latency to respond to infant cries decreases as the perceived intensity of infant distress increases (Wood & Gustafson, 2001).

Such disparate findings in the temperament and parenting literature may be a function of unaccounted factors that moderate the relation between infant negativity and maternal sensitivity (Crockenberg, 1986). We contended that maternal perception of infant soothability may be one such key factor.

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Temperamentally negative infants are more difficult to calm than less distress-prone children (Crockenberg & Smith, 1982). Additionally, recent data show that not all methods of soothing are effective at calming extreme distress (Jahromi, Putnam, & Stifter, 2004). Building upon Bandura's efficacy theory (Bandura, 1977), Leerkes and Crockenberg (2002) suggested that mothers of temperamentally difficult infants who are successful at calming them may develop higher degrees of sensitivity than mothers who do not have difficult infants or mothers who have difficult infants but are unsuccessful at soothing. This may be due to the feelings of efficaciousness that flourish when one achieves success under challenging circumstances. Consistent with this notion, we anticipated that when mothers view their 9-month-old infants as soothable, the relation between infant-negative reactivity at 4 months and maternal sensitivity at 9 months is positive. This is in contrast to mothers of temperamentally negative infants who view their child as more difficult to soothe. Here, we hypothesize that the relation between infant negativity and later sensitivity will be negative.

Fifty-six mothers and their developmentally healthy infants (25 males, 31 females) participated in this study when their infants were 9 months old ( $M = 9.50$  months,  $S.D. = .266$ ). Participants were seen as part of a larger, longitudinal investigation that explores the role of temperament in the growth of social competence from ages 4 months to 5 years. Of the mothers, 66.7% were Caucasian, 21.7% African American, 8.3% Hispanic, 1.7% Asian, and 1.7% of mixed ethnicity. The mothers in this sample were well educated: 18.3% completed high school, 35.0% earned a college degree, 38.3% completed a graduate degree, and 8.3% attained a professional or trade certificate.

In order to obtain a sample of temperamentally extreme and randomly selected children, 849 four-month-olds underwent screening procedures to evaluate levels of positive, negative, and motor reactivity to novel auditory and visual stimuli (see Calkins, Fox, & Marshall, 1996; Fox, Henderson, Rubin, Calkins, & Schmidt, 2001). A negative reactivity score was obtained by averaging ratings of intensity of negative affect and intensity and duration of motor activity including arm and leg movements and back arching. Previous research has found direct relations between degree of negative reactivity in infancy and auditory sensitivity in infancy (Marshall & Hardin, 2005) and behavioral inhibition in toddlerhood and early childhood (Calkins et al., 1996; Fox et al., 1995). Negative reactivity has also been shown to act in concert with a pattern of right frontal EEG asymmetry in the prediction of social reticence in early childhood (Fox et al., 2001). And, when coupled with insensitive caregiving in infancy (Hane & Ghera, 2005), negative reactivity is associated with an avoidant pattern of responding to novelty later in infancy.

Of these screened infants, 245 were selected to participate in the 9-month portion of the project, a portion of whom served as random controls. Data presented here were derived from the subsample of random control infants who participated in the home visit. At 9 months of age, 56 randomly selected infants who previously participated in the 4-month laboratory visit returned to participate with their mothers in laboratory and home visits. Infants and their mothers were observed during a 1-h, video-taped home visit, which included episodes involving mother busy in kitchen, feeding, free play, and changing. The home visit was video-recorded and subsequently rated for the degree of global maternal sensitivity. Sensitivity was determined based on a modified version of Ainsworth's system for rating Maternal Care Behavior (Ainsworth, Bell, & Stayton, 1972) and consisted of nine, 9-point Likert-type scales, with scale points 1, 3, 5, 7 and 9 anchored in detailed behavioral descriptions. Discrete episodic sensitivity scores were averaged in order to obtain one robust composite of maternal sensitivity, such that a higher score indicates more sensitivity. All sensitivity data were coded by two independent raters who overlapped on 40 cases and achieved reliability coefficients (intraclass  $r$ s) ranging from .59 to .84 on the separate home visit episodes and an overall sensitivity reliability coefficient of .80.

Maternal perception of infant soothability was assessed at 9 months of age via the soothability subscale of the Infant Behavior Questionnaire (IBQ; Rothbart, 1981). The IBQ consists of 87 items that require mothers to assess the frequency of the occurrence of temperamentally relevant infant behaviors along a 7-point Likert-type scale across a number of temperamental dimensions. The soothability subscale consists of nine items, which capture the infant's reduction in distress as a result of caregiver soothing techniques (see Rothbart, 1981). Items on this scale include efficacy of rocking, walking, and singing to the infant. The ratings on the soothability items are averaged, such that a higher score indicates higher degrees of perceived soothability.

Prior to testing the hypotheses, zero-order correlations among negative reactivity, IBQ soothability, and maternal sensitivity were computed and no significant relations were found. Consistent with the recommendations of Aiken and West (1991), the predictors that entered into the regression equations were mean-centered. In order to examine the degree to which maternal report of infant soothability moderates relations between observed infant reactivity and observed maternal sensitivity, a hierarchical multiple regression was computed in which maternal sensitivity scores were regressed onto negative reactivity, IBQ soothability, and their product. No direct effects for soothability or negative

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