



The Predictive Significance of Prenatal Neural Responding to Infant Emotional Cues for Mothers' Observed Parenting

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INTRODUCTION

- Mothers' processing of their infants' cues contributes to caregiving behaviors¹
- Event-related potentials (ERPs) are time-locked brain responses implicated in stimulus processing, and thus, useful for examining processing of infant cues^{2,3}
- N170 - ERP implicated in face processing - is larger for infant distress (vs. neutral, happy) expressions reflective of prioritized processing of infant distress thought to support parenting behavior²
- We examined the significance of expectant mothers' N170 amplitude to infant emotional expressions (distress, neutral, happy) for observed maternal sensitivity to distress and non-distress at 4 months post-partum

METHODS

Participants

- Participants were 61 primiparous expectant mothers (M age = 29.6 years; SD = 4.7)
- Mothers were predominantly white (91.8%), middle income (median: \$80,000), and highly educated (39.3% bachelor's degree)

Emotional Categorization Task

- Participants completed a categorization task comprising of infants' facial expressions (Distress, Happy, Neutral)
- In each task, 162 repeated images of infants displaying distress (54), happy (54), or neutral (54) facial expressions were viewed in series, and participants indicated the facial expression displayed (see figure 1)

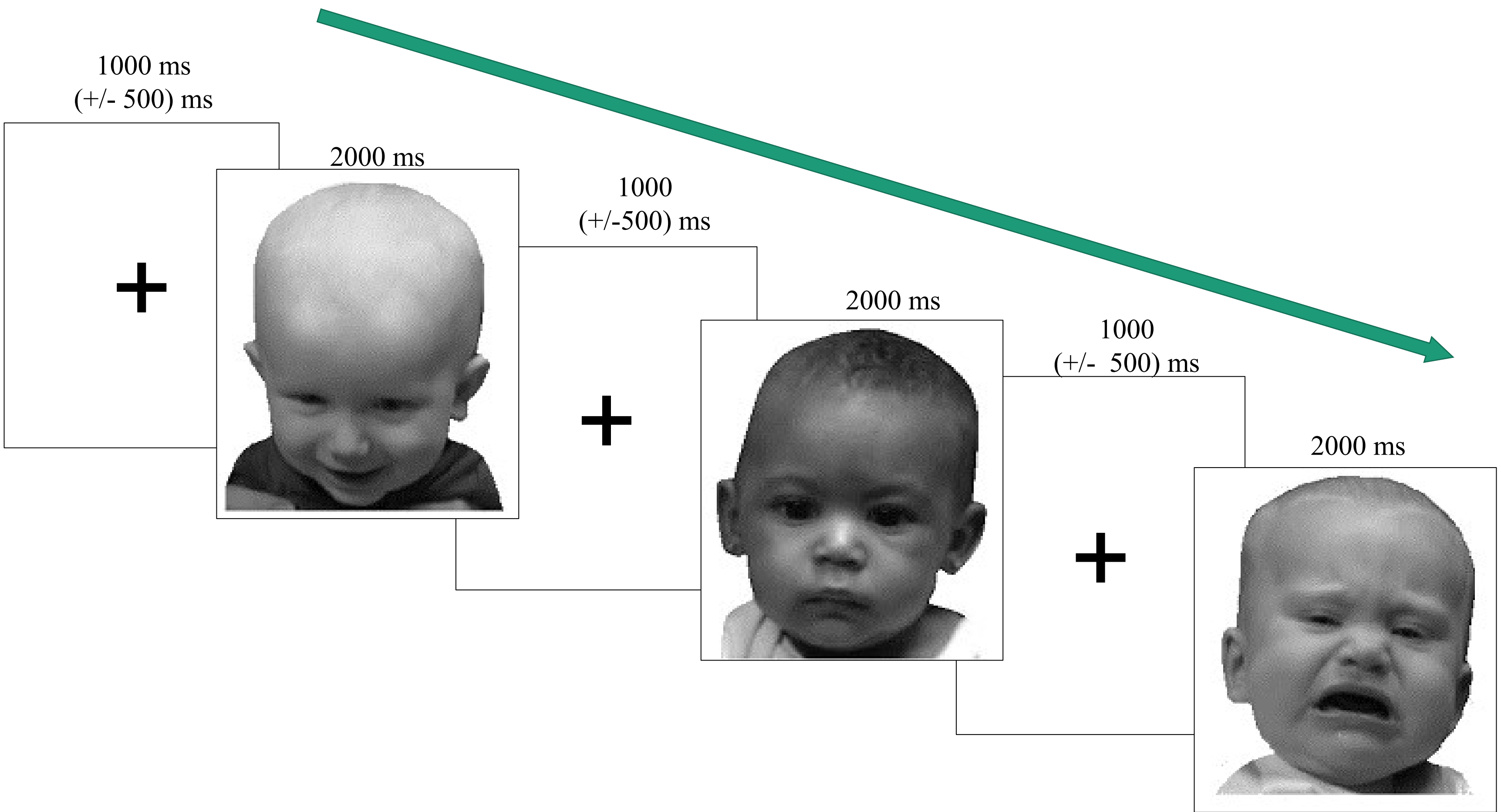
Parenting

- Maternal sensitivity to distress (i.e., prompt and effective responding to infant distress) and non-distress (i.e., awareness of needs, moods, interests, and capabilities of the infant) were observed during a free play and play with toys

Electroencephalogram (EEG) Recording

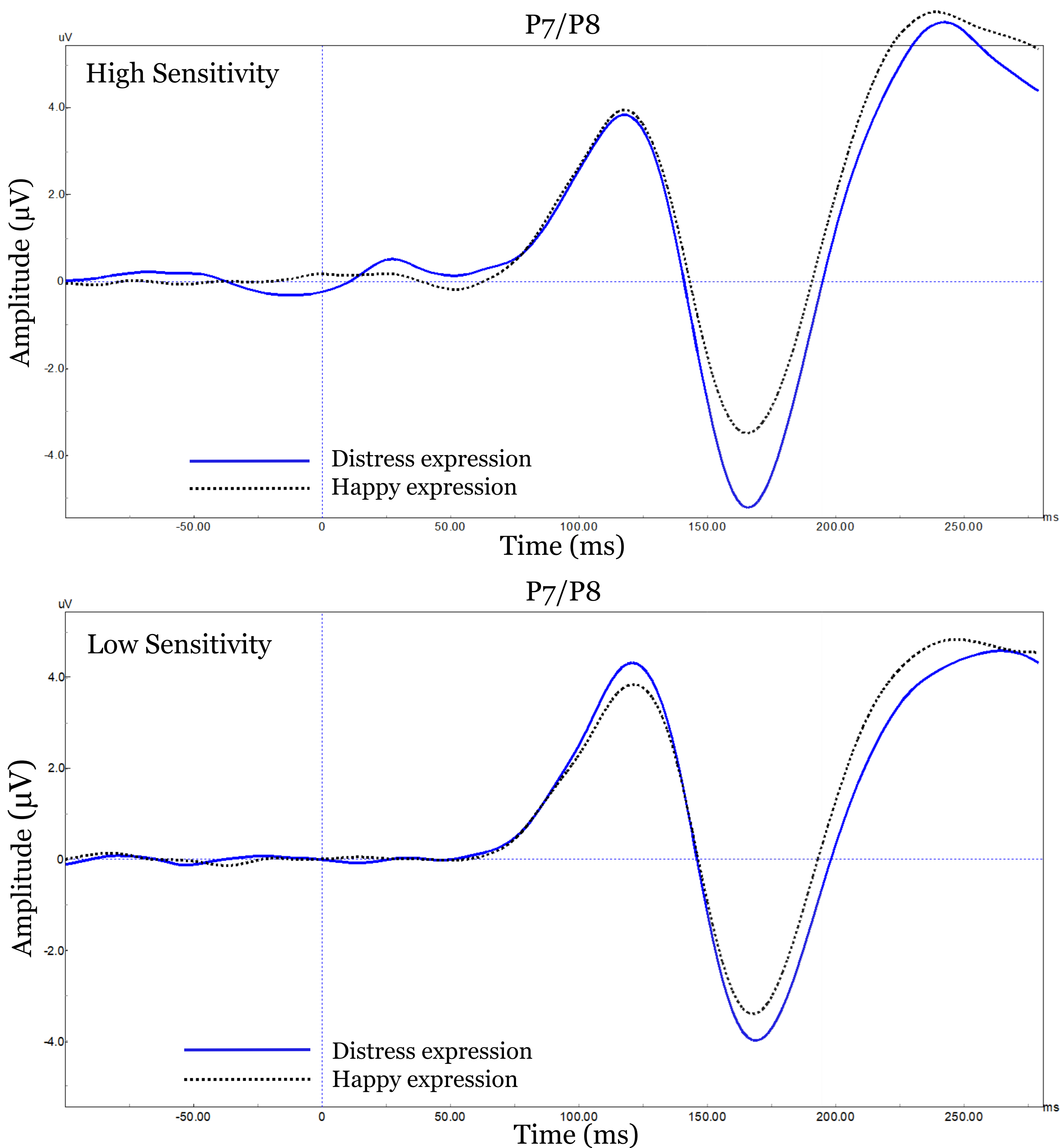
- EEG was monitored during the Emotional Categorization Task. Time-locked EEG activity to each image was extracted for each emotion
- The N170 defined as average activity at temporal-parietal sites (P7, P8) in a 150-190 ms window following stimulus presentation

EMOTIONAL CATEGORIZATION TASK



FIGURES

Mothers' N170 amplitude to infant distress vs. happy expressions for mothers' high (top figure) and low (bottom figure) on sensitivity to distress



RESULTS

Expectant Mothers N170 to Infant Expressions and Observed Sensitivity to Distress:

- Expectant mothers who exhibited a larger N170 amplitude to infants' distress (v. happy) expressions responded more sensitively to their infant's distress signals at 4 months postpartum (see Table 1)

Expectant Mothers N170 to Infant Expressions and Observed Sensitivity to Non-Distress:

- There was not a significant association between expectant mothers' N170 amplitude to infant emotional expressions and their observed sensitivity to non-distress at 4 months postpartum (see Table 1)

Table 1	Sensitivity to Distress	Sensitivity to Non-Distress
N170 to Distress v. Happy	0.34*	0.03

CONCLUSIONS

- Expectant mothers' neural processing of their infants' emotional facial expressions was associated with their parenting behaviors within the normative range
- Neural responding reflective of heightened attention to unfamiliar infant distress (v. happy) faces was associated with higher sensitivity to distress
- Examining women's neural responding to infant emotional expressions during pregnancy provides novel insight into the direction of associations, suggesting that women's neural processing of infant faces prior to infant birth contributes to their postpartum parenting behavior
- These findings suggest that interventions aimed at promoting mothers' awareness of infant emotional signals prior to the birth of their infant might enhance subsequent parenting outcomes

ACKNOWLEDGEMENTS

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Scan for references:



Scan for Family Child Development Lab website:

