Individual differences in non-clinical maternal depression impact infant affect and behavior during the still-face paradigm across the first year

Vanessa Vieites, Bethany C. Reeb-Sutherland*

Florida International University, Miami, FL 33199, United States

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ABSTRACT

Maternal depression can significantly impact mothers’ sensitivity to their infants’ needs as well as infants’ social and emotional development. The still-face paradigm (SFP) is widely used to assess infants’ understanding of the contingency between their own behavior and that of their caregivers, as well as infants’ ability to self-regulate arousal levels during sudden changes in maternal responsiveness. Infants of clinically depressed mothers display blunted levels of negative affect compared to infants of non-depressed mothers during the still-face (SF) phase. However, little is known about whether individual differences in elevated, non-clinical levels of maternal depression similarly affect mother-infant interactions. The current study examines the longitudinal effects of non-clinical maternal depression on infant and maternal behaviors during the SFP. Infants (N=63) were assessed at 5 and 9 months and maternal depression was assessed at 5 months using the Beck Depression Inventory (BDI). Infants of mothers with elevated levels of depression displayed less negative engagement during the SF phase compared to infants of mothers with lower levels of depression. This effect was present at 5 months, but not at 9 months. Findings demonstrate that non-clinical levels of maternal depressive symptomatology can have a significant impact on infants’ affective regulation during the first half of the first year of life, but this does not necessarily have a long-lasting influence later in infancy. Interventions may want to target mothers with non-clinical depression to promote healthy infant social and emotional development.

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1. Introduction

When engaging in social interactions, people often take part in mutual exchanges and are responsive to one another’s behavior. Detecting these social contingencies even in infancy is an important precursor for social learning. The still-face paradigm (SFP; Tronick, Adamson, Wise, & Brazelton, 1978) is a way to empirically observe infants’ communicative interactions with their adult caregivers. The SFP is commonly used to measure infants’ temperamental reactions to changes in parental contingencies, infants’ abilities to regulate negative emotions, and as an early marker of later attachment style

* Corresponding author at: Department of Psychology, Florida International University, Modesto A. Maidique Campus – DM 256, 11200 SW 8th Street, Miami, FL 33199, United States.
E-mail address: Besuther@fiu.edu (B.C. Reeb-Sutherland).

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(Beebe et al., 2010; Koulomzin et al., 2002; for review and meta-analysis, see Mesman, Ijzendoorn, & Bakermans-Kranenburg, 2009).

There are three phases within the SFP: interaction, SF, and reunion. During the interaction (i.e., baseline) and reunion phases, the caregiver engages normally with the infant (i.e., touching infant, making play/laughing faces). During the SF phase, the caregiver stops interacting with the infant and assumes a neutral expression regardless of the infants’ responsive behavior. Compared to the interaction and reunion phases, the SF phase breaks parent-infant contingency, thereby eliciting decreased positive affect (e.g., less smiling/laughing) and increased negative reactivity. When this occurs, infants will exhibit crying, screaming, pouting, and/or other signs of distress (e.g., Gusella, Muir, & Tronick, 1988; Tronick et al., 1978) while waning in their bids for their unresponsive caregiver’s attention (Ekas, Haltigan, & Messinger, 2013).

Social contingency between mother and infant is created through consistent dyadic interactions, usually measured by the infant’s responses to maternal bids for communication (Rochat & Striano, 1999). During normal mother-infant interactions, the mother’s behavior is predictive of and contingent on the infant’s behavior and vice-versa. For example, the mother may smile and laugh toward her infant, leading the infant to babble or giggle in return, which results in a form of protoconversation between the two. The majority of studies examining the SFP have investigated infant initiations and reactions. Studies that have focused on maternal behaviors during the SFP have usually done so within the context of maternal contributors to the SF effect (for review and meta-analysis, see Mesman et al., 2009). For example, maternal sensitivity, or reliably predictable and timely reactions to the infant’s cues in an affectively positive way, is found to be a precursor for establishing dyadic reciprocity between mother and infant behavior during the SFP (Conradt & Ablow, 2010; Coppola, Aureli, Grazia, & Ponzetti, 2015; Mastergeorge, Paschall, Loeb, & Dixon, 2014). Hence, maternal sensitivity and reliable caregiving fosters social contingency between mother and infant (Ainsworth, 1991). Therefore, low maternal sensitivity, such as in the case of maternal depression, may inhibit normal, contingent mother-infant interactions.

Maternal depression can significantly impact infants’ social and emotional development by compromising the typical social relationship between mother and infant (Feldman et al., 2009; Skotheim et al., 2013). For example, when the mother becomes emotionally unavailable (i.e., depressed) and thereby unresponsive to her infant’s behavior, the mutual reciprocity and exchange, as well as infant emotion regulation (Weinberg & Tronick, 1998), that occurs during typical mother-infant interactions is significantly reduced (Field, 1994). Studies have consistently revealed a SF effect, in which infants typically display an increase in negative affect (i.e., distress) during the SF phase (for review and meta-analysis, see Mesman et al., 2009). In contrast, infants of clinically depressed mothers display reduced levels of behavioral negativity when their mothers abruptly discontinue interacting with them, possibly as a result of having become habituated to their mothers’ nonresponsive, flattened affect (Field et al., 2007; Field, Diego, & Hernandez-Reif, 2009).

There are some inconsistencies in the literature with regard to the effects of maternal depression on infant behavior during the SFP. For instance, some studies report more behavioral and affective negativity in infants of mothers (or fathers) with depressive symptomatology compared to infants of parents with no history of depression (e.g., Forbes, Cohn, Allen, & Lewinsohn, 2004; Weinberg, Olson, Beeghly, & Tronick, 2006), while other studies find no behavioral differences between the two groups of infants (e.g., Moore, Cohn, & Campbell, 2001; Segal et al., 1995; Stanley, Murray, & Stein, 2004). Overall, findings suggest that maternal depression can significantly influence infant and maternal affective behavior. Nevertheless, individual differences in non-clinical maternal depressive symptomatology, as well as the longitudinal effects of the SF paradigm on mother-infant dyadic interactions remain to be examined.

Given that typically-developing infants are sensitive to parental social cues (i.e., eye gaze; Hains & Muir, 1996), and that maternal sensitivity to infant cues is essential for establishing social reciprocity and healthy attachment between a mother and her infant (for a theoretical analysis, see Shin, Park, Ryu, & Seomun, 2008), it is important to explore the kinds of behavioral and emotional responses that mothers with non-clinical symptoms of depression may elicit from their infants during dyadic interactions. Recently, Skotheim et al. (2013) reported that infants of mothers with subclinical levels of post-partum depression are less sensitive to social cues (i.e., eye gaze, affect) and contingency compared to infants of non-depressed mothers, suggesting that even slight elevations in maternal depressive symptomatology can interfere with normal, healthy mother-infant interactions. However, there is a paucity of literature assessing the impact of elevated, but non-clinical, maternal depression on infant and/or maternal behaviors during the SFP and, more broadly, mother-infant interactions. If such effects exist, clinicians may want to consider developing and providing treatments for mothers with elevated, non-clinical depression in addition to those with clinical depression.

The purpose of the current study is to investigate whether there are longitudinal effects of elevated levels of non-clinical, maternal depression on infant and maternal behaviors during the classic SFP. Whether infants of mothers with elevated, but non-clinical, levels of depression display blunted emotionality during the SF paradigm, and whether this effect is persistent was examined between 5 and 9 months of age. Furthermore, differences in maternal behavior during the SFP between high and low depression groups were explored at 5 and 9 months. It was predicted that infants of mothers with higher levels of non-clinical depression would display a decrease in negative affect during the SF phase than during the interaction and reunion periods compared to mothers with less symptoms of depression. In addition, it was predicted that mothers with higher levels of depression would display less social positivity during the interaction and reunion phases than mothers with lower levels of depression.
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