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Effects of maternal depression in the Still-Face Paradigm: A meta-analysis



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ABSTRACT

The Still-Face Paradigm (SFP) enables researchers to examine the quality of mother-infant interactions. In typical infants, a classic still-face effect (SFE) has been confirmed whereby infants demonstrate reduced positive affect (PA), reduced gaze (GA), and increased negative affect (NA). Recently, the SFP has been used to examine the effect of maternal depression upon infant behaviour. However, the nature and consistency of the behavioural responses of infants of depressed mothers during the SFP remains unclear. In the current meta-analysis, we examined whether or not infants of depressed mothers demonstrate the classic SFE, as well as whether or not these infants display the same levels of PA, NA, and GA as their counterparts with non-depressed mothers. Results revealed that infants of depressed mothers display the classic SFE like infants of their non-depressed counterparts. However, infants of depressed mothers also demonstrated significantly higher levels of PA during the still-face episode. One potential interpretation of this finding is that infants prior experience of similar, depressed interactions with their mothers, encourages them to amplify their positive attachment signals in order to engage maternal attention and response. Alternatively, or additionally, infants of depressed mothers could be using PA in order to regulate their own NA.

1. Introduction

The Still-Face Paradigm (SFP), designed by Tronick, Als, Adamson, Wise, and Brazelton (1978) has been used in large number of studies and is a useful paradigm which enables researchers to examine the quality of mother-infant interactions (Gusella, Muir & Tronick, 1988). In the SFP infants are typically observed in a three stage face-to-face interaction with an adult (see Mesman, Ijzendoorn, & Bakermans-Kranenburg, 2009, for review). The first stage (baseline) is a typical face-to-face interaction episode in which the adult is instructed to interact with the infant as they normally would. The second stage (still-face) involves the adult remaining in front of the infant but adopting a still face and becoming unresponsive. The third stage (reunion) involves the adult

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resuming normal interaction with the infant. Infants are scored throughout each stage on their positive affect (e.g., smiling, laughing), negative affect (e.g., crying, distress brow), and gaze aversion (i.e., gaze away from adult).

The SFP measures an infant's behavioural response to a reduction in responsiveness (the still face period) from a caregiver (Stanley, Murray, & Stein, 2004), and is believed to be a reliable method for inducing social-emotional stress in young infants, enabling the observation of emotion regulation and social-emotional relationships in vivo (Field, Vega-Lahr, Scafidi & Goldstein, 1986; Manian & Bornstein, 2009). The inclusion of the reunion period affords researchers the opportunity to observe infant behaviour following an unresponsive interaction with their caregiver (Mesman et al., 2009). A recent meta-analysis by Mesman et al. (2009) confirmed the existence of a classic still-face effect (SFE), which involves infants demonstrating reduced positive affect, reduced gaze, and increased negative affect during the still-face period that is carried over into the reunion stage (Mesman et al., 2009).

The SFP has also been used to investigate the effects of maternal psychopathology on mother-infant interaction (Mesman et al., 2009), with the majority of studies focusing on maternal depression. According to the hypotheses proposed, infants who have experienced different or inconsistent interactions with caregivers as a result of parental depression may fail to show the classic still-face effect (Moore, Cohn, & Campbell 2001). Attachment theorists have further argued that the quality of day-to-day interactions between a primary caregiver and an infant help the infant to develop an internal emotional-cognitive template. This template, they suggest, underpins how the infant then interacts emotionally and behaviourally with their caregiver (Ainsworth & Bowlby, 1991; Bretherton, 1992). Significant associations have often been reported between depression and maternal behaviour during the SFP, with depressed mothers being less behaviourally sensitive and more emotionally disengaged with their infants, in addition to displaying higher levels of negative affect (Field, 1994; Field, 2002; Field, Hernandez-Reif, Diego, Feijo, Vera, Gil et al., 2007; Rosenblum, McDonough, Muzik, Miller & Sameroff, 2002; Stanley et al., 2004; Weinberg, Olson, Beeghly, & Tronick, 2006). However, somewhat less consistent results have been found in relation to infant behavioural responding during the SFP (Mesman et al., 2009).

Consistent with the hypothesis described above, some authors have uncovered evidence to suggest that the SFP is less distressing for infants of depressed mothers. For example, Field et al. (2007) used the SFP to explore the impact of a reduction in maternal responsiveness between infants of depressed versus non-depressed mothers. Infants of depressed mothers evidenced fewer negative behaviours, less gaze aversion, and less motor activity during the still-face period, perhaps suggesting that they found the still-face period to be less distressing. Similar results were found earlier by Field (2002), using an adapted version of the SFP. In this study, depressed and non-depressed mothers were instructed to act depressed in place of the still-face episode. Overall, infants of depressed mothers exhibited fewer positive behaviours than the infants of non-depressed mothers during the SFP. Furthermore, infants of depressed mothers also exhibited little change in behaviour from the baseline period to the depressed period. The results of a study by Peláez-Nogueras, Field, Hossain, and Pickens (1996) also offer a degree of support for differences in infants of depressed versus non-depressed mothers. Infants of depressed mothers were found to have less negative and more positive behaviours in comparison to infants of non-depressed mothers at the reunion stage. Peláez-Nogueras and colleagues interpreted these findings as an indication that infants of depressed mothers recover faster from the still-face period due to being less distressed initially (Peláez-Nogueras et al., 1996). In particular, the authors suggest that infants of depressed mothers are familiar with their mother's disengaged, depressed behaviour and, therefore, are less distressed by the SFP manipulations than are their non-depressed counterparts.

Authors have further suggested that infants of depressed mothers develop a passive coping style much like that of stressed infant primates (Field, 2002; Reite, Short, Seller, & Pauley, 1981). In 1981, Reite and colleagues observed infant primates and their level of control in stressful situations. The authors found that during brief moments of stress, active coping was adopted by the primate infants, reflected in increases in agitated behaviour and physiological arousal. Alternatively, during lengthened periods of stress, the primate infants passively coped, indexed through reduced physiological and physical responses. Based upon these findings, Field (2002) has argued that infants of depressed mothers may similarly develop passive coping strategies through repeated exposure to depressed interactions with their mothers, contributing to their becoming less distressed during the SF Field (2002) also found that infants of depressed mothers exhibited more positive behaviours and less negative behaviours during still-face and reunion periods. Out, Bakermans-Kranenburg, and Van Ijzendoorn (2009) have suggested that infants with disorganised attachment styles (due to a range of factors including maternal insensitivity and maternal psychopathology) will attempt to minimise the expression of negative emotions in an effort to deal with stressful circumstances and to engage with their mother. Additionally, Weinberg and Tronick (1996) have suggested that PA may be an effective way for infants to deal with the still-face, effectively down-regulating the feelings of the distress it induces. It is therefore possible that infants of depressed mothers are amplifying their positive attachment signals in these circumstances in order to attract maternal attention and response, or that they have learnt to use PA in an effort to regulate their own NA.

The view that infants of depressed mothers adopt coping strategies to deal with the stress induced by the SFP has received some support in the literature (Manian & Bornstein, 2009, Moore et al., 2001). Moore et al. (2001) found infants of depressed mothers exhibited increased gaze aversion, at 4 months. Gaze aversion has been argued to act as an important emotion-regulation strategy in infancy, allowing the infant to disengage from the source of distress (Manian & Bornstein, 2009). Moore et al. (2001) suggest that the infants of depressed mothers increase their gaze aversion in a bid to manage their distress during the SFP more effectively. Manian and Bornstein (2009) have found contradictory results, however, with infants of non-depressed mothers averting their gaze significantly less often than infants of non-depressed mothers. Despite the contradiction between these findings, the authors still suggest that their findings may be evidence of a coping strategy. Manian and Bornstein (2009) explain that the infants of depressed mothers in their study may have adopted self-soothing strategies as opposed to averting their gaze to regulate their distress.

In other instances, infants of depressed mothers have been found to exhibit increased negative behaviours compared with infants of non-depressed mothers in the SFP (Forbes, Cohn, Allen, & Lewinsohn, 2004; Rosenblum et al., 2002; Weinberg et al., 2006). This

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