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Maternal posttraumatic stress symptoms and infant emotional reactivity and emotion regulation

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ABSTRACT

The current study examined associations between maternal posttraumatic stress disorder (PTSD) symptoms and infant emotional reactivity and emotion regulation during the first year of life in a primarily low-income, urban, ethnic/racial minority sample of 52 mother–infant dyads. Mothers completed questionnaires assessing their own trauma exposure history and current PTSD and depressive symptoms and their infants' temperament when the infants were 6 months old. Dyads participated in the repeated Still-Face Paradigm (SFP-R) when the infants were 6 months old, and infant affective states were coded for each SFP-R episode. Mothers completed questionnaires assessing infant trauma exposure history and infant current emotional and behavioral symptoms when the infants were 13 months old. Maternal PTSD symptoms predicted infants' emotion regulation at 6 months as assessed by (a) infant ability to recover from distress during the SFP-R and (b) maternal report of infant rate of recovery from distress/arousal in daily life. Maternal PTSD symptoms also predicted maternal report of infant externalizing, internalizing, and dysregulation symptoms at 13 months. Maternal PTSD was not associated with measures of infant emotional reactivity. Neither maternal depressive symptoms nor infant direct exposure to trauma accounted for the associations between maternal PTSD symptoms and infant outcomes. These findings suggest that maternal PTSD is associated with offspring emotion regulation difficulties as early as infancy. Such difficulties may contribute to increased risk of mental health problems among children of mothers with PTSD.

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1. Introduction

There has been increasing emphasis in the extant literature on the importance of self-regulation—the ability to manage one's emotions, attention, physiology, and behavior in a way that promotes competent functioning—in normal development as well as the developmental psychopathology of various mental disorders (Barton & Robins, 2000; Bell & McBride, 2010;

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Eisenberg, Spinrad, & Eggum, 2010; Gardner, Dishion, & Connell, 2008; National Research Council and Institute of Medicine, 2009). In their landmark report *From Neurons to Neighborhoods*, the National Research Council and Institute of Medicine (2000) concluded that one of the core concepts of development that has emerged from years of research is that "the growth of self-regulation is a cornerstone of early childhood development that cuts across all domains of behavior" (p. 3). Given the importance of self-regulation for multiple aspects of functioning, determining factors that interfere with its attainment is a critical area of research. Evidence suggests that exposure to maternal psychopathology during early development may have a substantial impact on child self-regulation (Brand & Brennan, 2009; Brummelte & Galea, 2010; Davis, Snidman, Wadhwa, Schetter, & Sandman, 2004; Field, 2010; Goodman & Gotlib, 1999). Much of this research has been based on studies of depressed, and to a lesser extent, anxious mothers. The impact of maternal posttraumatic stress disorder (PTSD) on child regulation has received comparatively little attention, though data from multiple sources suggest that exposure to maternal PTSD may have a profound effect on children's self-regulatory abilities (Bosquet Enlow, Kullowatz, Staudenmayer, Spasojevic, Ritz, & Wright, 2009; Brand, Engel, Canfield, & Yehuda, 2006; Chemtob, Nomura, Rajendran, Yehuda, Schwartz, & Abramovitz, 2010; Kaitz, Levy, Ebstein, Faraone, & Mankuta, 2009).

1.1. Reactivity and regulation

Appreciating the potential impact of maternal PTSD on the acquirement of child self-regulation requires an understanding of the related but distinct concepts of "reactivity" and "regulation." Here, reactivity refers to individual differences in the speed and intensity of initial activation of physiological, attentional, emotional, and motoric responses elicited by stimuli. Developmental theorists have suggested that reactivity reflects underlying biological biases toward particular response patterns that arise from a combination of genes and in utero neuroendocrine influences, though these biases may be modified to some extent by environmental experiences (Cole, Zahn-Waxler, Fox, Usher, & Welsh, 1996). Differences in reactivity have been noted as early as the 2nd trimester of the prenatal period, with continuity demonstrable across early and later development (DiúPietro, 2000).

Regulation involves the ability to modify the intensity and duration of physiological arousal, attention, and affective states in order to (a) protect oneself from becoming overwhelmed by stimulation or disorganized by one's own feelings, (b) modulate one's emotional expressions, and (c) organize complex behaviors involved in social interactions (National Research Council and Institute of Medicine, 2000; Sroufe, Egeland, Carlson, & Collins, 2005). That is, regulation involves the management of reactivity. Though, like reactivity, regulation may reflect biologically-based differences in the central nervous system (Rothbart, Ahadi, & Hershey, 1994; Rothbart & Derryberry, 1981; Rueda & Rothbart, 2009), the ability to self-regulate is largely theorized to arise out of interactions with primary caregivers during the first years of life (Eisenberg et al., 2010).

In early development, responsibility for child regulation is gradually transferred from the primary caregiver to the dyad to the child. Neonates and young infants are primarily focused on maintaining physiological homeostasis and rely on their caregivers as regulators (Loman & Gunnar, 2010). Physiological stress regulatory systems [e.g., hypothalamic–pituitary–adrenal (HPA) system, autonomic nervous system (ANS)] become organized during the first months through caregiver–infant transactions, with sensitive caregiving promoting effective physiological regulation of stress (Loman & Gunnar, 2010). By 4–6 months of age, infants engage in reciprocal interactions with their caregivers, and by the end of the first year, infants become active participants in the regulation of their arousal and emotional states through their attachment relationships (Schore, 1994). During this period, infants begin to show stabilizing patterns of frontal neural activation and predictable behavioral strategies for emotion regulation (Bell & Fox, 1994; Eisenberg et al., 2010). A history of sensitive caregiving in infancy, reflected in a secure attachment relationship, has been associated with more adaptive self-regulatory abilities and more optimal stress regulation in later development (Kochanska, Philibet, & Barry, 2009; Oosterman, De Schipper, Fisher, Dozier, & Schuengel, 2010). Because poor regulation in early development is thought to be carried forward through later development, disruptions to regulatory processes during the first year of life may have particularly detrimental and enduring effects on later child functioning (Eisenberg et al., 2010).

1.2. Maternal PTSD and child regulation

Because the quality of caregiving in early development is critical in shaping a child's emerging self-regulation capacities, factors that interfere with a mother's ability to provide high quality care are expected to negatively influence her child's attainment of these capacities. A caregiver's ability to provide responsive, sensitive care is determined by multiple factors, including her own psychological resources. PTSD is defined by symptoms of hyperarousal (e.g., irritability, angry outbursts, concentration difficulties, hypervigilance), avoidance and numbing of responsiveness (e.g., restricted range of affect, anhedonia, feeling detached from others) and reexperiencing of traumatic events (e.g., flashbacks; intense psychological distress and/or physiological reactivity upon exposure to traumatic reminders) (American Psychiatric Association, 2000). Associated symptoms prevalent among individuals with PTSD, such as emotional lability, difficulties in modulating anger, appropriately expressing emotions, and interpreting others' emotions, and disruptions in attention, memory, and consciousness (Hien, Cohen, & Campbell, 2005) may lead to withdrawn, avoidant, intrusive, irritable, hostile, unresponsive, and non-contingent parenting behaviors. Research shows that such parenting behaviors are associated with major disruptions

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