

# **The unexpected for the expecting parent: Effects of disruptive early interactions on mother-infant relationship**

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## **Abstract**

High-quality parental caregiving promotes children's development from their day of birth or even earlier. Whether or not there are ways to predict, and ultimately enhance, parental caregiving quality during the prenatal stages of development has been less well understood. This is even truer when things do not go according "to plan". In this commentary, we explore two possible scenarios, perhaps unexpected for expectant parents, that can affect children's development: (1) postpartum parental displays of atypical behaviors and parental caregiving strategies (i.e., maternal/paternal depression) and (2) postpartum child displays of atypical behaviors (i.e., autism spectrum disorder).

Keywords: Postpartum Depression; Autism Spectrum Disorder

Hechler and colleagues (2018) show how the quality of maternal and paternal caregiving towards their young infants at 6 weeks postpartum can be predicted by assessing the quality of their caregiving towards a “simulator infant” during the third trimester of pregnancy. This intriguing prediction is of great interest to the field and is related to the concepts of continuity and stability in child development (for a perspective of these two concepts, see Bornstein & colleagues, 2017). There is a large child development literature on the prediction of child outcomes, but results are often mixed, with much less known about the situation when the ‘unexpected’ actually happens. This commentary explores two possible *unexpected* scenarios that can affect a child’s development: parental behavior and the dyadic parent-child interaction. These two scenarios correspond to two main questions. First, what happens when parents display atypical behaviors and atypical parental caregiving after a child is born, for example in the case of postpartum depression and anxiety? Second, reciprocally, what happens when a child begins to display atypical behaviors, for example in the case of Autism Spectrum Disorder? How does this affect parental behaviors and caregiving? Each of these scenarios is addressed in turn.

In the first scenario, the quality of parental behavior and caregiving can be negatively impacted by poor parental mental health. In particular, parental displays of atypical behaviors such as parental depression and anxiety during pre- and postnatal periods have been found to have long-term negative effects on a child’s development (Cummings et al., 2005; Paulson et al., 2009; Ramchandani et al., 2005). One of the most robust findings in the literature is that maternal depression is associated with more problem behaviors in the child’s early years and increases their likelihood of being diagnosed with depression as an adolescent especially when maternal depression is persistent and severe (Netsi et al., 2018). This is a major public health

issue. With prenatal maternal depression estimated at roughly 8% and postnatal depression double that figure, and paternal depression evidenced at 10.4% and 25.6% in first-time fathers (Paulson & Bazemore, 2010), parent's mental well-being pre- and postnatally reflects genuine stress on many first-time parents who are expecting a new family member.

One reason why postnatal parental depression and anxiety may be related to children's development is the effect these disorders have on the quality of caregiving. Parents suffering from anxiety or depression may be less sensitive to an infant's cry, less patient with the infant's needs, less able to read the infant's cues (i.e., mentalization), and may themselves be emotionally depleted leading to inconsistent parenting (Esposito et al. 2017; Manian & Bornstein, 2009; National Research Council and Institute of Medicine, 2009; Zeegers et al., 2017). Thus, interventions for maternal postnatal depression have been found to improve mother-infant interaction, and in studies with more prolonged and intensive therapies, findings have demonstrated sustained improvements in child cognitive performance (Poobalan et al., 2007), behaviour outcomes, and attachment security (Stein et al., 2018). What is less well researched is the efficacy of interventions on paternal depression/anxiety.

Arguably less well understood, though related to parental well-being, is how changes in parental perceptions (of others, themselves as parents, and the baby) pre- and postnatally affect the quality of the caregiving and in turn affect children's development. Related to heightened levels of anxiety and worries is suspiciousness; that is, evolutionary theory would suggest that being a new parent inevitably results in heightened sensitivity to infant's cues and alertness to others' intentions toward the infant. These could involve parent instincts to protect young and keep them safe. As is known from both the clinical and non-clinical studies, high levels of anxiety can result in suspiciousness toward others and misreading social cues (i.e., hostile

attribution biases), resulting in avoidance of social situations. Conversely, a study of schoolchildren and adolescents in the community demonstrated that children who are highly suspicious of others are more likely to suffer from concurrent mental health issues compared to non-suspicious children (Wong, Freeman, & Hughes, 2014). What deserves further investigation are the developmental aspects of suspiciousness (Wong & Raine, 2018); that is, whether or not highly anxious and suspicious parents also transmit heightened sensations and avoidance behaviors to their infants postnatally, as one twin study already demonstrated that childhood suspiciousness is heritable (Zhou et al., 2018). No study to date has investigated the transmission of suspiciousness from parent to child, perhaps reflected in the lack of measures for parental suspiciousness and whether or not suspiciousness can be assessed pre- and postnatally.

In the second scenario, when a child begins to display atypical behaviors can be studied through cry. Parents usually understand the level of distress of a crying episode. They can differentiate a cry based on its pitch and intensity, evaluate the facial expression of the child, and make sense of environmental cues (time of the day, previous meal, diaper, etc.). But what happens when parents never (or almost never) “understand” their children’s cry? An example of this scenario is when a parent interacts with a child with neurological deficits before those deficits are diagnosed. This situation often happens in the case of children with Autism Spectrum Disorder (ASD). Parents of children who have been diagnosed with ASD often recount that they struggled to interpret their infant’s emotional cues. This difficulty was especially heightened in the infant’s first year of life (Esposito & Venuti, 2008; Esposito & Venuti, 2010a,b,c). The inability to understand the causes of their infant’s cry may lead to a vicious cycle (Esposito et al. 2013; see also Figure 1), in which the

mother is unable to understand her infant's wants and the infant, in turn, is not provided with optimal care that satisfies his/her needs.

Atypical vocalizations too may be implicated in this cycle, as evidenced in both humans and non-human models. Comparing data from human and mouse models, uncanny resemblances have been observed between the two: pointing to the role of genes in determining atypical calls of distress. Atypical distress vocalization has been shown to compromise socio-affective channels of mother-infant communication. In mice, infants that possess a risk-gene for autism spectrum disorder (ASD) elicit reduced maternal response. Maternal care that fails to meet the infants' needs can be seen as an adverse self-generated environmental factor that aggravates behaviors associated with ASD in infants at-risk for the autistic phenotype; this dynamic in turn promotes greater incidences of ASD-associated behaviors (see Figure 1A from Esposito et al., 2017). Likewise in humans, genetic risk factors for ASD in the infant reduces the mother's capacity to optimally respond to the infant, as the infant's atypical cry is not well-understood and often perceived as negative. This cycle triggers a persistent and adverse misperceptions and a lack of maternal response to the infant's atypical cry (see Figure 1B from Esposito et al., 2017).

<Insert Figure 1 Here>

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Figure 1

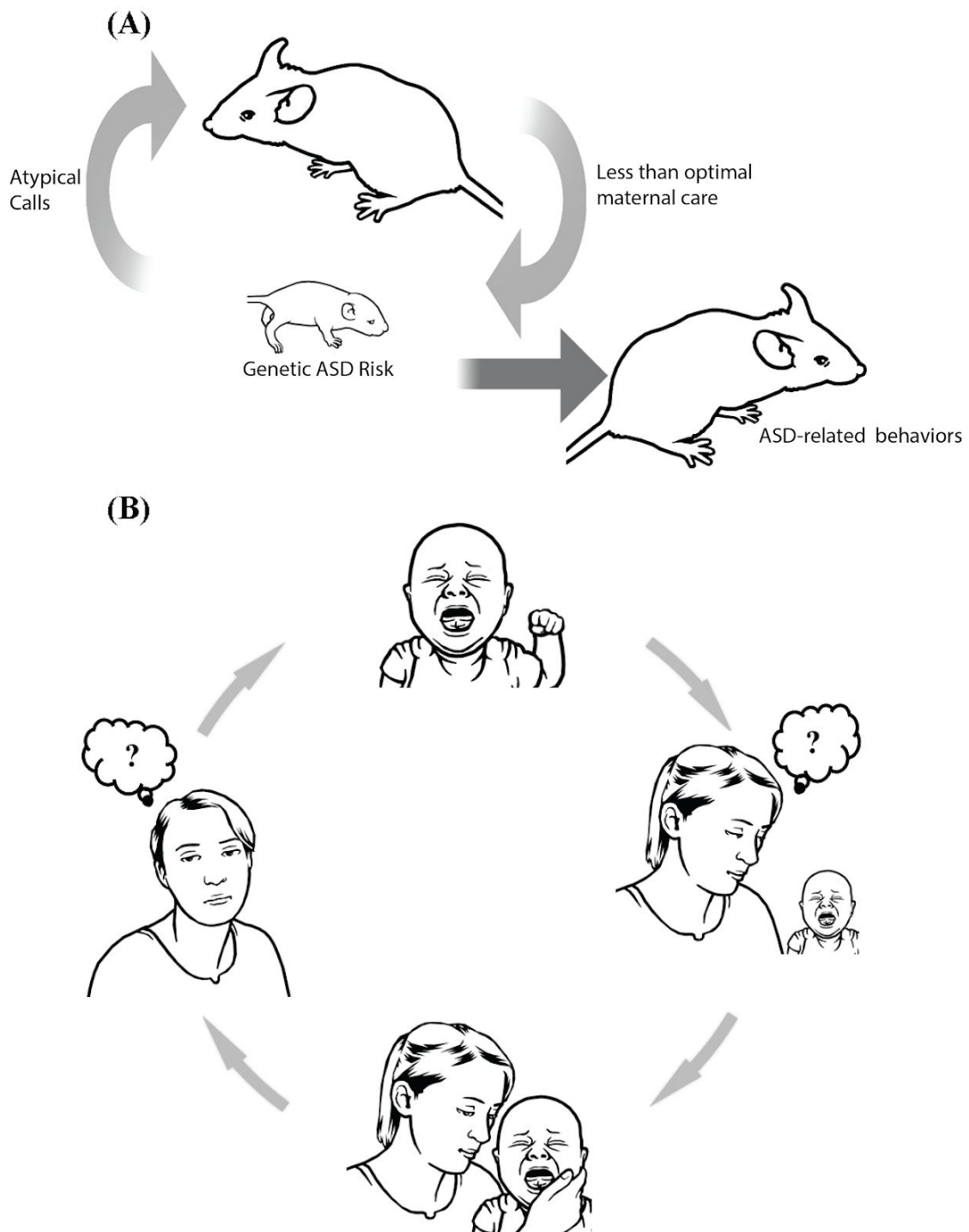


Figure 1. A hypothetical causative chain of events involving atypical vocalizations in mice and humans. (Extracted from Esposito, et al. 2017)