

# Maternal depression across the first years of life impacts children's neural basis of empathy

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Exposure to early and chronic maternal depression markedly increases a child's susceptibility to psychopathology and social-emotional problems, including social withdrawal, poor emotion regulation, and reduced empathy to others. Since 15-18% of women in industrial societies and up to 30% in developing countries suffer from maternal depression, it is of clinical and public health concern to understand the effects of maternal depression on children's development. A study published in the January 2017 issue of the *Journal of the American Academy of Child and Adolescent Psychiatry (JAACAP)* followed children of mothers with depression from birth to preadolescence and tested depression's impact on children's neural empathic response to others' distress.

While previous studies have demonstrated the effects of [maternal depression](#) on children's limited response to other's pain, this new study is the first to examine this topic in a longitudinal sample of mother-child pairs followed from birth to age 11.

This carefully selected sample of women with no comorbid contextual risk, who were repeatedly assessed for maternal depression across the first years of life, was utilized in order to compare children of mothers who were chronically depressed and children who were never exposed to any maternal psychopathology. 27 children of mothers with depression took part in the study, as well as 45 controls. They were home-visited at 9 months and 6 years to examine mother-child interaction patterns and were invited to a magnetoencephalography (MEG) session at age 11 in order to evaluate their neural reaction to pain in others.

"We were amazed to see that maternal depression in and of itself was related to differential neural processing of others' pain in 11-year-old children. We found that the neural reaction to pain in children of [depressed mothers](#) stops earlier than in controls, in an area related to socio-cognitive processing, so that children of depressed mothers seem to reduce mentalizing-related processing of others' pain, perhaps because of difficulty in regulating the high arousal associated with observing distress in others," said Prof. Ruth Feldman, director of the Developmental Social Neuroscience Lab and the Irving B. Harris Early Childhood Community Clinic at Bar-Ilan University and lead author of the study.

The researchers also found that mother-child interaction patterns had a crucial role on this effect. When mother-child interactions were more synchronous, that is, mother and child were better attuned to one another, and when mothers were less intrusive, children showed higher mentalizing-related processing in this crucial brain area.

"It is encouraging to see the role of mother-child interactions in our findings. Depressed mothers are repeatedly found to show less synchronous and

more intrusive interactions with their children, and so it might explain some of the differences found between children of depressed mothers and their peer controls in our study," added Prof. Feldman. "If so, our findings highlight a point of entry, where future interventions can focus their attention to help reduce the effects of maternal depression on children's psychosocial development."

Asked what next steps should be taken, Feldman responded: "The main clinical question now becomes: what strategies are most effective to improve mother–child interaction patterns for depressed mothers and their offspring. Moreover, if we are able to help these mothers be more attuned and less intrusive, will it be enough in order to enable resilience in the offspring? In addition, there are further scientific questions about the manner in which patterns of maternal care implement in the development of children's brain, endocrine systems, behavior, and relationships."

To that end, Feldman and her team are studying how maternal depression and mother–child interactions are associated with children's stress hormones, behavioral empathy, hormones related to bond formation, and their neural reaction to affiliative cues. Feldman is planning to study intervention strategies that focus on the mother–child interaction pattern, and is hopeful that if successful, these strategies will improve mental health and social adjustment in children of mothers with depression. "Wouldn't it be interesting and promising if an intervention focused on synchronous mother–child interactions could also reduce the prevalence of psychopathology in the [children](#) of depressed mothers?" she concluded.

**More information:** Maayan Pratt et al. Maternal Depression Across the First Years of Life Impacts the Neural Basis of Empathy in Preadolescence, *Journal of the American Academy of Child & Adolescent Psychiatry* (2017). [DOI: 10.1016/j.jaac.2016.10.012](#)

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