Teaching expectant mothers to bond with their babies

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Up to a third of mothers don't bond well with their babies after birth, causing intense emotional distress to both mother and baby[1]. Now researchers have found that they can train at-risk expectant mothers to recognise and regulate emotions better, potentially reducing their risk of postpartum depression.

Presenting the work at the ECNP Congress in Barcelona, researcher Dr Anne Bjertrup said:

People generally have an automatic tendency to see the positive or negative in any situation. In previous studies we saw that certain expectant mothers tended to perceive mostly negative emotions in relation to babies. This took several forms. In some cases the expectant mother would look at babies and mistakenly think that they were distressed or unhappy, when in fact they weren't. In other cases where the baby was distressed, they were emotionally unable to deal with this. So we had to see if we could train them, to help them avoid this negative bias and their own reaction during motherhood".

The work has just been published in the peer-reviewed journal *Neuroscience Applied*[2].

The proof-of-concept study included 45 expectant mothers from hospitals in Copenhagen. 23 of them were at high risk of postpartum depression and potentially not bonding with their child, having suffered from earlier depression. The remaining 22 had no depression history and were classified as having a low risk[3]. All were assessed at the beginning of the study to see how they responded to various "baby emotions". The women at high-risk then underwent a series of computer-based training sessions aimed at helping them cope with difficult emotions, and after two weeks they were reassessed.

Anne Bjertrup (of the Psychiatric Centre Copenhagen- NEAD Centre, Copenhagen, Denmark) said, "*With the at-risk women we were trying to communicate different things. For example, to make the worried expectant mothers focus on how a baby really expressed itself not just what she thought she saw, and then to respond appropriately. We tried to make sure that the women could accurately recognise the emotion a baby was showing, and we got them to visualise how to properly respond to these emotions*".

After the training, women in the high-risk group were significantly better at recognising happy babies; the women were themselves able to show more happy facial expressions, and reacted less to signs of infant distress.

Visual representation of the study setup: Participants' reactions to emotional infant stimuli were measured through ratings, eye-tracking, facial expressions, and galvanic skin response.

*(*Design by Dr. Anne Bjertrup via Canva)

Dr Bjertrup continued:

"*We found that participants' perceptions of infant facial expressions shifted significantly after the training. For example, before the training, they viewed ambiguous baby facial expressions as slightly negative. After the training, this perception became positive, marking a 5% shift towards a positive perception on our rating scale. Importantly, those who showed the most improvement in recognizing happy baby expressions had fewer indications of depression six months post-childbirth. Those who improved the most in recognizing happy baby expressions had fewer signs of depression six months after giving birth.*

This means that if we can train expecting mothers to be more sensitive to happy expressions and give them back control over their emotional reaction toward baby distress, it might reduce the risk of postpartum depression. This not only benefits the mother but also contributes to a healthier emotional development for the baby".

She added "*This is a preliminary study, so we need to interpret these results cautiously. We are currently undertaking a bigger trial, which will include a control group. Nevertheless, these initial results are promising. We're amongst*

the first groups anywhere to really explore how we can use emotional cognitive processes to prevent this significant mental illness and mother-infant bonding problem".

In the EU alone, there are around 4 million births every year, meaning that well over a million mothers and babies will be having bonding problems. Not bonding can have serious impacts on, mother and child, and families. Children may find it difficult to develop secure attachments in later life, although this also depends on what happens in early life. A mother may find it difficult to bond for various reasons, such as hormonal changes, stress, or past traumas. This can lead to a sense of shame or inadequacy, with many mothers refusing to acknowledge their difficulties. Many respond by emotionally closing down, creating a vicious cycle of alienation.

Dr Bjertrup added "It*'s important to recognize that bonding challenges, outside of PostPartum Depression or other mental illnesses, can stem from various factors. Not experiencing immediate bonding feelings as one might expect doesn't inherently signal an issue. A mother might not have immediate bonding feelings yet can still respond sensitively and appropriately to her infant's emotions and cues*".

Commenting, Dr Mijke Lambregtse - van den Berg, Infant Mental Health Specialist at Erasmus Medical Center, Rotterdam*, said: "Postpartum depression is a serious condition, not only affecting the mother, but also her child. This promising study not only stresses the importance of early mother-child bonding, it also trains expectant mothers at risk in how to better recognise positive emotions in babies. Reinforcing a positive mother-baby interaction might ultimately prevent postpartum depression as well*."

This is an independent comment, Dr Lambregtse - van den Berg was not directly involved in this study.

Notes

This work is presented at the 36th ECNP Congress, which takes place in Barcelona and online 7-10 October 2023, see https://www.ecnp.eu/Congress2023/ECNPcongress. With more than 6,000 participants the ECNP Congress is Europe's leading platform for the latest research in disease-related neuroscience.

1. *https://www.theguardian.com/lifeandstyle/2016/jun/06/one-third-of-new-mothers-struggle-to-bond-with-their-baby-research-shows*

2. *Neuroscience Applied, Prenatal affective cognitive training: A proof-of-concept study,* Bjertrup et al *(2023). None of the comments in the press release appear in the paper.* https://www.sciencedirect.com/science/article/pii/S2772408523001175

3. *The low-risk group did not receive any training. They were tested at the end of the trial and showed no change.*

Conference abstract

Prenatal affective cognitive training to reduce postpartum depression risk in high-risk pregnant women: a proof-of-concept study

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Background

Negative cognitive bias has been shown to constitute a risk- and maintaining factor for depression [1] and is increasingly seen as an indicator of postpartum depression risk. Recent studies suggest that women displaying a negative cognitive bias in processing infant signals during pregnancy may be at a heightened risk of PPD, even without a prior history of depression or current depressive symptoms [2, 3]. This aligns with cognitive neuropsychiatry's key assumption that cognitive processing abnormalities are the foundation of psychopathology [4]. Despite the complex and multifaceted causes of postpartum depression, targeting these abnormal affective cognitive processes could be a pivotal strategy in mitigating postpartum depression risk. Further, mothers with current or past depression often show less positive engagement with their infants, respond more negatively to infant cries, and struggle with emotional regulation [5]. These behaviours could impede infants' socio-emotional development, potentially mediating their risk of mental illness later in life.

Aim

This proof-of-concept study explores the feasibility and potential effects of a novel multilevel affective cognitive training intervention targeting emotional cognitive biases in pregnant participants with high risk of postpartum depression, specifically those with a personal history of depression.

Methods

The study included 43 participants, 23 at high risk and 22 at low risk of postpartum depression. We assessed cognitive responses to emotional infant stimuli at baseline, immediately after intervention, and at a two-week follow-up for the high-risk intervention group, and twice over two weeks for the low-risk group. Each training session encompassed five computerized training tasks, designed to enhance visual attention toward infants, infant-directedness in facial expressions and attention, recognition of infant happiness, and both implicit and explicit emotion regulation strategies in response to infant distress. The low-risk pregnant participants did not undergo any intervention but were re-assessed with the computerized tasks to investigate test-retest reliability of affective cognitive processing of infant stimuli. Six months after birth, participants filled out an online questionnaire assessing depressive symptoms.

Results

The intervention proved feasible, with 80% of participants completing all sessions and providing positive feedback. Post-intervention, the high-risk group demonstrated increased sensitivity to stimuli displaying infant happiness (p-values<0.02, d>0.1), more infant-directed facial expressions (p<0.001, d=0.6), heightened attention toward infant stimuli (p=0.04, d=0.2), and lessened negative reactivity to stimuli showing infant distress (p=0.01, d=2.6). The observed increase in sensitivity for happiness during pregnancy correlated with fewer depressive symptoms six months postpartum (r=-0.59, p=0.03). Finally, the group of low-risk pregnant participants showed no changes in affective cognition with repeated testing.

Conclusion

Our findings should be interpreted cautiously due to the lack of a high-risk control group and small sample size. We are currently conducting a randomized controlled trial to further investigate if prenatal affective cognitive training can indeed lower the risk of postpartum depression and improve mother-infant interaction and infant development.

References
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2. Bjertrup, A.J., et al., Cognitive processing of infant stimuli in pregnant women with and without affective disorders and the association to postpartum depression. European Neuropsychopharmacology, 2021. 42: p. 97-109.
3. Bjertrup, A.J., M.S. Væver, and K.W. Miskowiak,