European College of Neuropsychopharmacology – press release

Pregnant women recognise baby facial expressions and cries differently depending on their mental health history

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Type of study: case-control study/not peer reviewed/people

A pilot study has found that pregnant women who have suffered from depression or bipolar disorder (i.e. both mania and depression) recognise babies' faces and how babies laugh or cry, differently to healthy controls. This happens even if they are not currently experiencing depressive or manic symptoms and may represent an early risk-factor for children of these women, although the authors stress that research would be needed to confirm any long-term effects. This work is presented at the ECNP Congress in Barcelona.

Figures show that nearly 8% of Europeans (EU) have suffered from depression in the previous 12 months, with the rate of depression in women (9.7%) being around 50% higher than the rate in men. Around 1% of Europeans have suffered from bipolar disorder in the previous 12 months*. With over 5.1 million births in the EU every year, a significant number of the women who become pregnant will suffer from depression or bipolar disorder.

Researchers compared 22 pregnant women, currently well but with a history of depression, and 7 with bipolar disorder who were also currently well, against 28 healthy pregnant women. They also tested 18 non-pregnant women, as controls.

Between the 27th and 39th weeks of pregnancy, all the women were tested for how they responded to a series of happy or sad faces, and to laughter and crying, of both babies and adults. Specifically, the women were asked to rate how happy or distressed the infants were based on infants' facial and vocal displays of emotion (including smiles, laughter and cries). They were also asked to identify adult facial expressions of emotion (including happiness, sadness, fear and disgust) across varying intensity levels.

According to lead researcher, Dr Anne Bjertrup (Rigshospitalet, Copenhagen), *"In this study, we found that pregnant women with depression or bipolar disorder process infants' facial and vocal signals of emotion differently even when they are not currently experiencing a depressive or manic episode. These differences may impair these women's ability to recognise, interpret and respond appropriately to their future infants' emotional signals"*.

The researchers found that, compared to healthy pregnant women:

- Pregnant women with bipolar disorder had difficulty with recognising all facial expressions and showed a "positive face processing bias", where they showed better recognition of happy adult faces and more positive ratings of happy infant faces.
- In contrast, pregnant women with previous depression showed a negative bias in the recognition of adult facial expressions and rated infant cries more negatively.

Anne Bjertrup continued:

"This is a pilot study, so we need to replicate the findings within a larger sample. We know that depression and bipolar disorder are highly heritable, with up to 60% of children of parents with these affective disorders more likely to develop a mental disorder themselves. Genes play a role, but it is also likely that the quality of the early interaction with the mother is important. The different cognitive response to emotional infant signals in pregnant women with a history of mania and/or depression may make it more difficult for them to relate to their child and could thus confer an early environmental risk for the child.

It's worth emphasizing that this work does not say that the affected women are "bad mothers". It simply means that because of their health history, they may experience difficulties interpreting and responding appropriately to their infants' emotional needs and that we as clinicians need to be more aware of these possible difficulties. These are early days; this is the first research to show this link in both depression and bipolar disorder, so we need further studies to design and test early screening and intervention programs possibly involving ways which will train mothers to interpret the signals from their children better. But above all, we need evidence of any effect on children; our group have an ongoing study of mothers with affective disorders and their infants, to see if what we have found does indeed make a difference to the mother-infant interaction, which has an impact on the child's psychological development – this is something the work presented here does not address".

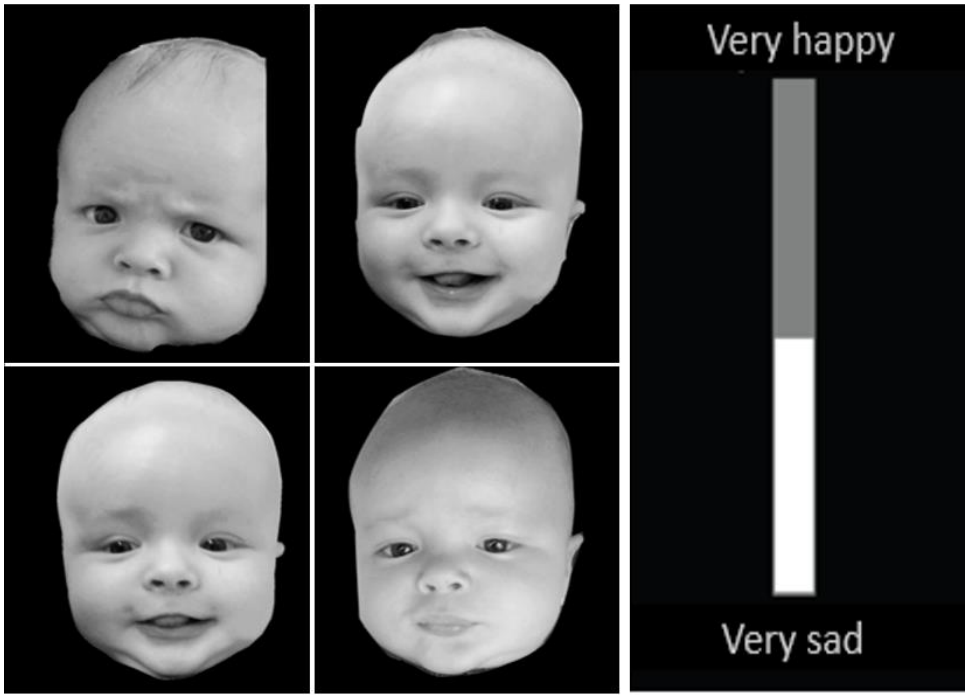

Figure 1: Rate how happy or sad the baby is

This figure illustrates examples *of baby* images with varying valence and intensity. Participants have to rate how happy or sad the baby is by moving the rating bar up or down. The more intense they think an emotion is the further up or down the rating bar goes (with permission of Anne ***Bjertrup: no restrictions on press use)***

Commenting, Professor Eduard Vieta (Institute of Neuroscience, University of Barcelona) said:

"This study adds to the growing scientific literature showing emotional bias in people with mood disorders, even when they are in remission, and for the first time shows the difficulties mothers have in identifying emotions in their own newborns. The results, however, do not imply at all that women with such conditions would not be able to raise a child properly and it does not prove any risk for their children since longitudinal data are lacking. This work may help us identify targets for pharmacological and psychological treatments, which in turn may help people with depression and bipolar disorder".

Professor Vieta was not involved in this work, it is an independent comment.

Notes

**Incidence statistics: for depression see https://read.oecd-ilibrary.org/social-issues-migration-health/health-at-a-glance-2017/prevalence-of-chronic-depression-2014_health_glance-2017-graph22-en#page1, for bipolar disorder see https://www.ncbi.nlm.nih.gov/pubmed/15935623*

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Notes for Editors

Please mention the ECNP Congress in any story resulting from this press release.

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The European College of Neuropsychopharmacology (ECNP)

The ECNP is an independent scientific association dedicated to the science and treatment of disorders of the brain. It is the largest non-institutional supporter of applied and translational neuroscience research and education in Europe. Website: www.ecnp.eu

The 31st annual ECNP Congress takes place from 6nd to 9th September in Barcelona. It is Europe's premier scientific meeting for disease-oriented brain research, annually attracting between 4,000 and 6,000 neuroscientists, psychiatrists, neurologists and psychologists from around the world. Congress website: https://2018.ecnp.eu/

Conference abstract (Poster P 569)

Hormones, Emotional processing and prepartum Attachment in Pregnant women with Affective Disorders (HEAPAD)

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Background: Emotion processing difficulties are candidate endophenotypes for unipolar disorder (UD) and bipolar disorder (BD). Emotion processing in UD is characterized by a negative bias, which is present also during pregnancy [1, 2]. In contrast, patients with BD seem to have general difficulties recognising emotional expressions and show a positive bias [3]. However, this has not been investigated during pregnancy. Research on healthy women suggests that pregnancy is associated with increased sensitivity to expressions signaling threat [4]. This study investigated for the first time whether the processing of facial and vocal signals of emotion is different in pregnant women with affective disorders compared to healthy pregnant women. We hypothesised that 1) pregnant women with BD would show a positive bias and generally impaired recognition of all emotional facial expressions 2) pregnant women with UD would show a negative bias, and 3) a pregnancy-associated threat bias would be absent in pregnant women with affective disorders.

Methods: Twenty-nine pregnant women with affective disorders (22 UD and 7 BD) in remission and 28 pregnant healthy women were assessed at 27-39 weeks of pregnancy. Eighteen non-pregnant healthy women, matched for age and education were included as controls. Emotion processing was assessed with the Facial Emotion Recognition Task [5] and Baby Paradigms rating task (emotional infant faces and vocal infant expressions (laughter and crying)). Results were analysed with repeated-measures analysis of variance (ANOVA).

Results: As hypothesised, pregnant women with BD displayed overall poorer recognition of facial expressions than the other groups ($F(3.85,281.29)=3.61$, $p=0.008$) but specifically better recognition of positive (happy) adult faces than healthy pregnant ($F(1,33)=7.88$, $p=0.008$; positive: $t=2.60$, $df=33$, $p=0.01$) and non-pregnant women ($F(1,22)=17.03$, $p<0.001$; positive: $t=1.98$, $df=23$, $p=0.059$).They also rated the medium happy infant faces more positively than healthy pregnant women ($F(1,33)=6.35$, $p=0.02$; medium happy: $t=2.39$, $df=33$, $p=0.02$). As hypothesised, UD pregnant women showed better discrimination accuracy for negative (sad, fearful) adult faces ($F(1,48)=4.08$, $p=0.049$; negative: $t=-2.40$, $df=48$, $p=0.02$) and rated infant cries more negatively than healthy pregnant women ($F(1.66,79.66)=4.45$, $p=0.02$; $t=2.34$, $df=46.52$, $p=0.02$). In contrast with the hypothesis, healthy pregnant women showed no better recognition accuracy or speed ($p >=0.33$) for threat expressions than non-pregnant controls and this did not differ between healthy and affected groups ($p >= 0.12$). However, healthy pregnant women rated the most distressed infant cries less negatively than the non- pregnant group: ($F(1.45,64.30)=3.43$, $p=0.051$; most distressed: $t=2.64$, $df=43$, $p=0.01$). Comparison of the two diagnostic groups revealed greater recognition of positive vs. negative faces in BD vs. UD pregnant women ($F(1,27)=19.99$, $p < 0.001$; positive: $t=2.25$, $df=27$, $p=0.03$; negative: $t=-3.10$, $df=27$, $p=0.005$)

Conclusion: During pregnancy, BD women displayed generally impaired facial expression recognition and a distinct positive bias while women with UD showed a negative processing bias. Future studies are warranted to examine if these cognitive biases influence risk of postpartum manic or depressive episodes and early mother-infant interactions.expressions signaling threat [4]. This study investigated for the first time whether the processing of facial and vocal signals of emotion is different in pregnant women with affective disorders compared to healthy pregnant women. We hypothesised that 1) pregnant women with BD would show a positive bias and generally impaired recognition of all emotional facial expressions 2) pregnant women with UD would show a negative bias, and 3) a pregnancy-associated threat bias would be absent in pregnant women with affective disorders.