**Gender differences in brain activation during implicit emotional processing in patients with melancholic depression**

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**Introduction:** The greater susceptibility of women to MDD may be related to differences in brain circuitry that underlie differences in processing of emotional facial expression between men and women. Gender differences in neural differences may also be influenced by with the neurobiology underlying subtypes of MDD, which is characterized by more impaired emotional reactivity and significant anhedonia. It is important to investigate gender differences by looking at just one melancholic subtype.

The aim of this study was to investigate gender difference MDD with melancholic depression as it relates to brain activation during implicit perception of emotional faces.

**Methods:** Thirty participants who met the DSM-IV criteria for a current major depressive episode (15 female, average age = 43.67, SD=8.59) and 21 healthy participants (12 female, average age = 37.65, SD=11.83) underwent fMRI using a 4.0 Tesla Varian Unity INOVA Whole Body MRI/MRS system while viewing emotional (sad, happy, fearful) or neutral faces (Penn Emotional Faces, Gur et al., 1992). FMRI data were preprocessed using the AFNI package (Cox, 1996).

**Results:** ROI analyses from brain areas with significant gender\*group effect revealed decreased BOLD signal in the right insula, and increased activation in the right cingulate, precuneus (BA31), and left posterior cingulate cortex in women compare to men ( p≤0.005). A gender\*melancholic score effect was found in the right superior temporal gyrus (BA39). The lateralization index was decreased in female compared to male participants in the amygdala, and claustrum, and increased in the insula and MPFC and parahippocampal gyrus..

**Conclusions:** Findingdifferences in the brain activation during implicit emotional face between female and male participants with melancholic subtype contribute to understanding greater susceptibility of women to MDD. ???