Supplementary material

Title:

Global Functional Connectivity Analysis Indicating Dysconnectivity of the Hate Circuit in Major Depressive Disorder

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Image acquisition and preprocessing

MRI images were obtained on a Siemens (Trio) 3T scanner at the Second Xiangya Hospital of Central South University. The participants were required to remain motionless and awake with their eyes closed. The participants used soft earplugs and foam pads to reduce the scanning noise and head motion. Resting-state functional images were obtained with a gradient-echo echo-planar imaging (EPI) sequence using the following parameters: repetition time/echo time = 2000 ms/30 ms, 30 slices, 64 × 64 matrix, 90° flip angle, 240 mm field of view, spatial resolution = 3.75 mm × 3.75 mm, 4 mm slice thickness, 0.4 mm gap, and 250 volumes lasting for 500 s. After the scan, each participant was asked some questions to confirm the wakefulness during the scan.

Functional images data were preprocessed by using the DPARBI software(Yan 2016). The fMRI time series were first corrected for within-scan acquisition time differences between slices and realigned to the first functional scan to correct for head motion. We excluded the participants whose head movement exceeding 2.0 mm of translation or 2° of rotation in any directions. All the realigned images were spatially normalized to the Montreal Neurological Institute in SPM8 and resampled to $3 \times 3 \times 3$ mm^3 (Liu 2015) . After normalization, the images were smoothed (with an 8 mm full width at half maximum Gaussian kernel). The time series were further linearly detrended and temporally band-pass filtered (0.01–0.08 Hz). After that, several covariates were removed including Friston-24 head motion parameters acquired by rigid body correction, signal from a ventricular region of interest (ROI), and signal from a region centered in the white matter. The global signal was not removed as indicated

in a previous study(Hahamy A 2014).

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