**Effects of Childhood Trauma on Left Inferior Frontal Gyrus Function during Response Inhibition Across Psychotic Disorders**

**– Supplementary Material –**

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**SUPPLEMENTARY METHODS**

**Participants**

From an initial sample of N=262 [including 85 healthy controls (HC), 92 bipolar disorder cases (BD) and 85 schizophrenia or schizoaffective disorder cases (SZ)], we excluded nine participants with a diagnosis other than SZ or BD according to the Diagnostic Interview for Psychosis (Castle *et al.*, 2006), including those with depressive disorder (n=3), delusional disorder (n=1), psychosis non-otherwise specified (n=3), or bipolar-II disorder (n=2), as well as three participants whose psychotic episode was induced by drug intake, and ten BD cases who did not report a lifetime history of psychosis. Also, healthy participants were excluded if the MINI revealed a history of mental illness (n=5), or were under the influence of drugs or antidepressant medications (n=3). Participants were also excluded from the present study if: clinical assessment and/or MRI acquisition were partial or missing (n=41), if the MRI revealed structural brain abnormalities (n=7), or if participants were dyslexic (n=1). Finally, participants were excluded if they did not reach behavioural performance above the chance level for each of the task conditions and if the quality of fMRI data did not meet quality assessment (n=18). Following these exclusions, the present study included 56 cases with schizophrenia (n=36) or schizoaffective disorder (n=20), 56 cases with psychotic bipolar-I disorder, and 53 healthy controls.

**Materials**

*fMRI data acquisition and pre-processing*

Functional images were processed following a standard pipeline that included manual re-orientation, slice-timing correction, then images were realigned to the first image in the sequence to help correct for head motion, and anatomical images were co-registered to the mean functional image. Scans were screened for stability (<2mm head movement; <2 degrees rotation), image artifacts, and structural abnormalities and were then spatially normalized into the Montreal Neurological Institute (MNI) space using a non-linear 12-parameter affine transformation, resliced to 2x2x2mm voxels. Finally, images were smoothed with an isotropic Gaussian kernel set at 8mm full-width half-maximum. For each condition, a stick function was convolved with a canonical hemodynamic function at each voxel to create first level (individual) contrasts for the different conditions separately (‘Congruent, ‘Incongruent’, ‘No-Go’ and ‘Neutral’) as well as for the contrast of interest (‘No-Go>Neutral’). Finally, the data were high-pass filtered using a cut-off of 128s and the autoregressive (AR1) function was applied. To help account for movement and image intensity-related variance, scans for all participants were additionally inspected for movements and intensity artifacts using the Artefact Detection Toolbox for SPM8 (ART; <https://www.nitrc.org/projects/artifact_detect/>). This toolbox identifies images that are outliers for movement (2mm translation and 2 degrees rotation) and global BOLD signal, and then allows the integration of dummy variables as new regressors to a new first-level model for each bad time point. Only participants showing 10% or less image outliers for each task condition separately, as well as for the whole run, were considered for further analyses. The regressors obtained after ART inspection, as well as incorrect and missed trials for each condition were added to the design matrix at the first-level. Individual contrasts representing brain activation during correct response inhibition (‘No-Go>Neutral’) were used in a second (group) level.

*Regions-of-Interest*

Regions-of-interest (ROIs) included the left and right IFG [respectively MNI coordinates (-35,20,-9) and (39,25,-11)], right IPL [MNI coordinates (48,-45,46)], right DLPFC [MNI coordinates (39,48,21)] and right SMA [MNI coordinates (12,14,56)]. Original coordinates were reported in Talairach space and were converted to MNI space using the tal2icbm\_spm script (<http://brainmap.org/icbm2tal/>). To identify the dACC region, we first applied a mask encompassing the bilateral cingulate regions 4, 5 and 6 based on functional similarities among these regions from Torta and Cauda’s meta-analysis (Torta and Cauda, 2011), to the main effect of task (across all participants), and then built a 6mm sphere around the group maximum peak within this mask [MNI coordinates (6,36,28)]. From these spheres, individual average time-series for the positive effect of task (‘No-Go>Neutral’; *p*<0.05) were extracted using the Marsbar toolbox for SPM8 ([http://marsbar.sourceforge.net](http://marsbar.sourceforge.net/); Brett *et al.*, 2002).

*Task-related functional connectivity*

This toolbox, contrary to standard PPI analyses as implemented in SPM8 (Friston *et al.*, 1997, Gitelman *et al.*, 2003), is fully automated and allows users to model simultaneously task-dependent connectivity for the selected conditions (i.e., ‘Congruent, ‘Incongruent’, ‘No-Go’ and ‘Neutral’). This method has better sensitivity and specificity than traditional PPI analyses (McLaren *et al.*, 2012). The mean time-series of all voxels within our seed regions was extracted for each subject and deconvolved from the Hemodynamic Response Function (HRF) to generate an estimated neuronal time-series (physiological variable). The condition onset times for each condition (‘Congruent, ‘Incongruent’, ‘No-Go’ and ‘Neutral’) were separately convolved to the canonical HRF to create the psychological variable. For each subject, the interaction term (PPI) was created by multiplying the physiological with the psychological variables. Individual PPI contrasts were automatically created by the toolbox (‘No-Go>Neutral’). These contrasts were used in a new whole-brain analysis using the general linear model in SPM8.

**Supplementary References**

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