

Supplementary material

Supplementary material 1.

Cortical thickness analysis

The surface extraction pipeline used topology correction (Yotter *et al.*, 2011a), spherical mapping (Yotter *et al.*, 2011b), estimation of local surface complexity, and local gyrification (Luders *et al.*, 2006). Finally, cortex surfaces were smoothed (FWHM=15mm) and resampled to a 32k mesh compatible with the Human Connectome Project (HCP). Individual values of mean white (WM) and gray matter (GM) volumes were calculated in each ROI of the Neuromorphometrics atlas (labeled data provided by Neuromorphometrics Inc.). Mean CT values (mCT) within the ROIs defined in the a2000s atlas included in CAT were also calculated. In a parallel pipeline, following the canonical FSL anatomical one, the axial-reoriented T1 images underwent bias field correction, skull-stripping, and non-linear co-registration to the standard MNI template. The resulting transformations were later used to normalize DTI and rs-fMRI data.

Functional connectivity analysis

Pre-processing

Pre-processing was performed using FEAT (Smith *et al.*, 2004) and included (i) removal of the first four volumes to allow for signal equilibration, (ii) head movement correction by volume realignment to the middle volume using MCFLIRT, (iii) global 4D mean intensity normalization, and (iv) spatial smoothing (5 mm FWHM). We then applied ICA-AROMA (Independent Component Analysis-based Automatic Removal Of Motion Artifacts;16) to identify independent components (ICs) representing motion-related artifacts. This method calculates a set of spatial and temporal discriminative features and accordingly exploits a classification procedure to identify ICs representing motion artifacts. Specifically, these features evaluate the spatial overlaps of each component with the brain and cerebral spinal fluid (CSF) edges, the frequency content and the temporal correlation with realignment parameters of the IC time series. Finally, ICs classified as motion-related were removed from the fMRI dataset by means of linear regression. The resulting fMRI dataset was then high-pass filtered (cut-off frequency of .01 Hz), and the mean values of the BOLD signal in both liquor and white matter were regressed from the data.

Melodic analysis

To assess correlations between within networks connectivity and sensory profiles parameters, pre-processed images for each participant were temporally concatenated to create a single 4D dataset. This fMRI dataset was then decomposed into ICs with a free estimation of the number of components using MELODIC (Multivariate Exploratory Linear Optimized Decomposition into Independent Components, (Beckmann, DeLuca, Devlin, & Smith, 2005). To identify the participant-specific temporal dynamics and spatial maps associated with each individuated RSN, a dual regression analysis was applied (Filippini *et al.*, 2009). This method implies (i) the use of the selected group-IC spatial maps in a linear model fit (spatial regression) against the single participant fMRI dataset, resulting in matrices describing the temporal dynamics for each IC and participant, and (ii) the use of these time-course matrices, which are entered into a linear model fit (temporal regression) against the associated fMRI dataset to estimate participant-specific spatial maps. After the dual regression, spatial maps of all the participants were grouped into a single 4D file for each RSN of interest. Candidate RSNs of interest were selected by visual inspection based on previous literature (Smith *et al.*, 2009).

Within-RSN connectivity differences were carried out with non-parametric permutation tests (5000 permutations), and analyses were restricted within the spatial RSN of interest using binary masks obtained by thresholding the corresponding Z map image ($Z > 2.3$). Output maps were threshold-free cluster enhancement (TFCE) corrected using a significance threshold of $p < .05$.

FSLNets analysis

Supplementary material 2. Gender differences for sensory processing

	Male (n=27)	Female (n=39)	Sign. (T test)
Low registration	28.74±6.91	28.51±7.86	.903
Sensation Seeking	43.70±5.36	44.77±5.94	.459
Sensory sensitivity	35.59±7.54	33.21±8.85	.257
Sensation Avoiding	35.67±7.98	35.46±8.71	.923

Supplementary material 3. Age differences for sensory processing

	Pearson corr	Sign.
Low registration	.023	.866
Sensation Seeking	-.173	.198
Sensory sensitivity	.027	.842
Sensation Avoiding	.017	.901