

SUPPLEMENTARY MATERIALS

A fronto-insular-parietal network for the sense of body ownership

V. Moro, V. Pacella, M. Scandola, S. Besharati, E. Rossato, Jenkinson P.M., Fotopoulou A.

A – The rationale of the statistical procedure followed in the analysis of data

*Table SM-A: Schematic representation of the statistical steps used in this paper. * = only on DSO+ patients*

1. Identification of the lesioned areas and disconnected tracts
1a. Lesion drawing on MRIcron (using each patients's MRI/CT scans).
1b. Disconnectome maps computation on the BCBToolkit (using each patient's lesion drawing).
2. Linear regressions and comparison of results with brain atlases
2a. The voxels of the lesion drawings and the disconnectome maps were analysed on FSL via two separate linear regressions for lesion and disconnection patterns to find differences between the DSO- and DSO+ groups. Clinical and neuropsychological data were used as covariates.
2b. Statistically significant voxels were used to identify lesions in grey matter structures and white matter tracts of the Harvard and Rojkova atlases respectively.
3. Definition of the DSO network
3a. Each lesioned brain area or disconnected tract was used as a regressor in separate Bayesian Bernoulli Models to verify which of them explain the DSO symptom better than the null model (i.e. clinical variables). Demographic and neuropsychological data were here used as covariates.
3b. The areas and tracts surviving to the analyses in the point 3a, were clusterized using the k-means algorithm*.
3c. The resulting clusters were used as regressors on the severity of the DSO symptom with a Gaussian Bayesian Model*.
3d. The proportion of the lesion of the grey matter structures, or the probability of disconnection of the white matter tract were compared between the two emerging clusters, to find which structures were equally involved in the two clusters*.

B- Descriptive results of the areas involved in the lesions in DSO+ and DSO- groups

Table SM-B. For each structure that resulted contributing to DSO ($BF_{10} > 3$) details of 1) the number of patients with the lesion affecting the structure for DSO patients (DSO+) and control group (DSO-); 2) the stereotaxic coordinates. Stereotaxic coordinates of the centre of mass have been computed on mrcron. AS: anterior segment of the arcuate fasciculus; FIL: frontal inferior longitudinal fasciculus; FIT5: fronto-insular tract 5; SLFII: second branch of the superior longitudinal fasciculus; SLFIII: third branch of the superior longitudinal fasciculus; PrCG: precentral gyrus; PsCG: postcentral gyrus; SMG: supramarginal gyrus.

Brain structure	DSO+ (n. 23)	DSO- (n. 26)	Stereotaxic coordinates		
			x	y	z
AS	21	19	133.62	111.05	100.27
FIL	19	16	134.66	144.61	92.78
FIT5	23	21	128.8	115.67	85.99
SLFII	20	11	147.03	142	85.91
SLFIII	23	11	129.69	118.37	120.57
PrCG	16	20	123.93	110.19	112.33
PsCG	16	18	132.46	123.3	93.72
SMG	15	8	153.19	100.27	110.02

C- Comparison of the DSO+ and DSO- groups' lesions via subtraction

Figure SM-1. a) overlapping of the DSO+ patients' lesions and b) of the control group's (DSO-) lesions. The colour bars (minimum 5 subjects) indicate the number of overlapping lesions. c) Subtraction plot of the DSO+ – DSO- 's lesions. The colour bar in c indicates the percentage of DSO+ patients whose lesion involves the same location for each voxel. For illustration purposes, the threshold of 30% has been set in the subtraction. The numbers on the upper part of the figure indicates the MNI coordinates of each axial slice.

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