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Supplementary material

Tract of Interest	Cluster Size (Voxels)	Mean Value (SD)		TFCE	Cohen's d	Peak voxel MNI
		PMDD	CTRL	p-value		Coordinates (x, y, z)
Mean diffusivity, PMDD > controls		$(\times 10^{-4} \text{ mm}^2/\text{s})$				
Superior coronaradiata L	10	6.98 (0.06)	6.57 (0.05)	0.085*	1.18	-23, -1, 34
Axial diffusivity, PMDD > controls		$(\times 10^{-3} \text{ mm}^2/\text{s})$				
Dorsal cingulum bundle L	140	1.35 (0.06)	1.27 (0.05)	0.014	0.72	-9, -24, 34
Dorsal cingulum bundle R	66	1.25 (0.04)	1.19 (0.04)	0.036	0.65	8, -14, 36
Superior corona radiata L	419	1.09 (0.08)	1.05 (0.08)	0.007*	0.64	-27, 3, 24
Superior corona radiata R	300	1.11 (0.07)	1.07 (0.06)	0.045	0.57	23, -15, 35
Superior longitudinal fasciculus L	194	1.22 (0.05)	1.17 (0.05)	0.035	0.64	-41, -16, 28
Uncinate fasciculus L	22	1.21 (0.07)	1.14 (0.06)	0.045	0.72	-35, -1, -19
Radial diffusivity				-		

Table S1: Between-group differences in white matter metrics (MD, AD, RD and WMV), within a priori defined ROIs. Threshold-Free Cluster Enhancement (TFCE) voxel-wise comparisons of mean diffusivity (MD), axial diffusivity (AD), radial diffusivity (RD) between women with PMDD and controls within tracts of interest. The results were corrected for multiple comparisons across voxels using the Family-Wise Error rate (FWE) $p < 0.1$ TFCE. * $q < 0.1$ False Discovery Rate (FDR) corrected across ROIs. Mean raw values of AD were extracted from the significant clusters and are presented for each group. Abbreviations: L, left; MNI, Montreal Neurological Institute; PMDD, premenstrual dysphoric disorder; R, right.

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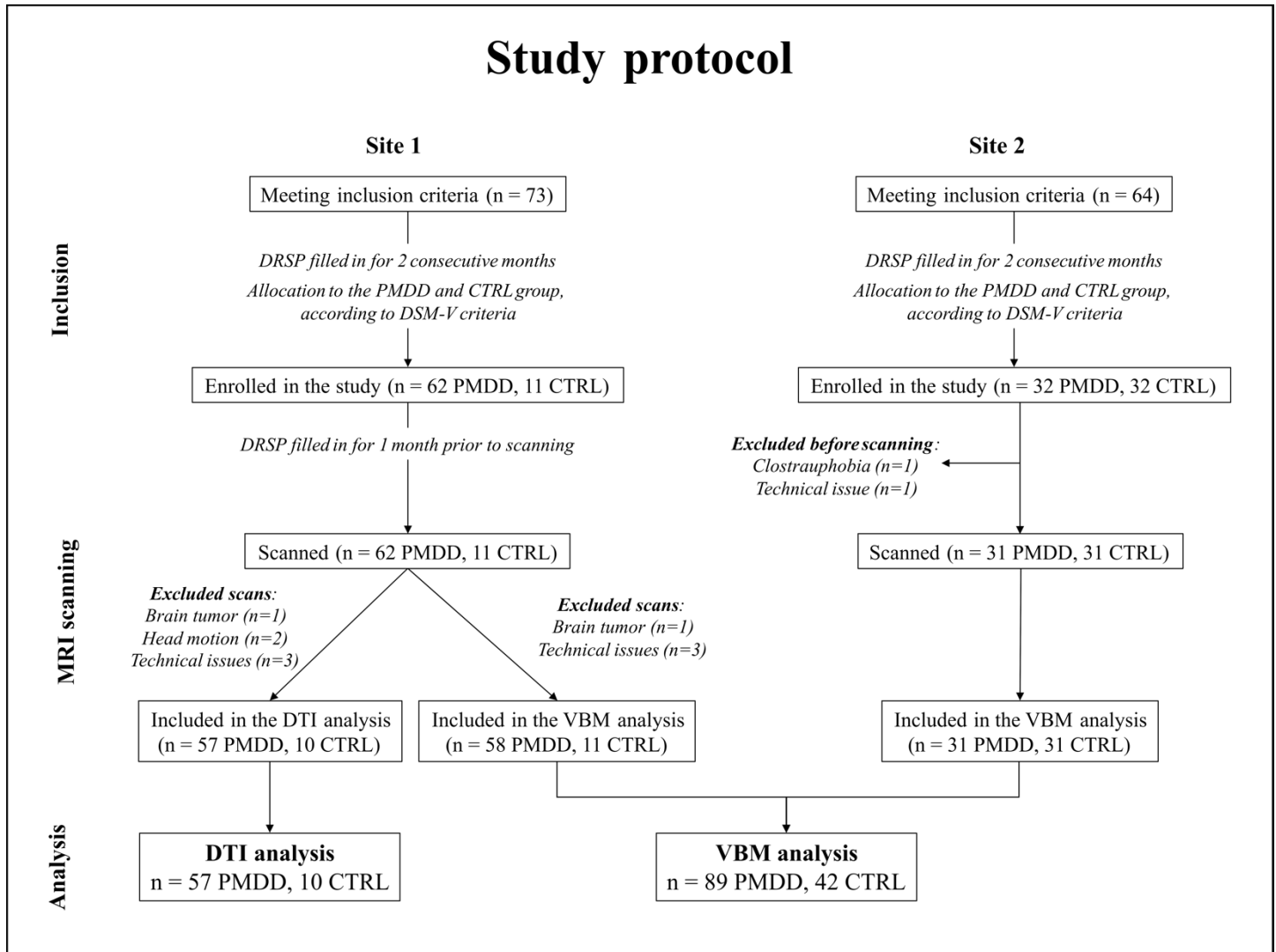


Figure S1. Diagram of the study protocol for the DTI and the VBM studies. For each stage of the study (Inclusion, MRI scanning and Analysis), the number of participants in each group (PMDD and Control) is depicted, along with the number of exclusions and motives. In addition, the timing in which the participants from each site filled in the Daily Report of Severity of Problems (DRSP) is presented. Thus, both site 1 and site 2 used the DRSP scores filled in for two consecutive months prior to the study to confirm PMDD diagnosis. Only the participants from site 1 additionally filled in the DRSP during the

Appendix 1 to Gu X, Dubol M, Stiernman L, et al. White matter microstructure and volume correlates of premenstrual dysphoric disorder. *J Psychiatry Neurosci* 2022. doi: 10.1503/jpn.210143

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month preceding the scanning session. CTRL = controls, PMDD = premenstrual dysphoric disorder, Site 1 = Uppsala, Site 2 Umeå.

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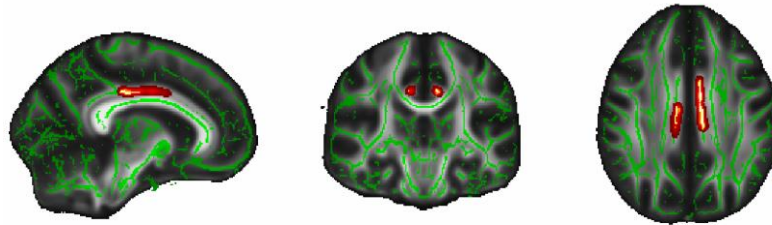
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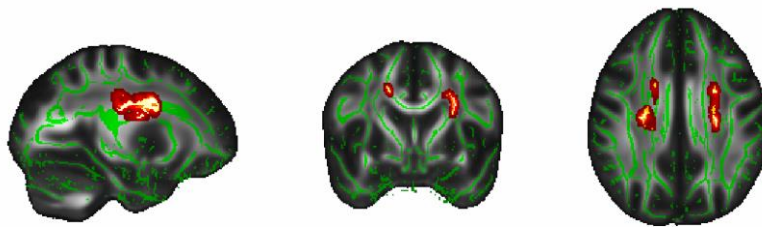
Figure S2. Between group differences in mean diffusivity within ROIs. Presentations of the tract-based spatial statistics (TBSS) results in MD, within ROIs. The cluster in the left superior corona radiata showed greater MD in women with PMDD compared to healthy controls. Depicted are significant ($q < 0.1$ FDR-corrected across ROIs) differences in red-yellow, overlaid onto the mean FA skeleton (green). The cluster was displayed with three-dimensional view at their peak MNI coordinates. To aid visualization the results were thickened using the “`tbss_fill`” command in FSL. Results were visualized at a threshold of $p < 0.1$ corrected for multiple comparisons across voxels using Familywise Error Rate (FWE) with threshold-free cluster enhancement (TFCE).

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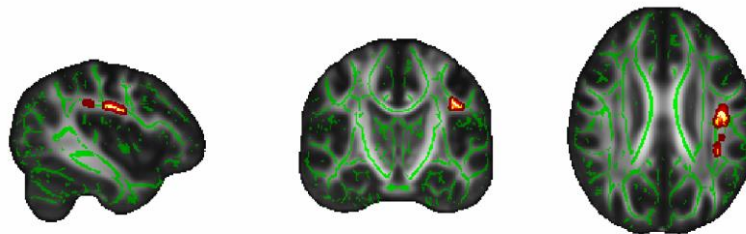
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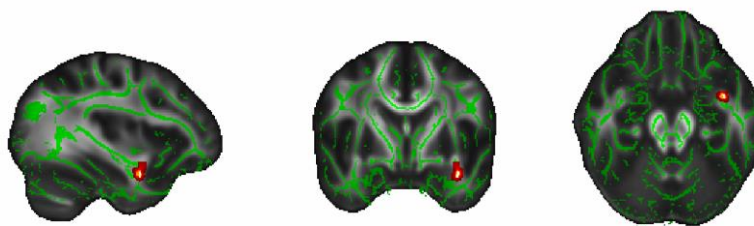
(a) Dorsal cingulum bundle



(b) Superior corona radiata



(c) Superior longitudinal fasciculus



(d) Uncinate fasciculus

Figure S3 Between group differences in axial diffusivity within ROIs. Presentations of the tract-based spatial statistics (TBSS) results in AD, within ROIs. The six clusters showed greater AD in women with PMDD compared to healthy controls. Depicted are significant differences in red-yellow, overlaid onto the

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mean FA skeleton (green). The six clusters were displayed with three-dimensional view at their peak MNI coordinates. To aid visualization the results were thickened using the “`tbss_fill`” command in FSL. Results were visualized at a threshold of $p < 0.1$ corrected for multiple comparisons across voxels using Familywise Error correction (FWE) with threshold-free cluster enhancement (TFCE). Among these clusters, only the one in the left superior corona radiata survived FDR correction across ROIs ($q < 0.1$).