**Supplemental Methods**

**Participants**

Among PTSD participants, 48 (PTSD, *n*=29; PTSD+DS, *n*=19) were receiving psychotropic treatment at the time of the study. Medications included antidepressants (total *n*=43: SSRIs, *n*=18; SNRIs, *n*=9; NDRIs, *n*=9; tetracyclics, *n*=7), atypical antipsychotics (*n*=10), sedatives (total *n*=19: benzodiazepines, *n*=13; cyclopyrrolone, *n*=6), and anticonvulsants (*n*=1).

**fMRI Image Acquisition**

We utilized a 3 Tesla MRI Scanner (Trio, Siemens Medical Solutions, Erlangen, Germany) with a 32-channel head coil for brain imaging. During the resting-state scan, 120 volumes of whole brain BOLD images were acquired with a gradient echo T2\* weighted echo-planar-imaging (EPI) pulse sequence (single-shot, blipped-EPI, interleaved slice acquisition order and tridimensional prospective acquisition correction) with the following parameters: TR = 3000 ms, TE = 20 ms, isotropic resolution 2mm, FOV = 192 × 192 × 128 mm3 (94 × 94 matrix, 64 slices), flip angle = 90°. High-resolution T1-weighted anatomical images were acquired with a Magnetization Prepared Rapid Acquisition Gradient Echo sequence (192 slices isotropic resolution 1mm).

**fMRI Preprocessing**

Preprocessing of the functional images was performed with SPM12 (Wellcome Department of Cognitive Neurology, London, UK). After discarding the 4 initial volumes, the standard preprocessing routine included spatial alignment to the mean image using a rigid body transformation, reslicing, and coregistration of the functional mean image to the anatomical. We then performed segmentation of all tissue types, and normalization to the Montreal Neurological Institute (MNI) standard template. The forward deformation fields used to normalize were generated without resampling the voxel size, where each subject was visually inspected to ensure precise normalization patterns given the relatively small anatomical regions of interest. Images were then smoothed using a 6mm kernel FWHM. Additional correction for motion was implemented using the ART software package (Gabrieli Lab, McGovern Institute for Brain Research, Cambridge, MA), which computes regressors that account for outlier volumes, in addition to the six movement regressors computed during standard realignment in general linear modeling. The smoothed functional images were subsequently bandpass filtered (high-pass 0.012 Hz, low-pass 0.1 Hz) to reduce the signal-to-noise ratio (software by co-author Jean Théberge).

**Supplemental Results**

**Machine Learning- mALFF**

We found similar results using the cross-validation procedure LOSOPG, where the MGPC machine learning algorithm was able to predict diagnosis of PTSD, PTSD+DS and healthy individuals from subject mALFF maps with 90.95% balanced accuracy, *p* < .0001 during permutation testing. Here, the class accuracy for healthy individuals was 96.08%, for PTSD patients it was 89.02%, and for PTSD+DS patients it was 87.76%. Finally, the predictive class value for healthy individuals was 89.09%, for PTSD patients it was 92.41%, and for PTSD+DS patients it was 89.58%. Again, regions that were weighted as most important in classifying the three groups were the bilaterial mid orbitofrontal cortex (BA 11), the bilateral dmPFC (BA 10, 9, 8, 6), the bilateral vmPFC/subgenual ACC (BA 11, 12, 25) and the bilateral superior parietal lobe (BA 5, 7).

Using an independent machine learning algorithms called binary Gaussian Process Classification (GPC), our results were generally replicated when classifying PTSD and PTSD+DS diagnoses based on subject mALFF maps. Here, binary GPC with LOSO cross-validation was able to distinguish PTSD from PTSD+DS patients with 91.44% balanced accuracy *(p* < .0001), in which the PTSD group had 95.12% class accuracy and the PTSD+DS group had 87.76% class accuracy, ROC/AUC = 0.96. The class predictive value of the PTSD group was 92.86% and for the PTSD+DS group it was 91.49%. Regions that were weighted as most important in classifying the three groups were similar to the MGPC analysis, and included the bilaterial mid orbital frontal cortex (BA 11), the bilateral dmPFC (BA 10, 9, 8), the left vmPFC/subgenual ACC (BA 11, 12, 25), the right temporal pole, and left pallidum. Similarly, a LOSOPG cross-validation procedure with the binary GPC yielded a balanced accuracy of 92.05% (*p* < .0001), in which the PTSD group had 96.34% class accuracy and the PTSD+DS group had 87.76% class accuracy, ROC/AUC = 0.96. Predictive value of the PTSD group was 92.94% and for the PTSD+DS group it was 93.48%. Regions that were weighted as most important in classifying the three groups were on balance with our main LOSO analysis.

**Machine Learning- Amygdala Complex Functional Connectivity**

We found similar results using the cross-validation procedure LOSOPG, where the MGPC machine learning algorithm was able to predict diagnosis of PTSD, PTSD+DS and healthy individuals, using individual amygdala complex functional connectivity maps with 85.00% balanced accuracy, *p* < .0001 during permutation testing. Here, the class accuracy for healthy individuals was 84.31%, for PTSD patients it was 85.37%, and for PTSD+DS patients it was 83.67%. Furthermore, the predictive class value for healthy individuals was 93.48%, for PTSD patients it was 85.37%, and for PTSD+DS patients it was 75.93%. Regions that were weighted as most important in classifying the three groups were in keeping with the LOSO MGPC analysis.

Using an independent machine learning algorithms called binary Gaussian Process Classification (GPC), these results were generally replicated when classifying PTSD and PTSD+DS diagnoses based on amygdala complex functional connectivity. Here, binary GPC with LOSO cross-validation was able to distinguish PTSD from PTSD+DS patients with 84.50% balanced accuracy *(p* < .0001), in which the PTSD group had 91.46% class accuracy and the PTSD+DS group had 75.51% class accuracy, ROC/AUC = 0.93. The class predictive value of the PTSD group was 86.21% and for the PTSD+DS group it was 84.09%. Regions that were weighted as most important in classifying the three groups were in keeping with the MGPC analysis, and included briefly the bilaterial mid and inferior orbitofrontal cortex (BA 11), the bilateral dmPFC and dlPFC (BA 46, 10, 9, 8, 6), the bilateral pregenual and dorsal anterior cingulate cortex (ACC), bilateral supramarginal gyrus, the bilateral vmPFC/subgenual ACC (BA 11, 12, 25), right pallidum, right temporal pole, bilateral supplemental motor area, bilateral cerebellum lobules VII and VIII, and bilateral inferior parietal lobes.

Similarly, a LOSOPG cross-validation procedure yielded a balanced accuracy of 85.0 0% (*p* < .0001), in which the PTSD group had 91.46% class accuracy and the PTSD+DS group had 77.55% class accuracy, ROC/AUC = 0.93. Predictive value of the PTSD group was 87.21% and for the PTSD+DS group it was 84.44%.

**Mass-Univariate Amygdala Complex Functional Connectivity Analysis**

In keeping with the supplementary amygdala complex machine learning analysis, we observed a significant amygdala complex × group interaction (FDR-corrected) within the left dlPFC, dmPFC and orbitofrontal cortex (BA 10, 46, 9), and within the right precuneus and superior parietal lobe (BA 40) (see Table s2).

Table s1.

*Clinical Data Statistical Analyses*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Variable** | **Levene's Homogenity Test** | **ANOVA** | **Post-Hoc Comparison** | **Post-Hoc Statistics** |
| CAPS- IV Total | *F*(2, 133) *=* 43.44*, p <* .001 | *F*(2, 53.16) *= 1051.48, p < .0001* | PTSD & PTSD+DS | *p* < .001 |
|  |  |  | PTSD & Control | *p* < .001 |
|  |  |  | PTSD+DS & Control | *p* < .001 |
| CAPS- 5 Total | *ns* | *F*(2, 43) = 11.46, *p <* .0001 | PTSD & PTSD+DS | *p* < .001 |
|  |  |  | PTSD & Control | *p* < .001 |
|  |  |  | PTSD+DS & Control | *p* < .001 |
| CTQ | *F*(2, 170) *=* 24.02*, p <* .001 | *F*(2, 98.81) *=* 88.84, *p <* .0001 | PTSD & PTSD+DS | *p < .005* |
|  |  |  | PTSD & Control | *p < .001* |
|  |  |  | PTSD+DS & Control | *p < .001* |
| BDI | *F*(2, 166) *=* 25.35, *p* <.001 | *F*(2, 81.43) = 409.62, *p* <.0001 | PTSD & PTSD+DS | *p < .001* |
|  |  |  | PTSD & Control | *p < .001* |
|  |  |  | PTSD+DS & Control | *p < .001* |
| MDI-total | *F(2, 170) =* 26.22, *p <* .001 | *F*(2, 83.09) = 150.73, *p* < .0001 | PTSD & PTSD+DS | *p < .001* |
|  |  |  | PTSD & Control | *p < .001* |
|  |  |  | PTSD+DS & Control | *p < .001* |
| MDI Depersonalization/  Derealization Average | *F*(2, 152) *=* 40.50*, p <* .001 | *F*(2, 66.19) = 78.35, *p* < .0001 | PTSD & PTSD+DS | *p < .001* |
|  |  |  | PTSD & Control | *p < .001* |
|  |  |  | PTSD+DS & Control | *p < .001* |
| RSDI Dissociation | *F*(2, 140) *=* 25.40*, p <* .001 | *F*(2, 56.52) = 25.45, *p* <.0001 | PTSD & PTSD+DS | *p < .05* |
|  |  |  | PTSD & Control | *p < .001* |
|  |  |  | PTSD+DS & Control | *p < .001* |
|  |  |  |  |  |
|  |  |  |  |  |

If Levene’s test of homogeneity of variance was violated, we then conducted Welch’s ANOVAs and Games-Howell post-hoc analyses to adjust for unequal variances. Abbreviations: PTSD= posttraumatic stress disorder, PTSD+DS= dissociative subtype posttraumatic stress disorder patients, CAPS = Clinician Administered PTSD Scale, BDI = Beck’s Depression Inventory, MDI = Multiscale Dissociation Inventory.

Table s2

*Amygdala Complex Functional Connectivity Full-Factorial ANOVA*

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Analysis** | **Gyrus/Sulcus** | **H** | **BA** | **Cluster Size** |  | **MNI Coordinate** |  | **F(10, 1074)** | **Z score** | ***p FDR*** |
|  |  |  |  |  | **x** | **y** | **z** |  |  |  |
| Group × Amygdala Complex Interaction | dlPFC, dmPFC, orbitofrontal cortex | L | 10,46,9 | 1432 | -44 | 38 | 22 | 3.42 | 3.54 | <.005 |
|  | Precuneus, Superior Parietal Lobe | R | 40 | 3565 | 35 | -46 | 48 | 3.00 | 3.08 | <.05 |

Abbreviations: PTSD= posttraumatic stress disorder, PTSD+DS= dissociative subtype posttraumatic stress disorder patients, dlPFC = Dorsolateral Prefrontal Cortex, dmPFC = Dorsomedial Prefrontal Cortex, BA = Brodmann Area, MNI = Montreal Neurological Institute, FDR = False-Discovery-Rate cluster corrected, H = Hemisphere.