**Supplemental Text (Methods)**

Neuroimaging methods

Consistent with methods described in prior literature,[1, 2] using the *trac-all* pipeline in FreeSurfer,[3] we corrected for B0 inhomogeneities, eddy currents, and head motion[4]; created a diffusion brain mask, white matter mask, and cortical mask; performed inter-subject and intra-subject registration; transformed all masks to standard space; fit a tensor at each voxel; estimated pathway priors; and fit a ball-and-stick model using FSL’s *bedpostx*.[5] After this, 18 anatomically informed, probabilistic white matter pathways were reconstructed, from which we extracted factional anisotropy (FA) for analysis. Similarly, for the DTI region of interest (ROI) analysis, we extracted the average FA from voxels in each ROI using the Johns Hopkins University (JHU) white matter parcellation atlas[6] and the ENIGMA-DTI protocol ([http://enigma.ini.usc.edu/ongoing/dti-working-group)](http://enigma.ini.usc.edu/ongoing/dti-working-group%29). Head motion was included as a nuisance regressor because of the results of a study by Yendiki and colleagues that demonstrated that diffusion weighted imaging is sensitive to head motion, potentially leading to false differences between groups.[4]

Statistical methods

Demographic and clinical information are presented in Supplement Table S1. Two-tailed partial correlations were conducted between PTSD severity and tractographic- and DTI-based regions of interest. In all of these cases, we covaried for age, sex, antidepressant medication status, and head motion parameters (average translation, average rotation, percent bad slices, and average dropout score). All correlations were assessed for significance after adjusting the alpha threshold using the Bonferroni method. This study was optimized to analyze PTSD symptom severity on a continuum rather than for dichotomous contrast of diagnostic status. However, to further characterize differences between PTSD and combat control groups, and to better inform future studies, we conducted a multivariate general linear model to test for between group differences in FA for each tract. The same covariates were included in this model as with the correlation analyses. The results of this analysis are presented in Supplement Table S2.

References

[1] Abdallah CG, Wrocklage KM, Averill CL, Akiki T, Schweinsburg B, Roy A, et al. Anterior hippocampal dysconnectivity in posttraumatic stress disorder: a dimensional and multimodal approach. Transl Psychiatry. 2017;7:e1045.

[2] Behrens TE, Johansen-Berg H, Woolrich MW, Smith SM, Wheeler-Kingshott CA, Boulby PA, et al. Non-invasive mapping of connections between human thalamus and cortex using diffusion imaging. Nat Neurosci. 2003;6:750-7.

[3] Yendiki A, Panneck P, Srinivasan P, Stevens A, Zollei L, Augustinack J, et al. Automated probabilistic reconstruction of white-matter pathways in health and disease using an atlas of the underlying anatomy. Front Neuroinform. 2011;5:23.

[4] Yendiki A, Koldewyn K, Kakunoori S, Kanwisher N, Fischl B. Spurious group differences due to head motion in a diffusion MRI study. Neuroimage. 2014;88:79-90.

[5] Behrens TE, Woolrich MW, Jenkinson M, Johansen-Berg H, Nunes RG, Clare S, et al. Characterization and propagation of uncertainty in diffusion-weighted MR imaging. Magn Reson Med. 2003;50:1077-88.

[6] Mori S, Oishi K, Jiang H, Jiang L, Li X, Akhter K, et al. Stereotaxic white matter atlas based on diffusion tensor imaging in an ICBM template. Neuroimage. 2008;40:570-82.