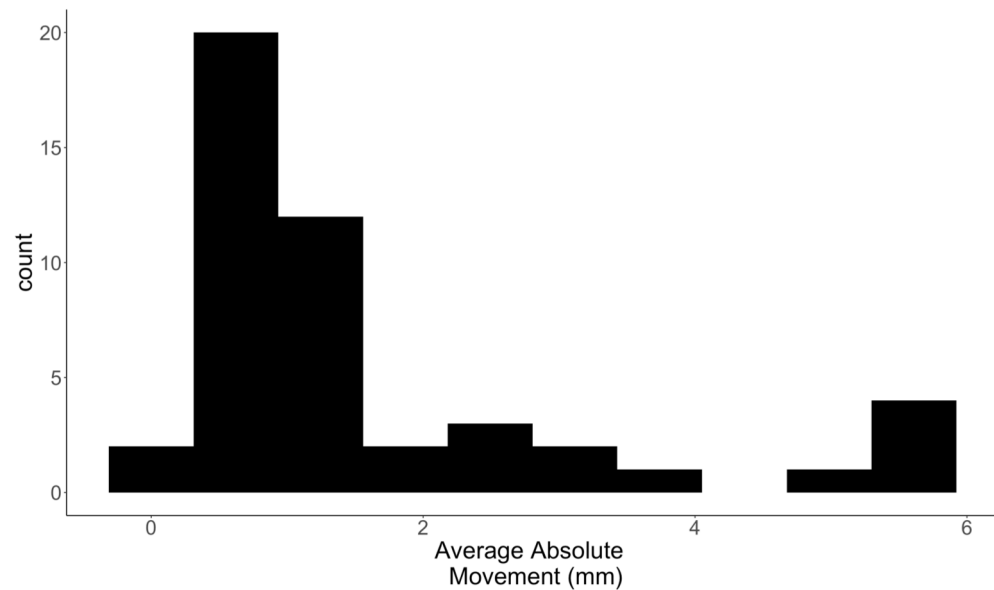
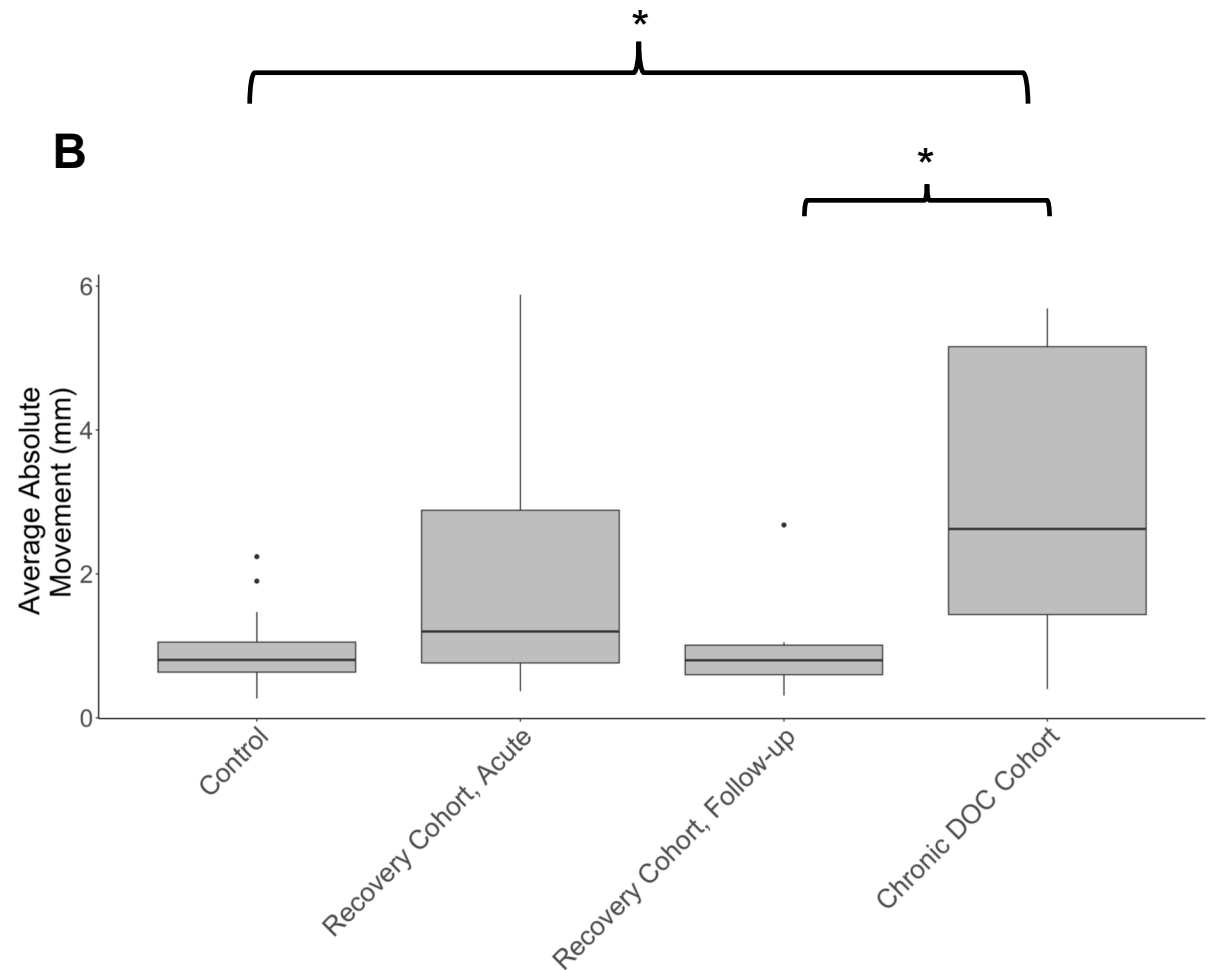


Supp. Fig 1: Structural abnormalities evident on Chronic DOC and Recovery Cohort Follow-up scans.

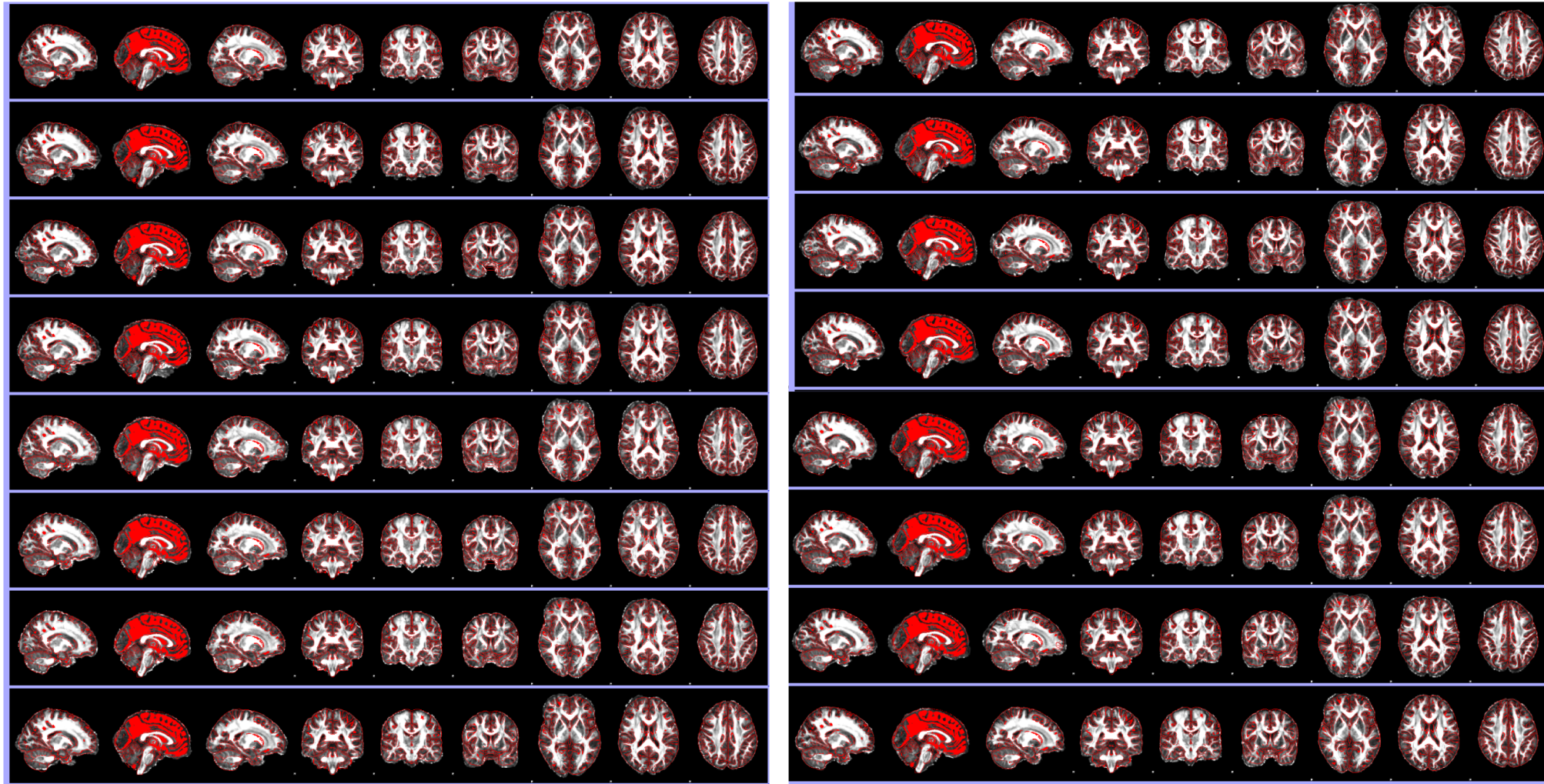
We analyzed gross structural abnormalities evident on each subject's T1 MEMPRAGE scan. In each group, we examined the incidence of: 1) encephalomalacia in each cortical lobe, 2) hypointensity indicative of parenchymal injury in the basal ganglia, thalamus, cerebellum, and brainstem, 3) ventriculomegaly, 4) diffuse cortical volume loss and 5) bilateral hypointensity (evidence of matter injury) in the centrum semiovale of the hemispheric white matter. Incidence in each group is reported as bar height.

A**B**

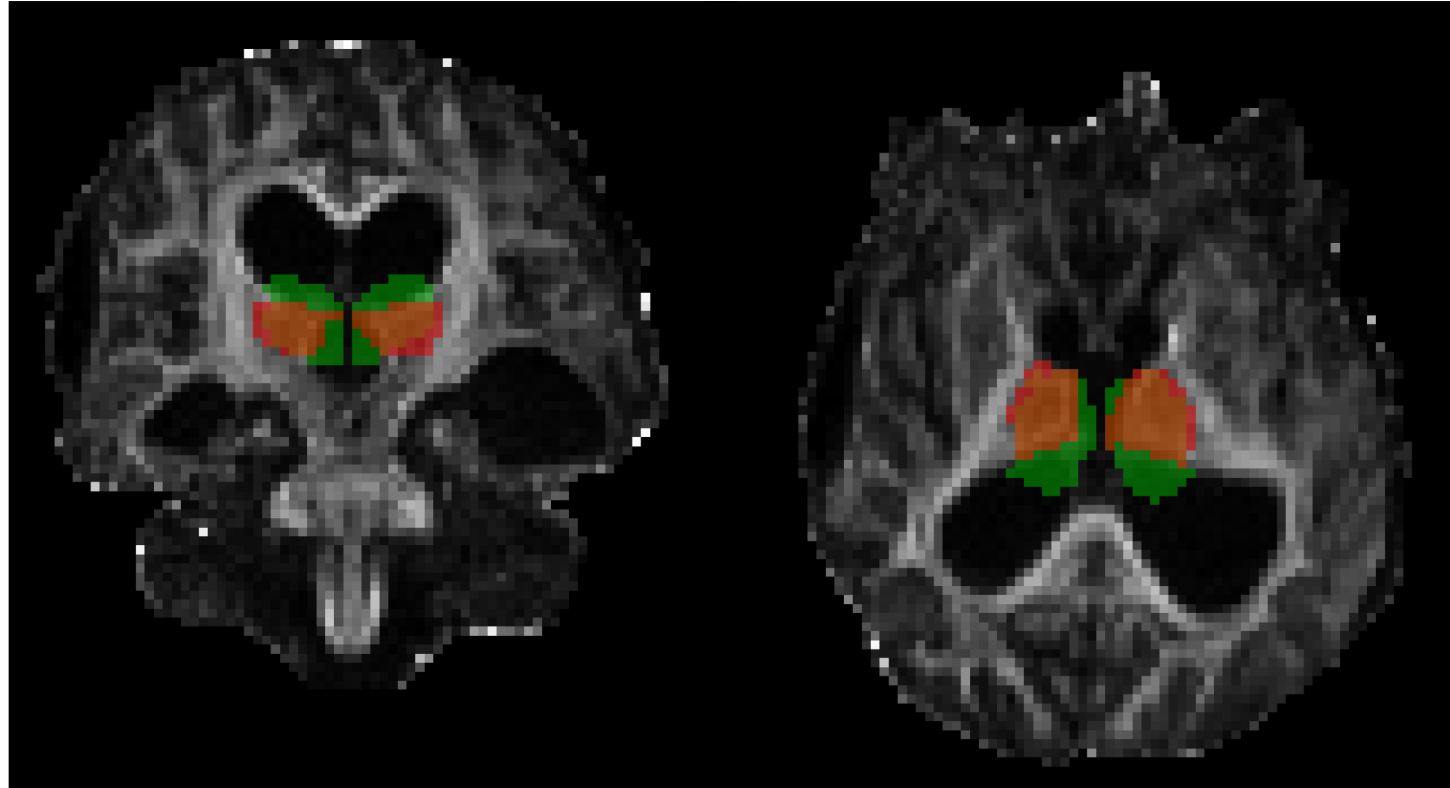
Supp. Fig 2: Head movement across patient cohorts.

(A) Histogram of average absolute between-volume head motion on the entire dataset (mean 1.6 mm, standard deviation of 1.6 mm). (B) Box-whisker plot of average head movement between cohorts. Average motion varied between groups, (ANOVA: $F(3,43) = 4.5$, $p = 0.01$). Post-hoc Tukey tests showed that the average absolute motion was greater in Chronic DoC Cohort than in Recovery Cohort at Follow-up ($p = 0.03$) and between Chronic DoC Cohort and Controls ($p = 0.02$).

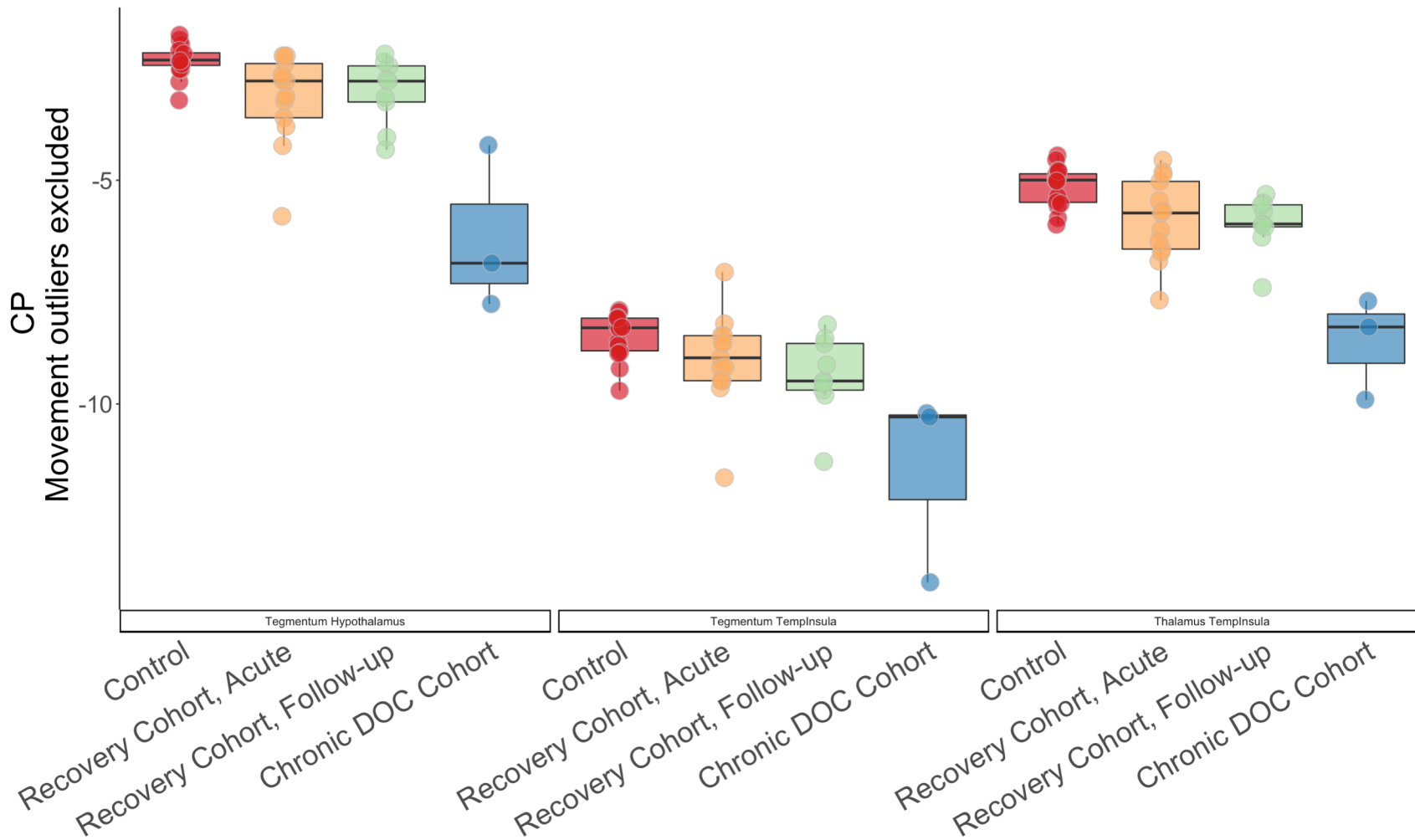
Control Subjects



Supp. Fig 3: Control FA maps registered into MNI space. Each subject's FA map in MNI space is shown (underlay, grayscale). Red outlines indicate the segmentation of the T1-weighted MNI template brain.



Supp. Fig 5: Representative example of manual ROI editing in diffusion space. Initial ROI (green) after transformation from MNI space into subject diffusion space. Manual, atlas-based editing to remove voxels within ventricles and to ensure confirmation with anatomic boundaries of region resulted in the modified ROI (red).



Supp. Fig 6: CP within 3 primary white matter connections after exclusion of head motion outliers. \log_{10} CP remained significantly different between Chronic DoC and Recovery Follow-up cohorts in Tegmentum - Hypothalamus (left, $p = 0.02$), Tegmentum - Temporal (middle, $p = 0.04$) and Thalamus - Temporal (right, $p = 0.009$) after exclusion of subjects who were head motion outliers.