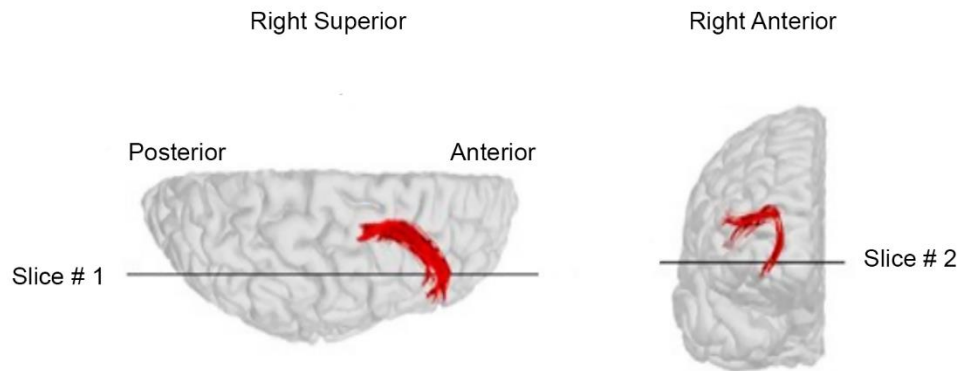
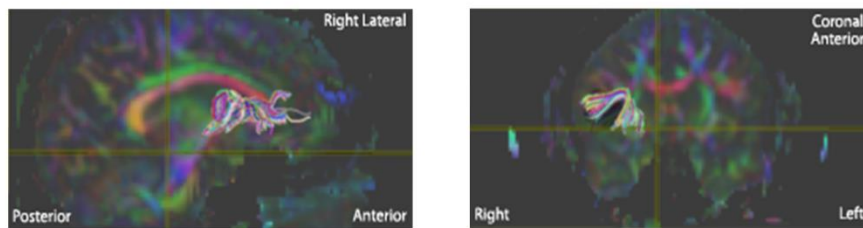


## Supplemental Figures

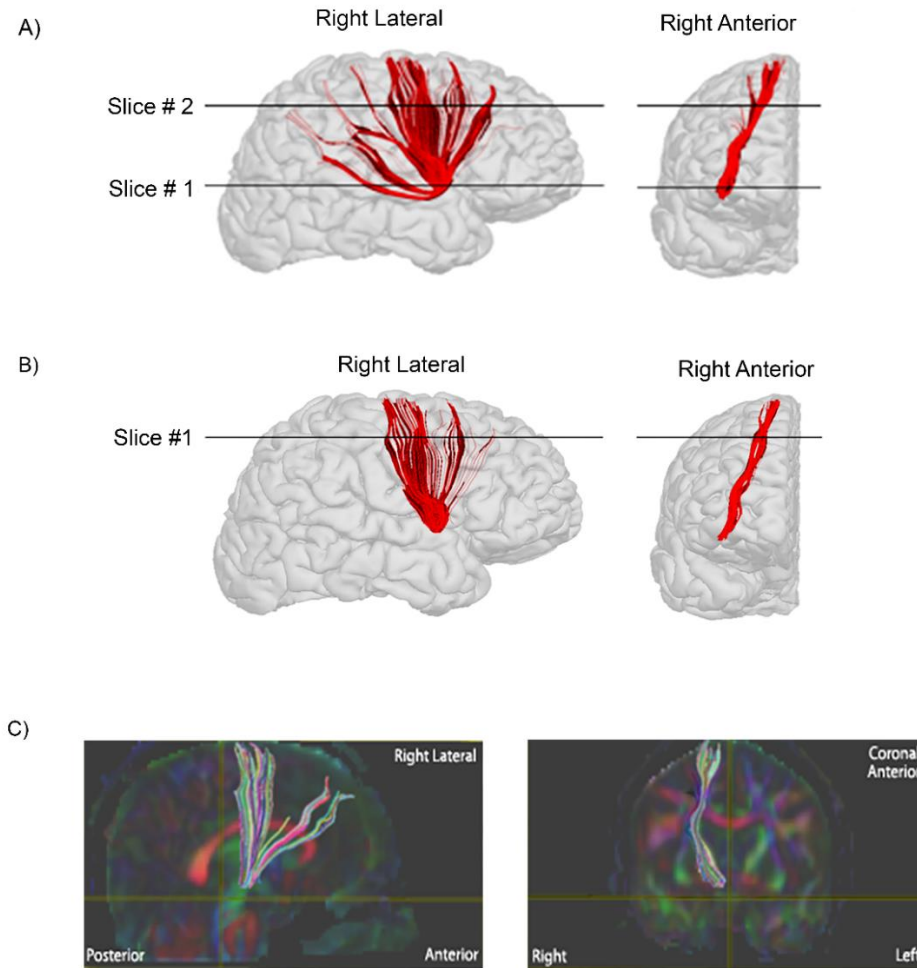
A)



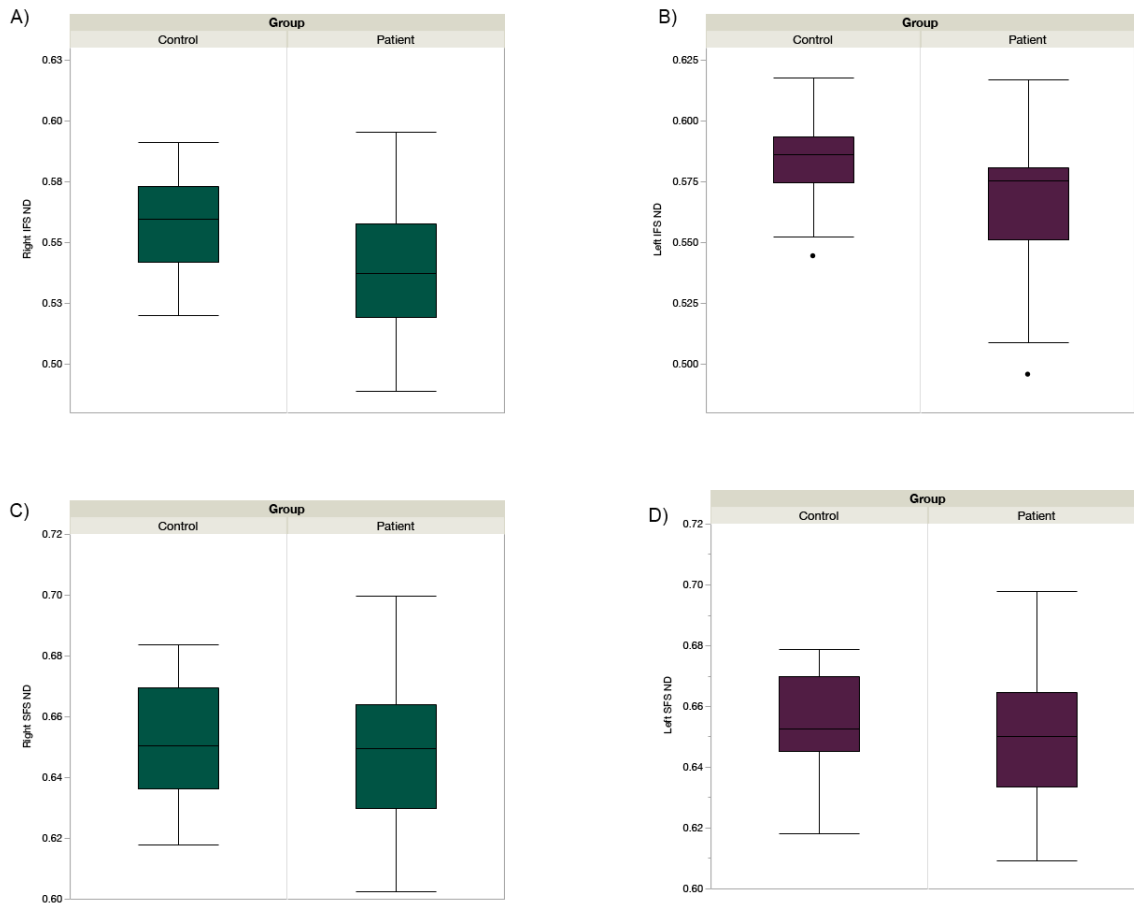
B)



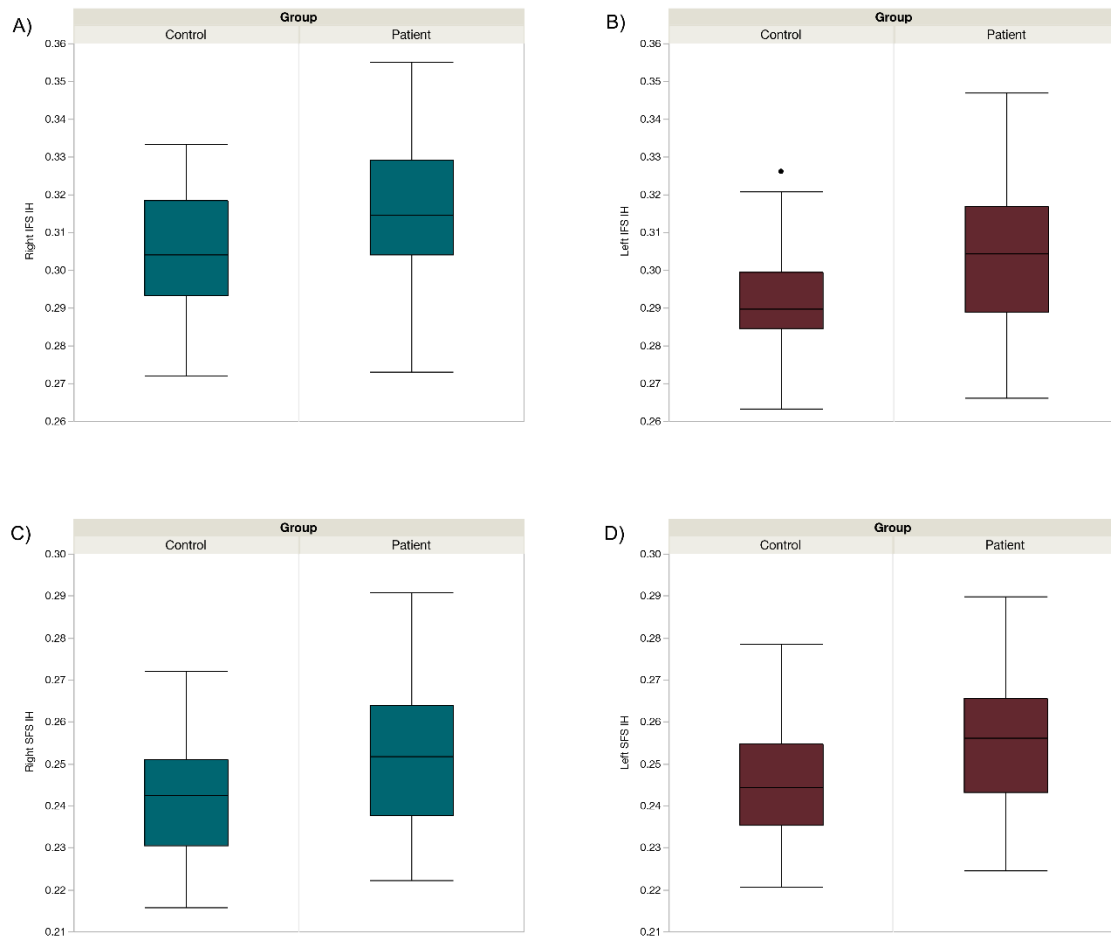
*Supplemental Figure 1.* The inferior frontostriatal (IFS) tract consists of frontostriatal projections from inferior frontal cortex to striatum. A streamline bundle representing the tract was first manually selected in DTI Studio using ‘OR’, ‘AND’, and ‘NOT’ ROIs (Mori *et al*, 2005). The IFS fiber tract was selected in each hemisphere according to the following procedure. An initial ‘OR’ ROI was manually drawn to encompass the frontal lobe anterior to the central sulcus and superior to the temporal lobe. These areas were identified in sagittal slice #1 (Figure 1A) of the central sulcus. A second ‘AND’ ROI was created by marking the perimeter of the striatum, external capsule, and the anterior and posterior limbs of the internal capsule, selecting streamlines passing between the two ROIs. The most superior axial section in which the anterior commissure crosses the interhemispheric fissure was identified, and the axial slice two slices superior of this section was chosen as Slice #2 (Figure 1A). The following streamlines were then removed to create the final streamline bundle using ‘NOT’ ROIs: streamlines extending to the contralateral hemisphere at the mid-sagittal line, streamlines extending inferiorly to the brainstem at the level of the decussation of the superior cerebellar peduncle, streamlines extending anteriorly beyond the splenium of the corpus callosum, streamlines extending anteriorly and inferiorly into the temporal lobe, and streamlines extending superiorly from the main bundle. Figure 1B are sagittal and coronal views of the final streamlines bundle in one example.



*Supplemental Figure 2.* Reconstruction of the superior frontostriatal tract (SFS). The SFS consists of tracts projecting from superior frontal cortex to striatum. A streamline bundle representing the fiber tract was derived from the superior corticostriate fiber tract (Figure 2A), followed by removal of streamlines extending into the parietal and occipital lobe (Figure 2B). The axial slice two slices above the intersection of the anterior commissure and interhemispheric fissure was identified as slice #1 (Figure 2A). An ‘OR’ ROI was first created to mark the perimeters of the striatum, external capsule, and anterior and posterior limbs of the internal capsule. One axial slice superior to the most superior axial section in which the cingulum was visible was identified as slice #2 (Figure 2A). An ‘AND’ ROI including the superior corona radiata was then created to select streamlines passing between the two ROIs. The following streamlines were removed using a ‘NOT’ ROI: streamlines extending into the contralateral hemisphere at the mid-sagittal line, streamlines extending inferiorly to the brainstem at the level of decussation of the superior cerebellar peduncle, and streamlines extending posteriorly to the occipital lobe. At the most inferior axial slice in which the cleavage of the central sulcus is visible, all streamlines anterior to the central sulcus were kept, while streamlines extending to the parietal lobe or posteriorly beyond the center of the central sulcus were removed (Figure 2B). Figure 2C are sagittal and coronal views of the final fiber bundle.



*Supplementary Figure 3:* Distribution of neurite density (ND) values for the left and right inferior (IFS) and superior (SFS) frontostriatal tracts (Figure 4A-D). Data were tested for normality and homogeneity of variance. Shapiro-Wilk tests demonstrated normally distributed ND values for all tracts for both patients and healthy controls ( $p$ -value  $>0.05$ ). No outliers were detected based on robust estimates.



*Supplementary Figure 4:* Distribution of isotropic hindered (IH) values for the left and right inferior (IFS) and superior (SFS) frontostriatal tracts (Figure 4A-D). Data were tested for normality and homogeneity of variance. Shapiro-Wilk tests demonstrated normally distributed IH values for all tracts for both patients and healthy controls ( $p$ -value  $>0.05$ ). No outliers were detected based on robust estimates.