**Supplementary Methods**

***Data Acquisition***

Scans were obtained using a Siemens 3T Tim Trio with a 12-channel phased-array head coil. High resolution 3D T1-weighted magnetization prepared rapid gradient-echo (MPRAGE) sequence was used with the following parameters: 1mm isotropic voxels; 160 sagittal slices; acquisition matrix size=256×256; repetition time (TR)=2300 ms; echo time (TE)=2.98 ms; field of view (FOV)=256 mm. Diffusion-weighted images were acquired using pulsed gradient-spin-echo echo-planar-imaging (EPI) under the following parameters: 2mm isotropic voxels; 64 axial slices; b-value of 700 s/mm2; 60 direction diffusion-weighted and 10 baseline images; TR = 7960ms, TE = 82ms; acquisition matrix size=128×128; FOV=256mm. Bi-temporal foam pads restricted head motion.

***Preprocessing***

The T1-weighted data was used for cortical parcellation and volumetric segmentation with FreeSurfer 6.0.0 (<http://surfer.nmr.mgh.harvard.edu/>). This pipeline included: removal of non-brain tissue using a hybrid watershed/surface deformation procedure; automated Talairach transformation; segmentation of the subcortical white matter and deep gray matter structures; intensity normalization; delineation of the gray matter white matter boundary; automated topology correction; and surface deformation following intensity gradients to optimally identify the gray/white and gray/cerebrospinal fluid boundaries. Surface based registration projected the Desikan parcellation to individual subjects(Desikan *et al.*, 2006).

Diffusion-weighted image preprocessing performed using FMRIB Software Library v5.0.7 (FSL) included: eddy current correction; gradient vector rotation to compensate for head motion; EPI distortion correction using the acquired field map; local fitting of the diffusion tensor at each voxel; and computation of FA maps. Transformation between diffusion and T1-weighted images was computed and used to project FreeSurfer parcellations and segmentations into the diffusion space. To model crossing fibers, the FSL BEDPOSTX tool was used with default parameters, and probabilistic tractography was subsequently performed using the FSL PROBTRACKX tool. Diffusion scans were inspected to discard patients with poor quality acquisitions (FOV or signal drop out issues (n=2); inability to tolerate scan (n=2)).