Supplementary Fig. S1 (A) Axial trace of diffusion image. (B) Matching apparent diffusion coefficient (ADC) map of the brain. Cerebrospinal fluid (CSF) with high degree of diffusion is dark on trace of diffusion and has high ADC values (bright), whereas brain tissue with lower diffusion is bright on trace of diffusion and has low ADC values (dark).
**Supplementary Fig. S2** (A) Axial trace of diffusion image. (B) Matching apparent diffusion coefficient (ADC) map of a child with acute ischemic stroke in the territory of the left middle cerebral artery shows restricted diffusion (bright signal on A and low ADC values on B) representing cytotoxic edema.
**Supplementary Fig. S3** (A) Axial trace of diffusion image. (B) Matching apparent diffusion coefficient (ADC) map of a child with brain abscess (not shown) shows increased diffusion (dark signal on A and high ADC values on B) representing vasogenic edema surrounding the abscess.
**Supplementary Fig. S4** (A) Fractional anisotropy (FA) map. (B) Color-coded FA map of the normal brain. High degrees of anisotropic diffusion (high FA value, bright) along white matter tracts in, for example, the corpus callosum and internal capsule, and low degree of anisotropic diffusion (low FA values, dark) are seen in the cortical and central gray matter. The color-coded FA map reveals the predominant direction of diffusion, with left to right diffusion in the corpus callosum (red), superior-inferior diffusion in the internal capsule (blue), and anterior-posterior diffusion in the frontal white matter (green).
Supplementary Fig. S5 Three-dimensional fiber tractography (FT) of all fibers within the brain.
Supplementary Fig. S6 Motion artifact. (A) Color-coded fractional anisotropy (FA) maps show an abnormal blueish color of the cerebral cortex and subcortical white matter suggestive of a motion artifact. (B) Mosaic images of the diffusion tensor imaging (DTI) raw data reveal one motion artifact as attenuated single image (asterisks) showing that a single motion artifact may markedly degrade the quality of the DTI images.