Supplementary Table S1: MRI Protocol Acquisition Parameters, Post-Processing, and Neuroimaging Findings

First author, Year	Field Strength, Modality	Technical Parameters	Protocol Type; Post-Processing	Brain MRI Findings (L: Left, R: Right, ~: correlated with)
Appenzeller, 2006	2T, Structural MRI	0.8×0.8×3.0 mm	T1w-IR; manual Hp segmentation	-SLE vs HC: ↓ L&R Hp volume at baseline & follow-up -SLE: • Hp atrophy *(Baseline)*: 44% (47/107) – L Hp (20/47), R Hp (10/47), L&R Hp (17/47) • Hp atrophy *(Follow-up)*: 67% (40/60) – L Hp (4/40), R Hp (4/40), L&R Hp (32/40)
Appenzeller, 2007	2T, Structural MRI	1.0×1.0×1.0 mm	T1w-GRE; VBM	-SLE vs HC: ↓ volume in CC, frontal, occipital, temporal & limbic lobes, cerebellum -SLE: • ↓ volume in CC in NPSLE w/ past vs active CNS involvement • ↓ WM volume in A/P CC, ↓ GM volume in frontal, dorsolateral & medial temporal regions *(Follow-up vs Baseline)*
Jung [a], 2012	1.5T, Diffusion MRI	2 mm thick slices, 2 b_0, 12 directions	DTI; TBSS	Group brain differences: NR
Gitelman, 2013	3T, Structural MRI	1.0×1.0×1.0 mm	T1w-MPRAGE; VBM	-cSLE vs HC: No differences -cSLE w/ CD vs cSLE w/o CD & HC: ↓ total GM volume, ↓ lateral frontal, orbito-frontal, anterior cingulate, & lateral temporal areas
Cesar, 2015	3T, Structural & Diffusion MRI	0.9x0.9x1.5 mm 1.1×1.1×3.0 mm, b=1000 s/mm^2, 39 directions	3D T1w-GRE; automatic volume segmentations DTI; TBSS (Free-water corrected)	- NPSLE vs HC: ↑ MD/AD/RD in total WM - NPSLE vs MS: • ↑ WB, WM, & GM volume • ↓ FA in CC, ILF, IFOF, forceps major & minor, Cg, Th radiation
Bizzo, 2016	1.5T, Structural MRI	1.3×1.0×1.3 mm	T1w-MPRAGE; surface-based analysis	-SLE w/ EM deficits vs HC: ↓ thickness L supra-marginal & superior temporal cortex -SLE w/ EM deficits vs SLE w/o EM deficits: ↓ thickness R superior frontal, A/P middle frontal & precentral cortex
Bódi, 2017	3T, Structural MRI	1.0×1.0×0.9 mm	T1w-MPRAGE; automatic volume segmentations, Hp subfields volume	SLE vs HC: ↓ volume CA1 & CA4-DG Hp subfields

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Zimmerman, 2017	1.5T, Structural MRI	1.3×1.0×1.3 mm	T1w-MPRAGE; automatic volume segmentations	-SLE w/ CD vs SLE w/o CD: ↓ L&R Hp and L Ag
Wiseman, 2017	1.5T, Diffusion MRI	1.9×1.9×2.5 mm, b=1000 s/mm^2, 32 directions	DTI (SS-EPI); tractography	-SLE vs HC: ↑ MD in all WM tracts, ↑ FA in CC - genu & L CST, ↓ FA in CC – splenium, L&R Cg
Cannerfelt, 2018	3T; Structural MRI	1.0×1.0×1.0 mm	T1w-MPRAGE; automatic Hp & CC volume segmentations	NPSLE vs non-NPSLE: ↓ L&R Hp volume in NPSLE
Corrêa, 2018	1.5T, Diffusion MRI	2.1×2.1×2.1 mm, b=900 s/mm^2, 30 directions	DTI; TBSS	-SLE w/ memory deficits vs HC: ↓ FA, ↑ MD, RD in CC, L&R ILF, IFOF, SLF, UF, CST, cerebral peduncle, posterior Th radiation, external capsule, A-P limb internal capsule, anterior CR, R superior CR -SLE w/o memory deficits vs HC: ↓ FA, ↑ MD, RD in same structures except R posterior limb internal capsule & R anterior CR
Nystedt, 2018	3T; Diffusion MRI	2.0×2.0×2.0 mm, b=1000 s/mm^2, 64 directions	DTI; CC, Cg, & UF tractography	-SLE vs HC: ↓ FA in R rostral Cg, CC mid-sagittal & forceps minor; ↑ MD in L hippocampal Cg -Non-NPSLE vs HC: ↓ FA in R rostral Cg, CC - forceps minor; ↑ MD in L hippocampal Cg -NPSLE vs HC: ↓ FA in CC – mid-sagittal & forceps minor; ↑ MD in L hippocampal Cg -Non-NPSLE vs NPSLE: No differences
Wiseman, 2018	1.5T, Diffusion MRI	1.9×1.9×2.5 mm, b=1000 s/mm^2, 32 directions	DTI; tractography	-17 Node Network Hubs: • ↑ Mean shortest path length, ↓ global efficiency, clustering coefficient & mean edge weight ~ ↑ age • ↑ Mean shortest path length, ↓ other metrics ~ ↑ WM 'lesion' volume
MacKay, 2019	3T, Diffusion MRI	1.9×1.9×2.5 mm, b=800 s/mm^2, 5 b_0, 33 directions	DTI (SS-EPI); voxel-wise analysis & tractography	-SLE-2 vs HC: ↓ FA & ↓ no. of streamlines in SLF, UF (insular cortex), hippocampal Cg, ILF, IFOF & CC - splenium -SLE-2: No FA changes *(Follow-up vs Baseline)*
DiFrancesco, 2020	3T, Diffusion MRI	3.8×3.8×5.0 mm, b=0-1000 s/mm^2 (15 b-values), 3 ⊥ directions	DWI (EPI) w/ CSF suppression; voxel-wise IVIM	-cSLE vs HC: • ↑ D∗ (D in blood) & D∗ × v_{bw} (perfusion) in cuneus, precuneus, superior occipital & posterior cingulate regions; ↑ D in precuneus & R inferior parietal regions • ↓ v_{bw} (blood-water fraction) in cuneus, precuneus, calcarine & middle-occipital regions; all abnormal metrics in middle posterior precuneus

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Mårtensson, 2021	3T, Structural MRI	1.0×1.0×1.0 mm	T1w-MPRAGE; VBM	-SLE vs HC: ↓ VBM volume in VIIIa and VIIa area of L&R cerebellum -NPSLE vs non-NPSLE: No differences
Qian, 2022	3T, Diffusion MRI	2.3×2.3×2.3 mm, b=1000 s/mm^2, 8 b_0, 61 directions	DTI (SS-EPI); TBSS & tractography (Free-water corrected)	- SLE vs HC: • ↑ FW in CC, fronto-parietal, fronto-temporal, fronto-occipital WM, Cg • No FA, RD, AD differences (Free-water corrected); no WM SC differences • ↓ FA, ↑ RD & AD in WM (Not free-water corrected)
Julio, 2023	3T, Diffusion MRI	2.0×2.0×2.0 mm, b=1000 s/mm^2, 32 directions	DWI (DTI); automatic segmentation of CC & shape analysis	-SLE vs HC: ↓ mid-sagittal area in the post CC -cSLE vs aSLE: ↓ FA, ↑ MD, ↑ RD, ↑ AD in whole CC and all but rostral CC parcels.

⊥=Orthogonal; 3D=Three-dimensional; AD=Axial diffusivity; Ag=Amygdala; A/P=Anterior/Posterior; aSLE=Adult-onset SLE; CC=Corpus callosum; CI=Cognitive Dysfunction; CA=Cornu ammonis; Cg=Cingulum; CR=Corona radiata; CSF=Cerebrospinal fluid; cSLE=Childhood-onset SLE; D=Water diffusion coefficient; ; D*=Perfusion coefficient; DG=Dentate gyrus; DTI=Diffusion tensor imaging; EPI= Echo-planar imaging; EM=Episodic memory; FA=Fractional anisotropy; FOV=Field of view; FW=Free water; FWE= FW elimination; GM=Grey matter; GRE=Gradient echo; Hp=Hippocampus; IFOF=Inferior fronto occipital fasciculus; ILF= Inferior Longitudinal fasciculus; IR=Inversion recovery; IVIM=Intravoxel incoherent motion; MD=Mean diffusivity; MPRAGE=Magnetization Prepared Rapid Gradient Echo Imaging; MS=Multiple sclerosis; NPSLE=Neuropsychiatric SLE; RD=Radial diffusivity; SC=Structural connectivity; SLF=Superior Longitudinal fasciculus; SS-EPI=Single-shot EPI; T=Tesla; TBSS=Tract-based spatial statistics; Th=Thalamus; UF=Uncinate fasciculus; VBM=Voxel based morphometry; v_{bw}=fraction of water molecules in blood; WB=Whole brain; WM=White matter

[a] No diffusion b-value or voxel size provided.