

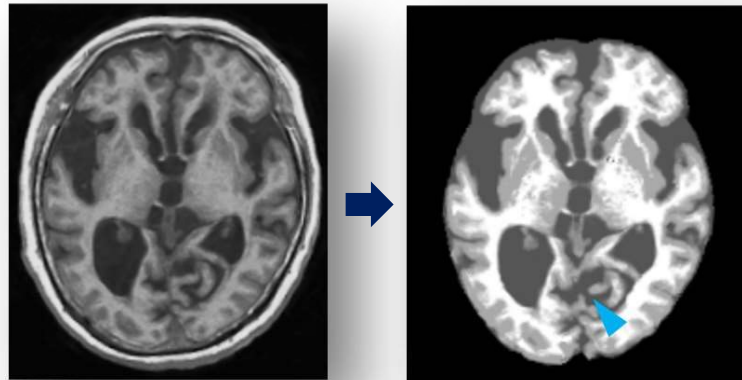
Table S1. Parameters for the acquisition of structural images.

MRI scanner	Sequence	TR (ms)	TE (ms)	Flip angle (°)	Thickness (mm)	Slices number	FOV (mm)	Matrix
GE Signa 1.5-Tesla	3D-SPGR	20	4.1	30	1.5/no gap	108 (axial)	230 × 230	256 × 256
TOSHIBA Vantage Titan 3-Tesla	3D-MPRAGE	7.2	3.4	9	1.0/no gap	180 (sagittal)	256 × 256	256 × 256
SIEMENS MAGNETOM Trio, A Tim System 3-Tesla	3D-MPRAGE	1900	2.74	9	1.0/no gap	176 (axial)	256 × 208	256 × 208
SIEMENS MAGNETOM Vida 3-Tesla	3D-MPRAGE	2300	1.97	8	1.0/no gap	192 (sagittal)	256 × 256	256 × 256
GE Signa 3-Tesla	3D-SPGR	8.7	3.2	11	1.0/no gap	176 (axial)	256 × 256	256 × 256

FOV: field of view; TE: echo time; TR: repetition time.

a

Error 4



b

Error 5

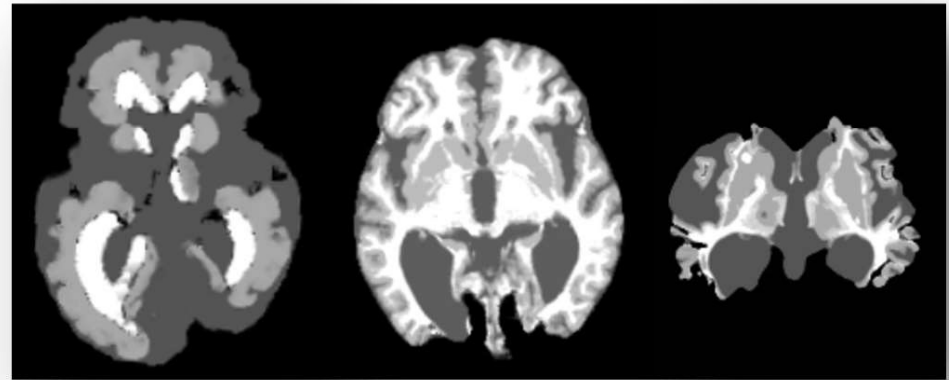


Figure S1. Samples of Errors 4 and 5.

a shows that a part of the gyrus (the grey matter) was misidentified as the cerebrospinal fluid (blue arrowhead). b shows that the brain structures were collapsed.

Table S2. Error types during segmentation and their frequencies when DESH-Template and DESH-TPM were created.

A. In the process of creating the prototype DESH-Template and DESH-TPM.

	Frequency				
	Error 1	Error 2	Error 3	Error 4	Error 5
Total	39.6% (67/169)	42.6% (72/169)	23.1% (39/169)	4.1% (6/169)	3.0% (5/169)
MRI scanner					
GE Signa 1.5-Tesla	35.6% (32/90)	37.8 (34/90)	1.1% (1/90)	6.7% (6/90)	3.3% (3/90)
TOSHIBA Vantage Titan 3-Tesla	36.4% (8/22)	45.5% (10/22)	9.1% (2/22)	0% (0/22)	0% (0/22)
SIEMENS MAGNETOM Trio, A Tim System 3-Tesla	47.4% (27/57)	49.1% (28/57)	63.2% (36/57)	0% (0/22)	3.5% (2/57)
P-value	0.341	0.383	<0.001 SIEMENS > TOSHIBA = GE	0.065	0.679

B. In the process of creating the final DESH-Template and DESH-TPM.

	Frequency				
	Error 1	Error 2	Error 3	Error 4	Error 5
Total	29.2% (26/89)	13.5% (12/89)	43.8% (39/89)	1.1% (1/89)	0% (0/89)
MRI scanner					
GE Signa 1.5-Tesla	23.3% (7/30)	13.3% (4/30)	3.3% (1/30)	3.3% (1/30)	0% (0/30)
TOSHIBA Vantage Titan 3-Tesla	30.0% (3/10)	20.0% (2/10)	10% (1/10)	0% (0/10)	0% (0/10)
SIEMENS MAGNETOM Trio, A Tim System 3-Tesla	26.5% (13/49)	12.2% (6/49)	75.5% (37/49)	0% (0/10)	0% (0/49)
P-value	0.904	0.807	<0.001 SIEMENS > TOSHIBA = GE	0.370	ND

Error 1: misidentifying the dura and/or extradural structures as the grey and/or white matter and/or CSF; Error 2: misidentifying the white matter lesions (represented by white matter hypointensity) as the grey matter; Error 3: the CSF image deficits; Error 4: misidentifying the grey matter as

the CSF; and Error 5: collapsed brain structures. The chi-square test and post-hoc chi-square test with Bonferroni correction were used. CSF: cerebrospinal fluid; DESH: disproportionately enlarged subarachnoid space hydrocephalus; TPM: Tissue Probability Map.

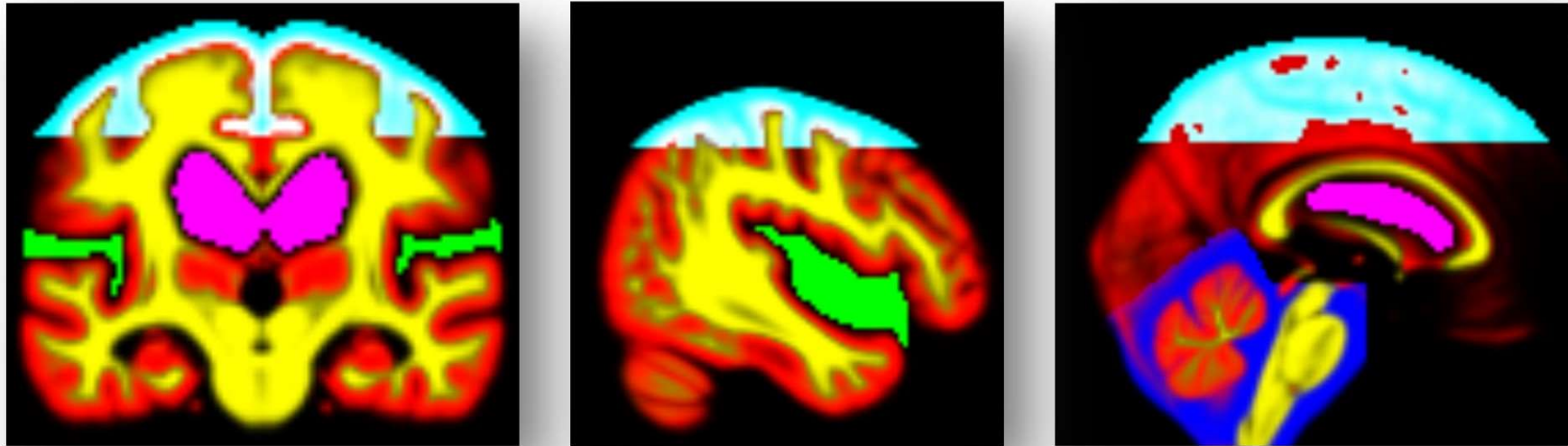


Figure S2. CSF regions of interests.

1) The cisterns in the superior convexity which are located superior to the top of lateral ventricles (light blue); 2) the lateral ventricles (purple); 3) the Sylvian fissures (yellow green), and 4) infratentorial cisterns (blue) according to the Pfaendner et al.'s definition [22]. CSF: cerebrospinal fluid.

Table S3. Results of CSF intensity measurements.

	Mean CSF intensity (Z-score)				P-value
	CSF regions				
	LV	SF	SC	IT	
MRI scanner					
SIMENSE MAGNETOM Vida 3-Tesla	-1.52 ± 0.17	-0.76 ± 0.29	-2.42 ± 0.43	0.50 ± 0.15	<0.001 SC < LV < SF < IT
GE Signa 1.5-Tesla	-1.06 ± 0.20	-0.32 ± 0.27	-0.34 ± 0.46	-0.67 ±0.43	<0.001 LV < IT < SF = SC

One-way analysis of variance (ANOVA) and Tukey's post-hoc analysis for comparisons were used. CSF: cerebrospinal fluid; LV: the lateral ventricles; IT: the infratentorial cisterns; SC: the cisterns in the superior convexity; SF: the Sylvian fissures.

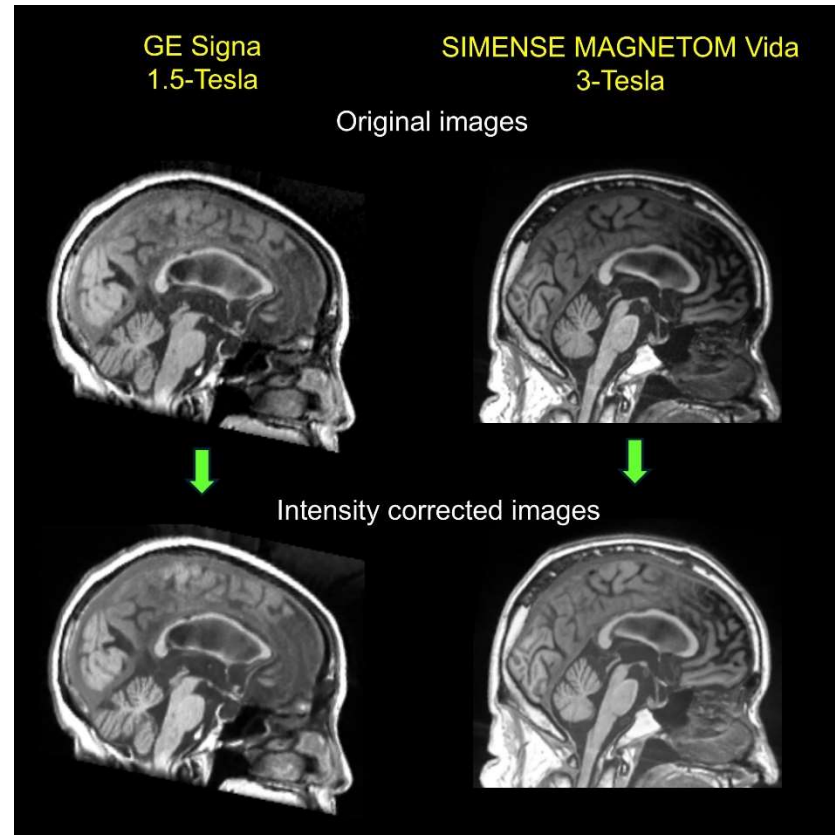


Figure S3. Samples of original and intensity-corrected images.

The original images obtained by a SIEMENSE MAGNETOM Vida 3-Tesla MRI scanner had central brightening artefacts. On the other hand, this artefact was not observed in the original images obtained by a GE signa 1.5-Tesla MRI scanner.

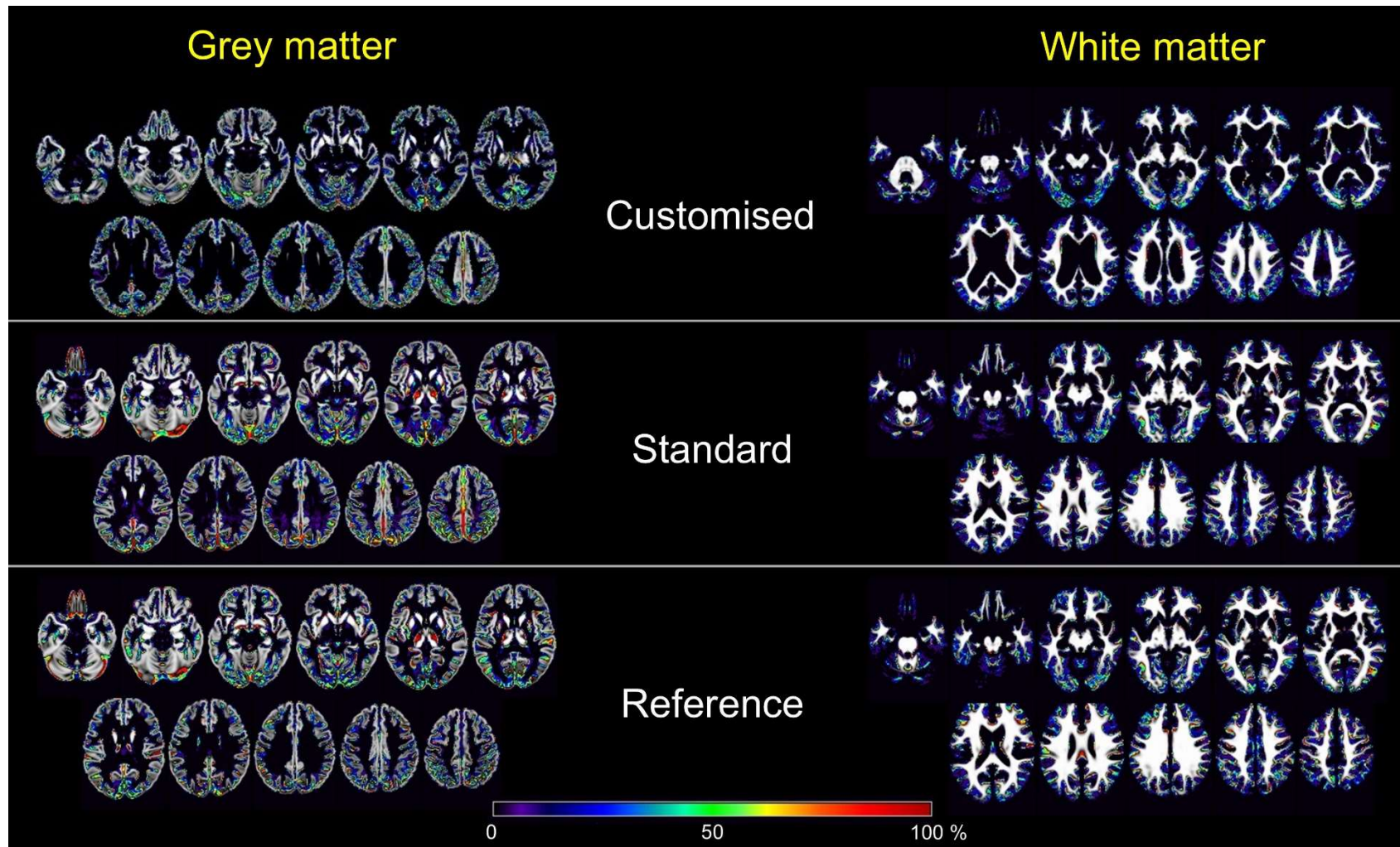


Figure S4. Overlapped maps of normalised grey and white matter images in three conditions.

Coloured maps demonstrate the overlap rates of each structural images outside the voxels of which probability values were above 0.5 in each structural template, which means the magnitude of spatial normalisation inaccuracy.