

Mechanical Properties of the In Vivo Adolescent Human Brain

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Supplemental Information

Sex differences in regional mechanical properties

Table S1: Shear stiffness, μ , of cerebral lobes and subcortical gray matter structures in male and female adolescents, and Cohen's d effect size indicating the difference between males and females. Population mean (standard deviation) in kPa.

Region	Male μ	Female μ	Cohen's d
Cerebrum	3.12 (0.28)	3.14 (0.35)	-0.08
Cerebellum	2.44 (0.17)	2.52 (0.34)	-0.31
Frontal Lobe	2.97 (0.25)	2.98 (0.38)	-0.04
Occipital Lobe	2.85 (0.28)	2.75 (0.23)	0.37
Parietal Lobe	2.84 (0.27)	2.84 (0.44)	0.02
Temporal Lobe	3.01 (0.21)	3.02 (0.29)	-0.05
Deep GM/WM	3.43 (0.40)	3.54 (0.48)	-0.25
Amygdala	3.37 (0.29)	3.60 (0.49)	-0.56
Hippocampus	3.09 (0.47)	3.39 (0.58)	-0.54
Caudate	4.05 (0.38)	4.17 (0.42)	-0.30
Putamen	3.98 (0.28)	4.02 (0.36)	-0.14
Pallidum	3.91 (0.32)	4.01 (0.39)	-0.27
Thalamus	3.96 (0.25)	4.09 (0.40)	-0.39

Table S2: Damping ratio, ζ , of cerebral lobes and subcortical gray matter structures in male and female adolescents, and Cohen's d effect size indicating the difference between males and females. Population mean (standard deviation).

Region	Male ζ	Female ζ	Cohen's d
Cerebrum	0.229 (0.018)	0.221 (0.024)	0.36
Cerebellum	0.278 (0.037)	0.293 (0.060)	-0.28
Frontal Lobe	0.223 (0.018)	0.210 (0.023)	0.65
Occipital Lobe	0.258 (0.052)	0.281 (0.067)	-0.37
Parietal Lobe	0.247 (0.030)	0.247 (0.038)	0.00
Temporal Lobe	0.238 (0.032)	0.237 (0.029)	0.04
Deep GM/WM	0.224 (0.021)	0.213 (0.026)	0.42
Amygdala	0.226 (0.032)	0.218 (0.044)	0.22
Hippocampus	0.185 (0.027)	0.190 (0.036)	-0.13
Caudate	0.215 (0.025)	0.197 (0.028)	0.66
Putamen	0.214 (0.018)	0.206 (0.022)	0.38
Pallidum	0.204 (0.017)	0.195 (0.017)	0.49
Thalamus	0.195 (0.020)	0.189 (0.018)	0.34

Effect size of individual comparisons between regions

Table S3: Effect size (Cohen's *d*) of individual comparisons between cerebral lobe stiffness, μ .

Cerebrum							
Cerebellum	1.99						
Frontal	0.48	1.52					
Occipital	1.01	0.98	0.54				
Parietal	0.89	1.10	0.42	0.12			
Temporal	0.35	1.64	0.12	0.66	0.54		
Deep GM/WM	1.10	3.09	1.57	2.11	1.99	1.45	
	Cerebrum	Cerebellum	Frontal	Occipital	Parietal	Temporal	Deep GM/WM

Table S4: Effect size (Cohen's *d*) of individual comparisons between subcortical gray matter structure stiffness, μ .

Cerebrum							
Amygdala	0.92						
Hippocampus	0.30	0.63					
Caudate	2.50	1.58	2.21				
Putamen	2.22	1.30	1.92	0.28			
Pallidum	2.11	1.19	1.81	0.39	0.11		
Thalamus	2.28	1.36	1.99	0.22	0.06	0.17	
	Cerebrum	Amygdala	Hippocampus	Caudate	Putamen	Pallidum	Thalamus

Table S5: Effect size (Cohen's *d*) of individual comparisons between cerebral lobe damping ratio, ζ .

Cerebrum							
Cerebellum	1.63						
Frontal	0.24	1.87					
Occipital	1.20	0.44	1.44				
Parietal	0.60	1.04	0.84	0.60			
Temporal	0.34	1.29	0.58	0.86	0.26		
Deep GM/WM	0.18	1.82	0.06	1.38	0.78	0.52	
	Cerebrum	Cerebellum	Frontal	Occipital	Parietal	Temporal	Deep GM/WM

Table S6: Effect size (Cohen's *d*) of individual comparisons between subcortical gray matter structure in damping ratio, ζ .

Cerebrum							
Amygdala	0.13						
Hippocampus	1.42	1.30					
Caudate	0.76	0.63	0.67				
Putamen	0.60	0.47	0.83	0.16			
Pallidum	0.98	0.85	0.45	0.22	0.38		
Thalamus	1.27	1.14	0.16	0.51	0.67	0.29	
	Cerebrum	Amygdala	Hippocampus	Caudate	Putamen	Pallidum	Thalamus