

Supplementary Material

Longitudinal Trajectories in Cortical Thickness and Volume Atrophy: Superior Cognitive Performance Does Not Protect Against Brain Atrophy in Older Adults

Supplementary Table 1. Cognitive normative test z and scaled scores for superior cognitive performers and typical older adults at baseline.

	SCP (n = 76)	TOA (n = 100)	p for SCP and TOA differences
CVLT Delayed Recall	1.58 ± 0.6	0.52 ± 0.8	<0.000
RCFT 30-min Delay	1.21 ± 1.6	0.54 ± 1.3	0.002
Digit Span*	13.00 ± 3.1	12.01 ± 2.8	0.031
Digit Symbol Coding*	12.77 ± 2.7	11.60 ± 2.5	0.004
Controlled Oral Word Association Task*	13.39 ± 3.0	11.86 ± 3.4	0.002
Category Fluency – Animals + Names*	13.60 ± 3.0	12.47 ± 2.9	0.015
Switching Fruit/Furniture*	12.79 ± 2.6	11.78 ± 2.7	0.013
Boston Naming Test	0.89 ± 0.6	0.77 ± 0.5	0.191
STROOP C/D	-0.41 ± 0.7	-0.36 ± 0.8	0.656

Data are presented as mean ± standard deviation of the mean.

CVLT, California Verbal Learning Test; RCFT, Rey Complex Figure Test and Recognition Trial; SCP, superior cognitive performer; TOA, typical older adult.

Characteristics compared using independent samples t-test.

* Age scaled scores (mean = 10, standard deviation = 3)

Supplementary Table 2. Results of linear mixed models examining the association between change in cortical thickness in regions of interest not previously identified in published literature on superior cognitive performance.

Brain area	Left Hemisphere			Right Hemisphere			A β -ve Left Hemisphere			A β -ve Right Hemisphere		
	Beta (SE)	p	FDR Adjusted p	Beta (SE)	p	FDR Adjusted p	Beta (SE)	p	FDR Adjusted p	Beta (SE)	p	FDR Adjusted p
Caudal Middle Frontal	-0.0013 (0.005)	0.784	0.996	-0.0024 (0.006)	0.659	0.996	-0.0057 (0.006)	0.339	0.994	-0.0017 (0.007)	0.801	0.994
Cuneus	-0.0018 (0.004)	0.658	0.996	-0.0001 (0.004)	0.978	0.996	-0.0026 (0.005)	0.601	0.994	-0.0018 (0.005)	0.721	0.994
Entorhinal	0.0078 (0.009)	0.383	0.996	-0.0018 (0.008)	0.816	0.996	0.0081 (0.011)	0.481	0.994	0.0010 (0.009)	0.916	0.994
Fusiform	-0.0008 (0.004)	0.861	0.996	-0.0043 (0.005)	0.359	0.996	-0.0042 (0.005)	0.447	0.994	-0.0083 (0.006)	0.148	0.994
Inferior Parietal	0.0009 (0.004)	0.824	0.996				-0.0043 (0.005)	0.384	0.994			
Inferior Temporal	-0.0015 (0.004)	0.714	0.996	0.0019 (0.004)	0.666	0.996	0.0018 (0.005)	0.740	0.994	0.0001 (0.005)	0.992	0.994
Lateral Occipital	0.0078 (0.004)	0.055	0.996				0.0063 (0.005)	0.210	0.994			
Lingual	-0.0012 (0.003)	0.736	0.996	-0.0011 (0.003)	0.756	0.996	-0.0004 (0.004)	0.932	0.994	-0.0022 (0.004)	0.597	0.994
Middle Temporal				0.0004 (0.004)	0.926	0.996				0.0013 (0.005)	0.802	0.994
Parahippocampal	0.0004 (0.006)	0.948	0.996	-0.0061 (0.005)	0.259	0.996	0.0013 (0.007)	0.853	0.994	-0.0045 (0.007)	0.502	0.994
Paracentral	-0.0006 (0.006)	0.929	0.996	0.0068 (0.006)	0.255	0.996	-0.0007 (0.008)	0.912	0.994	0.0107 (0.008)	0.174	0.994
Post Central				-0.0012 (0.005)	0.805	0.996				-0.0018 (0.006)	0.758	0.994
Precentral	0.0071 (0.006)	0.271	0.996	-0.0025 (0.006)	0.702	0.996	0.0059 (0.008)	0.454	0.994	-0.0007 (0.008)	0.930	0.994
Precuneus	-0.0012 (0.004)	0.787	0.996	-0.0026 (0.004)	0.512	0.996	-0.0051 (0.005)	0.281	0.994	-0.007 (0.005)	0.148	0.994
Rostral Anterior Cingulate	-0.0061 (0.006)	0.338	0.996				-0.0074 (0.008)	0.380	0.994			
Superior Parietal	0.002 (0.0044)	0.651	0.996	-0.0005 (0.004)	0.900	0.996	-0.0023 (0.005)	0.612	0.994	-0.0047 (0.005)	0.320	0.994
Superior Temporal	-0.0019 (0.004)	0.624	0.996	-0.0017 (0.004)	0.682	0.996	-0.0016 (0.005)	0.752	0.994	-0.0014 (0.005)	0.794	0.994
Supramarginal	0.0001 (0.004)	0.980	0.996	-0.0019 (0.005)	0.706	0.996	-0.0024 (0.005)	0.624	0.994	-0.0015 (0.006)	0.795	0.994
Frontal Pole	< 0.001 (0.009)	0.996	0.996	-0.0132 (0.009)	0.147	0.996	0.0066 (0.011)	0.561	0.994	-0.0135 (0.012)	0.246	0.994
Temporal Pole	0.0007 (0.009)	0.938	0.996	0.0051 (0.008)	0.526	0.996	0.0043 (0.010)	0.676	0.994	0.0054 (0.010)	0.588	0.994
Transverse Temporal	0.0011 (0.007)	0.884	0.996	-0.0143 (0.009)	0.117	0.996	-0.0028 (0.009)	0.758	0.994	-0.0183 (0.012)	0.123	0.994
Banks of the	-0.0034	0.464	0.996	-0.0074	0.164	0.996	-0.0057	0.358	0.994	-0.0087	0.166	0.994

Superior	(0.005)	(0.005)	(0.006)	(0.006)
Temporal Sulcus				

A β , amyloid- β ; FDR, false discovery rate; SE, standard error. A negative β coefficient indicates volume/cortical atrophy over time, with strong negative coefficients indicating greater atrophy relative to the error and sample size.

Supplementary Table 3. Results of linear mixed models examining the association between change in cerebral volume in regions of interest not previously identified in published literature on superior cognitive performance.

Brain area	Left Hemisphere			Right Hemisphere			A β -ve Left Hemisphere			A β -ve Right Hemisphere		
	Beta (SE)	p	FDR Adjusted p	Beta (SE)	p	FDR Adjusted p	Beta (SE)	p	FDR Adjusted p	Beta (SE)	p	FDR Adjusted p
Caudal Anterior Cingulate	-0.0001 (<0.001)	0.815	0.996	-0.0002 (<0.001)	0.628	0.996	-0.0004 (<0.001)	0.248	.994	-0.0003 (<0.001)	0.461	0.994
Caudal Middle Frontal	<0.0001 (0.001)	0.987	0.996	-0.0005 (0.001)	0.634	0.996	-0.0008 (0.001)	0.518	0.994	-0.0003 (0.001)	0.787	0.994
Cuneus	0.0003 (<0.001)	0.510	0.996	0.0001 (<0.001)	0.819	0.996	<0.0001 (0.001)	0.937	0.994	-0.0005 (0.001)	0.390	0.994
Entorhinal	0.0003 (0.001)	0.640	0.996	-0.0006 (<0.001)	0.133	0.996	-0.0003 (0.001)	0.636	0.994	-0.0006 (0.001)	0.282	0.994
Fusiform	0.0001 (0.001)	0.933	0.996	-0.0013 (0.001)	0.304	0.996	-0.0009 (0.001)	0.524	0.994	-0.0026 (0.001)	0.072	0.994
Inferior Parietal	0.0009 (0.002)	0.575	0.996	-0.0015 (0.002)	0.392	0.996	-0.0007 (0.002)	0.702	0.994	-0.0022 (0.002)	0.295	0.994
Inferior Temporal	-0.0005 (0.001)	0.692	0.996	-0.0005 (0.001)	0.696	0.996	0.0004 (0.002)	0.782	0.994	-0.0015 (0.002)	0.312	0.994
Isthmus Cingulate	0.0005 (<0.001)	0.164	0.996	-0.0005 (<0.001)	0.083	0.996	0.0001 (<0.001)	0.780	0.994	-0.0006 (<0.001)	0.097	0.994
Lateral Occipital	0.0033 (0.001)	0.021	0.911	-0.0003 (0.001)	0.837	0.996	0.0029 (0.002)	0.102	0.994	-0.0022 (0.002)	0.180	0.994
Lateral Orbitofrontal	-0.0010 (0.001)	0.303	0.996	-0.0010 (0.001)	0.345	0.996	-0.0019 (0.001)	0.151	0.994	-0.0012 (0.001)	0.420	0.994
Lingual	0.0006 (0.001)	0.432	0.996	0.0006 (0.001)	0.481	0.996	<0.0001 (0.001)	0.967	0.994	-0.0006 (0.001)	0.542	0.994
Medial Orbitofrontal	-0.0003 (0.001)	0.778	0.996	-0.0012 (0.001)	0.150	0.996	-0.0015 (0.001)	0.262	0.994	-0.0023 (0.001)	0.032	0.994
Middle Temporal	-0.0005 (0.001)	0.691	0.996	<0.001 (0.001)	0.982	0.996	-0.0005 (0.001)	0.723	0.994	-0.0002 (0.002)	0.883	0.994
Parahippocampal	0.0003 (<0.001)	0.394	0.996	-0.0002 (<0.001)	0.403	0.996	0.0002 (<0.001)	0.552	0.994	-0.0002 (<0.001)	0.467	0.994
Paracentral	<0.001 (0.001)	0.941	0.996	0.0008 (0.001)	0.174	0.996	-0.0001 (0.001)	0.831	0.994	0.0009 (0.001)	0.269	0.994
Pars Opercularis	0.00017 (0.001)	0.815	0.996	-0.0007 (0.001)	0.233	0.996	-0.0006 (0.001)	0.541	0.994	-0.0003 (<0.001)	0.403	0.994
Pars Orbitalis	-0.0002 (<0.001)	0.559	0.996	<0.0001 (<0.001)	0.919	0.996	-0.0004 (<0.001)	0.449	0.994	-0.0003 (0.001)	0.652	0.994
Pars Triangularis	<0.0001 (0.001)	0.958	0.996	-0.0001 (0.001)	0.850	0.996	<0.0001 (0.001)	0.994	0.994	<0.0001 (0.001)	0.982	0.994
Peri Calcarine	0.0006 (<0.001)	0.235	0.996	0.0004 (0.001)	0.412	0.996	0.0004 (0.001)	0.404	0.994	0.0004 (0.001)	0.470	0.994

Post Central	0.0008 (0.001)	0.549	0.996	-0.0001 (0.001)	0.962	0.996	-0.0003 (0.002)	0.864	0.994	<-0.0001 (0.002)	0.990	0.994
Posterior Cingulate	0.0004 (<0.001)	0.290	0.996	-0.0001 (<0.001)	0.889	0.996	0.0003 (<0.001)	0.467	0.994	<0.0001 (<0.001)	0.939	0.994
Precentral	0.0016 (0.002)	0.483	0.996	-0.0011 (0.002)	0.622	0.996	0.0010 (0.003)	0.738	0.994	-0.0004 (0.003)	0.885	0.994
Precuneus	0.0001 (0.001)	0.911	0.996	0.0001 (0.001)	0.927	0.996	-0.0012 (0.001)	0.372	0.994	-0.0008 (0.001)	0.559	0.994
Rostral Anterior Cingulate	-0.0002 (<0.001)	0.743	0.996	-0.0001 (<0.001)	0.790	0.996	-0.0004 (0.001)	0.506	0.994	-0.0002 (0.001)	0.710	0.994
Rostral Middle Frontal	-0.0004 (0.002)	0.866	0.996	0.0028 (0.003)	0.280	0.996	-0.0024 (0.003)	0.424	0.994	0.0019 (0.003)	0.583	0.994
Superior Frontal	0.0010 (0.003)	0.735	0.996	0.0009 (0.003)	0.758	0.996	0.0001 (0.003)	0.982	0.994	0.0003 (0.004)	0.942	0.994
Superior Parietal	0.0012 (0.002)	0.496	0.996	0.0003 (0.002)	0.888	0.996	0.0001 (0.002)	0.957	0.994	-0.0009 (0.002)	0.704	0.994
Superior Temporal	-0.0009 (0.001)	0.514	0.996	-0.0009 (0.001)	0.467	0.996	-0.0008 (0.002)	0.670	0.994	-0.0006 (0.002)	0.737	0.994
Supramarginal	0.0008 (0.001)	0.567	0.996	-0.0007 (0.001)	0.643	0.996	0.0006 (0.002)	0.704	0.994	-0.0003 (0.002)	0.872	0.994
Frontal Pole	-0.0002 (<0.001)	0.393	0.996	-0.0002 (<0.001)	0.399	0.996	-0.0001 (<0.001)	0.813	0.994	-0.0004 (<0.001)	0.214	0.994
Temporal Pole	0.0002 (0.000536)	0.746	0.996	0.0002 (<0.001)	0.724	0.996	<-0.0001 (0.001)	0.946	0.994	0.0001 (0.001)	0.917	0.994
Transverse Temporal	-0.0002 (<0.001)	0.441	0.996	-0.0002 (<0.001)	0.303	0.996	-0.0002 (<0.001)	0.500	0.994	-0.0003 (<0.001)	0.351	0.994
Insula	<0.001 (0.001)	0.914	0.996	-0.0004 (0.001)	0.669	0.996	-0.0001 (0.001)	0.936	0.994	-0.0006 (0.001)	0.613	0.994
Banks of the Superior Temporal Sulcus	-0.001 (<0.001)	0.851	0.996	-0.0007 (<0.001)	0.025	0.911	-0.0001 (<0.001)	0.766	0.994	-0.0011 (<0.001)	0.006	0.810
Cerebellum White Matter	-0.0010 (0.005)	0.830	0.996	0.0015 (0.003)	0.614	0.996	0.0005 (0.005)	0.914	0.994	0.0002 (0.003)	0.946	0.994
Cerebellum Cortex	0.0039 (0.005)	0.425	0.996	0.0003 (0.005)	0.959	0.996	0.0004 (0.006)	0.947	0.994	-0.0031 (0.007)	0.638	0.994
Thalamus	-0.0001 (0.001)	0.921	0.996	<0.0001 (0.001)	0.995	0.996	-0.0001 (0.001)	0.933	0.994	-0.0008 (0.001)	0.558	0.994
Caudate	-0.0007 (0.001)	0.211	0.996	-0.0003 (0.001)	.566	0.996	-0.0011 (0.001)	0.158	0.994	-0.0006 (0.001)	0.451	0.994
Putamen	-0.0011 (0.001)	0.131	0.996	0.0001 (0.0001)	0.925	0.996	-0.0016 (0.001)	0.073	0.994	0.0005 (0.001)	0.585	0.994
Pallidum	-0.0002 (<0.001)	0.609	0.996	-0.0005 (<0.001)	0.128	0.996	-0.0003 (<0.001)	0.590	0.994	-0.0007 (<0.001)	0.050	0.994
Amygdala	<-0.0001 (<0.001)	0.885	0.996	0.0001 (<0.001)	0.852	0.996	0.0002 (<0.001)	0.651	0.994	0.0001 (<0.001)	0.862	0.994

Accumbens Area	0.0002 (<0.001)	0.188	0.996	0.0001 (<0.001)	0.636	0.996	-<0.0001 (<0.001)	0.887	0.994	0.0001 (<0.001)	0.682	0.994
Ventral Diencephalon	-0.0003 (<0.001)	0.445	0.996	0.0008 (0.001)	0.163	0.996	-0.0004 (0.001)	0.523	0.994	0.0011 (0.001)	0.145	0.994
Choroid Plexus	-0.0008 (0.001)	0.343	0.996	-0.0001 (0.001)	0.865	0.996	-0.0012 (0.001)	0.207	0.994	0.0005 (0.001)	0.607	0.994
Cortical White Matter	0.0011 (0.014)	0.940	0.996	0.0111 (0.016)	0.475	0.996	-0.0078 (0.018)	0.665	0.994	-0.0021 (0.020)	0.918	0.994

A β , amyloid- β ; FDR, false discovery rate; SE, Standard Error. **Bold** indicates statistical significance at $p < .05$ before FDR Adjustment. A negative β coefficient indicates volume/cortical atrophy over time, with strong negative coefficients indicating greater atrophy relative to the error and sample size.

Supplementary Table 4. Results of main effects of linear mixed models examining the association between change in cortical thickness and cerebral volume in those with superior cognitive performance in regions of interest both previously identified in published literature and those not previously identified.

Brain area	Volume or Thickness	Left Hemisphere			Right Hemisphere		
		Beta (SE)	P	FDR Adjusted p	Beta (SE)	P	FDR Adjusted p
Cerebral Cortex	Thickness	-0.0123 (0.015)	0.413	0.964	-0.0103 (0.015)	0.506	0.964
Caudal Anterior Cingulate	Thickness	0.0482 (0.047)	0.307	0.899	-0.0493 (0.044)	0.264	0.899
Caudal Middle Frontal	Thickness	-0.0251 (0.020)	0.210	0.899	0.0002 (0.022)	0.992	0.998
Cuneus	Thickness	-0.0004 (0.018)	0.983	0.996	-0.0015 (0.019)	0.939	0.996
Entorhinal	Thickness	-0.0733 (0.050)	0.145	0.786	-0.0851 (0.057)	0.139	0.786
Fusiform	Thickness	-0.0472 (0.022)	0.033	0.684	-0.0448 (0.022)	0.044	0.684
Inferior Parietal	Thickness	-0.0085 (0.018)	0.637	0.964	-0.0054 (0.019)	0.775	0.981
Inferior Temporal	Thickness	-0.0029 (0.025)	0.908	0.996	-0.0304 (0.025)	0.216	0.899
Isthmus Cingulate	Thickness	-0.0325 (0.030)	0.285	0.899	-0.0022 (0.029)	0.941	0.996
Lateral Occipital	Thickness	-0.0099 (0.020)	0.621	0.964	0.0072 (0.021)	0.733	0.964
Lateral Orbitofrontal	Thickness	0.0050 (0.021)	0.813	0.982	-0.0256 (0.025)	0.307	0.899
Lingual	Thickness	-0.0263 (0.017)	0.130	0.786	-0.0007 (0.018)	0.967	0.996
Medial Orbitofrontal	Thickness	-0.0099 (0.023)	0.665	0.964	-0.0166 (0.025)	0.511	0.964
Middle Temporal	Thickness	-0.0243 (0.023)	0.301	0.899	-0.0218 (0.023)	0.352	0.932
Parahippocampal	Thickness	-0.0236 (0.049)	0.629	0.964	-0.0446 (0.039)	0.254	0.899
Paracentral	Thickness	-0.0038 (0.025)	0.878	0.996	0.0082 (0.024)	0.734	0.964
Pars Opercularis	Thickness	-0.0039 (0.018)	0.824	0.984	0.0017 (0.019)	0.929	0.996
Pars Orbitalis	Thickness	>0.0001 (0.029)	0.999	0.999	-0.0394 (0.028)	0.159	0.786
Pars Triangularis	Thickness	-0.0229 (0.019)	0.239	0.899	-0.0152 (0.022)	0.496	0.964
Peri Calcarine	Thickness	-0.0062 (0.018)	0.730	0.964	-0.0005 (0.018)	0.977	0.996
Post Central	Thickness	-0.0066 (0.018)	0.721	0.964	-0.006 (0.019)	0.732	0.964
Posterior Cingulate	Thickness	0.0036 (0.026)	0.887	0.996	0.0247 (0.025)	0.329	0.899
Precentral	Thickness	-0.0197 (0.023)	0.386	0.964	0.0018 (0.025)	0.945	0.996
Precuneus	Thickness	0.0171 (0.020)	0.390	0.964	-0.0057 (0.018)	0.752	0.971
Rostral Anterior Cingulate	Thickness	-0.0221 (0.036)	0.538	0.964	-0.0569 (0.034)	0.095	0.684
Rostral Middle Frontal	Thickness	-0.0121 (0.017)	0.482	0.964	-0.0090 (0.019)	0.637	0.964
Superior Frontal	Thickness	-0.0052 (0.020)	0.796	0.982	0.0048 (0.020)	0.812	0.982
Superior Parietal	Thickness	-0.0043 (0.020)	0.828	0.984	0.0121 (0.020)	0.547	0.964
Superior Temporal	Thickness	-0.0375 (0.021)	0.068	0.685	-0.0343 (0.020)	0.087	0.684
Supramargil	Thickness	0.0025 (0.018)	0.892	0.996	-0.0061 (0.018)	0.741	0.964
Frontal Pole	Thickness	-0.0122 (0.035)	0.730	0.964	-0.0152 (0.040)	0.708	0.964
Temporal Pole	Thickness	-0.0531 (0.045)	0.242	0.899	-0.0770 (0.046)	0.096	0.684

Transverse Temporal Insula	Thickness	-0.0146 (0.030)	0.620	0.964	-0.0179 (0.029)	0.541	0.964
Banks of the Superior Temporal Sulcus	Thickness	-0.0196 (0.022)	0.378	0.964	-0.0017 (0.0244)	0.945	0.996
Cerebral Cortex	Volume	-0.1400 (0.136)	0.305	0.899	-0.1380 (0.140)	0.327	0.899
Caudal Anterior Cingulate	Volume	0.0044 (0.004)	0.293	0.899	-0.0068 (0.004)	0.130	0.786
Caudal Middle Frontal	Volume	-0.0107 (0.009)	0.216	0.899	-0.0041 (0.009)	0.655	0.964
Cuneus	Volume	-0.0038 (0.004)	0.358	0.932	-0.0020 (0.004)	0.618	0.964
Entorhinal	Volume	-0.0037 (0.003)	0.240	0.899	-0.0024 (0.003)	0.494	0.964
Fusiform	Volume	-0.0198 (0.012)	0.093	0.685	-0.0279 (0.011)	0.009	0.601
Inferior Parietal	Volume	-0.0243 (0.013)	0.070	0.685	-0.0100 (0.015)	0.493	0.964
Inferior Temporal	Volume	-0.0050 (0.012)	0.721	0.964	-0.0146 (0.0139)	0.261	0.899
Isthmus Cingulate	Volume	0.0061 (0.004)	0.092	0.684	-0.0005 (0.004)	0.893	0.995
Lateral Occipital	Volume	-0.0008 (0.011)	0.947	0.996	0.0003 (0.012)	0.980	0.996
Lateral Orbitofrontal	Volume	-0.0036 (0.007)	0.598	0.964	-0.0064 (0.006)	0.327	0.899
Lingual	Volume	-0.0037 (0.008)	0.657	0.964	-0.0035 (0.007)	0.632	0.964
Medial Orbitofrontal	Volume	-0.0072 (0.005)	0.162	0.786	0.0020 (0.005)	0.702	0.964
Middle Temporal	Volume	0.0033 (0.012)	0.779	0.981	0.0007 (0.012)	0.958	0.996
Parahippocampal	Volume	>0.0001 (0.003)	0.984	0.996	-0.0014 (0.003)	0.650	0.964
Paracentral	Volume	-0.0059 (0.004)	0.151	0.786	-0.0034 (0.005)	0.478	0.964
Pars Opercularis	Volume	0.0011 (0.006)	0.846	0.996	-0.0036 (0.005)	0.501	0.964
Pars Orbitalis	Volume	0.0004 (0.003)	0.869	0.996	-0.0058 (0.003)	0.088	0.684
Pars Triangularis	Volume	-0.0054 (0.005)	0.255	0.899	-0.0020 (0.005)	0.714	0.964
Peri Calcarine	Volume	-0.0012 (0.003)	0.734	0.964	0.0003 (0.004)	0.939	0.996
Post Central	Volume	-0.0080 (0.010)	0.407	0.964	0.0065 (0.010)	0.530	0.964
Posterior Cingulate	Volume	0.0002 (0.004)	0.946	0.996	-0.0051 (0.004)	0.163	0.786
Precentral	Volume	-0.0238 (0.013)	0.068	0.685	-0.0047 (0.013)	0.722	0.964
Precuneus	Volume	0.0033 (0.008)	0.698	0.964	-0.0022 (0.009)	0.803	0.982
Rostral Anterior Cingulate	Volume	0.0017 (0.004)	0.678	0.964	-0.0142 (0.004)	0.001	0.164
Rostral Middle Frontal	Volume	-0.0023 (0.0144)	0.872	0.996	-0.0083 (0.015)	0.581	0.964
Superior Frontal	Volume	-0.0076 (0.018)	0.675	0.964	-0.0044 (0.019)	0.814	0.982
Superior Parietal	Volume	0.0061 (0.0144)	0.671	0.964	0.0191 (0.013)	0.142	0.786
Superior Temporal	Volume	-0.0117 (0.0103)	0.258	0.899	-0.0061 (0.010)	0.545	0.964
Supramargil	Volume	-0.0027 (0.0103)	0.796	0.982	-0.0066 (0.0114)	0.565	0.964
Frontal Pole	Volume	-0.0012 (0.001)	0.424	0.964	-0.0007 (0.002)	0.719	0.964
Temporal Pole	Volume	-0.0023 (0.004)	0.571	0.964	-0.0042 (0.004)	0.307	0.899
Transverse Temporal Insula	Volume	-0.0003 (0.002)	0.878	0.996	-0.0006 (0.001)	0.675	0.964
	Volume	-0.0065 (0.007)	0.320	0.899	-0.0130 (0.007)	0.053	0.685

Banks of the Superior Temporal Sulcus	Volume	0.0012 (0.004)	0.741	0.964	-0.0034 (0.003)	0.287	0.899
Cerebellum White Matter	Volume	0.0505 (0.022)	0.021	0.684	0.0309 (0.020)	0.129	0.786
Cerebellum Cortex	Volume	0.0450 (0.060)	0.453	0.964	0.0218 (0.057)	0.701	0.964
Thalamus Proper	Volume	0.0161 (0.008)	0.038	0.684	0.0049 (0.006)	0.415	0.964
Caudate	Volume	-0.0013 (0.005)	0.792	0.981	0.0024 (0.005)	0.663	0.964
Putamen	Volume	-0.0140 (0.007)	0.039	0.684	-0.0056 (0.006)	0.356	0.932
Pallidum	Volume	-0.0037 (0.003)	0.222	0.899	0.0043 (0.002)	0.030	0.685
Hippocampus	Volume	0.0062 (0.005)	0.175	0.820	0.0026 (0.005)	0.582	0.964
Amygdala	Volume	0.0012 (0.002)	0.578	0.964	-0.0011 (0.002)	0.642	0.964
Accumbens Area	Volume	-0.00211 (0.001)	0.079	0.684	-0.0017 (0.001)	0.148	0.786
Ventral Diencephalon	Volume	0.0015 (0.003)	0.634	0.964	-0.0003 (0.003)	0.908	0.996
Choroid Plexus	Volume	0.0081 (0.003)	0.011	0.601	0.0088 (0.004)	0.023	0.685
Cortical White Matter	Volume	0.267 (0.141)	0.061	0.684	0.2520 (0.145)	0.084	0.685

FDR, false discovery rate; SE, Standard Error. **Bold** indicates statistical significance at $p < 0.05$ before FDR Adjustment.

A negative β coefficient indicates volume/cortical atrophy over time, with strong negative coefficients indicating greater atrophy relative to the error and sample size.