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### **Supplemental Material**

#### **The Association between Lifelong Greenspace Exposure and 3-Dimensional Brain Magnetic Resonance Imaging in Barcelona Schoolchildren**

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**Supplemental Materials, Table S1.** Regression coefficients of the univariate linear regression models with lifelong residential surrounding greenness<sup>a</sup> as outcome and age, sex, and maternal education (one at a time) as predictor.

<b>Predictor</b>	<b>Regression coefficient (95% Confidence intervals)</b>	<b>p-value</b>
<b>Age (Years)</b>	0.005 (-0.005, 0.015)	0.30
<b>Sex</b>		
Boy	1	
Girl	-0.015 (-0.032, 0.002)	0.08
<b>Maternal educational attainment</b>		
None or primary school	1	
Secondary school	-0.001 (-0.034, 0.031)	0.93
University	0.014 (-0.015, 0.043)	0.35

<sup>a</sup> Average of normalized difference vegetation index (NDVI) across a buffer of 100 m around the residential address(es) since birth, weighted by the time the participant spent in each address.

**Supplemental Materials, Table S2.** Regional clusters associated with lifelong exposure to greenness<sup>a</sup> controlled for individual (maternal education) and neighborhood (urban vulnerability index) socioeconomic status. All clusters reported correspond to cluster size p-values <0.05.

Location	Adjusted for maternal education					Adjusted for urban vulnerability index				
	Cluster size <sup>b</sup> , voxels (ml)	p-value <sup>c</sup>	x y z <sup>d</sup>	t <sup>e</sup>	p-value <sup>f</sup>	Cluster size <sup>b</sup> , voxels (ml)	p-value <sup>c</sup>	x y z <sup>d</sup>	t <sup>e</sup>	p-value <sup>f</sup>
<b>Grey Matter</b>										
Left premotor cortex	964 (3.3)	0.008	-33 -5 60	3.02	0.001	1151 (3.9)	0.001	-33 -5 60	3.05	0.001
Left prefrontal cortex	587 (2.0)	0.09	-33 23 26	2.80	0.002	358 (1.2)	0.40	-35 24 26	2.7	0.004
Right prefrontal cortex										
Superior cluster	1268 (4.3) <sup>g</sup>	<0.0005	26 26 17	3.02	0.001	2631 (8.9) <sup>g</sup>	<0.0005	27 23 18	3.05	0.001
Inferior cluster (Operculum)	1268 (4.3) <sup>g</sup>	<0.0005	42 29 3	3.21	0.0008	2631 (8.9) <sup>g</sup>	<0.0005	42 29 3	3.3	0.0006
<b>White Matter</b>										
Cerebellum										
Left hemisphere	8462 (28.6) <sup>g</sup>	<0.0005	-26 -60 -39	3.19	0.0008	13765 (46.5) <sup>g</sup>	<0.0005	-24 -59 -37	3.34	0.0004
Right hemisphere	8462 (28.6) <sup>g</sup>	<0.0005	23 -77 -17	3.06	0.001	13765 (46.5) <sup>g</sup>	<0.0005	24 -74 -30	3.26	0.0006
Left Premotor region	519 (1.8)	0.14	-29 -5 56	3.00	0.001	709 (2.4)	0.036	-29 -5 54	2.97	0.0016
Right prefrontal region										
Superior cluster	354 (1.2)	0.40	41 31 14	3.01	0.001	461(1.6)	0.20	41 32 14	3.04	0.001
Inferior cluster (operculum)	922 (3.1)	0.01	53 18 0	4.04	<0.0005	890 (3.0)	0.01	53 18 0	3.80	0.00009

<sup>a</sup> Average of normalized difference vegetation index (NDVI) across a buffer of 100 m around the residential address(es) since birth, weighted by the time the participant spent

in each address.

<sup>b</sup> The number of voxels each showing statistically significant association with lifelong residential surrounding greenness.

<sup>c</sup> Cluster size p-value which establishes the probability of the occurrence of a cluster of the specified voxel size or larger under the null hypothesis of a brain made of voxels

with only spatially autocorrelated noise.

<sup>d</sup> x y z, coordinates of the voxel with maximum (peak) t-value inside the corresponding cluster provided in Montreal Neurological Institute (MNI) space.

<sup>e</sup> Maximum (peak) t-value within the cluster. The t-values are generated from the voxel-wise regression model.

<sup>f</sup> Peak p-value which establishes the probability of occurrence of the specified t-value or greater generated by the voxel-wise regression model. The p-value of each row

corresponds to the maximum (peak) t-value of each cluster.

<sup>g</sup> Two parts of a single cluster.

**Supplemental Materials, Table S3.** Regional clusters associated with HRT-SE<sup>a</sup> (A), 2-back  $d'$  (B), and 3-back  $d'$  (C). All clusters reported correspond to cluster size  $p$ -values <0.05.

(A)

Location	Cluster size <sup>b</sup> , voxels (ml)	$p$ -value <sup>c</sup>	$x$ $y$ $z$ <sup>d</sup>	$t$ <sup>e</sup>	$p$ -value <sup>f</sup>
<b>Grey Matter</b>					
Prefrontal cortex					
Left hemisphere	214213 (723.0) <sup>g</sup>	<0.0005	-43 36 39	3.72	<0.0005
Right hemisphere	214213 (723.0) <sup>g</sup>	<0.0005	26 57 22	4.15	<0.0005
Left premotor cortex	214213 (723.0) <sup>g</sup>	<0.0005	-37 -3 54	2.62	0.009
Inferior parietal cortex					
Left hemisphere	214213 (723.0) <sup>g</sup>	<0.0005	-44 -60 43	4.44	<0.0005
Right hemisphere	214213 (723.0) <sup>g</sup>	<0.0005	45 -66 49	3.84	<0.0005
Cerebellum					
Left hemisphere	214213 (723.0) <sup>g</sup>	<0.0005	-21 -49 -33	4.67	<0.0005
Right hemisphere	214213 (723.0) <sup>g</sup>	<0.0005	16.5 -67 -33	3.89	<0.0005
Temporal-occipital cortex					
Left hemisphere	214213 (723.0) <sup>g</sup>	<0.0005	-30 -49 -6	4.47	<0.0005
Right hemisphere	214213 (723.0) <sup>g</sup>	<0.0005	48 -45 3	3.54	0.0005
Hippocampal-complex	214213 (723.0) <sup>g</sup>	<0.0005	-21 -25 -18	4.56	<0.0005
Cingulate gyrus	214213 (723.0) <sup>g</sup>	<0.0005	11 -36 30	3.61	<0.0005
<b>White Matter</b>					
Cerebellum					
Left hemisphere	44774 (151.1) <sup>h</sup>	<0.0005	-20 -34 -48	3.47	0.0006
Right hemisphere	44774 (151.1) <sup>h</sup>	<0.0005	28 -52 -18	3.72	<0.0005
Brainstem/Thalamus	44774 (151.1) <sup>h</sup>	<0.0005	-10 -40 -44	4.17	<0.0005
Hippocampal-complex	44774 (151.1) <sup>h</sup>	<0.0005	-16 -25 -17	4.02	<0.0005
Inferior parietal region					
Right hemisphere	10113 (34.1)	<0.0005	39 -66 31	4.08	<0.0005
Left hemisphere	24946 (84.2) <sup>h</sup>	<0.0005	-33 -43 58	3.44	0.0007
Sensorimotor region					
Right hemisphere	24946 (84.2) <sup>h</sup>	<0.0005	26 -28 58	4.63	<0.0005
Left hemisphere	24946 (84.2) <sup>h</sup>	<0.0005	-28 -13 63	4.46	<0.0005
Supplementary motor region	24946 (84.2) <sup>h</sup>	<0.0005	10 0 61	3.56	<0.0005
Left Prefrontal region	24946 (84.2) <sup>h</sup>	<0.0005	-3 51 22	3.20	0.002

**(B)**

<b>Location</b>	<b>Cluster size<sup>b</sup>, voxels (ml)</b>	<b>p-value<sup>c</sup></b>	<b>x y z<sup>d</sup></b>	<b>t<sup>e</sup></b>	<b>p-value<sup>f</sup></b>
<b>Grey Matter</b>					
Prefrontal cortex					
Left hemisphere	62404 (210.6) <sup>i</sup>	<0.0005	-26 41 46	3.44	<0.0005
Right hemisphere	62404 (210.6) <sup>i</sup>	<0.0005	27 35 51	3.70	<0.0005
Left premotor cortex	62404 (210.6) <sup>i</sup>	<0.0005	-27 -9 46	3.43	<0.0005
Lateral temporal cortex					
Left hemisphere	62404 (210.6) <sup>i</sup>	<0.0005	-38 3 -41	3.61	<0.0005
Right hemisphere	62404 (210.6) <sup>i</sup>	<0.0005	59 -16 -27	3.37	<0.0005
Basal ganglia	62404 (210.6) <sup>i</sup>	<0.0005	-11 9 -3	3.42	<0.0005
Inferior parietal cortex					
Left hemisphere	8473 (28.6)	<0.0005	-54 -54 24	4.36	<0.0005
Right hemisphere	1412 (4.8)	<0.0005	60 -60 34	3.26	0.001
Cerebellum					
Left hemisphere	9265 (31.3) <sup>j</sup>	<0.0005	-21 -58 -36	3.76	<0.0005
Right hemisphere	9265 (31.3) <sup>j</sup>	<0.0005	23 -91 -30	2.92	0.002
<b>White Matter</b>					
Cerebellum					
Left hemisphere	45236 (152.7) <sup>k</sup>	<0.0005	-12 -36 -11	2.85	0.005
Right hemisphere	45236 (152.7) <sup>k</sup>	<0.0005	32 -61 -30	3.03	0.003
Brainstem/Thalamus	45236 (152.7) <sup>k</sup>	<0.0005	6 -45 -44	5.52	<0.0005
Hippocampal-complex	45236 (152.7) <sup>k</sup>	<0.0005	-20 -16 -12	3.16	0.002
Left Premotor region	45236 (152.7) <sup>k</sup>	<0.0005	-34 -3 45	2.81	0.005
Prefrontal region					
Right hemisphere	45236 (152.7) <sup>k</sup>	<0.0005	21 33 34	3.29	0.001
Left hemisphere	2802 (9.5)	<0.0005	-21 42 33	4.46	<0.0005
Sensorimotor region	886 (3.0)	0.012	-36 -34 45	3.43	0.0007
Left inferior parietal region	983 (3.3)	0.006	-8 -58 31	3.14	0.002

(C)

Location	Cluster size <sup>b</sup> , voxels (ml)	p-value <sup>c</sup>	x y z <sup>d</sup>	t <sup>e</sup>	p-value <sup>f</sup>
<b>Grey Matter</b>					
Prefrontal cortex					
Left hemisphere	134174 (452.8) <sup>l</sup>	<0.0005	-30 36 49.5	3.92	<0.0005
Right hemisphere	134174 (452.8) <sup>l</sup>	<0.0005	20 66 24	3.90	<0.0005
Left premotor cortex	134174 (452.8) <sup>l</sup>	<0.0005	-27 -7.5 46.5	3.79	<0.0005
Lateral temporal cortex					
Left hemisphere	134174 (452.8) <sup>l</sup>	<0.0005	-49.5 -3 -13	2.96	0.003
Right hemisphere	134174 (452.8) <sup>l</sup>	<0.0005	55 -36 0	3.46	0.0006
Hippocampal-complex	134174 (452.8) <sup>l</sup>	<0.0005	-21 -30 -17	3.97	<0.0005
Cerebellum					
Left hemisphere	134174 (452.8) <sup>l</sup>	<0.0005	-18 -54 -33	4.03	<0.0005
Right hemisphere	134174 (452.8) <sup>l</sup>	<0.0005	18 -54 -32	4.07	<0.0005
Inferior parietal cortex					
Right hemisphere	134174 (452.8) <sup>l</sup>	<0.0005	61.5 -58 37	3.45	0.0007
Left hemisphere	8126 (27.4)	<0.0005	-53 -49 21	3.44	0.0007
<b>White Matter</b>					
Cerebellum					
Left hemisphere	80553 (271.9) <sup>m</sup>	<0.0005	-50 -58 -53	5.15	<0.0005
Right hemisphere	80553 (271.9) <sup>m</sup>	<0.0005	39 -58 -36	3.06	0.0025
Brainstem/Thalamus	80553 (271.9) <sup>m</sup>	<0.0005	2 -28 -48	4.13	<0.0005
Basal ganglia	80553 (271.9) <sup>m</sup>	<0.0005	27 12 -9	3.34	0.001
Sensorimotor region					
Left hemisphere	80553 (271.9) <sup>m</sup>	<0.0005	-20 -30 66	4.38	<0.0005
Right hemisphere	80553 (271.9) <sup>m</sup>	<0.0005	26 -28 60	4.27	<0.0005
Left premotor region	80553 (271.9) <sup>m</sup>	<0.0005	-22 -1 39	3.49	0.0006
Left inferior parietal region	815 (2.7)	0.0195	-8 -61 31	3.40	0.0008
Right temporal region	967 (3.3)	0.0075	53 -43 -11	2.73	0.003

<sup>a</sup> Hit reaction time-standard error.

<sup>b</sup> The number of voxels each showing statistically significant association with lifelong residential surrounding greenness.

<sup>c</sup> Cluster size p-value which establishes the probability of the occurrence of a cluster of the specified voxel size or larger under the null hypothesis of a brain made of voxels with only spatially autocorrelated noise.

<sup>d</sup> x y z, coordinates of the voxel with maximum (peak) t-value inside the corresponding cluster provided in Montreal Neurological Institute (MNI) space.

<sup>e</sup> Maximum (peak) t-value within the cluster. The t-values are generated from the voxel-wise regression model.

<sup>f</sup> Peak p-value which establishes the probability of occurrence of the specified t-value or greater generated by the voxel-wise regression model. The p-value of each row corresponds to the maximum (peak) t-value of each cluster.

<sup>g</sup> Parts of a single cluster.

<sup>h</sup> Parts of a single cluster.

<sup>i</sup> Parts of a single cluster.

<sup>j</sup> Parts of a single cluster.

<sup>k</sup> Parts of a single cluster.

<sup>l</sup> Parts of a single cluster.

<sup>m</sup> Parts of a single cluster.