

Supplementary Data

Additional testing for the relation between minimum spanning tree (MST) diameter and graph measures calculated in our previous study, resulted in positive correlations between the MST diameter and both normalized clustering (gamma) and normalized path length (lambda) (see Supplementary Table S1 for Pearson correlations).

Analyses were performed on a twin dataset that partially contained both children of a twin pair (83 twin pairs), and thus, data were not fully independent. To additionally test

whether the effects found in the complete dataset could be explained by this partially nonindependent data, we randomly selected one child of each of 83 twin pairs, resulting in a group of 81 girls and 63 boys. Statistical tests (Supplementary Table S2) on these groups show similar, although slightly less significant effects of time and gender indicating that child brains do develop toward more decentralized line-like configurations and that girls show more decentralized line-like configurations than boys did.

SUPPLEMENTARY TABLE S1. CORRELATIONS MINIMUM SPANNING TREE DIAMETER, CLUSTERING, AND PATH LENGTH

	<i>Gamma</i> 5 years	<i>Gamma</i> 7 years	<i>Lambda</i> 5 years	<i>Lambda</i> 7 years
Diameter 5years				
<i>r</i>	0.182	0.168	0.100	0.126
<i>p</i>	0.006	0.011	0.132	0.058
Diameter 7years				
<i>r</i>	0.199	0.261	0.206	0.225
<i>p</i>	0.003	0.000	0.002	0.001

Significant results are printed in bold.

Italic texts represent results at trend level, *r* represents correlation coefficient, *p* represents significance value of correlation.

SUPPLEMENTARY TABLE S2. RESULTS REPEATED MEASURES ANOVA OF SL AND MST PARAMETERS (INDEPENDENT DATA)

	5 years Mean (SD)	7 years Mean (SD)	Δ Time	Time		Time \times Gender		Gender		Boys vs. Girls
				F[2,142]	p	F[2,142]	p	F[2,142]	p	
Theta										
SL	0.032 (0.007)	0.030 (0.005)	↓	14.24	0.000	4.76	0.031	18.19	0.000	<
Degree	0.236 (0.023)	0.236 (0.021)		0.01	0.917	0.14	0.711	6.48	0.012	>
Leaf number	0.370 (0.041)	0.371 (0.040)		0.04	0.848	0.13	0.723	7.47	0.007	>
Eccentricity	0.462 (0.031)	0.462 (0.029)		0.00	0.953	0.18	0.670	12.00	0.001	<
Diameter	0.638 (0.048)	0.637 (0.046)		0.00	0.964	0.12	0.730	12.15	0.001	<
BC	0.738 (0.024)	0.737 (0.022)		0.26	0.609	1.69	0.196	9.11	0.003	>
Degree correlation	0.365 (0.101)	0.370 (0.093)		0.55	0.462	0.92	0.339	2.97	0.087	<
Hierarchy	0.250 (0.026)	0.251 (0.026)		0.13	0.722	0.00	0.992	3.83	0.052	>
Alpha										
SL	0.029 (0.006)	0.028 (0.005)	↓	4.82	0.030	2.94	0.088	10.23	0.002	<
Degree	0.222 (0.020)	0.219 (0.019)	↓	2.94	0.089	0.05	0.819	1.33	0.251	
Leaf number	0.340 (0.045)	0.329 (0.044)	↓	5.16	0.025	0.00	0.947	2.62	0.108	
Eccentricity	0.500 (0.036)	0.502 (0.034)	↑	3.27	0.073	2.24	0.136	3.34	0.070	
Diameter	0.689 (0.057)	0.700 (0.053)	↑	3.20	0.050	2.27	0.134	3.26	0.073	
BC	0.720 (0.021)	0.720 (0.022)		0.01	0.708	5.54	0.020	1.15	0.285	
Degree correlation	0.389 (0.091)	0.394 (0.090)		0.09	0.762	1.62	0.206	0.47	0.495	
Hierarchy	0.235 (0.030)	0.228 (0.029)	↓	4.95	0.022	0.30	0.585	2.33	0.129	
Beta										
SL	0.023 (0.005)	0.021 (0.003)	↓	20.25	0.000	5.81	0.017	14.43	0.000	<
Degree	0.212 (0.019)	0.211 (0.016)		0.17	0.681	0.66	0.419	0.00	0.975	
Leaf number	0.327 (0.045)	0.319 (0.047)		2.13	0.147	0.21	0.649	3.01	0.085	
Eccentricity	0.515 (0.038)	0.520 (0.036)		2.37	0.126	1.01	0.318	3.53	0.062	
Diameter	0.719 (0.059)	0.728 (0.057)		2.07	0.153	0.79	0.377	3.54	0.062	
BC	0.707 (0.021)	0.704 (0.021)		2.58	0.111	1.18	0.280	1.25	0.265	
Degree correlation	0.388 (0.090)	0.387 (0.095)		0.07	0.793	0.25	0.618	0.46	0.497	
Hierarchy	0.230 (0.029)	0.226 (0.030)		1.59	0.209	0.07	0.795	2.98	0.087	

Normalized MST parameters were analyzed for separated frequency bands. Mean and standard deviations are shown per MST parameter. F-values and significance are shown for within- and between subject factors. Bold text represents significant results; italic text represents results at trend level; ↑ indicates an increase over time; ↓ indicates a decrease over time; < indicates boys smaller than girls; > indicates boys larger than girls.

ANOVA, analysis of variance; MST, minimum spanning tree; SL, synchronization likelihood; BC, betweenness centrality.