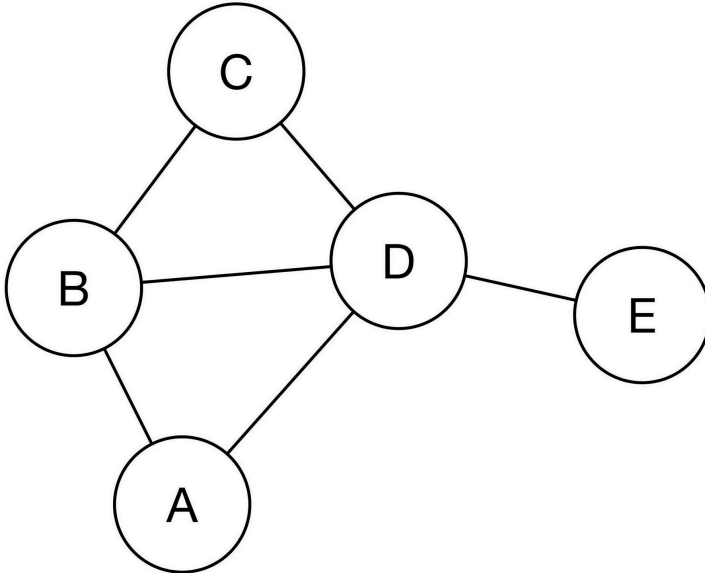


Online-Only Supplements

eFigure1. Network Efficiency.



$$E_{glob} = 1/n(n-1) \sum_{i,j} d(v_i, v_j)$$

$$E_{loc} = 1/n \sum E(G_i)$$

Efficient information exchange between brain regions is assumed to follow the shortest path between those regions. As illustrated here, there are several possible paths or routes from region A to region E with A→D→E being the shortest or most efficient. Global efficiency (E_{glob}) of a network is defined as the average inverse shortest path length across all regions in the network where n is the number of regions and $d(v_i, v_j)$ is the length of the shortest path between regions i and j . Local efficiency is the average efficiency (E) of the local subgraphs (G_i).

eTable 1. Neurocognitive testing z-scores. Data are shown as mean (standard deviation).

Test Name	Non-impaird (N = 100)	Impaired (N = 61)	Test Reference
20Q Abstraction	0.057 (1.001)	-0.546 (0.901)	¹
20Q Achievement	0.060 (0.862)	-0.322 (0.951)	¹
Color-Word Inhibition Switching	0.104 (0.869)	-0.546 (0.963)	¹
Trails Number-Letter Switching	0.170 (0.604)	-1.508 (1.131)	¹
Letter Fluency	0.060 (0.800)	-1.055 (0.775)	¹
Rey Complex Figure Copy	-1.494 (1.899)	-3.585 (2.474)	²
Block Design	0.025 (0.857)	-0.680 (0.986)	^{3,4}
Digits Back	-0.040 (0.942)	-0.628 (1.006)	^{3,4}
Digits Forward	-0.150 (1.048)	-0.678 (0.839)	^{3,4}
Digit Symbol	-0.047 (0.908)	-0.792 (0.895)	^{3,4}
Spatial Span Forward	0.097 (0.898)	-0.590 (0.787)	^{3,4}

eTable 2. Partial correlations between functional connectome efficiencies and executive function tests

Global Efficiency	R	p	Local Efficiency	R	p	Regional Efficiency	R	p
20Q Abstraction	0.29	0.004*	20Q Abstraction	-0.28	0.005*	20Q Abstraction	-0.15	0.151
20Q Achievement	0.23	0.023	20Q Achievement	-0.2	0.051	20Q Achievement		
Color-Word Inhibition Switching	0.04	0.722	Color-Word Inhibition Switching	-0.02	0.814	Color-Word Inhibition Switching		
Trails Number-Letter Switching	0.1	0.33	Trails Number-Letter Switching	-0.07	0.523	Trails Number-Letter Switching		
Letter Fluency	0.28	0.006*	Letter Fluency	-0.3	0.003*	Letter Fluency	-0.18	0.073
Rey Complex Figure Copy	0.19	0.059	Rey Complex Figure Copy	-0.1	0.326	Rey Complex Figure Copy		
Block Design	0.15	0.15	Block Design	-0.13	0.187	Block Design		
Digits Back	0.18	0.083	Digits Back	-0.05	0.642	Digits Back		

Digits Forward	0.31	0.002*	Digits Forward	-0.31	0.002*	Digits Forward	-0.4	< 0.0001*
Digit Symbol	0.11	0.29	Digit Symbol	-0.11	0.3	Digit Symbol		
Spatial Span Forward	0.1	0.32	Spatial Span Forward	-0.06	0.529	Spatial Span Forward		

Footnote. *p value survives correction for multiple comparisons

eTable 3. Partial correlations between structural connectome efficiencies and executive function tests

Global Efficiency:	R	p	Local Efficiency	R	p
20Q Abstraction	-0.03	0.683		-0.05	0.552
20Q Achievement	-0.1	0.231		-0.167	0.039
Color-Word Inhibition Switching	0.153	0.061		0.19	0.021
Trails Number-Letter Switching	0.01	0.876		0.04	0.667
Letter Fluency	0.04	0.656		0.08	0.328
Rey Complex Figure Copy	-0.05	0.552		-0.03	0.726
Block Design	-0.19	0.02		-0.15	0.063
Digits Back	-0.04	0.648		0.02	0.784
Digits Forward	0.06	0.432		0.07	0.413
Digit Symbol	0.06	0.445		0.11	0.165
Spatial Span Forward	0.03	0.746		0.15	0.062

Footnote. No p values survived correction for multiple comparisons

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