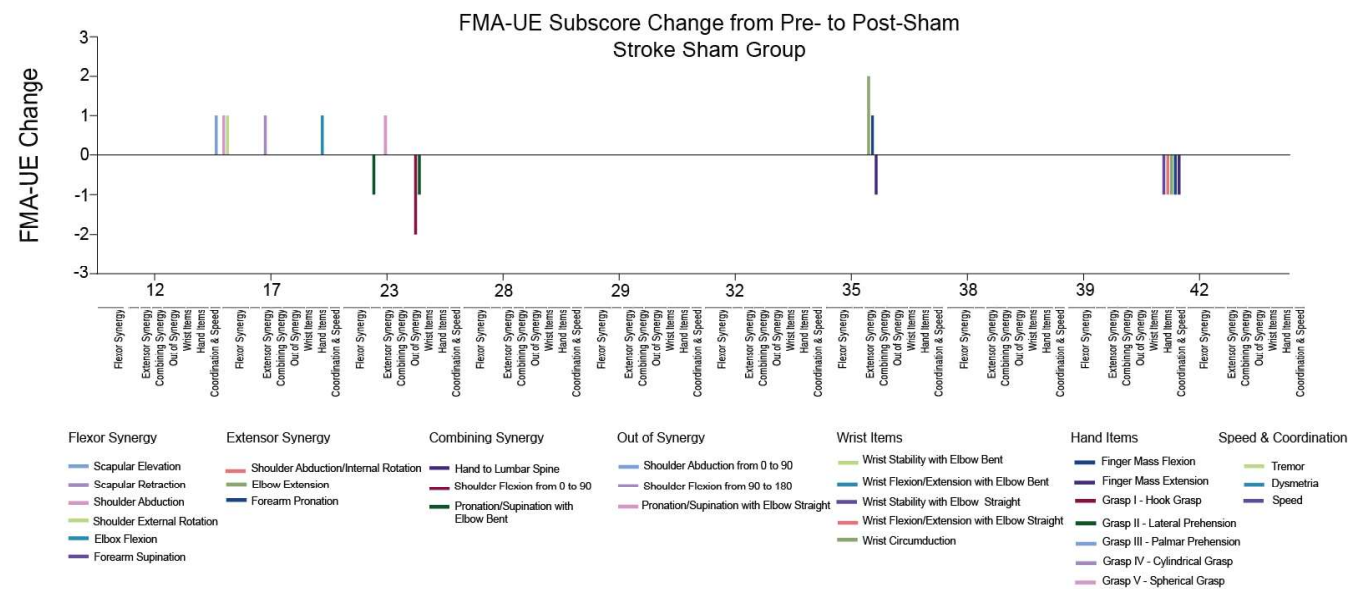
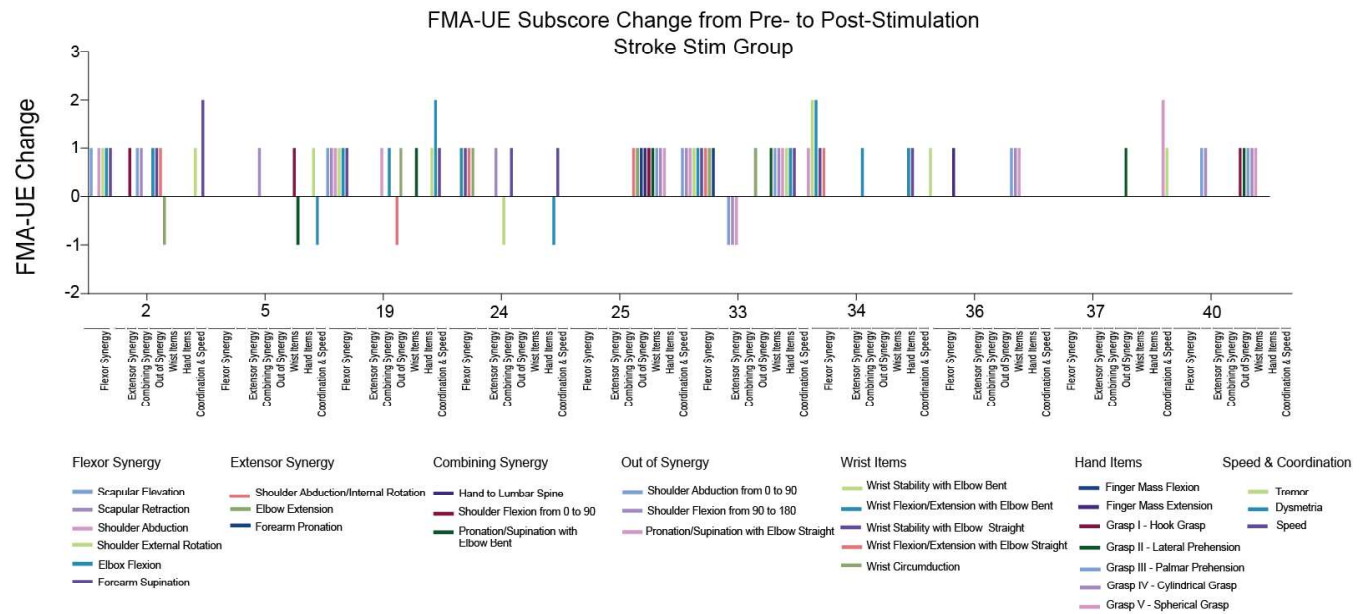
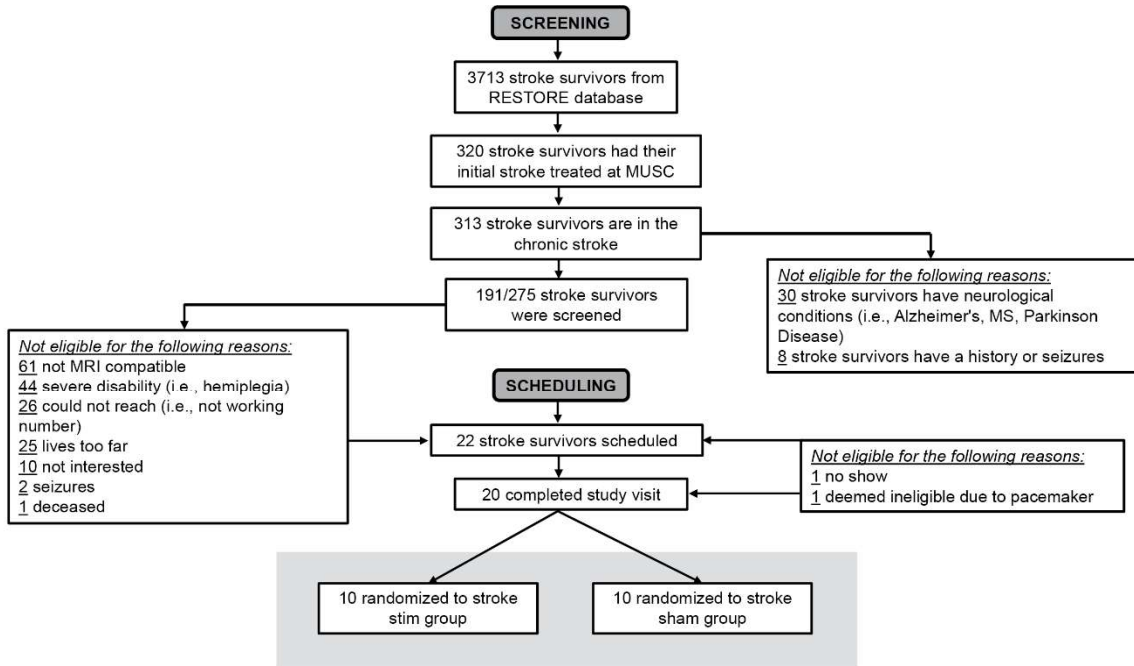


Supplementary Figure 1

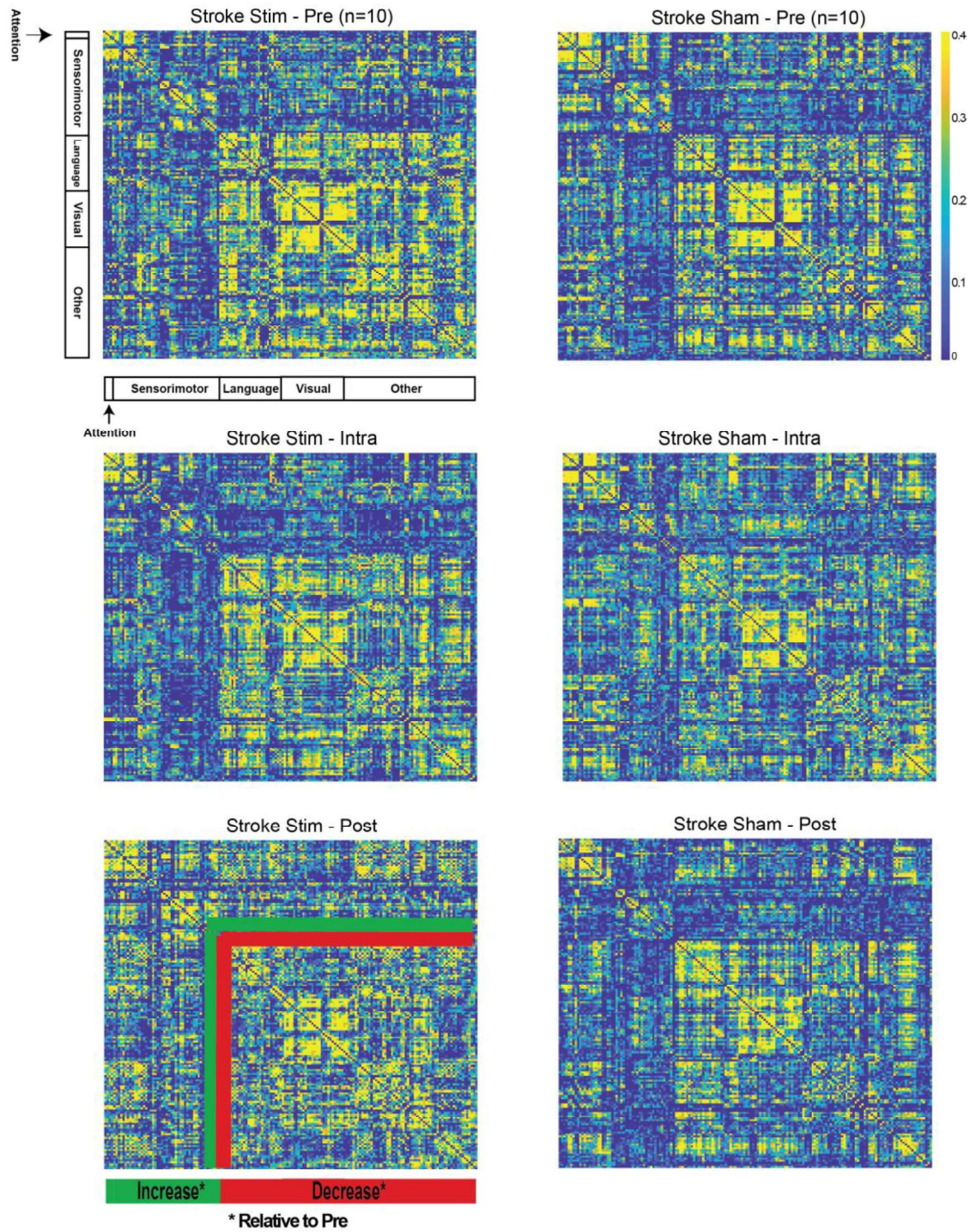


Supplementary Figure 2



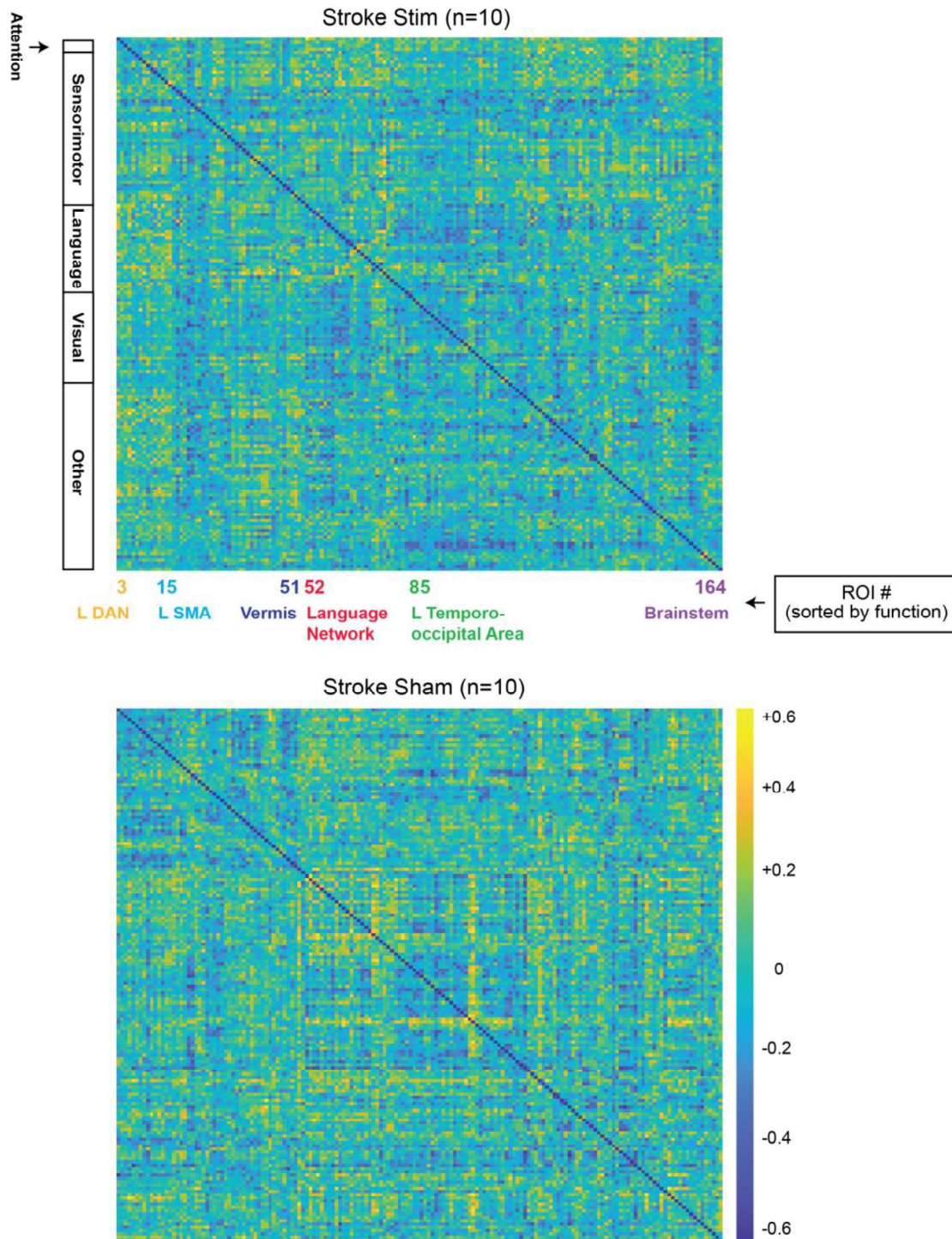
Supplementary Figure 3

Mean Connectivity Matrices for Chronic Stroke Subjects

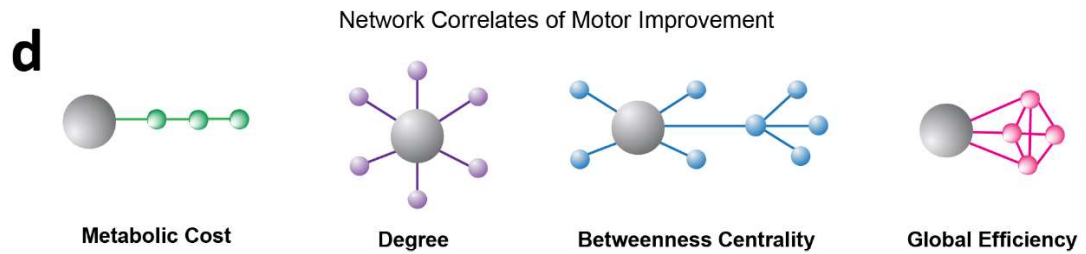
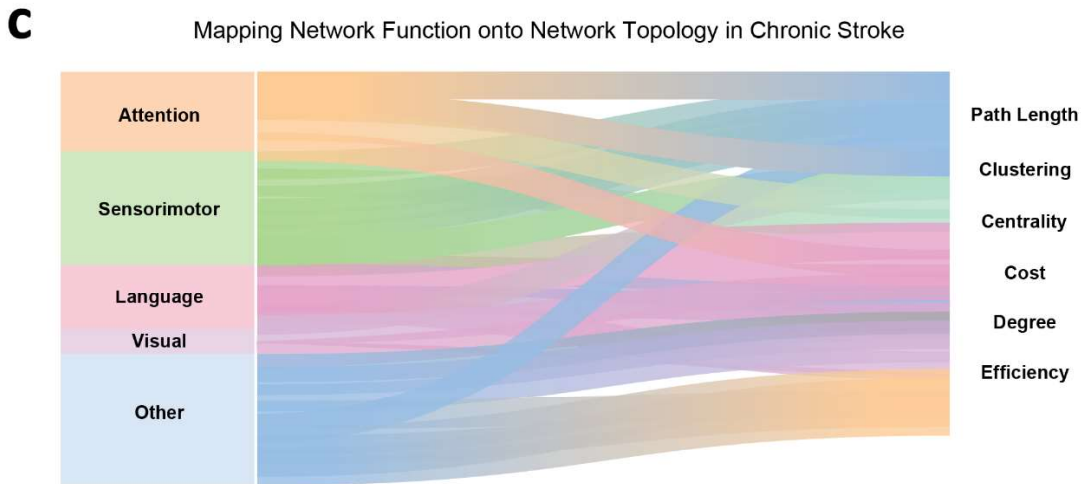
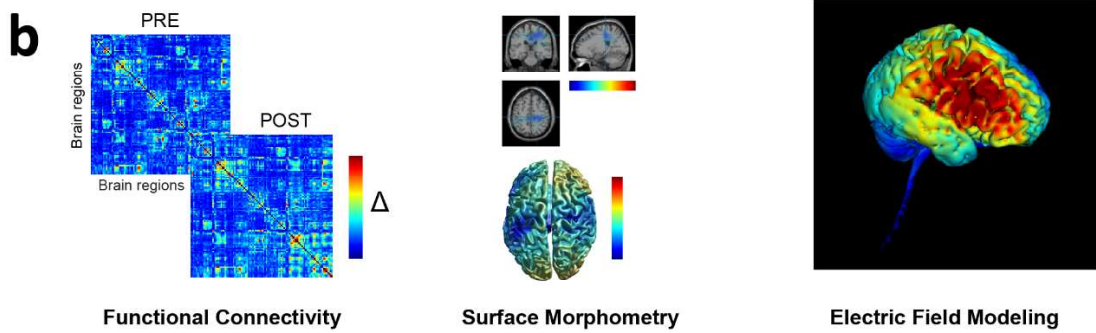
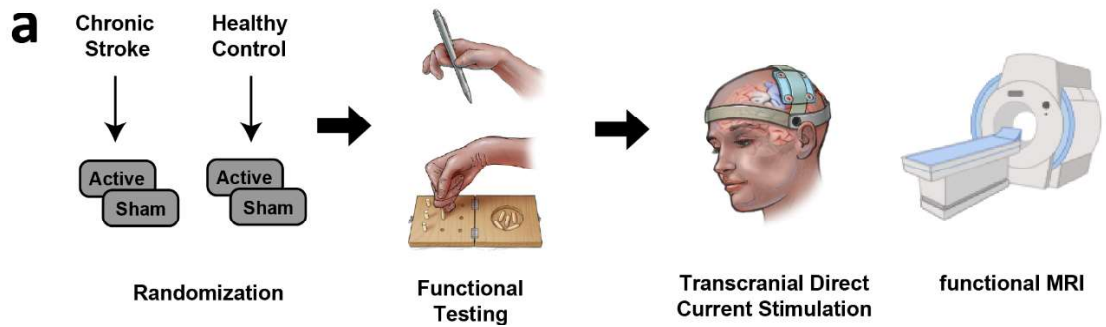


Supplementary Figure 4

Change in Mean Connectivity Matrices for Chronic Stroke Subjects (Post-Pre)



Supplementary Figure 5



Supplementary Table 1

Harvard -Oxford and Automated Anatomical Labeling Atlases for all groups

Region
ROI 1 = networks.DorsalAttention.FEF (L)
ROI 2 = networks.DorsalAttention.FEF (R)
ROI 3 = networks.DorsalAttention.IPS (L)
ROI 4 = networks.DorsalAttention.IPS (R)
ROI 5 = networks.SensoriMotor.Lateral (L)
ROI 6 = networks.SensoriMotor.Lateral (R)
ROI 7 = networks.SensoriMotor.Superior
ROI 8 = networks.Cerebellar.Anterior
ROI 9 = networks.Cerebellar.Posterior
ROI 10 = atlas.PreCG r (Precentral Gyrus Right)
ROI 11 = atlas.PreCG l (Precentral Gyrus Left)
ROI 12 = atlas.PostCG r (Postcentral Gyrus Right)
ROI 13 = atlas.PostCG l (Postcentral Gyrus Left)
ROI 14 = atlas.SMA r (Juxtapositional Lobule Cortex -formerly Supplementary Motor Cortex- Right)
ROI 15 = atlas.SMA l (Juxtapositional Lobule Cortex -formerly Supplementary Motor Cortex- Left)
ROI 16 = atlas.FO r (Frontal Operculum Cortex Right)
ROI 17 = atlas.FO l (Frontal Operculum Cortex Left)
ROI 18 = atlas.CO r (Central Opercular Cortex Right)
ROI 19 = atlas.CO l (Central Opercular Cortex Left)
ROI 20 = atlas.Caudate r
ROI 21 = atlas.Caudate l
ROI 22 = atlas.Putamen r
ROI 23 = atlas.Putamen l
ROI 24 = atlas.Pallidum r
ROI 25 = atlas.Pallidum l
ROI 26 = atlas.Cereb1 l (Cerebellum Crus1 Left)
ROI 27 = atlas.Cereb1 r (Cerebellum Crus1 Right)
ROI 28 = atlas.Cereb2 l (Cerebellum Crus2 Left)
ROI 29 = atlas.Cereb2 r (Cerebellum Crus2 Right)
ROI 30 = atlas.Cereb3 l (Cerebellum 3 Left)
ROI 31 = atlas.Cereb3 r (Cerebellum 3 Right)
ROI 32 = atlas.Cereb45 l (Cerebellum 4 5 Left)
ROI 33 = atlas.Cereb45 r (Cerebellum 4 5 Right)

ROI 34 = atlas.Cereb6 l (Cerebellum 6 Left)
ROI 35 = atlas.Cereb6 r (Cerebellum 6 Right)
ROI 36 = atlas.Cereb7 l (Cerebellum 7b Left)
ROI 37 = atlas.Cereb7 r (Cerebellum 7b Right)
ROI 38 = atlas.Cereb8 l (Cerebellum 8 Left)
ROI 39 = atlas.Cereb8 r (Cerebellum 8 Right)
ROI 40 = atlas.Cereb9 l (Cerebellum 9 Left)
ROI 41 = atlas.Cereb9 r (Cerebellum 9 Right)
ROI 42 = atlas.Cereb10 l (Cerebellum 10 Left)
ROI 43 = atlas.Cereb10 r (Cerebellum 10 Right)
ROI 44 = atlas.Ver12 (Vermis 1 2)
ROI 45 = atlas.Ver3 (Vermis 3)
ROI 46 = atlas.Ver45 (Vermis 4 5)
ROI 47 = atlas.Ver6 (Vermis 6)
ROI 48 = atlas.Ver7 (Vermis 7)
ROI 49 = atlas.Ver8 (Vermis 8)
ROI 50 = atlas.Ver9 (Vermis 9)
ROI 51 = atlas.Ver10 (Vermis 10)
ROI 52 = networks.Language.IFG (L)
ROI 53 = networks.Language.IFG (R)
ROI 54 = networks.Language.pSTG (L)
ROI 55 = networks.Language.pSTG (R)
ROI 56 = atlas.IFG tri r (Inferior Frontal Gyrus, pars triangularis Right)
ROI 57 = atlas.IFG tri l (Inferior Frontal Gyrus, pars triangularis Left)ROI =
ROI 58 = atlas.IFG oper r (Inferior Frontal Gyrus, pars opercularis Right)
ROI 59 = atlas.IFG oper l (Inferior Frontal Gyrus, pars opercularis Left)
ROI 60 = atlas.aSTG r (Superior Temporal Gyrus, anterior division Right)
ROI 61 = atlas.aSTG l (Superior Temporal Gyrus, anterior division Left)
ROI 62 = atlas.pSTG r (Superior Temporal Gyrus, posterior division Right)
ROI 63 = atlas.pSTG l (Superior Temporal Gyrus, posterior division Left)
ROI 64 = atlas.aMTG r (Middle Temporal Gyrus, anterior division Right)
ROI 65 = atlas.aMTG l (Middle Temporal Gyrus, anterior division Left)
ROI 66 = atlas.pMTG r (Middle Temporal Gyrus, posterior division Right)
ROI 67 = atlas.pMTG l (Middle Temporal Gyrus, posterior division Left)
ROI 68 = atlas.toMTG r (Middle Temporal Gyrus, temporooccipital part Right)
ROI 69 = atlas.toMTG l (Middle Temporal Gyrus, temporooccipital part Left)
ROI 70 = atlas.aITG r (Inferior Temporal Gyrus, anterior division Right)

ROI 71 = atlas.aITG l (Inferior Temporal Gyrus, anterior division Left)
ROI 72 = atlas.pITG r (Inferior Temporal Gyrus, posterior division Right)
ROI 73 = atlas.pITG l (Inferior Temporal Gyrus, posterior division Left)
ROI 74 = atlas.aSMG r (Supramarginal Gyrus, anterior division Right)
ROI 75 = atlas.aSMG l (Supramarginal Gyrus, anterior division Left)
ROI 76 = atlas.pSMG r (Supramarginal Gyrus, posterior division Right)
ROI 77 = atlas.pSMG l (Supramarginal Gyrus, posterior division Left)
ROI 78 = atlas.AG r (Angular Gyrus Right)
ROI 79 = atlas.AG l (Angular Gyrus Left)
ROI 80 = networks.Visual.Medial
ROI 81 = networks.Visual.Occipital
ROI 82 = networks.Visual.Lateral (L)
ROI 83 = networks.Visual.Lateral (R)
ROI 84 = atlas.toITG r (Inferior Temporal Gyrus, temporooccipital part Right)
ROI 85 = atlas.toITG l (Inferior Temporal Gyrus, temporooccipital part Left)
ROI 86 = atlas.sLOC r (Lateral Occipital Cortex, superior division Right)
ROI 87 = atlas.sLOC l (Lateral Occipital Cortex, superior division Left)
ROI 88 = atlas.iLOC r (Lateral Occipital Cortex, inferior division Right)
ROI 89 = atlas.iLOC l (Lateral Occipital Cortex, inferior division Left)
ROI 90 = atlas.ICC r (Intracalcarine Cortex Right)
ROI 91 = atlas.ICC l (Intracalcarine Cortex Left)
ROI 92 = atlas.Cuneal r (Cuneal Cortex Right)
ROI 93 = atlas.Cuneal l (Cuneal Cortex Left)
ROI 94 = atlas.LG r (Lingual Gyrus Right)
ROI 95 = atlas.LG l (Lingual Gyrus Left)
ROI 96 = atlas.aTFusC r (Temporal Fusiform Cortex, anterior division Right)
ROI 97 = atlas.aTFusC l (Temporal Fusiform Cortex, anterior division Left)
ROI 98 = atlas.pTFusC r (Temporal Fusiform Cortex, posterior division Right)
ROI 99 = atlas.pTFusC l (Temporal Fusiform Cortex, posterior division Left)
ROI 100 = atlas.TOFusC r (Temporal Occipital Fusiform Cortex Right)
ROI 101 = atlas.TOFusC l (Temporal Occipital Fusiform Cortex Left)
ROI 102 = atlas.OFusG r (Occipital Fusiform Gyrus Right)
ROI 103 = atlas.OFusG l (Occipital Fusiform Gyrus Left)
ROI 104 = atlas.SCC r (Supracalcarine Cortex Right)
ROI 105 = atlas.SCC l (Supracalcarine Cortex Left)
ROI 106 = atlas.OP r (Occipital Pole Right)
ROI 107 = atlas.OP l (Occipital Pole Left)

ROI 108 = networks.DefaultMode.MPFC
ROI 109 = networks.DefaultMode.LP (L)
ROI 110 = networks.DefaultMode.LP (R)
ROI 111 = networks.DefaultMode.PCC
ROI 112 = networks.Salience.ACC
ROI 113 = networks.Salience.AInsula (L)
ROI 114 = networks.Salience.AInsula (R)
ROI 115 = networks.Salience.RPFC (L)
ROI 116 = networks.Salience.RPFC (R)
ROI 117 = networks.Salience.SMG (L)
ROI 118 = networks.Salience.SMG (R)
ROI 119 = networks.FrontoParietal.LPFC (L)
ROI 120 = networks.FrontoParietal.PPC (L)
ROI 121 = networks.FrontoParietal.LPFC (R)
ROI 122 = networks.FrontoParietal.PPC (R)
ROI 123 = atlas.FP r (Frontal Pole Right)
ROI 124 = atlas.FP l (Frontal Pole Left)
ROI 125 = atlas.IC r (Insular Cortex Right)
ROI 126 = atlas.IC l (Insular Cortex Left)
ROI 127 = atlas.SFG r (Superior Frontal Gyrus Right)
ROI 128 = atlas.SFG l (Superior Frontal Gyrus Left)
ROI 129 = atlas.MidFG r (Middle Frontal Gyrus Right)
ROI 130 = atlas.MidFG l (Middle Frontal Gyrus Left)
ROI 131 = atlas.TP r (Temporal Pole Right)
ROI 132 = atlas.TP l (Temporal Pole Left)
ROI 133 = atlas.SPL r (Superior Parietal Lobule Right)
ROI 134 = atlas.SPL l (Superior Parietal Lobule Left)
ROI 135 = atlas.MedFC (Frontal Medial Cortex)
ROI 136 = atlas.SubCalC (Subcallosal Cortex)
ROI 137 = atlas.PaCiG r (Paracingulate Gyrus Right)
ROI 138 = atlas.PaCiG l (Paracingulate Gyrus Left)
ROI 139 = atlas.AC (Cingulate Gyrus, anterior division)
ROI 140 = atlas.PC (Cingulate Gyrus, posterior division)
ROI 141 = atlas.Precuneous (Precuneous Cortex)
ROI 142 = atlas.FOrb r (Frontal Orbital Cortex Right)
ROI 143 = atlas.FOrb l (Frontal Orbital Cortex Left)
ROI 144 = atlas.aPaHC r (Parahippocampal Gyrus, anterior division Right)

ROI 145 = atlas.aPaHC l (Parahippocampal Gyrus, anterior division Left)
ROI 146 = atlas.pPaHC r (Parahippocampal Gyrus, posterior division Right)
ROI 147 = atlas.pPaHC l (Parahippocampal Gyrus, posterior division Left)
ROI 148 = atlas.PO r (Parietal Operculum Cortex Right)
ROI 149 = atlas.PO l (Parietal Operculum Cortex Left)
ROI 150 = atlas.PP r (Planum Polare Right)
ROI 151 = atlas.PP l (Planum Polare Left)
ROI 152 = atlas.HG r (Heschl's Gyrus Right)
ROI 153 = atlas.HG l (Heschl's Gyrus Left)
ROI 154 = atlas.PT r (Planum Temporale Right)
ROI 155 = atlas.PT l (Planum Temporale Left)
ROI 156 = atlas.Thalamus r
ROI 157 = atlas.Thalamus
ROI 158 = atlas.Hippocampus r
ROI 159 = atlas.Hippocampus l
ROI 160 = atlas.Amygdala r
ROI 161 = atlas.Amygdala l
ROI 162 = atlas.Accumbens r
ROI 163 = atlas.Accumbens l
ROI 164 = atlas.Brain-Stem

Supplementary Table 2

Supplementary Table 1. Mean Connectivity

Mean Connectivity Across Timepoints for Stroke Stim Group	Post hoc p-value	FDR-corrected p-value	Timepoint
left supplementary motor area	↑ $p=0.0029$, $t_{[18]} = 3.463$ ↑ $p=0.0336$, $t_{[18]} = 2.300$	0.0297 0.4442	Pre to post Intra to post
left inferior frontal gyrus, pars triangularis	↓ $p=0.0058$, $t_{[18]} = 3.629$	0.0303	Pre to post
left inferior frontal gyrus, pars opercularis	↓ $p=0.0396$, $t_{[18]} = 2.770$	0.1371	Pre to post
left inferior temporal gyrus, temporo-occipital	↓ $p=0.0095$, $t_{[18]} = 3.404$	0.2514	Intra to post

Note: Significance defined as p-values less than or equal to 0.05.

Supplementary Table 3

Supplementary Table 2. Surface-Based Morphometry

Mean whole-brain cortical thickness between Healthy Control and Chronic Stroke groups	P-value	FDR-corrected p-value
superior frontal gyrus	p=0.0267, $t_{[38]} = 2.306$	p=0.167
IFG pars opercularis	p=0.0004, $t_{[38]} = 3.896$	p=0.004
precentral gyrus	p=0.0278, $t_{[38]} = 2.288$	p=0.168
pericalcarine	p=0.0003, $t_{[38]} = 3.990$	p=0.004
paracentral gyrus	p=0.0003, $t_{[38]} = 4.013$	p=0.004

Note: t-tests were used to assess differences in cortical thickness across specific brain regions using the Desikan- Killiany atlas. The following ROIs revealed to be statistically different, with healthy controls showing larger cortical thickness. Significance was defined as p-values less than or equal to 0.05.

Supplementary Table 4

Supplementary Table 3. Graph theory and FMA linear regressions for pooled Stroke Stim and Sham groups (N=20)

Significant left-sided ROIs	Δ FMA vs Pre-Post Δ in Graph Theory Metrics		FMA Δ vs Pre-Stimulation Graph Theory Metric
Brain Region	Graph Theory Measure	P-Value	P-Value
Attention Regions			
Dorsal Attention FEF (L)	Betweenness Centrality	0.043	
Dorsal Attention IPS (L)	Betweenness Centrality	0.039	0.041
Dorsal Attention IPS (L)	Global Efficiency		0.031
Dorsal Attention IPS (L)	Cost		0.029
Dorsal Attention IPS (L)	Degree		0.029
Sensorimotor Regions			
Putamen (L)	Average Path Length	0.037	
Cerebellum Crus2 (L)	Betweenness Centrality	0.042	
Cerebellum 6 (L)	Average Path Length	0.002	
Caudate (L)	Betweenness Centrality		0.035
Postcentral Gyrus (L)	Global Efficiency	0.027	
Postcentral Gyrus (L)	Cost	0.008	
Postcentral Gyrus (L)	Average Path Length	0.031	
Postcentral Gyrus (L)	Degree	0.008	
Language Regions			
Language Network pSTG (L)	Cost	0.004	
Language Network pSTG (L)	Degree	0.004	
Inferior Frontal Gyrus, pars triangularis (L)	Global Efficiency	0.024	
Inferior Frontal Gyrus, pars triangularis (L)	Local Efficiency	0.037	
Inferior Frontal Gyrus, pars triangularis (L)	Average Path Length	0.010	
Inferior Frontal Gyrus, pars opercularis (L)	Local Efficiency	0.040	
Visual Regions			
Lateral Occipital Cortex, inferior division (L)	Average Path Length	0.042	
Intracalcarine Cortex (L)	Average Path Length	0.036	
Inferior Temporal Gyrus, temporooccipital (L)	Clustering Coefficient	0.030	
Other Regions			

Middle Frontal Gyrus Left	Average Path Length	0.029	
Inferior Temporal Gyrus, posterior division (L)	Average Path Length	0.034	
Inferior Temporal Gyrus, posterior division (L)	Average Path Length		0.043
Planum Polare (L)	Betweenness Centrality		0.024
Frontal Operculum Cortex (L)	Local Efficiency	0.041	
Frontal Operculum Cortex (L)	Clustering Coefficient	0.040	
Accumbens (L)	Global Efficiency	0.030	
Salience Insula (L)	Local Efficiency	0.031	
Salience Insula (L)	Clustering Coefficient	0.040	