**Supplementary File 1**

**Supplementary Table 1A.** MCS and UWS patients’ demographic and clinical characteristics. The table includes condition, etiology (traumatic brain injury (TBI) grouped with Haemorrhage Stroke and other focal leasons and Anoxia), time science injury (TSI), age, gender (F=female, M=male), Coma Recovery Scale-Revised (CSR-R) auditory, visual, motor, verbal, communication and arousal subscores, CRS-R total score.

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Patient ID** | **Etiology** | **TSI (Days)** | **Age (Years)** | **Gender** | **Auditory** | **Visual** | **Motor** | **Verbal** | **Communication** | **Arousal** | **Total CSR-R** |
| MCS P1 | TBI | 3034 | 34 | F | 3 | 3 | 2 | 2 | 0 | 2 | 12 |
| MCS P2 | TBI | 1294 | 40 | F | 2 | 3 | 2 | 2 | 0 | 2 | 11 |
| MCS P3 | Anoxia | 13 | 62 | M | 0 | 3 | 2 | 1 | 0 | 1 | 7 |
| MCS P4 | TBI | 389 | 59 | F | 2 | 1 | 2 | 1 | 0 | 2 | 8 |
| MCS P5 | TBI | 589 | 30 | M | 3 | 2 | 2 | 2 | 0 | 1 | 10 |
| MCS P6 | TBI | 521 | 28 | M | 1 | 3 | 2 | 2 | 0 | 2 | 10 |
| MCS P7 | TBI | 533 | 47 | M | 3 | 5 | 2 | 1 | 0 | 2 | 13 |
| MCS P8 | Anoxia | 2639 | 38 | M | 1 | 3 | 2 | 2 | 0 | 1 | 9 |
| MCS P9 | TBI | 2690 | 24 | M | 3 | 3 | 5 | 1 | 0 | 2 | 14 |
| MCS P10 | Anoxia | 9900 | 39 | M | 3 | 3 | 5 | 2 | 0 | 2 | 15 |
| MCS P11 | Anoxia | 314 | 26 | F | 3 | 1 | 2 | 1 | 0 | 2 | 9 |
| MCS P12 | TBI | 407 | 31 | M | 0 | 1 | 5 | 2 | 0 | 1 | 9 |
| MCS P13 | Anoxia | 64 | 29 | M | 1 | 3 | 2 | 2 | 0 | 2 | 10 |
| MCS P14 | Anoxia | 639 | 43 | M | 2 | 3 | 1 | 2 | 0 | 2 | 10 |
| MCS P15 | TBI | 1241 | 53 | M | 0 | 3 | 2 | 2 | 0 | 2 | 9 |
| MCS P16 | TBI | 135 | 51 | M | 3 | 4 | 2 | 1 | 0 | 2 | 12 |
| MCS P17 | TBI | 1383 | 68 | F | 3 | 1 | 3 | 2 | 0 | 2 | 11 |
| MCS P18 | TBI | 1331 | 35 | M | 3 | 0 | 2 | 1 | 0 | 2 | 8 |
| MCS P19 | TBI | 35 | 73 | M | 0 | 2 | 0 | 1 | 0 | 1 | 4 |
| MCS P20 | Anoxia | 104 | 43 | F | 3 | 1 | 3 | 1 | 0 | 0 | 8 |
| MCS P21 | Anoxia | 401 | 29 | M | 1 | 3 | 2 | 1 | 0 | 2 | 9 |
| MCS P22 | TBI | 255 | 39 | M | 4 | 5 | 4 | 2 | 1 | 2 | 18 |
| MCS P23 | Anoxia | 1482 | 32 | M | 3 | 4 | 2 | 2 | 1 | 2 | 14 |
| MCS P24 | TBI | 641 | 23 | M | 3 | 3 | 0 | 1 | 0 | 2 | 9 |
| MCS P25 | Anoxia | 34 | 47 | F | 3 | 4 | 5 | 3 | 2 | 2 | 19 |
| MCS P26 | Anoxia | 7814 | 34 | M | 1 | 3 | 5 | 2 | 0 | 2 | 13 |
| MCS P27 | TBI | 20 | 52 | M | 3 | 3 | 2 | 2 | 1 | 2 | 13 |
| MCS P28 | TBI | 37 | 26 | F | 2 | 3 | 3 | 0 | 1 | 1 | 10 |
| MCS P29 | TBI | 242 | 46 | F | 2 | 3 | 2 | 1 | 0 | 2 | 10 |
| MCS P30 | Anoxia | 396 | 57 | M | 3 | 0 | 2 | 2 | 0 | 2 | 9 |
| UWS P1 | TBI | 283 | 52 | F | 1 | 0 | 2 | 2 | 0 | 1 | 6 |
| UWS P2 | Anoxia | 743 | 30 | M | 1 | 0 | 2 | 1 | 0 | 2 | 6 |
| UWS P3 | Anoxia | 92 | 74 | M | 1 | 0 | 1 | 1 | 0 | 1 | 4 |
| UWS P4 | TBI | 43 | 64 | M | 1 | 0 | 2 | 1 | 0 | 1 | 5 |
| UWS P5 | Anoxia | 18 | 20 | M | 1 | 0 | 0 | 1 | 0 | 1 | 3 |
| UWS P6 | Anoxia | 304 | 60 | F | 1 | 1 | 1 | 1 | 0 | 2 | 6 |
| UWS P7 | Anoxia | 29 | 44 | M | 1 | 0 | 1 | 0 | 0 | 2 | 4 |
| UWS P8 | Anoxia | 38 | 50 | F | 0 | 0 | 0 | 2 | 0 | 1 | 3 |
| UWS P9 | Anoxia | 50 | 69 | F | 0 | 1 | 2 | 1 | 0 | 1 | 5 |
| UWS P10 | Anoxia | 1868 | 21 | F | 1 | 0 | 1 | 2 | 0 | 2 | 6 |
| UWS P11 | Anoxia | 129 | 49 | F | 1 | 0 | 0 | 1 | 0 | 2 | 4 |
| UWS P12 | TBI | 24 | 58 | M | 0 | 1 | 2 | 0 | 0 | 1 | 4 |
| UWS P13 | Anoxia | 30 | 44 | M | 1 | 1 | 1 | 1 | 0 | 1 | 5 |
| UWS P14 | Anoxia | 335 | 40 | F | 1 | 0 | 2 | 1 | 0 | 2 | 6 |

**Supplementary Table 1B.** Brain Region Involved for every networks illustrated in the figure I to N extracted from NNFT based on Shen et al. (2015) atlas labeling.

|  |  |
| --- | --- |
| **Brain Region Involved for DMN** | **Intensity** |
| 44% Frontal\_Med\_VMPFC\_R [26] / 31% Cingulum\_Ant\_R [32] | 0.90924 |
| 60% Frontal\_Sup\_Medial\_R [24] / 20% Cingulum\_Ant\_R [32] | 0.93139 |
| 52% Frontal\_Sup\_R [4] / 41% Frontal\_Sup\_Medial\_R [24] | 0.80972 |
| 87% Angular\_R [66] | 0.84221 |
| 44% Cingulum\_Post\_R [36] / 39% Cingulum\_Mid\_R [34] | 0.79147 |
| 57% Precuneus\_R [68] / 32% Calcarine\_R [44] | 0.70205 |
| 79% Precuneus\_R [68] | 0.88825 |
| 54% Frontal\_Med\_VMPFC\_L [25] / 31% Cingulum\_Ant\_L [31] | 0.91556 |
| 50% Frontal\_Sup\_Medial\_L [23] / 47% Cingulum\_Ant\_L [31] | 0.96556 |
| 40% Frontal\_Sup\_Medial\_L [23] / 30% Frontal\_Sup\_L [3] | 0.74546 |
| 57% Frontal\_Sup\_Medial\_L [23] / 41% Frontal\_Sup\_L [3] | 0.85587 |
| 44% Frontal\_Sup\_Medial\_L [23] / 43% Frontal\_Sup\_L [3] | 0.83064 |
| 59% Angular\_L [65] / 26% Parietal\_Inf\_L [61] | 0.76956 |
| 55% Temporal\_Mid\_L [85] / 27% Angular\_L [65] | 0.77156 |
| 77% Temporal\_Mid\_L [85] | 0.80842 |
| 45% Precuneus\_L [67] / 34% Calcarine\_L [43] | 0.82173 |
| 74% Precuneus\_L [67] | 1 |
| **Brain Region Involved for Visual** | **Intensity** |
| 39% Fusiform\_R [56] / 25% Occipital\_Inf\_R [54] | 0.70872 |
| 51% Lingual\_R [48] / 33% Fusiform\_R [56] | 0.87274 |
| 67% Occipital\_Mid\_R [52] | 0.88126 |
| 42% Occipital\_Sup\_R [50] / 26% Cuneus\_R [46] | 0.79673 |
| 48% Lingual\_R [48] / 17% Fusiform\_R [56] | 0.83135 |
| 65% Cuneus\_R [46] | 0.84935 |
| 37% Occipital\_Mid\_R [52] / 20% Occipital\_Sup\_R [50] | 0.75776 |
| 78% Lingual\_R [48] | 0.97204 |
| 39% Calcarine\_R [44] / 27% Cuneus\_R [46] | 0.95529 |
| 76% Calcarine\_R [44] | 0.92708 |
| 37% Temporal\_Sup\_L [81] / 35% Rolandic\_Oper\_L [17] | 0.72006 |
| 93% Occipital\_Mid\_L [51] | 0.88113 |
| 40% Fusiform\_L [55] / 31% Lingual\_L [47] | 0.79654 |
| 47% Occipital\_Sup\_L [49] / 32% Cuneus\_L [45] | 0.8983 |
| 49% Occipital\_Mid\_L [51] / 44% Occipital\_Inf\_L [53] | 0.74688 |
| 88% Lingual\_L [47] | 1 |
| 34% Calcarine\_L [43] / 26% Occipital\_Mid\_L [51] | 0.81339 |
| 38% Lingual\_L [47] / 20% Calcarine\_L [43] | 0.84961 |
| 67% Calcarine\_L [43] | 0.95617 |
| **Brain Region Involved for Salience** | **Intensity** |
| 41% Frontal\_Mid\_Orb\_R [10] / 29% Frontal\_Mid\_R [8] | 0.74767 |
| 38% Frontal\_Inf\_Orb\_R [16] / 26% Frontal\_Mid\_Orb\_R [10] | 0.76732 |
| 61% Frontal\_Mid\_R [8] | 0.80919 |
| 84% Frontal\_Mid\_R [8] | 1 |
| 56% Cingulum\_Mid\_R [34] / 26% Cingulum\_Ant\_R [32] | 0.89333 |
| 67% Frontal\_Inf\_Tri\_R [14] | 0.83262 |
| 57% Insula\_R [30] / 21% Frontal\_Inf\_Tri\_R [14] | 0.74549 |
| 74% Postcentral\_R [58] | 0.73133 |
| 60% Supp\_Motor\_Area\_R [20] / 22% Cingulum\_Mid\_R [34] | 0.74191 |
| 58% Temporal\_Mid\_R [86] / 32% Temporal\_Sup\_R [82] | 0.74898 |
| 50% Temporal\_Sup\_R [82] / 28% Rolandic\_Oper\_R [18] | 0.71296 |
| 52% Temporal\_Sup\_R [82] / 48% Temporal\_Mid\_R [86] | 0.84572 |
| 66% Temporal\_Mid\_R [86] | 0.82313 |
| 41% Frontal\_Mid\_L [7] / 28% Frontal\_Sup\_L [3] | 0.77442 |
| 75% Frontal\_Mid\_L [7] | 0.8282 |
| 63% Frontal\_Inf\_Tri\_L [13] | 0.82589 |
| 55% Supp\_Motor\_Area\_L [19] / 24% Frontal\_Sup\_Medial\_L [23] | 0.81985 |
| 61% Frontal\_Inf\_Tri\_L [13] | 0.88701 |
| 77% Temporal\_Mid\_L [85] | 0.80309 |
| 62% Temporal\_Mid\_L [85] | 0.81927 |
| 72% Temporal\_Mid\_L [85] | 0.81848 |
| **Brain Region Involved for Posterior DMN** | **Intensity** |
| 57% Supp\_Motor\_Area\_R [20] / 39% Paracentral\_Lobule\_R [70] | 0.80048 |
| 63% Postcentral\_R [58] | 0.77675 |
| 37% Parietal\_Sup\_R [60] / 23% Parietal\_Inf\_R [62] | 0.70656 |
| 80% Precuneus\_R [68] | 0.86118 |
| 79% Precuneus\_R [68] | 0.74169 |
| 46% Precuneus\_R [68] / 37% Cingulum\_Mid\_R [34] | 0.86742 |
| 51% Postcentral\_L [57] / 39% Precentral\_L [1] | 0.73914 |
| 61% Postcentral\_L [57] | 0.76176 |
| 58% Paracentral\_Lobule\_L [69] / 35% Precuneus\_L [67] | 0.84561 |
| 66% Parietal\_Sup\_L [59] | 0.92041 |
| 75% Precuneus\_L [67] | 1 |
| 49% Parietal\_Inf\_L [61] / 38% Postcentral\_L [57] | 0.7002 |
| 66% Cingulum\_Mid\_L [33] | 0.70015 |
| 74% Precuneus\_L [67] | 0.70861 |
| 46% Precuneus\_L [67] / 45% Cingulum\_Mid\_L [33] | 0.90781 |
| **Brain Region Involved for FPN** | **Intensity** |
| 41% Frontal\_Mid\_Orb\_R [10] / 29% Frontal\_Mid\_R [8] | 0.71857 |
| 61% Frontal\_Mid\_R [8] | 0.83527 |
| 84% Frontal\_Mid\_R [8] | 0.81022 |
| 85% Frontal\_Mid\_R [8] | 0.89663 |
| 67% Frontal\_Inf\_Tri\_R [14] | 0.72855 |
| 44% Frontal\_Inf\_Oper\_R [12] / 34% Frontal\_Inf\_Tri\_R [14] | 0.76975 |
| 37% Parietal\_Sup\_R [60] / 23% Parietal\_Inf\_R [62] | 0.80984 |
| 46% SupraMarginal\_R [64] / 34% Parietal\_Inf\_R [62] | 1 |
| 87% Angular\_R [66] | 0.90587 |
| 41% Frontal\_Mid\_L [7] / 28% Frontal\_Sup\_L [3] | 0.71232 |
| 40% Frontal\_Mid\_Orb\_L [9] / 39% Frontal\_Inf\_Orb\_L [15] | 0.92596 |
| 63% Frontal\_Inf\_Tri\_L [13] | 0.89738 |
| 44% Frontal\_Sup\_Medial\_L [23] / 43% Frontal\_Sup\_L [3] | 0.76021 |
| 84% Frontal\_Mid\_L [7] | 0.96682 |
| 64% Frontal\_Inf\_Orb\_L [15] | 0.88846 |
| 61% Frontal\_Inf\_Tri\_L [13] | 0.83907 |
| 52% Frontal\_Inf\_Tri\_L [13] / 42% Frontal\_Inf\_Oper\_L [11] | 0.9035 |
| 50% Precentral\_L [1] / 30% Frontal\_Inf\_Oper\_L [11] | 0.86084 |
| 46% Frontal\_Mid\_L [7] / 45% Frontal\_Sup\_L [3] | 0.70241 |
| 81% Precentral\_L [1] | 0.70613 |
| 59% Angular\_L [65] / 26% Parietal\_Inf\_L [61] | 0.72952 |
| **Brain Region Involved for subcortical fronto-temporoparietal (Sub-FPTN)** | **Intensity** |
| 38% Frontal\_Inf\_Orb\_R [16] / 26% Frontal\_Mid\_Orb\_R [10] | 0.73524 |
| 45% Frontal\_Inf\_Tri\_R [14] / 28% Frontal\_Inf\_Orb\_R [16] | 0.73048 |
| 67% Frontal\_Inf\_Tri\_R [14] | 0.89288 |
| 44% Frontal\_Inf\_Oper\_R [12] / 34% Frontal\_Inf\_Tri\_R [14] | 0.79496 |
| 37% Parietal\_Sup\_R [60] / 23% Parietal\_Inf\_R [62] | 0.7 |
| 46% SupraMarginal\_R [64] / 34% Parietal\_Inf\_R [62] | 0.83401 |
| 58% Temporal\_Mid\_R [86] / 32% Temporal\_Sup\_R [82] | 0.75678 |
| 52% Temporal\_Sup\_R [82] / 48% Temporal\_Mid\_R [86] | 0.80884 |
| 64% Temporal\_Mid\_R [86] | 0.87249 |
| 51% Temporal\_Inf\_R [90] / 47% Temporal\_Mid\_R [86] | 0.81118 |
| 70% Temporal\_Inf\_R [90] | 0.90559 |
| 81% Cingulum\_Ant\_R [32] | 0.72996 |
| 81% Cingulum\_Mid\_R [34] | 0.79348 |
| 19% Putamen\_R [74] / 14% Caudate\_R [72] | 0.74234 |
| 52% Thalamus\_R [78] | 0.70057 |
| 33% Cingulum\_Ant\_L [31] / 23% Rectus\_MedOFC\_L [27] | 0.80333 |
| 40% Frontal\_Mid\_Orb\_L [9] / 39% Frontal\_Inf\_Orb\_L [15] | 0.89789 |
| 63% Frontal\_Inf\_Tri\_L [13] | 0.89456 |
| 84% Frontal\_Mid\_L [7] | 0.79996 |
| 64% Frontal\_Inf\_Orb\_L [15] | 0.82283 |
| 61% Frontal\_Inf\_Tri\_L [13] | 0.76427 |
| 52% Frontal\_Inf\_Tri\_L [13] / 42% Frontal\_Inf\_Oper\_L [11] | 0.82259 |
| 50% Precentral\_L [1] / 30% Frontal\_Inf\_Oper\_L [11] | 0.77428 |
| 52% Cingulum\_Mid\_L [33] / 45% Supp\_Motor\_Area\_L [19] | 0.72432 |
| 59% Angular\_L [65] / 26% Parietal\_Inf\_L [61] | 0.77823 |
| 55% Temporal\_Mid\_L [85] / 27% Angular\_L [65] | 0.76983 |
| 57% Parietal\_Inf\_L [61] / 36% SupraMarginal\_L [63] | 0.84927 |
| 82% Temporal\_Mid\_L [85] | 1 |
| 63% Temporal\_Inf\_L [89] | 0.97964 |
| 37% Cingulum\_Mid\_L [33] / 36% Cingulum\_Ant\_L [31] | 0.86863 |
| 53% Thalamus\_L [77] / 0% Thalamus\_R [78] | 0.70005 |