Supplementary Information for:

The EEG multiverse of schizophrenia

Gordillo, da Cruz et al.

1. Supplementary Tables

Supplementary Table 1 - List of the abbreviation of the EEG features

1	**ampl total power alpha**	Amplitude total power in alpha band
2	**ampl total power beta**	Amplitude total power in beta band
3	**ampl total power delta**	Amplitude total power in delta band
4	**ampl total power gamma**	Amplitude total power in gamma band
5	**ampl total power theta**	Amplitude total power in theta band
6	**approx entropy**	Full-band EEG Approximate Entropy
7	**asymmetry ampl alpha**	Range EEG asymmetry in alpha band
8	**asymmetry ampl beta**	Range EEG asymmetry in beta band
9	**asymmetry ampl delta**	Range EEG asymmetry in delta band
10	**asymmetry ampl gamma**	Range EEG asymmetry in gamma band
11	**asymmetry ampl theta**	Range EEG asymmetry in theta band
12	**betw cen e-dtf alpha**	Betweenness Centrality of the directed transfer function at electrode level in alpha band
13	**betw cen e-dtf beta**	Betweenness Centrality of the directed transfer function at electrode level in beta band
14	**betw cen e-dtf delta**	Betweenness Centrality of the directed transfer function at electrode level in delta band
15	**betw cen e-dtf gamma**	Betweenness Centrality of the directed transfer function at electrode level in gamma band
16	**betw cen e-dtf theta**	Betweenness Centrality of the directed transfer function at electrode level in theta band
17	**betw cen e-icoh alpha**	Betweenness Centrality of the imaginary part of coherency at electrode level in alpha band
18	**betw cen e-icoh beta**	Betweenness Centrality of the imaginary part of coherency at electrode level in beta band
19	**betw cen e-icoh delta**	Betweenness Centrality of the imaginary part of coherency at electrode level in delta band
20	**betw cen e-icoh gamma**	Betweenness Centrality of the imaginary part of coherency at electrode level in gamma band
21	**betw cen e-icoh theta**	Betweenness Centrality of the imaginary part of coherency at electrode level in theta band
22	**betw cen e-plv alpha**	Betweenness Centrality of the phase-locking value at electrode level in alpha band
23	**betw cen e-plv beta**	Betweenness Centrality of the phase-locking value at electrode level in beta band
24	**betw cen e-plv delta**	Betweenness Centrality of the phase-locking value at electrode level in delta band
25	**betw cen e-plv gamma**	Betweenness Centrality of the phase-locking value at electrode level in gamma band

26	**betw cen e-plv theta**	Betweenness Centrality of the phase-locking value at electrode level in theta band
27	**betw cen s-ips alpha**	Betweenness Centrality of the instantaneous phase synchronization at source level in alpha band
28	**betw cen s-ips beta**	Betweenness Centrality of the instantaneous phase synchronization at source level in beta band
29	**betw cen s-ips delta**	Betweenness Centrality of the instantaneous phase synchronization at source level in delta band
30	**betw cen s-ips gamma**	Betweenness Centrality of the instantaneous phase synchronization at source level in gamma band
31	**betw cen s-ips theta**	Betweenness Centrality of the instantaneous phase synchronization at source level in theta band
32	**betw cen s-lcoh alpha**	Betweenness Centrality of the lagged coherence at source level in alpha band
33	**betw cen s-lcoh beta**	Betweenness Centrality of the lagged coherence at source level in beta band
34	**betw cen s-lcoh delta**	Betweenness Centrality of the lagged coherence at source level in delta band
35	**betw cen s-lcoh gamma**	Betweenness Centrality of the lagged coherence at source level in gamma band
36	**betw cen s-lcoh theta**	Betweenness Centrality of the lagged coherence at source level in theta band
37	**betw cen s-lps alpha**	Betweenness Centrality of the lagged phase synchronization at source level in alpha band
38	**betw cen s-lps beta**	Betweenness Centrality of the lagged phase synchronization at source level in beta band
39	**betw cen s-lps delta**	Betweenness Centrality of the lagged phase synchronization at source level in delta band
40	**betw cen s-lps gamma**	Betweenness Centrality of the lagged phase synchronization at source level in gamma band
41	**betw cen s-lps theta**	Betweenness Centrality of the lagged phase synchronization at source level in theta band
42	**clust coeff e-dtf alpha**	Clustering Coefficient of the directed transfer function at electrode level in alpha band
43	**clust coeff e-dtf beta**	Clustering Coefficient of the directed transfer function at electrode level in beta band
44	**clust coeff e-dtf delta**	Clustering Coefficient of the directed transfer function at electrode level in delta band
45	**clust coeff e-dtf gamma**	Clustering Coefficient of the directed transfer function at electrode level in gamma band
46	**clust coeff e-dtf theta**	Clustering Coefficient of the directed transfer function at electrode level in theta band
47	**clust coeff e-icoh alpha**	Clustering Coefficient of the imaginary part of coherency at electrode level in alpha band
48	**clust coeff e-icoh beta**	Clustering Coefficient of the imaginary part of coherency at electrode level in beta band
49	**clust coeff e-icoh delta**	Clustering Coefficient of the imaginary part of coherency at electrode level in delta band

50	**clust coeff e-icoh gamma**	Clustering Coefficient of the imaginary part of coherency at electrode level in gamma band
51	**clust coeff e-icoh theta**	Clustering Coefficient of the imaginary part of coherency at electrode level in theta band
52	**clust coeff e-plv alpha**	Clustering Coefficient of the phase-locking value at electrode level in alpha band
53	**clust coeff e-plv beta**	Clustering Coefficient of the phase-locking value at electrode level in beta band
54	**clust coeff e-plv delta**	Clustering Coefficient of the phase-locking value at electrode level in delta band
55	**clust coeff e-plv gamma**	Clustering Coefficient of the phase-locking value at electrode level in gamma band
56	**clust coeff e-plv theta**	Clustering Coefficient of the phase-locking value at electrode level in theta band
57	**clust coeff s-ips alpha**	Clustering Coefficient of the instantaneous phase synchronization at source level in alpha band
58	**clust coeff s-ips beta**	Clustering Coefficient of the instantaneous phase synchronization at source level in beta band
59	**clust coeff s-ips delta**	Clustering Coefficient of the instantaneous phase synchronization at source level in delta band
60	**clust coeff s-ips gamma**	Clustering Coefficient of the instantaneous phase synchronization at source level in gamma band
61	**clust coeff s-ips theta**	Clustering Coefficient of the instantaneous phase synchronization at source level in theta band
62	**clust coeff s-lcoh alpha**	Clustering Coefficient of the lagged coherence at source level in alpha band
63	**clust coeff s-lcoh beta**	Clustering Coefficient of the lagged coherence at source level in beta band
64	**clust coeff s-lcoh delta**	Clustering Coefficient of the lagged coherence at source level in delta band
65	**clust coeff s-lcoh gamma**	Clustering Coefficient of the lagged coherence at source level in gamma band
66	**clust coeff s-lcoh theta**	Clustering Coefficient of the lagged coherence at source level in theta band
67	**clust coeff s-lps alpha**	Clustering Coefficient of the lagged phase synchronization at source level in alpha band
68	**clust coeff s-lps beta**	Clustering Coefficient of the lagged phase synchronization at source level in beta band
69	**clust coeff s-lps delta**	Clustering Coefficient of the lagged phase synchronization at source level in delta band
70	**clust coeff s-lps gamma**	Clustering Coefficient of the lagged phase synchronization at source level in gamma band
71	**clust coeff s-lps theta**	Clustering Coefficient of the lagged phase synchronization at source level in theta band
72	**coeff of var ampl alpha**	Range EEG coefficient of variation in alpha band
73	**coeff of var ampl beta**	Range EEG coefficient of variation in beta band

74	**coeff of var ampl delta**	Range EEG coefficient of variation in delta band
75	**coeff of var ampl gamma**	Range EEG coefficient of variation in gamma band
76	**coeff of var ampl theta**	Range EEG coefficient of variation in theta band
77	**correlation dimension**	Full-band EEG Correlation Dimension
78	**dfa exponent alpha**	Detrended Fluctuation Analysis exponent in alpha band
79	**dfa exponent beta**	Detrended Fluctuation Analysis exponent in beta band
80	**dfa exponent delta**	Detrended Fluctuation Analysis exponent in delta band
81	**dfa exponent gamma**	Detrended Fluctuation Analysis exponent in gamma band
82	**dfa exponent theta**	Detrended Fluctuation Analysis exponent in theta band
83	**hfd alpha**	Higuchi's Fractal Dimension in alpha band
84	**hfd beta**	Higuchi's Fractal Dimension in beta band
85	**hfd delta**	Higuchi's Fractal Dimension in delta band
86	**hfd gamma**	Higuchi's Fractal Dimension in gamma band
87	**hfd theta**	Higuchi's Fractal Dimension in theta band
88	**hjorth activity**	Full-band EEG Hjorth parameter activity
89	**hjorth complexity**	Full-band EEG Hjorth parameter complexity
90	**hjorth mobility**	Full-band EEG Hjorth parameter mobility
91	**hurst exponent**	Full-band Hurst Exponent
92	**kfd alpha**	Katz's Fractal Dimension in alpha band
93	**kfd beta**	Katz's Fractal Dimension in beta band
94	**kfd delta**	Katz's Fractal Dimension in delta band
95	**kfd gamma**	Katz's Fractal Dimension in gamma band
96	**kfd theta**	Katz's Fractal Dimension in theta band
97	**kurtosis ampl alpha**	Kurtosis of the amplitude in alpha band
98	**kurtosis ampl beta**	Kurtosis of the amplitude in beta band
99	**kurtosis ampl delta**	Kurtosis of the amplitude in delta band
100	**kurtosis ampl gamma**	Kurtosis of the amplitude in gamma band
101	**kurtosis ampl theta**	Kurtosis of the amplitude in theta band
102	**life time alpha**	Life-time statistics of alpha bursts
103	**life time beta**	Life-time statistics of beta bursts
104	**life time delta**	Life-time statistics of delta bursts
105	**life time gamma**	Life-time statistics of gamma bursts
106	**life time theta**	Life-time statistics of theta bursts
107	**lyapunov exponent**	Full-band EEG Lyapunov Exponent
108	**lzc exhaustive**	Lempel-Ziv complexity exhaustive
109	**lzc primitive**	Lempel-Ziv complexity primitive
110	**mean ampl alpha**	Mean amplitude of the envelope in alpha band
111	**mean ampl beta**	Mean amplitude of the envelope in beta band
112	**mean ampl delta**	Mean amplitude of the envelope in delta band
113	**mean ampl gamma**	Mean amplitude of the envelope in gamma band
114	**mean ampl theta**	Mean amplitude of the envelope in theta band
115	**microstates temporal**	EEG microstates temporal parameters: mean duration, time coverage and occurrence

116	**microstates transitions**	EEG microstates transition probabilities
117	**mod index alpha-beta**	Modulation Index of alpha phase on beta amplitude
118	**mod index alpha-gamma**	Modulation Index of alpha phase on gamma amplitude
119	**mod index beta-gamma**	Modulation Index of beta phase on gamma amplitude
120	**mod index delta-alpha**	Modulation Index of delta phase on alpha amplitude
121	**mod index delta-beta**	Modulation Index of delta phase on beta amplitude
122	**mod index delta-gamma**	Modulation Index of delta phase on gamma amplitude
123	**mod index theta-alpha**	Modulation Index of theta phase on alpha amplitude
124	**mod index theta-beta**	Modulation Index of theta phase on beta amplitude
125	**mod index theta-gamma**	Modulation Index of theta phase on gamma amplitude
126	**node str e-dtf alpha**	Node Strength of the directed transfer function at electrode level in alpha band
127	**node str e-dtf beta**	Node Strength of the directed transfer function at electrode level in beta band
128	**node str e-dtf delta**	Node Strength of the directed transfer function at electrode level in delta band
129	**node str e-dtf gamma**	Node Strength of the directed transfer function at electrode level in gamma band
130	**node str e-dtf theta**	Node Strength of the directed transfer function at electrode level in theta band
131	**node str e-icoh alpha**	Node Strength of the imaginary part of coherency at electrode level in alpha band
132	**node str e-icoh beta**	Node Strength of the imaginary part of coherency at electrode level in beta band
133	**node str e-icoh delta**	Node Strength of the imaginary part of coherency at electrode level in delta band
134	**node str e-icoh gamma**	Node Strength of the imaginary part of coherency at electrode level in gamma band
135	**node str e-icoh theta**	Node Strength of the imaginary part of coherency at electrode level in theta band
136	**node str e-plv alpha**	Node Strength of the phase-locking value at electrode level in alpha band
137	**node str e-plv beta**	Node Strength of the phase-locking value at electrode level in beta band
138	**node str e-plv delta**	Node Strength of the phase-locking value at electrode level in delta band
139	**node str e-plv gamma**	Node Strength of the phase-locking value at electrode level in gamma band
140	**node str e-plv theta**	Node Strength of the phase-locking value at electrode level in theta band
141	**node str s-ips alpha**	Node Strength of the instantaneous phase synchronization at source level in alpha band
142	**node str s-ips beta**	Node Strength of the instantaneous phase synchronization at source level in beta band

143	**node str s-ips delta**	Node Strength of the instantaneous phase synchronization at source level in delta band
144	**node str s-ips gamma**	Node Strength of the instantaneous phase synchronization at source level in gamma band
145	**node str s-ips theta**	Node Strength of the instantaneous phase synchronization at source level in theta band
146	**node str s-lcoh alpha**	Node Strength of the lagged coherence at source level in alpha band
147	**node str s-lcoh beta**	Node Strength of the lagged coherence at source level in beta band
148	**node str s-lcoh delta**	Node Strength of the lagged coherence at source level in delta band
149	**node str s-lcoh gamma**	Node Strength of the lagged coherence at source level in gamma band
150	**node str s-lcoh theta**	Node Strength of the lagged coherence at source level in theta band
151	**node str s-lps alpha**	Node Strength of the lagged phase synchronization at source level in alpha band
152	**node str s-lps beta**	Node Strength of the lagged phase synchronization at source level in beta band
153	**node str s-lps delta**	Node Strength of the lagged phase synchronization at source level in delta band
154	**node str s-lps gamma**	Node Strength of the lagged phase synchronization at source level in gamma band
155	**node str s-lps theta**	Node Strength of the lagged phase synchronization at source level in theta band
156	**relative ampl alpha**	Relative spectral amplitude in alpha band
157	**relative ampl beta**	Relative spectral amplitude in beta band
158	**relative ampl delta**	Relative spectral amplitude in delta band
159	**relative ampl gamma**	Relative spectral amplitude in gamma band
160	**relative ampl theta**	Relative spectral amplitude in theta band
161	**rqa determinism**	Full-band EEG Recurrence Quantification Analysis Determinism
162	**rqa entropy**	Full-band EEG Recurrence Quantification Analysis Entropy
163	**rqa laminarity**	Full-band EEG Recurrence Quantification Analysis Laminarity
164	**rqa max diagonal**	Full-band EEG Recurrence Quantification Analysis Maximal diagonal line length
165	**rqa max vertical**	Full-band EEG Recurrence Quantification Analysis Maximal vertical line length
166	**rqa mean diagonal**	Full-band EEG Recurrence Quantification Analysis Mean diagonal line length
167	**rqa rte**	Full-band EEG Recurrence Quantification Analysis Recurrence times entropy
168	**rqa trapping time**	Full-band EEG Recurrence Quantification Analysis Trapping time
169	**sample entropy**	Full-band EEG Sample Entropy
170	**skewness ampl alpha**	Skewness of the amplitude in alpha band
171	**skewness ampl beta**	Skewness of the amplitude in beta band
172	**skewness ampl delta**	Skewness of the amplitude in delta band
173	**skewness ampl gamma**	Skewness of the amplitude in gamma band
174	**skewness ampl theta**	Skewness of the amplitude in theta band

175	**source ampl alpha**	Spectral amplitude in alpha band at source level
176	**source ampl beta**	Spectral amplitude in beta band at source level
177	**source ampl delta**	Spectral amplitude in delta band at source level
178	**source ampl gamma**	Spectral amplitude in gamma band at source level
179	**source ampl theta**	Spectral amplitude in theta band at source level
180	**spectral entropy alpha**	Spectral Entropy in alpha band
181	**spectral entropy beta**	Spectral Entropy in beta band
182	**spectral entropy delta**	Spectral Entropy in delta band
183	**spectral entropy gamma**	Spectral Entropy in gamma band
184	**spectral entropy theta**	Spectral Entropy in theta band
185	**std ampl alpha**	Standard deviation of the amplitude of the envelope in alpha band
186	**std ampl beta**	Standard deviation of the amplitude of the envelope in beta band
187	**std ampl delta**	Standard deviation of the amplitude of the envelope in delta band
188	**std ampl gamma**	Standard deviation of the amplitude of the envelope in gamma band
189	**std ampl theta**	Standard deviation of the amplitude of the envelope in theta band
190	**waiting time alpha**	Waiting-time statistics of alpha bursts
191	**waiting time beta**	Waiting-time statistics of beta bursts
192	**waiting time delta**	Waiting-time statistics of delta bursts
193	**waiting time gamma**	Waiting-time statistics of gamma bursts
194	**waiting time theta**	Waiting-time statistics of theta bursts

Supplementary Table 2 – Brain regions defined for source space analyses

x	**y**	**z**	**Left hemisphere**	**x**	**y**	**z**	**Right hemisphere**
-5	55	-5	**LMedialOrbitofrontal Cortex**	5	50	-5	**RMedialOrbitofrontal Cortex**
-30	50	-10	**LMiddleOrbitofrontal Cortex**	30	55	-10	**RMiddleOrbitofrontal Cortex**
-5	50	30	**LSuperiorFrontalGyrusMedialPart**	10	50	30	**RSuperiorFrontalGyrusMedialPart**
-20	50	-15	**LSuperiorFrontalGyrusOrbitalPart**	15	50	-15	**RSuperiorFrontalGyrusOrbitalPart**
-5	35	15	**LAnteriorCingulateCortex**	5	35	15	**RAnteriorCingulateCortex**
-35	35	35	**LMiddleFrontalGyrus**	35	35	35	**RMiddleFrontalGyrus**
-20	35	40	**LSuperiorFrontalGyrus**	20	30	45	**RSuperiorFrontalGyrus**
-5	35	-20	**LGyrusRectus**	5	35	-20	**RGyrusRectus**
-35	30	-10	**LInferiorFrontalGyrusOrbitalPart**	40	30	-10	**RInferiorFrontalGyrusOrbitalPart**
-45	30	15	**LInferiorFrontalGyrusParsTriangularis**	45	30	15	**RInferiorFrontalGyrusParsTriangularis**

-50	15	20	**LInferiorFrontalOperculum**	50	15	20	**RInferiorFrontalOperculum**
-5	15	-10	**LOlfactoryGyrus**	5	15	-10	**ROlfactoryGyrus**
-35	15	-35	**LTemporalPoleMiddleTemporalGyrus**	45	15	-30	**RTemporalPoleMiddleTemporalGyrus**
-40	15	-20	**LTemporalPoleSuperiorTemporalGyrus**	45	15	-15	**RTemporalPoleSuperiorTemporalGyrus**
-40	10	0	**LInsula**	40	10	0	**RInsula**
-5	5	60	**LSupplementaryMotorArea**	10	0	60	**RSupplementaryMotorArea**
-40	-5	50	**LPrecentralGyrus**	40	-10	50	**RPrecentralGyrus**
-50	-10	15	**LRolandicOperculum**	50	-5	15	**RRolandicOperculum**
-5	-15	40	**LMiddleCingulateCortex**	5	-10	40	**RMiddleCingulateCortex**
-20	-15	-20	**LParahippocampalGyrus**	20	-15	-20	**RParahippocampalGyrus**
-45	-20	10	**LHeschlGyrus**	45	-15	10	**RHeschlGyrus**
-25	-20	-10	**LHippocampus**	25	-20	-10	**RHippocampus**
-55	-20	5	**LSuperiorTemporalGyrus**	55	-20	5	**RSuperiorTemporalGyrus**
-5	-25	70	**LParacentralLobule**	5	-30	70	**RParacentralLobule**
-45	-25	50	**LPostcentralGyrus**	40	-25	55	**RPostcentralGyrus**
-50	-30	-25	**LInferiorTemporalGyrus**	55	-30	-20	**RInferiorTemporalGyrus**
-55	-35	30	**LSupramarginalGyrus**	55	-30	35	**RSupramarginalGyrus**
-55	-35	0	**LMiddleTemporalGyrus**	55	-35	0	**RMiddleTemporalGyrus**
-30	-40	-20	**LFusiformGyrus**	35	-40	-20	**RFusiformGyrus**
-5	-45	25	**LPosteriorCingulate Cortex**	5	-45	20	**RPosteriorCingulate Cortex**
-45	-45	45	**LInferiorParietalLobule**	45	-45	50	**RInferiorParietalLobule**
-10	-55	50	**LPrecuneus**	10	-55	45	**RPrecuneus**
-25	-60	60	**LSuperiorParietalLobule**	25	-60	60	**RSuperiorParietalLobule**
-45	-65	40	**LAngularGyrus**	40	-60	40	**RAngularGyrus**
-15	-70	-5	**LLingualGyrus**	15	-65	-5	**RLingualGyrus**
-10	-80	10	**LCalcarineSulcus**	15	-75	10	**RCalcarineSulcus**
-5	-80	25	**LCuneus**	15	-80	30	**RCuneus**
-35	-80	-10	**LInferiorOccipitalGyrus**	35	-80	-10	**RInferiorOccipitalGyrus**
-30	-80	15	**LMiddleOccipitalGyrus**	35	-85	20	**RMiddleOccipitalGyrus**

-20	-85	30	**LSuperiorOccipitalGyrus**	20	-80	30	**RSuperiorOccipitalGyrus**

Supplementary Table 3 – Classification performance of EEG features for discriminating patients versus controls using penalized logistic regression.

EEG features	AUC score train	AUC score test	ACC score train	ACC score test	*p*-value	*p*-value group ANCOVA
hjorth activity	0.544	0.499	0.648	0.606	0.638	0.148
relative ampl alpha	0.749	0.569	0.801	0.632	0.000	0.991
mod index alpha-beta	0.731	0.538	0.781	0.602	0.010	0.597
mod index alpha-gamma	0.766	0.568	0.804	0.621	0.002	0.017
mean ampl alpha	0.708	0.539	0.766	0.606	0.019	0.098
mean ampl beta	0.641	0.512	0.717	0.595	0.151	0.425
mean ampl delta	0.578	0.504	0.672	0.604	0.256	0.254
mean ampl gamma	0.533	0.501	0.640	0.608	0.342	0.005
mean ampl theta	0.760	0.618	0.785	0.647	0.000	0.000
std ampl alpha	0.762	0.560	0.804	0.615	0.000	0.194
std ampl beta	0.644	0.519	0.718	0.600	0.086	0.552
std ampl delta	0.591	0.508	0.682	0.604	0.212	0.315
std ampl gamma	0.532	0.501	0.638	0.608	0.328	0.003
std ampl theta	0.752	0.604	0.780	0.638	0.000	0.000
kurtosis ampl alpha	0.671	0.568	0.727	0.630	0.000	0.001
kurtosis ampl beta	0.719	0.566	0.772	0.631	0.000	0.139
kurtosis ampl delta	0.607	0.503	0.694	0.598	0.236	0.168
kurtosis ampl gamma	0.718	0.596	0.757	0.646	0.000	0.011
kurtosis ampl theta	0.610	0.528	0.691	0.615	0.044	0.033
skewness ampl alpha	0.560	0.499	0.662	0.604	0.715	0.445
skewness ampl beta	0.706	0.582	0.763	0.651	0.000	0.002
skewness ampl delta	0.572	0.505	0.670	0.607	0.187	0.264
skewness ampl gamma	0.562	0.501	0.663	0.608	0.301	0.053
skewness ampl theta	0.637	0.517	0.718	0.602	0.084	0.009
ampl total power alpha	0.703	0.539	0.762	0.607	0.020	0.098

ampl total power beta	0.641	0.512	0.717	0.595	0.155	0.425
ampl total power delta	0.580	0.504	0.674	0.603	0.256	0.253
ampl total power gamma	0.535	0.501	0.641	0.608	0.330	0.005
ampl total power theta	0.762	0.617	0.787	0.646	0.000	0.000
approx entropy	0.557	0.497	0.659	0.601	0.736	0.990
relative ampl beta	0.806	0.615	0.836	0.656	0.000	0.000
mod index beta-gamma	0.645	0.507	0.725	0.598	0.233	0.604
hjorth complexity	0.747	0.554	0.793	0.614	0.002	0.661
correlation dimension	0.686	0.506	0.753	0.583	0.188	0.948
relative ampl delta	0.694	0.550	0.755	0.622	0.004	0.221
mod index delta-alpha	0.727	0.587	0.775	0.642	0.000	0.002
mod index delta-beta	0.643	0.552	0.715	0.628	0.001	0.001
mod index delta-gamma	0.718	0.554	0.773	0.620	0.001	0.030
dfa exponent alpha	0.677	0.575	0.738	0.642	0.000	0.001
dfa exponent beta	0.700	0.608	0.748	0.663	0.000	0.000
dfa exponent delta	0.510	0.498	0.625	0.612	0.761	0.163
dfa exponent gamma	0.582	0.501	0.679	0.603	0.313	0.708
dfa exponent theta	0.541	0.495	0.647	0.604	0.783	0.994
betw cen e-dtf alpha	0.547	0.500	0.653	0.611	0.695	0.608
betw cen e-dtf beta	0.531	0.498	0.641	0.611	0.712	0.840
betw cen e-dtf delta	0.552	0.498	0.656	0.607	0.733	0.794
betw cen e-dtf gamma	0.535	0.498	0.643	0.611	0.714	0.863
betw cen e-dtf theta	0.550	0.497	0.655	0.606	0.735	0.711
clust coeff e-dtf alpha	0.518	0.499	0.631	0.613	0.726	0.162
clust coeff e-dtf beta	0.542	0.500	0.649	0.609	0.292	0.112
clust coeff e-dtf delta	0.547	0.499	0.652	0.607	0.724	0.058
clust coeff e-dtf gamma	0.551	0.500	0.655	0.606	0.726	0.252
clust coeff e-dtf theta	0.521	0.499	0.633	0.612	0.729	0.105

node str e-dtf alpha	0.559	0.497	0.659	0.601	0.725	0.998
node str e-dtf beta	0.542	0.495	0.647	0.603	0.758	0.986
node str e-dtf delta	0.516	0.498	0.629	0.612	0.741	0.951
node str e-dtf gamma	0.505	0.499	0.621	0.615	0.718	0.979
node str e-dtf theta	0.579	0.498	0.675	0.598	0.686	0.998
betw cen e-icoh alpha	0.584	0.505	0.679	0.605	0.151	0.265
betw cen e-icoh beta	0.588	0.499	0.682	0.599	0.719	0.568
betw cen e-icoh delta	0.512	0.498	0.627	0.612	0.768	0.671
betw cen e-icoh gamma	0.645	0.512	0.722	0.598	0.108	0.211
betw cen e-icoh theta	0.552	0.499	0.656	0.605	0.749	0.095
clust coeff e-icoh alpha	0.665	0.535	0.739	0.617	0.025	0.983
clust coeff e-icoh beta	0.653	0.572	0.723	0.647	0.002	0.306
clust coeff e-icoh delta	0.560	0.495	0.660	0.599	0.724	0.999
clust coeff e-icoh gamma	0.720	0.554	0.773	0.615	0.000	0.060
clust coeff e-icoh theta	0.678	0.622	0.717	0.662	0.000	0.000
node str e-icoh alpha	0.633	0.520	0.714	0.608	0.080	0.949
node str e-icoh beta	0.664	0.575	0.731	0.648	0.000	0.142
node str e-icoh delta	0.554	0.495	0.657	0.600	0.754	0.963
node str e-icoh gamma	0.744	0.562	0.792	0.619	0.000	0.012
node str e-icoh theta	0.688	0.628	0.727	0.668	0.000	0.000
betw cen e-plv alpha	0.711	0.546	0.772	0.619	0.003	0.078
betw cen e-plv beta	0.585	0.503	0.679	0.601	0.233	0.174
betw cen e-plv delta	0.640	0.512	0.720	0.602	0.090	0.047
betw cen e-plv gamma	0.533	0.504	0.641	0.614	0.250	0.048
betw cen e-plv theta	0.587	0.501	0.679	0.596	0.230	0.246
clust coeff e-plv alpha	0.716	0.573	0.769	0.635	0.001	0.098

clust coeff e-plv beta	0.796	0.600	0.832	0.646	0.000	0.006
clust coeff e-plv delta	0.773	0.624	0.811	0.673	0.000	0.010
clust coeff e-plv gamma	0.623	0.528	0.700	0.610	0.036	0.004
clust coeff e-plv theta	0.770	0.711	0.788	0.728	0.000	0.000
node str e-plv alpha	0.737	0.593	0.784	0.649	0.000	0.035
node str e-plv beta	0.829	0.602	0.857	0.643	0.000	0.002
node str e-plv delta	0.810	0.654	0.838	0.692	0.000	0.004
node str e-plv gamma	0.635	0.534	0.711	0.617	0.023	0.001
node str e-plv theta	0.796	0.715	0.813	0.730	0.000	0.000
relative ampl gamma	0.749	0.563	0.798	0.620	0.002	0.968
hurst exponent	0.643	0.525	0.718	0.610	0.037	0.001
hfd alpha	0.726	0.610	0.761	0.652	0.000	0.000
hfd beta	0.736	0.596	0.780	0.647	0.000	0.034
hfd delta	0.655	0.521	0.728	0.602	0.061	0.002
hfd gamma	0.733	0.574	0.780	0.630	0.000	0.169
hfd theta	0.708	0.580	0.751	0.631	0.000	0.001
betw cen s-ips alpha	0.502	0.500	0.619	0.617	0.671	0.933
clust coeff s-ips alpha	0.509	0.498	0.624	0.613	0.694	0.084
node str s-ips alpha	0.532	0.497	0.640	0.607	0.705	0.039
betw cen s-ips beta	0.558	0.498	0.661	0.605	0.716	0.005
clust coeff s-ips beta	0.573	0.497	0.670	0.599	0.697	0.176
node str s-ips beta	0.649	0.513	0.728	0.599	0.118	0.236
betw cen s-ips delta	0.561	0.499	0.664	0.607	0.672	0.927
clust coeff s-ips delta	0.527	0.498	0.636	0.609	0.697	0.388
node str s-ips delta	0.592	0.507	0.683	0.602	0.196	0.289
betw cen s-ips gamma	0.538	0.497	0.646	0.607	0.727	0.612
clust coeff s-ips gamma	0.692	0.523	0.756	0.596	0.057	0.134
node str s-ips gamma	0.776	0.552	0.820	0.609	0.005	0.195

betw cen s-ips theta	0.662	0.515	0.737	0.602	0.100	0.121
clust coeff s-ips theta	0.607	0.507	0.694	0.600	0.190	0.001
node str s-ips theta	0.692	0.523	0.754	0.596	0.049	0.003
kfd alpha	0.625	0.516	0.705	0.602	0.117	0.205
kfd beta	0.634	0.506	0.713	0.593	0.223	0.171
kfd delta	0.671	0.527	0.737	0.599	0.047	0.011
kfd gamma	0.599	0.511	0.688	0.603	0.167	0.004
kfd theta	0.762	0.626	0.784	0.654	0.000	0.000
betw cen s-lcoh alpha	0.614	0.513	0.704	0.609	0.123	0.590
clust coeff s-lcoh alpha	0.575	0.494	0.673	0.597	0.770	0.321
node str s-lcoh alpha	0.560	0.495	0.662	0.601	0.729	0.353
betw cen s-lcoh beta	0.607	0.499	0.697	0.595	0.647	0.219
clust coeff s-lcoh beta	0.695	0.530	0.763	0.605	0.028	0.984
node str s-lcoh beta	0.775	0.554	0.824	0.613	0.001	0.997
betw cen s-lcoh delta	0.569	0.499	0.670	0.603	0.664	0.543
clust coeff s-lcoh delta	0.516	0.495	0.630	0.609	0.717	0.284
node str s-lcoh delta	0.513	0.497	0.627	0.612	0.663	0.417
betw cen s-lcoh gamma	0.677	0.515	0.750	0.597	0.103	0.015
clust coeff s-lcoh gamma	0.778	0.547	0.819	0.601	0.004	0.066
node str s-lcoh gamma	0.745	0.527	0.796	0.590	0.043	0.016
betw cen s-lcoh theta	0.843	0.598	0.873	0.643	0.000	0.061
clust coeff s-lcoh theta	0.748	0.587	0.784	0.632	0.000	0.048
node str s-lcoh theta	0.735	0.566	0.778	0.618	0.000	0.020
betw cen s-lps alpha	0.535	0.492	0.644	0.602	0.783	0.948
clust coeff s-lps alpha	0.515	0.497	0.629	0.612	0.721	0.710
node str s-lps alpha	0.516	0.498	0.629	0.612	0.716	0.711
betw cen s-lps beta	0.528	0.495	0.639	0.608	0.798	0.957

clust coeff s-lps beta	0.551	0.495	0.655	0.602	0.727	0.484
node str s-lps beta	0.556	0.498	0.658	0.602	0.666	0.476
betw cen s-lps delta	0.620	0.492	0.708	0.586	0.825	0.514
clust coeff s-lps delta	0.516	0.496	0.629	0.609	0.701	0.687
node str s-lps delta	0.513	0.499	0.626	0.612	0.679	0.193
betw cen s-lps gamma	0.521	0.498	0.633	0.611	0.719	0.076
clust coeff s-lps gamma	0.689	0.534	0.750	0.606	0.027	0.006
node str s-lps gamma	0.715	0.528	0.773	0.596	0.038	0.004
betw cen s-lps theta	0.623	0.505	0.709	0.597	0.238	0.461
clust coeff s-lps theta	0.759	0.579	0.793	0.626	0.000	0.001
node str s-lps theta	0.755	0.584	0.790	0.629	0.000	0.002
life time alpha	0.705	0.552	0.766	0.625	0.002	0.216
life time beta	0.746	0.619	0.787	0.669	0.000	0.000
life time delta	0.522	0.496	0.633	0.609	0.745	0.366
life time gamma	0.684	0.571	0.741	0.636	0.000	0.006
life time theta	0.527	0.498	0.636	0.609	0.710	0.959
lyapunov exponent	0.625	0.541	0.705	0.626	0.010	0.000
lzc exhaustive	0.716	0.553	0.770	0.616	0.001	0.988
lzc primitive	0.711	0.551	0.767	0.615	0.003	0.981
microstates temporal	0.702	0.660	0.741	0.702	0.000	0.000
microstates transitions	0.734	0.703	0.765	0.736	0.000	0.000
hjorth mobility	0.704	0.555	0.765	0.622	0.001	0.979
asymmetry ampl alpha	0.666	0.550	0.732	0.624	0.001	0.029
asymmetry ampl beta	0.509	0.497	0.623	0.612	0.740	0.546
asymmetry ampl delta	0.590	0.497	0.682	0.594	0.744	0.614
asymmetry ampl gamma	0.566	0.497	0.664	0.599	0.731	0.798
asymmetry ampl theta	0.694	0.603	0.752	0.666	0.000	0.000
coeff of var ampl alpha	0.721	0.608	0.766	0.660	0.000	0.000
coeff of var ampl beta	0.735	0.616	0.777	0.670	0.000	0.005

coeff of var ampl delta	0.534	0.497	0.642	0.608	0.724	0.770
coeff of var ampl gamma	0.518	0.498	0.631	0.612	0.692	0.995
coeff of var ampl theta	0.748	0.602	0.794	0.661	0.000	0.000
rqa determinism	0.666	0.531	0.736	0.607	0.032	1.000
rqa entropy	0.525	0.499	0.635	0.611	0.697	0.628
rqa laminarity	0.700	0.555	0.762	0.624	0.004	0.997
rqa max diagonal	0.627	0.500	0.708	0.586	0.677	0.959
rqa max vertical	0.660	0.518	0.731	0.596	0.105	0.482
rqa mean diagonal	0.533	0.498	0.641	0.608	0.698	0.793
rqa rte	0.749	0.581	0.792	0.633	0.000	0.603
rqa trapping time	0.697	0.545	0.754	0.609	0.006	0.946
sample entropy	0.670	0.529	0.738	0.604	0.029	0.986
spectral entropy alpha	0.693	0.583	0.734	0.631	0.000	0.005
spectral entropy beta	0.804	0.618	0.837	0.667	0.000	0.712
spectral entropy delta	0.768	0.572	0.810	0.630	0.000	0.000
spectral entropy gamma	0.748	0.586	0.796	0.644	0.001	0.021
spectral entropy theta	0.647	0.526	0.711	0.594	0.035	0.000
source ampl alpha	0.532	0.499	0.640	0.609	0.644	0.052
source ampl beta	0.681	0.527	0.748	0.600	0.039	0.351
source ampl delta	0.620	0.510	0.703	0.597	0.195	0.205
source ampl gamma	0.632	0.518	0.709	0.599	0.103	0.280
source ampl theta	0.628	0.529	0.705	0.610	0.030	0.067
relative ampl theta	0.848	0.652	0.864	0.677	0.000	0.000
mod index theta-alpha	0.565	0.502	0.661	0.601	0.280	0.134
mod index theta-beta	0.527	0.500	0.637	0.612	0.287	0.431
mod index theta-gamma	0.596	0.499	0.686	0.595	0.664	0.398
waiting time alpha	0.690	0.549	0.755	0.627	0.004	0.247
waiting time beta	0.702	0.619	0.750	0.674	0.000	0.000
waiting time delta	0.520	0.498	0.632	0.611	0.734	0.734
waiting time gamma	0.702	0.568	0.756	0.631	0.000	0.008
waiting time theta	0.537	0.497	0.644	0.605	0.693	0.871

Supplementary Table 4 – 5% strongest pairwise correlations in patients

Feature 1	Feature 2	Correlation	Relative inertia	Distance correlation
mean ampl gamma	ampl total power gamma	1	1	1
mean ampl theta	ampl total power theta	1	1	1
mean ampl gamma	std ampl gamma	0.98959	0.992633	0.987991
std ampl gamma	ampl total power gamma	0.98959	0.992633	0.987991
clust coeff e-plv gamma	node str e-plv gamma	0.987631	0.978755	0.99032
clust coeff e-icoh theta	node str e-icoh theta	0.985802	0.982842	0.996694
clust coeff e-plv theta	node str e-plv theta	0.981468	0.983435	0.996363
clust coeff e-plv beta	node str e-plv beta	0.981061	0.977461	0.987961
mean ampl theta	kfd theta	0.969552	0.972041	0.981017
ampl total power theta	kfd theta	0.969551	0.972042	0.981017
clust coeff s-lcoh theta	node str s-lcoh theta	0.968951	0.967822	0.987216
clust coeff s-lps theta	node str s-lps theta	0.968206	0.974792	0.987523
node str s-lcoh gamma	node str s-lps gamma	0.946992	0.642045	0.65084
ampl total power gamma	kfd gamma	0.911986	0.914176	0.93953
mean ampl gamma	kfd gamma	0.911986	0.914176	0.93953
std ampl gamma	kfd gamma	0.904424	0.900433	0.915602
clust coeff s-ips theta	node str s-ips theta	0.901967	0.912396	0.909995
clust coeff s-lps gamma	node str s-lps gamma	0.871669	0.964787	0.95172
kurtosis ampl alpha	mod index delta-alpha	0.846552	0.802792	0.849012
life time gamma	waiting time gamma	0.835995	0.945824	0.973978
microstates temporal	microstates transitions	0.83424	0.735222	0.895267
node str s-lcoh gamma	clust coeff s-lps gamma	0.812718	0.621444	0.623393
mean ampl theta	std ampl theta	0.799936	0.994131	0.995368
std ampl theta	ampl total power theta	0.799921	0.994133	0.99537
clust coeff s-lcoh theta	clust coeff s-lps theta	0.784229	0.860787	0.885076
kurtosis ampl gamma	mod index delta-gamma	0.783431	0.871654	0.929647
clust coeff e-icoh theta	clust coeff e-plv theta	0.779988	0.804412	0.878278
std ampl theta	kfd theta	0.759434	0.967461	0.973097
kurtosis ampl alpha	spectral entropy alpha	0.757299	0.819279	0.883801

node str e-icoh gamma	**node str s-lps gamma**	0.752503	0.598211	0.543119
node str s-lcoh theta	**clust coeff s-lps theta**	0.75092	0.811906	0.869894
hfd theta	**spectral entropy alpha**	0.747871	0.749135	0.760024
node str e-icoh theta	**clust coeff e-plv theta**	0.735179	0.777197	0.874269
node str e-icoh gamma	**node str s-lcoh gamma**	0.730843	0.555879	0.560478
std ampl theta	**relative ampl theta**	0.727062	0.680305	0.665159
clust coeff e-icoh theta	**hfd alpha**	0.720135	0.646747	0.718097
clust coeff e-icoh theta	**node str e-plv theta**	0.719439	0.771448	0.867818
node str e-icoh gamma	**clust coeff s-lps gamma**	0.717621	0.573493	0.552091
mod index delta-alpha	**spectral entropy alpha**	0.714342	0.757438	0.834528
node str e-icoh theta	**hfd alpha**	0.696999	0.60268	0.716249
clust coeff e-plv theta	**hfd alpha**	0.688927	0.616007	0.69185
node str e-icoh theta	**node str e-plv theta**	0.683457	0.764925	0.866801
std ampl theta	**kfd delta**	0.674789	0.746827	0.794096
node str e-plv beta	**node str e-plv gamma**	0.674767	0.700628	0.684059
clust coeff s-lcoh theta	**node str s-lps theta**	0.673756	0.823219	0.875896
node str s-lcoh theta	**node str s-lps theta**	0.673468	0.815244	0.879937
clust coeff e-plv gamma	**node str e-plv beta**	0.668893	0.686184	0.684443
dfa exponent alpha	**dfa exponent beta**	0.657877	0.697926	0.652278
kurtosis ampl alpha	**hfd theta**	0.657716	0.64619	0.683365
clust coeff e-plv beta	**clust coeff e-plv gamma**	0.657016	0.667917	0.643523
hfd alpha	**relative ampl theta**	0.655622	0.695618	0.713949
clust coeff e-plv gamma	**clust coeff s-lps gamma**	0.655103	0.586858	0.609501
clust coeff e-plv theta	**kfd theta**	0.654943	0.600432	0.6951
mod index delta-alpha	**mod index delta-beta**	0.652284	0.73224	0.687288
kurtosis ampl alpha	**coeff of var ampl alpha**	0.652201	0.616084	0.664635
node str e-plv theta	**kfd theta**	0.651592	0.585557	0.7077
node str e-plv theta	**hfd alpha**	0.646226	0.573697	0.680419
hfd delta	**spectral entropy delta**	0.644599	0.755082	0.725572
clust coeff e-plv beta	**node str e-plv gamma**	0.643157	0.656965	0.633324
mean ampl theta	**relative ampl theta**	0.640192	0.689481	0.68528
ampl total power theta	**relative ampl theta**	0.640171	0.689467	0.685261
hfd theta	**kfd theta**	0.633275	0.573161	0.646917
mod index alpha-gamma	**mod index delta-gamma**	0.624029	0.598849	0.567008
node str e-plv gamma	**kfd gamma**	0.620038	0.659687	0.74984

mod index delta-alpha	**hfd theta**	0.61922	0.609072	0.617602
node str e-plv gamma	**clust coeff s-lps gamma**	0.618196	0.566712	0.600038
clust coeff e-plv gamma	**kfd gamma**	0.615218	0.642873	0.717233
mod index alpha-gamma	**kurtosis ampl gamma**	0.61494	0.566333	0.483736
clust coeff e-icoh theta	**kfd theta**	0.613109	0.601063	0.684104
kfd theta	**relative ampl theta**	0.611183	0.685159	0.68011
relative ampl beta	**life time beta**	0.60949	0.60509	0.654301
kfd theta	**asymmetry ampl theta**	0.598696	0.395686	0.568382
coeff of var ampl alpha	**coeff of var ampl beta**	0.595374	0.598168	0.423779
mean ampl theta	**asymmetry ampl theta**	0.595179	0.395812	0.558035
ampl total power theta	**asymmetry ampl theta**	0.595171	0.395813	0.558029
clust coeff e-plv delta	**node str e-plv delta**	0.593644	0.978804	0.992578
mean ampl theta	**node str e-plv theta**	0.589461	0.544455	0.679565
ampl total power theta	**node str e-plv theta**	0.58945	0.544455	0.679557
relative ampl beta	**relative ampl theta**	0.589374	0.484668	0.469612
mean ampl theta	**clust coeff e-plv theta**	0.588556	0.550421	0.663326
ampl total power theta	**clust coeff e-plv theta**	0.588543	0.55042	0.663317
clust coeff e-plv beta	**clust coeff s-lps gamma**	0.587114	0.495419	0.402336
node str e-icoh theta	**kfd theta**	0.586422	0.57906	0.689527
hfd alpha	**kfd theta**	0.584926	0.615463	0.645527
clust coeff e-plv gamma	**node str s-lps gamma**	0.584546	0.550308	0.534592
clust coeff e-plv theta	**relative ampl theta**	0.58214	0.540085	0.570992
clust coeff e-icoh theta	**hfd theta**	0.581057	0.549389	0.576023
clust coeff e-plv theta	**hfd theta**	0.580926	0.545275	0.570422
node str e-plv beta	**clust coeff s-lps gamma**	0.578697	0.50082	0.436118
clust coeff s-Icoh theta	**relative ampl theta**	0.576541	0.48355	0.416143
kurtosis ampl theta	**hfd alpha**	0.571562	0.446206	0.499897
relative ampl beta	**hfd alpha**	0.570944	0.522476	0.53221
kfd theta	**spectral entropy alpha**	0.570181	0.536723	0.637632
ampl total power theta	**clust coeff s-lps theta**	0.567356	0.643363	0.578026
mean ampl theta	**clust coeff s-lps theta**	0.567353	0.643365	0.578028
hfd alpha	**hfd theta**	0.565368	0.540971	0.57292
clust coeff e-icoh theta	**relative ampl theta**	0.561774	0.544201	0.560921
node str e-icoh theta	**hfd theta**	0.556972	0.528324	0.576182
node str e-plv gamma	**node str s-lps gamma**	0.55397	0.552208	0.534503

std ampl theta	**clust coeff s-lcoh theta**	0.553876	0.554575	0.485918
node str e-plv theta	**relative ampl theta**	0.553434	0.532518	0.579612
mean ampl gamma	**clust coeff e-plv gamma**	0.552004	0.569748	0.70544
ampl total power gamma	**clust coeff e-plv gamma**	0.552004	0.569748	0.70544
hfd alpha	**spectral entropy theta**	0.551915	0.623991	0.711624
mean ampl gamma	**node str e-plv gamma**	0.550022	0.587675	0.723817
ampl total power gamma	**node str e-plv gamma**	0.550021	0.587675	0.723817
clust coeff s-lps theta	**relative ampl theta**	0.549621	0.582962	0.531609
mean ampl theta	**clust coeff e-icoh theta**	0.548728	0.546902	0.646451
ampl total power theta	**clust coeff e-icoh theta**	0.548713	0.546899	0.646441
node str s-lcoh theta	**relative ampl theta**	0.548408	0.458378	0.408263
kurtosis ampl alpha	**mod index delta-beta**	0.547979	0.573517	0.467151
kfd delta	**relative ampl theta**	0.543402	0.522567	0.507667
node str e-plv theta	**hfd theta**	0.542319	0.524461	0.567978
kurtosis ampl theta	**coeff of var ampl theta**	0.540412	0.661918	0.688783
std ampl theta	**clust coeff s-lps theta**	0.535911	0.647296	0.586624
kurtosis ampl alpha	**waiting time beta**	0.532316	0.600137	0.651568
std ampl gamma	**clust coeff e-plv gamma**	0.531839	0.562718	0.681372
kfd theta	**spectral entropy theta**	0.5317	0.59308	0.659066

Supplementary Table 5 – 5% weakest pairwise correlations in patients

Feature 1	**Feature 2**	**Correlation**	**Relative inertia**	**Distance correlation**
skewness ampl beta	**kfd delta**	0.010123	0.293404	0.018427
node str e-plv beta	**coeff of var ampl beta**	0.010116	0.334407	0.045012
kurtosis ampl gamma	**hfd beta**	0.009762	0.271545	0.124173
kurtosis ampl gamma	**asymmetry ampl theta**	0.009749	0.397899	0.220405
dfa exponent beta	**betw cen s-lcoh gamma**	0.009666	0.390479	0.194458
ampl total power theta	**node str e-plv beta**	0.009665	0.1942	0.090911
mean ampl theta	**node str e-plv beta**	0.009653	0.194196	0.090904
dfa exponent alpha	**node str e-icoh gamma**	0.009597	0.191597	0.112271
hfd beta	**node str s-lps gamma**	0.009469	0.341517	0.258006
betw cen s-lcoh gamma	**life time gamma**	0.009415	0.409599	0.235024
mean ampl gamma	**node str e-plv delta**	0.009228	0.269253	0.090165

ampl total power gamma	**node str e-plv delta**	0.009228	0.269253	0.090165
node str s-ips alpha	**asymmetry ampl alpha**	0.009115	0.386372	0.373464
clust coeff e-plv beta	**coeff of var ampl alpha**	0.00902	0.213484	0.069353
hfd delta	**betw cen s-ips beta**	0.009011	0.396763	0.061759
ampl total power gamma	**clust coeff e-plv delta**	0.008811	0.218124	0.076656
mean ampl gamma	**clust coeff e-plv delta**	0.008811	0.218124	0.076656
betw cen e-plv delta	**node str s-lps theta**	0.008769	0.450406	0.316902
std ampl theta	**node str e-plv beta**	0.008586	0.199485	0.103006
clust coeff s-ips theta	**spectral entropy delta**	0.00849	0.366348	0.178416
node str e-icoh gamma	**clust coeff s-ips theta**	0.008392	0.274212	0.05396
betw cen e-plv delta	**microstates transitions**	0.008152	0.223639	0.060456
dfa exponent beta	**node str s-lcoh gamma**	0.008038	0.292801	0.286234
life time gamma	**spectral entropy delta**	0.008004	0.310797	0.077005
kfd gamma	**coeff of var ampl theta**	0.007985	0.372676	0.224284
node str s-ips theta	**microstates transitions**	0.007817	0.231312	0.11452
node str e-plv delta	**spectral entropy theta**	0.007762	0.255143	0.09361
hfd theta	**betw cen s-lcoh gamma**	0.00775	0.253244	0.113383
asymmetry ampl theta	**waiting time gamma**	0.007702	0.435707	0.269222
clust coeff e-plv beta	**microstates temporal**	0.00742	0.156363	0.082669
lyapunov exponent	**waiting time gamma**	0.007415	0.421776	0.185366
node str e-plv delta	**kfd gamma**	0.007287	0.245806	0.085297
betw cen e-plv gamma	**lyapunov exponent**	0.007091	0.507669	0.28682
std ampl gamma	**hfd beta**	0.007083	0.494704	0.47013
node str s-lps theta	**coeff of var ampl beta**	0.007021	0.302828	0.140281
mod index delta-beta	**clust coeff s-lps theta**	0.006797	0.258418	0.068634
mean ampl theta	**kfd gamma**	0.006756	0.192464	0.082753
ampl total power theta	**kfd gamma**	0.006743	0.192476	0.082746
mod index delta-beta	**node str e-plv gamma**	0.006713	0.332095	0.128701
clust coeff e-plv gamma	**hfd alpha**	0.006676	0.167234	0.054066
kurtosis ampl gamma	**life time beta**	0.006391	0.378175	0.273835
kurtosis ampl gamma	**clust coeff e-plv theta**	0.00603	0.202246	0.088964
hurst exponent	**node str s-lcoh theta**	0.005917	0.242488	0.046938
relative ampl beta	**waiting time gamma**	0.00568	0.246122	0.164922
clust coeff e-plv gamma	**asymmetry ampl alpha**	0.005664	0.271633	0.068785

node str s-ips alpha	**kfd delta**	0.005632	0.285457	0.169768
skewness ampl theta	**microstates transitions**	0.005603	0.210114	0.111843
node str e-icoh gamma	**coeff of var ampl theta**	0.005549	0.349299	0.148956
dfa exponent alpha	**betw cen e-plv delta**	0.005498	0.318619	0.141903
node str e-plv gamma	**asymmetry ampl alpha**	0.005423	0.316826	0.07107
node str s-lcoh gamma	**spectral entropy theta**	0.005416	0.201913	0.088314
betw cen s-lcoh gamma	**spectral entropy gamma**	0.005294	0.398221	0.190369
betw cen e-plv delta	**clust coeff e-plv beta**	0.005171	0.345013	0.098821
clust coeff s-lps theta	**spectral entropy gamma**	0.004972	0.217687	0.046093
clust coeff e-plv theta	**node str s-lcoh gamma**	0.004922	0.150216	0.086108
betw cen s-ips beta	**clust coeff s-ips theta**	0.004827	0.419	0.163444
clust coeff s-lps theta	**microstates transitions**	0.004742	0.216336	0.219049
kurtosis ampl alpha	**waiting time gamma**	0.004725	0.32921	0.145706
betw cen e-plv delta	**kfd theta**	0.004631	0.280987	0.210813
node str s-ips alpha	**asymmetry ampl theta**	0.004511	0.372471	0.147431
mod index alpha-gamma	**skewness ampl theta**	0.0045	0.454869	0.23535
node str e-plv alpha	**hfd alpha**	0.004461	0.157806	0.105499
clust coeff s-ips theta	**microstates transitions**	0.004431	0.210898	0.055891
betw cen s-lcoh gamma	**coeff of var ampl alpha**	0.004415	0.335051	0.083473
node str e-plv beta	**asymmetry ampl alpha**	0.004162	0.32559	0.076363
clust coeff s-lps gamma	**lyapunov exponent**	0.00411	0.306178	0.158352
clust coeff e-icoh theta	**betw cen e-plv gamma**	0.004108	0.274814	0.036219
node str e-icoh gamma	**node str s-lps theta**	0.004043	0.294313	0.08508
life time gamma	**asymmetry ampl alpha**	0.004011	0.385925	0.148035
betw cen e-plv gamma	**spectral entropy theta**	0.004003	0.305447	0.083612
skewness ampl beta	**clust coeff s-lps gamma**	0.003918	0.232881	0.037926
node str e-plv delta	**microstates transitions**	0.003865	0.195924	0.067279
hfd beta	**kfd gamma**	0.003794	0.552928	0.496777
microstates temporal	**waiting time gamma**	0.003678	0.226833	0.099521
skewness ampl beta	**mod index delta-gamma**	0.003674	0.417008	0.191637

clust coeff s-lps theta	**coeff of var ampl beta**	0.003599	0.245745	0.127506
dfa exponent beta	**clust coeff e-plv delta**	0.003518	0.188147	0.081631
mod index delta-gamma	**betw cen e-plv delta**	0.003511	0.427337	0.112696
betw cen e-plv delta	**microstates temporal**	0.003437	0.218976	0.105177
dfa exponent alpha	**clust coeff e-plv beta**	0.003233	0.18992	0.040045
node str e-icoh gamma	**clust coeff s-lps theta**	0.003212	0.253463	0.085993
betw cen e-plv gamma	**hfd alpha**	0.003131	0.198572	0.099207
spectral entropy gamma	**relative ampl theta**	0.00301	0.316774	0.280036
node str e-icoh gamma	**life time beta**	0.002998	0.264346	0.115737
skewness ampl beta	**node str e-plv gamma**	0.002978	0.350046	0.210999
betw cen e-plv delta	**hfd theta**	0.002967	0.253837	0.075647
std ampl gamma	**mod index delta-alpha**	0.002955	0.281648	0.086543
betw cen e-plv gamma	**coeff of var ampl theta**	0.002945	0.44013	0.157819
mod index alpha-gamma	**node str e-icoh theta**	0.002827	0.447867	0.323881
clust coeff e-plv beta	**asymmetry ampl alpha**	0.002825	0.277216	0.068175
node str s-lcoh gamma	**waiting time gamma**	0.002798	0.315121	0.220065
ampl total power gamma	**mod index delta-alpha**	0.002447	0.281679	0.098386
mean ampl gamma	**mod index delta-alpha**	0.002447	0.281679	0.098386
clust coeff s-ips theta	**kfd gamma**	0.00232	0.285247	0.080896
kurtosis ampl gamma	**kfd delta**	0.002304	0.284557	0.029678
clust coeff s-lcoh theta	**spectral entropy delta**	0.002212	0.222972	0.036817
clust coeff e-plv gamma	**microstates transitions**	0.002188	0.155597	0.088618
kurtosis ampl alpha	**kurtosis ampl gamma**	0.002163	0.250775	0.204256
clust coeff e-plv beta	**hfd theta**	0.001945	0.169136	0.055937
dfa exponent alpha	**spectral entropy alpha**	0.001893	0.229467	0.078786
node str e-plv beta	**kfd theta**	0.00189	0.185453	0.104969
betw cen e-plv delta	**clust coeff s-lcoh theta**	0.001819	0.32194	0.234199
dfa exponent alpha	**clust coeff e-plv delta**	0.001781	0.18094	0.09068
ampl total power gamma	**mod index delta-beta**	0.001743	0.323371	0.057643
mean ampl gamma	**mod index delta-beta**	0.001743	0.323371	0.057643
clust coeff e-plv gamma	**coeff of var ampl theta**	0.001714	0.296813	0.03554
node str e-plv alpha	**kfd gamma**	0.001684	0.243632	0.062647
node str e-plv theta	**node str s-lcoh gamma**	0.001665	0.188923	0.082152

clust coeff e-plv gamma	**relative ampl theta**	0.001462	0.413429	0.379611
clust coeff e-plv delta	**node str e-plv gamma**	0.001305	0.210391	0.092716
mod index alpha-gamma	**mod index delta-alpha**	0.001282	0.40765	0.267697
node str s-lps gamma	**coeff of var ampl alpha**	0.001208	0.20599	0.162961
betw cen s-ips beta	**microstates transitions**	0.001186	0.22883	0.055752
hfd delta	**node str s-ips theta**	0.001104	0.360994	0.139785
clust coeff e-plv beta	**microstates transitions**	0.00077	0.175543	0.126493
clust coeff e-plv delta	**clust coeff e-plv gamma**	0.000687	0.179358	0.0948
coeff of var ampl beta	**spectral entropy delta**	0.000275	0.337764	0.041369
mod index alpha-gamma	**spectral entropy delta**	5.69E-05	0.365195	0.153651

Supplementary Table 6 –Features that were significant after correcting for 13.112 comparisons using the Holm method.

EEG features	**# significant variables**	**Corrected p-value**	**Cohens d**
dfa exponent beta	2	6.34E-05	-0.73098
clust coeff e-icoh theta	37	6.13E-06	0.822389
node str e-icoh theta	16	5.32E-06	0.828157
clust coeff e-plv theta	62	1.01E-07	1.037379
node str e-plv theta	46	1.01E-07	1.034402
hfd alpha	61	2.61E-06	-0.85347
kfd theta	11	4.75E-05	0.743827
life time beta	2	7.60E-05	-0.72389
lyapunov exponent	1	5.84E-05	-0.73228
microstates temporal	1	8.36E-05	0.718154
microstates transitions	4	2.32E-07	0.954002
asymmetry ampl theta	2	5.57E-05	-0.74216
coeff of var ampl alpha	14	8.67E-06	-0.80885
spectral entropy theta	2	7.45E-05	-0.72303
relative ampl theta	1	0.000177	0.690304
waiting time beta	10	9.89E-06	-0.80877

Supplementary Table 7 - Prediction of SANS and SAPS scores using elastic net regularized linear regression. The numbers in the leftmost column coincide with the numbers and EEG features as indicated in Supplementary Table 1.

	SAPS		**SANS**	
	RMSE (percentiles)	**R^2 percentiles**	**RMSE (percentiles)**	**R^2 percentiles**

	25	50	75	25	50	75	25	50	75	25	50	75
1	3.06	3.17	3.28	-0.02	0	0	5.03	5.17	5.43	-0.03	0	0
2	3.06	3.16	3.24	0	0	0	5	5.12	5.36	0	0	0
3	3.05	3.14	3.26	0	0	0	5	5.15	5.36	-0.01	0	0
4	3.05	3.16	3.23	0	0	0	4.98	5.13	5.36	-0.01	0	0
5	3.09	3.18	3.29	-0.03	0	0	5.03	5.16	5.44	-0.02	0	0
6	3.07	3.16	3.27	-0.01	0	0	5.03	5.25	5.46	-0.04	0	0
7	3.07	3.16	3.27	-0.01	0	0	5.03	5.2	5.42	-0.01	0	0
8	3.06	3.16	3.28	0	0	0	4.98	5.16	5.38	0	0	0
9	3.05	3.16	3.27	-0.01	0	0	5	5.15	5.35	0	0	0
10	3.05	3.14	3.26	0	0	0	4.98	5.15	5.36	-0.01	0	0
11	3.05	3.16	3.24	-0.01	0	0	5.02	5.19	5.43	-0.02	0	0
12	3.09	3.17	3.3	-0.04	0	0	5.02	5.16	5.41	-0.01	0	0
13	3.05	3.15	3.25	0	0	0.01	4.98	5.14	5.37	-0.01	0	0
14	3.07	3.16	3.29	-0.01	0	0.02	5.01	5.16	5.4	-0.01	0	0
15	3.05	3.16	3.3	-0.03	0	0.01	4.96	5.11	5.29	0	0	0.03
16	3.06	3.16	3.3	-0.02	0	0	5.03	5.19	5.38	-0.02	0	0
17	3.06	3.15	3.22	0	0	0	5.01	5.15	5.36	0	0	0
18	3.11	3.16	3.26	-0.02	0	0	5.03	5.2	5.39	-0.01	0	0
19	3.06	3.16	3.24	0	0	0	4.98	5.17	5.35	0	0	0
20	3.05	3.14	3.23	0	0	0	5	5.12	5.36	0	0	0
21	3.05	3.14	3.25	0	0	0	4.98	5.11	5.38	0	0	0
22	3.07	3.16	3.26	-0.01	0	0	5.01	5.21	5.35	-0.01	0	0
23	3.05	3.14	3.23	0	0	0	5	5.11	5.35	0	0	0
24	3.06	3.16	3.24	0	0	0	4.98	5.15	5.37	-0.01	0	0
25	3.06	3.16	3.26	0	0	0	4.98	5.11	5.36	0	0	0
26	3.06	3.16	3.26	0	0	0	5.03	5.2	5.4	-0.02	0	0
27	3.06	3.16	3.29	-0.01	0	0	5	5.16	5.39	-0.02	0	0
28	3.08	3.17	3.28	-0.01	0	0	5.01	5.11	5.37	0	0	0
29	3.07	3.16	3.24	0	0	0	5.03	5.18	5.42	-0.02	0	0
30	3.07	3.17	3.29	0	0	0	5.03	5.18	5.39	-0.01	0	0
31	3.07	3.16	3.26	-0.01	0	0	5	5.17	5.34	-0.01	0	0
32	3.07	3.16	3.26	0	0	0	5.03	5.17	5.35	-0.01	0	0
33	3.05	3.14	3.23	0	0	0	5.05	5.23	5.42	-0.03	0	0
34	3.05	3.14	3.22	0	0	0	4.99	5.14	5.34	-0.01	0	0.01
35	3.05	3.14	3.22	0	0	0	5	5.14	5.4	-0.01	0	0
36	3.04	3.15	3.25	0	0	0.01	5.03	5.22	5.44	-0.01	0	0
37	3.06	3.17	3.28	-0.01	0	0	5.01	5.12	5.41	-0.01	0	0
38	3.05	3.14	3.26	0	0	0	5.02	5.13	5.38	-0.01	0	0
39	3.06	3.16	3.26	0	0	0	4.99	5.14	5.37	-0.01	0	0.01
40	3.05	3.16	3.29	-0.01	0	0	5.01	5.2	5.39	-0.02	0	0
41	3.04	3.15	3.27	-0.01	0	0.01	4.97	5.11	5.36	-0.01	0	0
42	3.05	3.15	3.28	-0.03	0	0.01	5	5.17	5.35	0	0	0

43	3.09	3.17	3.32	-0.05	-0.01	0	5	5.17	5.35	0	0	0
44	3.06	3.17	3.3	-0.04	0	0	5.01	5.17	5.36	-0.01	0	0
45	3.09	3.18	3.28	-0.04	0	0	5	5.15	5.35	0	0	0
46	3.05	3.17	3.27	-0.03	0	0.01	5	5.18	5.35	0	0	0
47	3.07	3.17	3.27	-0.01	0	0	5.02	5.16	5.4	-0.01	0	0
48	3.05	3.16	3.27	-0.01	0	0	5.01	5.18	5.4	-0.01	0	0
49	3.06	3.16	3.27	-0.02	0	0	4.98	5.12	5.35	0	0	0
50	3.04	3.15	3.27	-0.01	0	0.02	5.03	5.12	5.36	-0.01	0	0
51	3.05	3.16	3.25	0	0	0	4.99	5.19	5.41	-0.01	0	0
52	3.05	3.14	3.25	0	0	0	5.01	5.19	5.38	-0.02	0	0
53	3.05	3.15	3.23	0	0	0	4.98	5.12	5.35	0	0	0
54	3.06	3.16	3.28	-0.01	0	0	4.99	5.12	5.39	-0.01	0	0
55	3.06	3.16	3.27	0	0	0	4.99	5.11	5.36	0	0	0
56	3.05	3.14	3.25	0	0	0	5.02	5.16	5.36	-0.02	0	0.01
57	3.05	3.14	3.26	0	0	0	5	5.15	5.37	-0.01	0	0
58	3.06	3.16	3.28	0	0	0	4.98	5.11	5.35	0	0	0
59	3.06	3.17	3.29	-0.01	0	0	5.01	5.13	5.35	-0.01	0	0
60	3.06	3.16	3.25	-0.01	0	0	5.02	5.11	5.35	0	0	0
61	3.05	3.14	3.24	0	0	0	5.03	5.17	5.4	-0.01	0	0
62	3.06	3.15	3.25	-0.01	0	0	5.03	5.2	5.42	-0.01	0	0
63	3.06	3.14	3.26	0	0	0	4.98	5.15	5.41	-0.01	0	0
64	3.05	3.17	3.28	-0.03	0	0	4.98	5.11	5.35	0	0	0
65	3.07	3.17	3.26	-0.01	0	0	4.98	5.18	5.38	-0.01	0	0
66	3.06	3.17	3.26	0	0	0	5	5.11	5.38	0	0	0
67	3.06	3.16	3.25	0	0	0	5.01	5.18	5.44	-0.01	0	0
68	3.05	3.15	3.26	0	0	0	4.98	5.11	5.38	0	0	0
69	3.05	3.15	3.26	0	0	0	4.98	5.11	5.4	-0.01	0	0
70	3.07	3.15	3.27	-0.03	0	0	4.98	5.11	5.35	0	0	0
71	3.06	3.16	3.26	0	0	0	5	5.13	5.35	-0.01	0	0
72	3.05	3.16	3.24	0	0	0	5.02	5.17	5.41	-0.01	0	0
73	3.05	3.16	3.26	0	0	0	5	5.13	5.35	0	0	0
74	3.05	3.14	3.26	0	0	0	4.98	5.12	5.35	0	0	0
75	3.05	3.14	3.22	0	0	0	5	5.18	5.39	-0.01	0	0
76	3.05	3.14	3.22	0	0	0	5	5.12	5.35	0	0	0
77	3.03	3.13	3.23	0	0	0.02	5.04	5.25	5.43	-0.08	-0.01	0
78	3.06	3.15	3.25	0	0	0	5.01	5.12	5.4	-0.01	0	0
79	3.05	3.16	3.29	0	0	0	5	5.12	5.43	-0.01	0	0
80	3.07	3.16	3.3	-0.03	0	0	5	5.12	5.37	-0.01	0	0
81	3.05	3.14	3.24	0	0	0	5	5.16	5.35	-0.01	0	0
82	3.07	3.15	3.26	-0.02	0	0	5	5.17	5.4	0	0	0
83	3.06	3.14	3.26	0	0	0	5.03	5.15	5.41	-0.01	0	0
84	3.05	3.15	3.24	-0.01	0	0	5.01	5.19	5.42	-0.01	0	0
85	3.05	3.15	3.25	0	0	0	4.98	5.11	5.36	0	0	0

86	3.05	3.15	3.25	-0.01	0	0.02	5.04	5.21	5.38	-0.01	0	0
87	3.06	3.14	3.25	-0.01	0	0	5.08	5.28	5.42	-0.06	0	0
88	3.08	3.15	3.25	-0.02	0	0	4.98	5.12	5.36	0	0	0
89	3.06	3.16	3.26	-0.01	0	0	5	5.19	5.36	-0.01	0	0
90	3.07	3.15	3.29	-0.01	0	0	5.02	5.17	5.4	-0.01	0	0
91	3.06	3.14	3.24	0	0	0	4.98	5.11	5.36	-0.01	0	0
92	3.07	3.18	3.31	-0.05	0	0	5.02	5.19	5.43	-0.03	0	0
93	3.04	3.14	3.22	0	0	0.01	5	5.12	5.36	0	0	0
94	3.06	3.14	3.25	0	0	0	5.02	5.15	5.37	-0.01	0	0
95	3.05	3.16	3.25	0	0	0	4.98	5.12	5.36	0	0	0
96	3.09	3.19	3.29	-0.04	0	0	5.02	5.17	5.44	-0.02	0	0
97	3.05	3.14	3.23	0	0	0	5.07	5.2	5.36	-0.05	0	0
98	3.06	3.15	3.26	-0.01	0	0	5.01	5.18	5.38	-0.01	0	0
99	3.06	3.17	3.24	-0.02	0	0	5	5.15	5.4	-0.01	0	0
100	3.05	3.16	3.29	0	0	0	5.01	5.17	5.36	-0.01	0	0
101	3.05	3.14	3.26	-0.01	0	0	4.98	5.17	5.41	-0.03	0	0
102	3.05	3.15	3.28	-0.01	0	0	5.02	5.13	5.46	-0.03	0	0
103	3.07	3.16	3.26	0	0	0	5.01	5.19	5.4	-0.03	0	0
104	3.06	3.15	3.23	0	0	0	4.98	5.12	5.36	0	0	0
105	3.05	3.14	3.25	0	0	0	4.96	5.25	5.4	-0.03	0	0
106	3.06	3.16	3.24	0	0	0	5	5.15	5.37	-0.01	0	0
107	3.07	3.16	3.26	-0.01	0	0	4.98	5.12	5.38	0	0	0
108	3.05	3.14	3.3	0	0	0	5.03	5.14	5.4	-0.01	0	0
109	3.05	3.15	3.3	0	0	0	5.03	5.12	5.4	-0.01	0	0
110	3.06	3.17	3.28	-0.02	0	0	5.03	5.17	5.43	-0.03	0	0
111	3.06	3.16	3.24	0	0	0	5	5.12	5.36	0	0	0
112	3.05	3.14	3.25	0	0	0	5	5.15	5.36	-0.01	0	0
113	3.05	3.16	3.23	0	0	0	4.98	5.13	5.36	-0.01	0	0
114	3.09	3.18	3.29	-0.03	0	0	5.03	5.16	5.44	-0.02	0	0
115	3.05	3.14	3.26	0	0	0	5.01	5.15	5.4	-0.01	0	0
116	3.06	3.16	3.27	-0.01	0	0	4.94	5.12	5.36	0	0.01	0.03
117	3.07	3.16	3.23	0	0	0	5.03	5.16	5.36	-0.01	0	0
118	3.05	3.16	3.27	0	0	0	4.98	5.15	5.41	0	0	0
119	3.04	3.13	3.23	0	0	0.01	5.02	5.12	5.36	-0.01	0	0
120	3.07	3.16	3.28	-0.01	0	0	5.08	5.26	5.51	-0.06	0	0
121	3.05	3.16	3.26	0	0	0	4.98	5.11	5.35	0	0	0
122	3.05	3.16	3.26	0	0	0	5	5.21	5.4	0	0	0
123	3.07	3.16	3.27	-0.01	0	0	5.01	5.16	5.38	-0.01	0	0
124	3.06	3.17	3.3	-0.04	0	0	5.02	5.12	5.41	-0.01	0	0
125	3.07	3.16	3.27	0	0	0	4.98	5.11	5.36	0	0	0
126	3.12	3.18	3.32	-0.09	-0.01	0	4.98	5.15	5.39	-0.01	0	0.01
127	3.05	3.16	3.29	-0.02	0	0.01	5.01	5.14	5.36	-0.01	0	0
128	3.05	3.14	3.24	-0.01	0	0	5.01	5.13	5.38	-0.01	0	0

129	3.04	3.15	3.24	-0.01	0	0.02	4.95	5.15	5.34	-0.02	0	0.03
130	3.05	3.13	3.22	-0.01	0	0.01	5	5.13	5.37	-0.01	0	0
131	3.06	3.16	3.25	0	0	0	5.02	5.14	5.4	-0.01	0	0
132	3.05	3.16	3.29	-0.01	0	0	5.02	5.17	5.38	-0.01	0	0
133	3.07	3.16	3.27	-0.02	0	0	4.98	5.12	5.35	0	0	0
134	2.98	3.12	3.26	-0.01	0.01	0.04	5.02	5.13	5.36	-0.01	0	0
135	3.05	3.15	3.23	0	0	0	5.01	5.17	5.36	-0.01	0	0
136	3.05	3.14	3.26	0	0	0	5.01	5.15	5.36	-0.01	0	0.01
137	3.05	3.15	3.25	0	0	0	4.98	5.12	5.35	0	0	0
138	3.06	3.15	3.27	-0.01	0	0	4.98	5.12	5.4	-0.01	0	0
139	3.05	3.16	3.27	0	0	0	4.99	5.11	5.36	0	0	0
140	3.05	3.14	3.25	0	0	0	5.01	5.15	5.35	-0.01	0	0
141	3.06	3.16	3.27	-0.01	0	0	5.02	5.17	5.37	-0.01	0	0
142	3.06	3.16	3.27	0	0	0	4.98	5.15	5.38	0	0	0
143	3.06	3.16	3.26	0	0	0	5.02	5.12	5.38	-0.01	0	0
144	3.06	3.16	3.28	0	0	0	5	5.12	5.35	0	0	0
145	3.05	3.14	3.24	0	0	0	5.03	5.16	5.4	-0.01	0	0
146	3.06	3.14	3.25	0	0	0	5.03	5.16	5.4	-0.01	0	0
147	3.05	3.14	3.25	0	0	0	4.98	5.15	5.39	-0.01	0	0
148	3.05	3.17	3.27	-0.01	0	0	4.98	5.11	5.36	0	0	0
149	3.05	3.15	3.28	-0.01	0	0	4.98	5.18	5.36	-0.01	0	0
150	3.07	3.17	3.29	0	0	0	5	5.15	5.4	-0.01	0	0
151	3.06	3.16	3.26	0	0	0	5.01	5.21	5.42	-0.01	0	0
152	3.06	3.17	3.3	-0.02	0	0	4.98	5.11	5.35	0	0	0
153	3.05	3.15	3.24	0	0	0	4.98	5.11	5.38	0	0	0
154	3.06	3.16	3.27	-0.03	0	0.01	4.98	5.11	5.35	0	0	0
155	3.06	3.16	3.27	0	0	0	5	5.14	5.36	-0.01	0	0
156	3.06	3.14	3.25	0	0	0	5.03	5.21	5.42	-0.03	0	0
157	3.07	3.17	3.31	-0.02	0	0	4.98	5.15	5.36	-0.01	0	0
158	3.06	3.16	3.3	-0.02	0	0	4.99	5.12	5.36	-0.01	0	0
159	3.06	3.16	3.29	-0.03	0	0.01	5.03	5.16	5.39	-0.01	0	0
160	3.05	3.16	3.27	-0.03	0	0	5.03	5.15	5.36	-0.01	0	0
161	3.06	3.13	3.28	-0.02	0	0.01	5.03	5.15	5.39	-0.01	0	0
162	3.06	3.16	3.26	-0.01	0	0	5.03	5.19	5.41	-0.04	-0.01	0
163	3.05	3.17	3.33	-0.02	0	0.02	5.03	5.15	5.41	-0.01	0	0
164	3.06	3.16	3.31	-0.04	0	0	5.03	5.23	5.41	-0.04	0	0
165	3.04	3.15	3.25	0	0	0.01	5.03	5.31	5.48	-0.06	-0.01	0
166	3.06	3.16	3.25	-0.01	0	0	4.99	5.17	5.41	-0.03	0	0
167	3.08	3.16	3.31	-0.03	0	0	5.03	5.19	5.42	-0.02	0	0
168	3.03	3.14	3.27	-0.02	0	0.02	5.03	5.24	5.43	-0.04	-0.01	0
169	3.05	3.13	3.27	-0.01	0	0.02	5.03	5.21	5.41	-0.03	0	0
170	3.04	3.15	3.3	-0.03	0	0.03	5.02	5.15	5.34	-0.02	0	0
171	3.06	3.16	3.26	0	0	0	5.03	5.21	5.4	-0.01	0	0

172	3.05	3.15	3.26	0	0	0	5	5.12	5.36	-0.01	0	0
173	3.08	3.16	3.31	-0.04	0	0	5	5.12	5.36	0	0	0
174	3.05	3.16	3.25	-0.01	0	0	5	5.12	5.39	-0.02	0	0
175	3.05	3.14	3.22	0	0	0	4.98	5.11	5.36	-0.01	0	0
176	3.05	3.14	3.27	0	0	0	5.01	5.1	5.36	-0.01	0	0
177	3.05	3.14	3.22	0	0	0	5.01	5.12	5.39	0	0	0
178	3.05	3.14	3.25	0	0	0	5.01	5.11	5.4	-0.01	0	0
179	3.05	3.14	3.25	0	0	0	5.02	5.17	5.4	-0.02	0	0
180	3.06	3.16	3.24	0	0	0	5.03	5.2	5.38	-0.01	0	0
181	3.06	3.16	3.26	-0.01	0	0	5.02	5.17	5.41	-0.01	0	0
182	3.06	3.14	3.25	0	0	0	4.98	5.12	5.42	-0.01	0	0
183	3.07	3.17	3.32	-0.04	0	0	5.01	5.17	5.36	-0.01	0	0
184	3.1	3.16	3.27	-0.03	0	0	5.03	5.2	5.39	-0.03	0	0
185	3.07	3.18	3.32	-0.02	0	0	5.01	5.16	5.4	-0.02	0	0
186	3.06	3.15	3.24	0	0	0	5	5.12	5.36	0	0	0
187	3.06	3.14	3.25	0	0	0	5.02	5.15	5.36	-0.01	0	0
188	3.05	3.15	3.23	0	0	0	4.98	5.12	5.36	-0.01	0	0
189	3.09	3.17	3.29	-0.03	0	0	5.03	5.17	5.42	-0.01	0	0
190	3.05	3.14	3.3	0	0	0	5.03	5.17	5.4	-0.01	0	0
191	3.06	3.16	3.26	0	0	0	5.02	5.19	5.48	-0.01	0	0
192	3.05	3.15	3.25	0	0	0	5.02	5.12	5.38	-0.01	0	0
193	3.05	3.15	3.26	0	0	0	5.03	5.21	5.41	-0.02	0	0
194	3.07	3.16	3.27	-0.01	0	0	5.03	5.17	5.38	-0.01	0	0

Supplementary Table 8 - Prediction of SANS and SAPS scores using random forest nonlinear regression. The numbers in the leftmost column coincide with the numbers and EEG features as indicated in Supplementary Table 1.

	SAPS						**SANS**					
	RMSE (percentiles)			**R^2 percentiles**			**RMSE (percentiles)**			**R^2 percentiles**		
	25	**50**	**75**	**25**	**50**	**75**	**25**	**50**	**75**	**25**	**50**	**75**
1	3.09	3.20	3.33	-0.10	-0.05	0.01	5.09	5.29	5.51	-0.11	-0.06	-0.01
2	3.06	3.16	3.26	-0.04	-0.01	0.02	5.34	5.50	5.77	-0.19	-0.15	-0.10
3	3.17	3.26	3.36	-0.13	-0.08	-0.03	5.08	5.25	5.57	-0.10	-0.06	-0.01
4	3.02	3.19	3.30	-0.06	-0.03	0.04	5.10	5.41	5.54	-0.11	-0.06	-0.03
5	3.20	3.32	3.42	-0.14	-0.11	-0.07	5.10	5.32	5.50	-0.11	-0.07	-0.02
6	3.02	3.15	3.25	-0.04	0.01	0.05	5.14	5.36	5.58	-0.14	-0.07	-0.02
7	3.12	3.25	3.36	-0.10	-0.06	-0.03	5.09	5.24	5.41	-0.06	-0.02	0.01
8	3.14	3.24	3.31	-0.08	-0.06	-0.03	5.08	5.26	5.46	-0.07	-0.03	0.00
9	3.13	3.23	3.37	-0.09	-0.06	-0.03	5.20	5.37	5.55	-0.12	-0.08	-0.06
10	3.13	3.29	3.36	-0.11	-0.07	-0.03	5.06	5.29	5.44	-0.07	-0.03	0.01
11	3.09	3.18	3.30	-0.06	-0.03	0.00	5.06	5.26	5.45	-0.07	-0.03	0.00
12	3.10	3.19	3.32	-0.07	-0.03	0.00	5.00	5.19	5.30	-0.04	-0.01	0.02

13	3.12	3.21	3.31	-0.08	-0.04	-0.01	5.03	5.23	5.39	-0.05	-0.01	0.01
14	3.04	3.12	3.24	-0.04	0.01	0.04	5.08	5.24	5.38	-0.04	-0.02	0.00
15	3.17	3.24	3.33	-0.11	-0.06	-0.03	5.01	5.21	5.30	-0.04	0.00	0.03
16	3.07	3.19	3.31	-0.06	-0.02	0.01	5.13	5.25	5.38	-0.06	-0.04	-0.01
17	2.99	3.06	3.19	0.01	0.04	0.06	5.11	5.26	5.48	-0.09	-0.05	-0.02
18	3.11	3.20	3.27	-0.05	-0.03	-0.01	4.99	5.15	5.30	-0.03	-0.01	0.02
19	3.09	3.17	3.28	-0.06	-0.03	-0.01	5.07	5.21	5.34	-0.05	-0.02	0.01
20	3.11	3.22	3.38	-0.09	-0.06	-0.03	5.13	5.29	5.51	-0.09	-0.05	-0.02
21	3.15	3.27	3.34	-0.09	-0.06	-0.05	5.09	5.23	5.46	-0.07	-0.04	-0.01
22	3.08	3.16	3.25	-0.04	-0.02	0.01	4.96	5.08	5.26	0.00	0.04	0.06
23	3.15	3.27	3.34	-0.10	-0.07	-0.04	5.17	5.34	5.57	-0.11	-0.09	-0.06
24	3.14	3.25	3.35	-0.10	-0.07	-0.05	5.19	5.33	5.55	-0.12	-0.08	-0.05
25	3.07	3.19	3.29	-0.08	-0.03	0.00	4.97	5.19	5.35	-0.04	-0.01	0.04
26	3.08	3.16	3.25	-0.03	-0.01	0.01	4.95	5.13	5.30	-0.02	0.02	0.04
27	3.12	3.22	3.34	-0.08	-0.05	-0.02	5.02	5.16	5.35	-0.04	0.00	0.01
28	3.02	3.12	3.25	-0.02	0.01	0.03	5.00	5.18	5.38	-0.03	-0.01	0.01
29	3.06	3.16	3.26	-0.04	-0.01	0.01	5.11	5.24	5.46	-0.08	-0.05	-0.02
30	3.01	3.09	3.18	0.01	0.03	0.05	5.06	5.22	5.37	-0.05	-0.02	0.00
31	3.02	3.14	3.21	-0.02	0.01	0.04	5.02	5.14	5.38	-0.03	-0.01	0.02
32	3.16	3.26	3.40	-0.12	-0.08	-0.04	5.31	5.47	5.60	-0.14	-0.11	-0.09
33	3.11	3.19	3.32	-0.06	-0.04	-0.01	4.99	5.15	5.38	-0.04	-0.02	0.02
34	3.03	3.13	3.24	-0.03	0.01	0.03	4.98	5.19	5.31	-0.03	-0.01	0.02
35	3.10	3.26	3.36	-0.09	-0.06	-0.03	4.91	5.20	5.39	-0.02	0.00	0.04
36	3.10	3.20	3.26	-0.06	-0.03	-0.01	5.10	5.26	5.50	-0.08	-0.06	-0.03
37	3.12	3.20	3.35	-0.08	-0.04	-0.02	5.07	5.21	5.43	-0.06	-0.04	0.00
38	3.11	3.20	3.29	-0.08	-0.04	-0.01	5.07	5.29	5.49	-0.08	-0.04	-0.01
39	3.07	3.15	3.24	-0.03	-0.01	0.01	5.02	5.20	5.37	-0.05	-0.02	0.01
40	3.09	3.19	3.30	-0.07	-0.03	0.00	5.14	5.30	5.48	-0.09	-0.06	-0.04
41	3.09	3.19	3.28	-0.04	-0.02	0.01	5.14	5.32	5.45	-0.08	-0.06	-0.03
42	3.11	3.20	3.35	-0.09	-0.03	0.00	4.95	5.08	5.23	0.00	0.03	0.05
43	3.15	3.23	3.36	-0.12	-0.05	-0.02	4.94	5.10	5.27	-0.01	0.02	0.04
44	3.13	3.20	3.33	-0.09	-0.04	0.00	5.02	5.18	5.34	-0.05	-0.01	0.03
45	3.13	3.22	3.33	-0.09	-0.04	-0.01	4.92	5.10	5.22	0.00	0.02	0.06
46	3.08	3.18	3.31	-0.07	-0.03	0.00	4.98	5.13	5.32	-0.04	0.01	0.04
47	3.14	3.28	3.38	-0.14	-0.08	-0.03	5.19	5.44	5.66	-0.16	-0.10	-0.05
48	3.11	3.28	3.42	-0.13	-0.06	-0.03	5.06	5.26	5.42	-0.07	-0.03	0.02
49	3.14	3.27	3.39	-0.13	-0.08	-0.03	5.20	5.36	5.62	-0.14	-0.10	-0.06
50	3.12	3.27	3.36	-0.13	-0.08	0.00	5.40	5.56	5.79	-0.22	-0.17	-0.11
51	3.24	3.37	3.48	-0.19	-0.14	-0.10	5.09	5.40	5.56	-0.13	-0.08	-0.03
52	3.05	3.14	3.23	-0.04	0.02	0.05	5.07	5.34	5.49	-0.11	-0.06	0.00
53	3.22	3.34	3.43	-0.15	-0.11	-0.07	5.19	5.42	5.63	-0.14	-0.10	-0.06
54	3.04	3.19	3.28	-0.07	0.00	0.03	5.32	5.46	5.73	-0.17	-0.13	-0.10
55	3.13	3.28	3.41	-0.12	-0.09	-0.05	4.97	5.16	5.35	-0.05	-0.01	0.03

56	3.15	3.21	3.34	-0.11	-0.05	-0.02	5.01	5.16	5.44	-0.06	0.00	0.03
57	3.04	3.11	3.26	-0.04	0.01	0.05	5.23	5.41	5.59	-0.16	-0.09	-0.04
58	2.98	3.18	3.31	-0.07	0.00	0.05	5.07	5.24	5.48	-0.09	-0.05	0.00
59	3.05	3.20	3.29	-0.07	-0.04	0.01	5.12	5.32	5.54	-0.10	-0.07	-0.02
60	3.02	3.15	3.25	-0.06	0.01	0.07	5.23	5.44	5.73	-0.17	-0.12	-0.07
61	3.06	3.17	3.28	-0.06	-0.02	0.02	5.27	5.44	5.59	-0.16	-0.11	-0.07
62	3.10	3.24	3.36	-0.14	-0.04	0.00	5.34	5.56	5.80	-0.22	-0.15	-0.10
63	3.18	3.29	3.40	-0.16	-0.09	-0.05	5.18	5.44	5.67	-0.16	-0.12	-0.06
64	3.19	3.30	3.41	-0.15	-0.10	-0.04	5.21	5.44	5.72	-0.18	-0.10	-0.08
65	3.22	3.34	3.53	-0.20	-0.14	-0.09	5.37	5.54	5.81	-0.22	-0.15	-0.10
66	3.11	3.19	3.32	-0.09	-0.03	0.01	5.23	5.42	5.66	-0.15	-0.10	-0.07
67	3.06	3.20	3.31	-0.08	-0.04	0.02	5.25	5.43	5.72	-0.19	-0.10	-0.06
68	3.20	3.33	3.43	-0.17	-0.10	-0.06	5.13	5.37	5.60	-0.13	-0.08	-0.03
69	3.13	3.29	3.44	-0.14	-0.10	-0.05	4.99	5.25	5.51	-0.08	-0.03	0.01
70	3.15	3.29	3.42	-0.16	-0.09	-0.04	5.19	5.36	5.63	-0.14	-0.10	-0.05
71	3.14	3.24	3.31	-0.09	-0.05	-0.01	5.16	5.33	5.60	-0.13	-0.09	-0.04
72	3.13	3.20	3.30	-0.10	-0.06	0.00	4.92	5.12	5.36	-0.04	0.00	0.05
73	3.19	3.28	3.38	-0.14	-0.09	-0.04	4.99	5.25	5.40	-0.06	-0.02	0.02
74	3.18	3.27	3.40	-0.12	-0.08	-0.05	5.23	5.42	5.63	-0.14	-0.10	-0.07
75	3.20	3.32	3.46	-0.17	-0.12	-0.08	5.15	5.39	5.56	-0.14	-0.06	-0.03
76	3.12	3.20	3.32	-0.09	-0.04	-0.01	5.27	5.46	5.66	-0.17	-0.12	-0.07
77	3.07	3.20	3.31	-0.06	-0.02	0.01	5.06	5.22	5.40	-0.06	-0.01	0.01
78	3.26	3.38	3.50	-0.23	-0.15	-0.11	5.22	5.43	5.61	-0.14	-0.10	-0.05
79	3.14	3.28	3.41	-0.13	-0.09	-0.05	5.14	5.28	5.50	-0.11	-0.07	0.01
80	3.08	3.16	3.30	-0.06	-0.02	0.00	5.11	5.27	5.48	-0.09	-0.05	-0.02
81	3.11	3.24	3.39	-0.11	-0.06	-0.03	5.25	5.51	5.70	-0.21	-0.13	-0.06
82	3.05	3.17	3.27	-0.06	-0.01	0.02	5.14	5.41	5.63	-0.12	-0.09	-0.05
83	3.03	3.13	3.25	-0.07	-0.02	0.07	5.46	5.75	5.95	-0.30	-0.21	-0.15
84	3.17	3.27	3.41	-0.13	-0.10	-0.06	5.13	5.30	5.52	-0.11	-0.07	-0.01
85	3.11	3.21	3.34	-0.09	-0.04	0.00	5.19	5.40	5.69	-0.14	-0.10	-0.06
86	3.07	3.16	3.35	-0.08	-0.03	0.03	5.10	5.30	5.44	-0.09	-0.05	-0.01
87	3.18	3.28	3.38	-0.13	-0.07	-0.02	5.27	5.43	5.61	-0.18	-0.11	-0.04
88	3.00	3.11	3.22	-0.02	0.01	0.05	5.12	5.31	5.57	-0.13	-0.07	-0.01
89	3.10	3.18	3.31	-0.07	-0.03	0.00	5.30	5.52	5.63	-0.19	-0.13	-0.07
90	3.09	3.25	3.35	-0.11	-0.05	-0.01	5.14	5.42	5.63	-0.16	-0.09	-0.01
91	3.15	3.26	3.36	-0.11	-0.07	-0.05	5.24	5.42	5.62	-0.15	-0.11	-0.08
92	3.05	3.16	3.28	-0.07	-0.02	0.03	5.20	5.39	5.62	-0.15	-0.09	-0.05
93	3.12	3.21	3.31	-0.07	-0.04	-0.02	5.25	5.51	5.67	-0.17	-0.12	-0.08
94	3.13	3.24	3.34	-0.12	-0.05	-0.02	5.05	5.23	5.50	-0.07	-0.03	0.01
95	3.04	3.18	3.30	-0.08	-0.02	0.03	5.07	5.41	5.51	-0.11	-0.05	-0.02
96	3.20	3.30	3.45	-0.15	-0.10	-0.06	5.19	5.37	5.59	-0.12	-0.08	-0.04
97	3.17	3.25	3.33	-0.12	-0.06	-0.02	5.10	5.28	5.39	-0.07	-0.03	0.01
98	3.16	3.27	3.40	-0.12	-0.08	-0.05	5.10	5.27	5.49	-0.09	-0.05	-0.01

99	3.05	3.12	3.22	-0.03	0.01	0.05	5.09	5.33	5.54	-0.07	-0.05	-0.03
100	3.06	3.21	3.30	-0.08	-0.03	0.00	5.18	5.43	5.62	-0.15	-0.09	-0.05
101	3.07	3.20	3.29	-0.07	-0.04	0.00	5.04	5.20	5.47	-0.08	-0.04	0.02
102	3.12	3.27	3.42	-0.14	-0.08	-0.04	4.98	5.14	5.31	-0.05	0.01	0.08
103	3.21	3.34	3.42	-0.18	-0.13	-0.06	5.14	5.38	5.59	-0.14	-0.08	-0.04
104	3.10	3.20	3.32	-0.07	-0.05	-0.02	5.09	5.35	5.50	-0.09	-0.06	-0.04
105	3.06	3.18	3.32	-0.09	-0.01	0.01	5.17	5.33	5.47	-0.13	-0.07	-0.02
106	3.18	3.27	3.43	-0.15	-0.09	-0.03	5.13	5.33	5.54	-0.12	-0.07	-0.03
107	3.07	3.17	3.28	-0.05	-0.02	0.01	5.12	5.36	5.62	-0.12	-0.07	-0.04
108	3.09	3.22	3.34	-0.10	-0.05	0.00	5.18	5.41	5.64	-0.15	-0.09	-0.02
109	3.10	3.22	3.34	-0.10	-0.04	0.00	5.18	5.41	5.62	-0.15	-0.10	-0.03
110	3.09	3.20	3.33	-0.10	-0.05	0.01	5.09	5.29	5.51	-0.11	-0.06	-0.01
111	3.06	3.16	3.26	-0.04	-0.01	0.02	5.34	5.50	5.76	-0.19	-0.15	-0.10
112	3.16	3.26	3.36	-0.12	-0.08	-0.03	5.07	5.26	5.58	-0.11	-0.05	-0.01
113	3.02	3.19	3.30	-0.06	-0.03	0.04	5.10	5.41	5.54	-0.11	-0.06	-0.03
114	3.20	3.32	3.42	-0.14	-0.11	-0.07	5.10	5.32	5.50	-0.11	-0.07	-0.02
115	3.15	3.28	3.40	-0.15	-0.07	-0.03	5.08	5.33	5.55	-0.14	-0.05	0.01
116	3.07	3.20	3.32	-0.09	-0.02	0.03	4.85	5.04	5.24	0.01	0.05	0.09
117	3.07	3.16	3.32	-0.07	-0.03	0.01	5.00	5.18	5.33	-0.04	0.01	0.04
118	3.08	3.18	3.30	-0.05	-0.02	0.01	4.95	5.14	5.33	-0.03	0.01	0.04
119	3.10	3.19	3.31	-0.07	-0.04	0.00	5.01	5.25	5.49	-0.06	-0.02	0.01
120	3.08	3.15	3.25	-0.10	-0.01	0.03	5.05	5.26	5.46	-0.08	-0.03	0.00
121	3.12	3.20	3.35	-0.09	-0.05	-0.01	5.04	5.20	5.44	-0.06	-0.03	0.00
122	3.03	3.13	3.22	-0.03	0.00	0.05	5.20	5.32	5.51	-0.11	-0.07	-0.04
123	3.04	3.16	3.25	-0.05	-0.01	0.02	5.15	5.27	5.47	-0.09	-0.06	-0.02
124	3.09	3.18	3.33	-0.06	-0.04	-0.01	5.09	5.27	5.40	-0.08	-0.05	-0.01
125	3.11	3.22	3.32	-0.08	-0.05	-0.02	5.13	5.37	5.57	-0.10	-0.07	-0.04
126	3.15	3.24	3.36	-0.12	-0.07	-0.01	5.09	5.31	5.49	-0.10	-0.04	0.02
127	3.12	3.24	3.37	-0.11	-0.05	-0.01	5.04	5.25	5.43	-0.08	-0.03	0.02
128	3.15	3.23	3.35	-0.09	-0.06	-0.03	5.00	5.18	5.38	-0.07	0.00	0.05
129	3.08	3.18	3.34	-0.11	-0.03	0.04	5.01	5.28	5.49	-0.10	-0.04	0.03
130	3.07	3.14	3.27	-0.05	-0.02	0.03	5.05	5.22	5.37	-0.07	0.00	0.04
131	3.13	3.27	3.35	-0.11	-0.07	-0.03	5.08	5.33	5.52	-0.10	-0.05	-0.01
132	3.09	3.24	3.33	-0.09	-0.04	0.00	4.96	5.19	5.35	-0.04	0.01	0.04
133	3.12	3.24	3.35	-0.10	-0.06	-0.02	5.24	5.36	5.67	-0.15	-0.11	-0.07
134	3.09	3.22	3.32	-0.10	-0.05	0.01	5.34	5.54	5.70	-0.18	-0.14	-0.10
135	3.25	3.36	3.47	-0.19	-0.14	-0.09	5.08	5.34	5.49	-0.11	-0.05	-0.02
136	3.07	3.16	3.24	-0.06	0.00	0.04	5.10	5.35	5.47	-0.08	-0.04	-0.01
137	3.19	3.29	3.39	-0.14	-0.10	-0.06	5.16	5.43	5.60	-0.13	-0.09	-0.05
138	3.01	3.15	3.27	-0.05	0.00	0.04	5.18	5.38	5.64	-0.13	-0.09	-0.06
139	3.13	3.25	3.38	-0.11	-0.07	-0.04	4.96	5.16	5.36	-0.04	-0.01	0.03
140	3.15	3.25	3.32	-0.12	-0.06	-0.02	5.01	5.11	5.33	-0.04	0.00	0.04
141	3.08	3.16	3.29	-0.05	-0.02	0.03	5.13	5.37	5.59	-0.13	-0.09	-0.06

142	3.06	3.18	3.30	-0.08	-0.02	0.02	5.02	5.20	5.50	-0.09	-0.04	-0.01
143	3.07	3.22	3.30	-0.08	-0.03	0.00	5.04	5.26	5.52	-0.08	-0.03	-0.01
144	2.97	3.08	3.17	-0.01	0.05	0.10	5.11	5.32	5.68	-0.13	-0.07	-0.03
145	3.15	3.25	3.32	-0.10	-0.06	-0.03	5.23	5.37	5.56	-0.13	-0.09	-0.06
146	3.05	3.20	3.28	-0.09	-0.01	0.03	5.28	5.44	5.71	-0.17	-0.11	-0.06
147	3.15	3.25	3.34	-0.12	-0.07	-0.03	5.20	5.43	5.65	-0.15	-0.11	-0.06
148	3.16	3.30	3.40	-0.13	-0.10	-0.04	5.16	5.36	5.61	-0.14	-0.08	-0.04
149	3.20	3.32	3.43	-0.16	-0.12	-0.06	5.30	5.53	5.77	-0.22	-0.15	-0.10
150	3.11	3.21	3.30	-0.07	-0.04	0.00	5.19	5.38	5.62	-0.13	-0.09	-0.05
151	3.11	3.25	3.33	-0.10	-0.05	-0.01	5.18	5.38	5.60	-0.13	-0.08	-0.03
152	3.13	3.25	3.33	-0.10	-0.06	-0.02	5.13	5.37	5.59	-0.12	-0.08	-0.04
153	3.17	3.25	3.40	-0.12	-0.08	-0.04	5.05	5.29	5.49	-0.09	-0.05	-0.01
154	3.09	3.22	3.33	-0.09	-0.03	0.00	5.19	5.33	5.64	-0.13	-0.09	-0.05
155	3.15	3.25	3.33	-0.10	-0.07	-0.03	5.11	5.31	5.50	-0.10	-0.05	-0.01
156	3.21	3.33	3.43	-0.16	-0.12	-0.07	5.03	5.23	5.38	-0.07	-0.02	0.03
157	3.20	3.32	3.44	-0.15	-0.11	-0.07	5.29	5.46	5.62	-0.18	-0.12	-0.08
158	3.17	3.24	3.35	-0.10	-0.07	-0.04	5.17	5.47	5.61	-0.14	-0.08	-0.05
159	3.04	3.19	3.32	-0.07	-0.02	0.02	5.10	5.27	5.41	-0.10	-0.04	0.01
160	3.15	3.26	3.37	-0.12	-0.07	-0.04	5.32	5.50	5.66	-0.19	-0.14	-0.10
161	3.09	3.20	3.35	-0.10	-0.04	0.00	5.12	5.34	5.48	-0.12	-0.07	0.00
162	3.07	3.16	3.26	-0.05	-0.02	0.01	5.09	5.31	5.45	-0.11	-0.05	-0.01
163	3.07	3.20	3.32	-0.07	-0.02	0.02	5.10	5.36	5.51	-0.13	-0.05	0.01
164	3.00	3.11	3.26	-0.06	0.01	0.06	5.10	5.25	5.49	-0.10	-0.04	0.01
165	3.12	3.23	3.33	-0.11	-0.05	0.00	5.17	5.34	5.57	-0.13	-0.08	-0.04
166	3.07	3.18	3.30	-0.06	-0.02	0.01	5.11	5.32	5.44	-0.11	-0.06	0.00
167	3.13	3.26	3.36	-0.12	-0.08	-0.03	5.17	5.33	5.47	-0.12	-0.07	-0.01
168	3.11	3.19	3.34	-0.10	-0.04	0.00	5.11	5.39	5.59	-0.14	-0.08	-0.02
169	3.16	3.24	3.39	-0.13	-0.08	-0.01	5.08	5.38	5.54	-0.13	-0.07	-0.01
170	3.03	3.13	3.29	-0.05	0.01	0.04	4.99	5.19	5.41	-0.05	-0.02	0.02
171	3.17	3.31	3.41	-0.14	-0.11	-0.06	5.09	5.30	5.54	-0.09	-0.05	-0.02
172	3.13	3.22	3.34	-0.09	-0.06	-0.03	5.05	5.19	5.39	-0.04	-0.02	0.01
173	3.04	3.14	3.24	-0.02	0.00	0.03	5.10	5.31	5.47	-0.07	-0.04	-0.01
174	3.12	3.23	3.34	-0.09	-0.06	-0.02	4.85	5.08	5.28	0.00	0.03	0.07
175	3.04	3.19	3.32	-0.08	-0.03	0.02	5.06	5.27	5.48	-0.09	-0.03	0.01
176	3.05	3.21	3.35	-0.11	-0.02	0.02	5.27	5.46	5.71	-0.18	-0.13	-0.08
177	3.06	3.20	3.32	-0.08	-0.02	0.02	5.19	5.31	5.50	-0.13	-0.06	-0.02
178	3.11	3.25	3.36	-0.11	-0.06	-0.01	5.25	5.41	5.67	-0.16	-0.12	-0.09
179	3.09	3.23	3.33	-0.11	-0.05	0.02	5.16	5.31	5.61	-0.14	-0.09	-0.02
180	3.19	3.26	3.37	-0.13	-0.08	-0.04	5.13	5.38	5.61	-0.13	-0.07	-0.03
181	3.14	3.25	3.39	-0.11	-0.08	-0.04	5.08	5.28	5.61	-0.12	-0.06	0.01
182	3.12	3.21	3.36	-0.09	-0.04	-0.02	5.22	5.40	5.64	-0.13	-0.10	-0.07
183	2.98	3.15	3.27	-0.05	0.00	0.05	5.16	5.30	5.50	-0.11	-0.07	-0.03
184	3.15	3.24	3.34	-0.10	-0.06	-0.02	5.13	5.30	5.56	-0.11	-0.08	-0.04

185	3.09	3.18	3.31	-0.09	-0.03	0.01	5.08	5.24	5.53	-0.11	-0.05	-0.01
186	3.07	3.20	3.30	-0.06	-0.03	0.01	5.29	5.46	5.69	-0.16	-0.12	-0.08
187	3.15	3.25	3.35	-0.11	-0.06	-0.02	5.09	5.24	5.53	-0.10	-0.05	0.00
188	3.03	3.16	3.27	-0.05	-0.01	0.04	5.11	5.37	5.55	-0.11	-0.07	-0.02
189	3.21	3.32	3.40	-0.15	-0.10	-0.07	5.05	5.31	5.57	-0.11	-0.05	0.00
190	3.06	3.19	3.34	-0.10	-0.02	0.02	4.95	5.17	5.32	-0.04	0.01	0.08
191	3.13	3.22	3.29	-0.09	-0.03	0.01	5.13	5.38	5.61	-0.15	-0.08	-0.02
192	3.14	3.21	3.33	-0.09	-0.05	-0.03	5.19	5.35	5.52	-0.10	-0.07	-0.04
193	3.08	3.17	3.31	-0.08	-0.02	0.02	5.11	5.24	5.41	-0.09	-0.04	0.02
194	3.09	3.18	3.30	-0.08	-0.02	0.03	5.06	5.27	5.35	-0.08	-0.01	0.02

Supplementary Table 9 – Features used as references for Pearson correlation disattenuated analysis in patients (using the variable showing the largest effect as the representative variable of each EEG feature)

EEG feature	**EEG feature used as reference**	**correlation**
mod index alpha-gamma	mod index delta-gamma	0.62
mean ampl gamma	kfd gamma	0.91
mean ampl theta	kfd theta	0.97
std ampl gamma	kfd gamma	0.9
std ampl theta	mean ampl theta	0.8
kurtosis ampl alpha	mod index delta-alpha	0.85
kurtosis ampl gamma	mod index delta-gamma	0.78
kurtosis ampl theta	hfd alpha	0.57
skewness ampl beta	hfd alpha	0.52
skewness ampl theta	hfd theta	0.47
ampl total power gamma	kfd gamma	0.91
ampl total power theta	kfd theta	0.97
relative ampl beta	life time beta	0.61
mod index delta-alpha	kurtosis ampl alpha	0.85
mod index delta-beta	mod index delta-alpha	0.65
mod index delta-gamma	kurtosis ampl gamma	0.78
dfa exponent alpha	dfa exponent beta	0.66
dfa exponent beta	dfa exponent alpha	0.66
clust coeff e-icoh theta	clust coeff e-plv theta	0.78
node str e-icoh gamma	node str s-lps gamma	0.75
node str e-icoh theta	clust coeff e-plv theta	0.74
betw cen e-plv delta	node str e-plv alpha	0.19
betw cen e-plv gamma	clust coeff e-plv gamma	0.36
clust coeff e-plv beta	node str e-plv beta	0.98
clust coeff e-plv delta	node str e-plv delta	0.59
clust coeff e-plv gamma	node str e-plv beta	0.67

clust coeff e-plv theta	node str e-plv theta	0.98
node str e-plv alpha	hurst exponent	0.46
node str e-plv beta	clust coeff e-plv beta	0.98
node str e-plv delta	clust coeff e-plv delta	0.59
node str e-plv gamma	node str e-plv beta	0.67
node str e-plv theta	clust coeff e-plv theta	0.98
hurst exponent	hfd delta	0.48
hfd alpha	clust coeff e-icoh theta	0.72
hfd beta	hfd theta	0.48
hfd delta	spectral entropy delta	0.64
hfd theta	spectral entropy alpha	0.75
node str s-ips alpha	clust coeff s-ips theta	0.36
betw cen s-ips beta	node str e-plv gamma	0.21
clust coeff s-ips theta	node str s-ips theta	0.9
node str s-ips theta	clust coeff s-ips theta	0.9
kfd delta	std ampl theta	0.67
kfd gamma	mean ampl gamma	0.91
kfd theta	mean ampl theta	0.97
betw cen s-lcoh gamma	clust coeff e-plv gamma	0.21
node str s-lcoh gamma	node str s-lps gamma	0.95
clust coeff s-lcoh theta	node str s-lcoh theta	0.97
node str s-lcoh theta	clust coeff s-lcoh theta	0.97
clust coeff s-lps gamma	node str s-lps gamma	0.87
node str s-lps gamma	node str s-lcoh gamma	0.95
clust coeff s-lps theta	node str s-lps theta	0.97
node str s-lps theta	clust coeff s-lps theta	0.97
life time beta	relative ampl beta	0.61
life time gamma	waiting time gamma	0.84
lyapunov exponent	kfd theta	0.49
microstates temporal	microstates transitions	0.83
microstates transitions	microstates temporal	0.83
asymmetry ampl alpha	kfd theta	0.43
asymmetry ampl theta	mean ampl theta	0.6
coeff of var ampl alpha	kurtosis ampl alpha	0.65
coeff of var ampl beta	coeff of var ampl alpha	0.6
coeff of var ampl theta	kurtosis ampl theta	0.54
spectral entropy alpha	kurtosis ampl alpha	0.76
spectral entropy delta	hfd delta	0.64
spectral entropy gamma	kfd gamma	0.29
spectral entropy theta	hfd alpha	0.55
relative ampl theta	std ampl theta	0.73

waiting time beta	kurtosis ampl alpha	0.53
waiting time gamma	life time gamma	0.84

Supplementary Table 10 – Features used as references for Pearson correlation disattenuated analysis in controls (using the variable showing the largest effect as the representative variable of each EEG feature)

EEG feature	**EEG feature used as reference**	**correlation**
mod index alpha-gamma	kfd theta	0.49
mean ampl gamma	kfd gamma	0.96
mean ampl theta	kfd theta	0.98
std ampl gamma	kfd gamma	0.95
std ampl theta	mean ampl theta	0.8
kurtosis ampl alpha	mod index delta-alpha	0.81
kurtosis ampl gamma	mod index delta-gamma	0.5
kurtosis ampl theta	node str s-ips alpha	0.39
skewness ampl beta	hfd alpha	0.53
skewness ampl theta	relative ampl theta	0.53
ampl total power gamma	kfd gamma	0.96
ampl total power theta	kfd theta	0.98
relative ampl beta	life time beta	0.64
mod index delta-alpha	kurtosis ampl alpha	0.81
mod index delta-beta	mod index delta-alpha	0.54
mod index delta-gamma	kurtosis ampl gamma	0.5
dfa exponent alpha	dfa exponent beta	0.56
dfa exponent beta	dfa exponent alpha	0.56
clust coeff e-icoh theta	hfd theta	0.73
node str e-icoh gamma	node str s-lps gamma	0.61
node str e-icoh theta	hfd theta	0.7
betw cen e-plv delta	mod index delta-alpha	0.27
betw cen e-plv gamma	clust coeff e-plv beta	0.39
clust coeff e-plv beta	clust coeff e-plv gamma	0.44
clust coeff e-plv delta	node str e-plv delta	0.56
clust coeff e-plv gamma	node str e-plv gamma	0.98
clust coeff e-plv theta	node str e-plv theta	0.97
node str e-plv alpha	kurtosis ampl alpha	0.52
node str e-plv beta	clust coeff e-plv gamma	0.47
node str e-plv delta	clust coeff e-plv delta	0.56
node str e-plv gamma	clust coeff e-plv gamma	0.98
node str e-plv theta	clust coeff e-plv theta	0.97
hurst exponent	hfd delta	0.54
hfd alpha	relative ampl theta	0.65

hfd beta	hfd theta	0.5
hfd delta	spectral entropy delta	0.67
hfd theta	kfd theta	0.74
node str s-ips alpha	lyapunov exponent	0.49
betw cen s-ips beta	clust coeff e-plv gamma	0.24
clust coeff s-ips theta	node str s-ips theta	0.9
node str s-ips theta	clust coeff s-ips theta	0.9
kfd delta	std ampl theta	0.54
kfd gamma	mean ampl gamma	0.96
kfd theta	mean ampl theta	0.98
betw cen s-lcoh gamma	kfd gamma	0.35
node str s-lcoh gamma	node str s-lps gamma	0.49
clust coeff s-lcoh theta	node str s-lcoh theta	0.96
node str s-lcoh theta	clust coeff s-lcoh theta	0.96
clust coeff s-lps gamma	node str s-lps gamma	0.79
node str s-lps gamma	clust coeff s-lps gamma	0.79
clust coeff s-lps theta	node str s-lps theta	0.97
node str s-lps theta	clust coeff s-lps theta	0.97
life time beta	relative ampl beta	0.64
life time gamma	waiting time gamma	0.93
lyapunov exponent	kfd theta	0.51
microstates temporal	microstates transitions	0.67
microstates transitions	microstates temporal	0.67
asymmetry ampl alpha	kurtosis ampl alpha	0.55
asymmetry ampl theta	asymmetry ampl alpha	0.44
coeff of var ampl alpha	kurtosis ampl alpha	0.61
coeff of var ampl beta	coeff of var ampl alpha	0.53
coeff of var ampl theta	clust coeff s-lcoh theta	0.49
spectral entropy alpha	hfd theta	0.7
spectral entropy delta	hfd delta	0.67
spectral entropy gamma	mod index delta-gamma	0.27
spectral entropy theta	hfd alpha	0.29
relative ampl theta	hfd alpha	0.65
waiting time beta	relative ampl beta	0.53
waiting time gamma	life time gamma	0.93

Supplementary Table 11 – Features used as references for Pearson correlation disattenuated analysis in patients (using the first principal component as the representative variable of each EEG feature)

EEG feature	**EEG feature used as reference**	**correlation**
mod index alpha-gamma	kfd theta	0.57

mean ampl gamma	kfd gamma	0.95
mean ampl theta	kfd theta	0.97
std ampl gamma	kfd gamma	0.94
std ampl theta	kfd theta	0.97
kurtosis ampl alpha	spectral entropy alpha	0.88
kurtosis ampl gamma	mod index delta-gamma	0.92
kurtosis ampl theta	coeff of var ampl theta	0.74
skewness ampl beta	hfd alpha	0.41
skewness ampl theta	spectral entropy theta	0.72
ampl total power gamma	kfd gamma	0.95
ampl total power theta	kfd theta	0.97
relative ampl beta	life time beta	0.67
mod index delta-alpha	kurtosis ampl alpha	0.85
mod index delta-beta	mod index delta-alpha	0.82
mod index delta-gamma	kurtosis ampl gamma	0.92
dfa exponent alpha	dfa exponent beta	0.76
dfa exponent beta	dfa exponent alpha	0.76
clust coeff e-icoh theta	clust coeff e-plv theta	0.83
node str e-icoh gamma	clust coeff s-lps gamma	0.52
node str e-icoh theta	clust coeff e-plv theta	0.83
betw cen e-plv delta	relative ampl theta	0.39
betw cen e-plv gamma	betw cen s-ips beta	0.28
clust coeff e-plv beta	clust coeff e-plv gamma	0.62
clust coeff e-plv delta	node str e-plv theta	0.57
clust coeff e-plv gamma	node str e-plv beta	0.64
clust coeff e-plv theta	clust coeff e-icoh theta	0.83
node str e-plv alpha	mod index delta-alpha	0.63
node str e-plv beta	clust coeff e-plv gamma	0.64
node str e-plv delta	node str e-plv theta	0.58
node str e-plv gamma	kfd gamma	0.65
node str e-plv theta	clust coeff e-icoh theta	0.82
hurst exponent	hfd delta	0.84
hfd alpha	relative ampl theta	0.73
hfd beta	kfd theta	0.58
hfd delta	hurst exponent	0.84
hfd theta	spectral entropy alpha	0.76
node str s-ips alpha	clust coeff s-ips theta	0.59
betw cen s-ips beta	betw cen e-plv gamma	0.28
clust coeff s-ips theta	node str s-ips theta	0.94
node str s-ips theta	clust coeff s-ips theta	0.94
kfd delta	std ampl theta	0.77

kfd gamma	mean ampl gamma	0.95
kfd theta	mean ampl theta	0.97
betw cen s-lcoh gamma	coeff of var ampl beta	0.3
node str s-lcoh gamma	node str e-icoh gamma	0.47
clust coeff s-lcoh theta	clust coeff s-lps theta	0.89
node str s-lcoh theta	clust coeff s-lps theta	0.87
clust coeff s-lps gamma	clust coeff e-plv gamma	0.61
node str s-lps gamma	clust coeff e-plv gamma	0.59
clust coeff s-lps theta	clust coeff s-lcoh theta	0.89
node str s-lps theta	clust coeff s-lcoh theta	0.89
life time beta	waiting time beta	0.85
life time gamma	waiting time gamma	0.97
lyapunov exponent	std ampl theta	0.72
microstates temporal	microstates transitions	0.83
microstates transitions	microstates temporal	0.83
asymmetry ampl alpha	kurtosis ampl alpha	0.66
asymmetry ampl theta	coeff of var ampl theta	0.62
coeff of var ampl alpha	dfa exponent alpha	0.69
coeff of var ampl beta	dfa exponent beta	0.62
coeff of var ampl theta	kurtosis ampl theta	0.74
spectral entropy alpha	kurtosis ampl alpha	0.88
spectral entropy delta	hfd delta	0.77
spectral entropy gamma	node str e-plv gamma	0.49
spectral entropy theta	skewness ampl theta	0.72
relative ampl theta	mean ampl theta	0.74
waiting time beta	life time beta	0.85
waiting time gamma	life time gamma	0.97

Supplementary Table 12 – Features used as references for Pearson correlation disattenuated analysis in controls (using the first principal component as the representative variable of each EEG feature)

EEG feature	**EEG feature used as reference**	**correlation**
mod index alpha-gamma	asymmetry ampl alpha	0.53
mean ampl gamma	kfd gamma	0.96
mean ampl theta	kfd delta	0.81
std ampl gamma	kfd gamma	0.96
std ampl theta	kfd theta	0.98
kurtosis ampl alpha	mod index delta-alpha	0.84
kurtosis ampl gamma	mod index delta-gamma	0.85
kurtosis ampl theta	coeff of var ampl theta	0.82
skewness ampl beta	hfd alpha	0.69

skewness ampl theta	hfd alpha	0.54
ampl total power gamma	kfd gamma	0.96
ampl total power theta	kfd delta	0.81
relative ampl beta	life time beta	0.67
mod index delta-alpha	kurtosis ampl alpha	0.84
mod index delta-beta	mod index delta-alpha	0.76
mod index delta-gamma	kurtosis ampl gamma	0.85
dfa exponent alpha	dfa exponent beta	0.78
dfa exponent beta	dfa exponent alpha	0.78
clust coeff e-icoh theta	clust coeff e-plv theta	0.86
node str e-icoh gamma	clust coeff s-lps gamma	0.7
node str e-icoh theta	clust coeff e-plv theta	0.85
betw cen e-plv delta	clust coeff e-plv beta	0.3
betw cen e-plv gamma	node str e-icoh gamma	0.42
clust coeff e-plv beta	mean ampl gamma	0.58
clust coeff e-plv delta	spectral entropy delta	0.57
clust coeff e-plv gamma	kfd gamma	0.68
clust coeff e-plv theta	clust coeff e-icoh theta	0.86
node str e-plv alpha	spectral entropy alpha	0.7
node str e-plv beta	mean ampl gamma	0.61
node str e-plv delta	spectral entropy delta	0.55
node str e-plv gamma	kfd gamma	0.69
node str e-plv theta	clust coeff e-icoh theta	0.84
hurst exponent	hfd delta	0.86
hfd alpha	skewness ampl beta	0.69
hfd beta	hfd theta	0.62
hfd delta	hurst exponent	0.86
hfd theta	kfd theta	0.77
node str s-ips alpha	node str e-plv alpha	0.63
betw cen s-ips beta	node str s-ips theta	0.35
clust coeff s-ips theta	node str s-ips theta	0.88
node str s-ips theta	clust coeff s-ips theta	0.88
kfd delta	std ampl theta	0.82
kfd gamma	mean ampl gamma	0.96
kfd theta	std ampl theta	0.98
betw cen s-lcoh gamma	node str s-lcoh gamma	0.61
node str s-lcoh gamma	betw cen s-lcoh gamma	0.61
clust coeff s-lcoh theta	clust coeff s-lps theta	0.4
node str s-lcoh theta	clust coeff s-lps theta	0.39
clust coeff s-lps gamma	node str e-icoh gamma	0.7
node str s-lps gamma	node str e-icoh gamma	0.68

clust coeff s-lps theta	node str e-icoh theta	0.41
node str s-lps theta	clust coeff s-lcoh theta	0.39
life time beta	waiting time beta	0.82
life time gamma	waiting time gamma	0.97
lyapunov exponent	kfd delta	0.82
microstates temporal	microstates transitions	0.25
microstates transitions	hfd theta	0.32
asymmetry ampl alpha	kurtosis ampl alpha	0.68
asymmetry ampl theta	coeff of var ampl theta	0.77
coeff of var ampl alpha	kurtosis ampl alpha	0.73
coeff of var ampl beta	coeff of var ampl alpha	0.71
coeff of var ampl theta	kurtosis ampl theta	0.82
spectral entropy alpha	mod index delta-alpha	0.84
spectral entropy delta	hfd delta	0.83
spectral entropy gamma	kfd gamma	0.4
spectral entropy theta	hfd alpha	0.48
relative ampl theta	mean ampl theta	0.59
waiting time beta	life time beta	0.82
waiting time gamma	life time gamma	0.97

Supplementary Table 13 – Features used as references for PLSC disattenuated analysis in patients

EEG feature	**EEG feature used as reference**	**relative inertia**
mod index alpha-gamma	mod index delta-gamma	0.6
mean ampl gamma	kfd gamma	0.91
mean ampl theta	kfd theta	0.97
std ampl gamma	kfd gamma	0.9
std ampl theta	kfd theta	0.97
kurtosis ampl alpha	spectral entropy alpha	0.82
kurtosis ampl gamma	mod index delta-gamma	0.87
kurtosis ampl theta	coeff of var ampl theta	0.66
skewness ampl beta	mod index delta-beta	0.5
skewness ampl theta	spectral entropy theta	0.63
ampl total power gamma	kfd gamma	0.91
ampl total power theta	kfd theta	0.97
relative ampl beta	life time beta	0.61
mod index delta-alpha	kurtosis ampl alpha	0.8
mod index delta-beta	mod index delta-alpha	0.73
mod index delta-gamma	kurtosis ampl gamma	0.87
dfa exponent alpha	dfa exponent beta	0.7
dfa exponent beta	dfa exponent alpha	0.7

clust coeff e-icoh theta	node str e-icoh theta	0.98
node str e-icoh gamma	node str s-lps gamma	0.6
node str e-icoh theta	clust coeff e-icoh theta	0.98
betw cen e-plv delta	betw cen s-ips beta	0.58
betw cen e-plv gamma	node str e-plv gamma	0.71
clust coeff e-plv beta	node str e-plv beta	0.98
clust coeff e-plv delta	node str e-plv delta	0.98
clust coeff e-plv gamma	node str e-plv gamma	0.98
clust coeff e-plv theta	node str e-plv theta	0.98
node str e-plv alpha	node str e-plv theta	0.6
node str e-plv beta	clust coeff e-plv beta	0.98
node str e-plv delta	clust coeff e-plv delta	0.98
node str e-plv gamma	clust coeff e-plv gamma	0.98
node str e-plv theta	clust coeff e-plv theta	0.98
hurst exponent	hfd delta	0.83
hfd alpha	relative ampl theta	0.7
hfd beta	relative ampl theta	0.6
hfd delta	hurst exponent	0.83
hfd theta	spectral entropy alpha	0.75
node str s-ips alpha	node str s-ips theta	0.72
betw cen s-ips beta	betw cen s-lcoh gamma	0.64
clust coeff s-ips theta	node str s-ips theta	0.91
node str s-ips theta	clust coeff s-ips theta	0.91
kfd delta	std ampl theta	0.75
kfd gamma	mean ampl gamma	0.91
kfd theta	mean ampl theta	0.97
betw cen s-lcoh gamma	betw cen s-ips beta	0.64
node str s-lcoh gamma	node str s-lps gamma	0.64
clust coeff s-lcoh theta	node str s-lcoh theta	0.97
node str s-lcoh theta	clust coeff s-lcoh theta	0.97
clust coeff s-lps gamma	node str s-lps gamma	0.96
node str s-lps gamma	clust coeff s-lps gamma	0.96
clust coeff s-lps theta	node str s-lps theta	0.97
node str s-lps theta	clust coeff s-lps theta	0.97
life time beta	waiting time beta	0.86
life time gamma	waiting time gamma	0.95
lyapunov exponent	kfd delta	0.57
microstates temporal	microstates transitions	0.74
microstates transitions	microstates temporal	0.74
asymmetry ampl alpha	kurtosis ampl alpha	0.58
asymmetry ampl theta	coeff of var ampl theta	0.65

coeff of var ampl alpha	dfa exponent alpha	0.65
coeff of var ampl beta	dfa exponent beta	0.62
coeff of var ampl theta	kurtosis ampl theta	0.66
spectral entropy alpha	kurtosis ampl alpha	0.82
spectral entropy delta	hfd delta	0.76
spectral entropy gamma	kfd gamma	0.49
spectral entropy theta	skewness ampl theta	0.63
relative ampl theta	hfd alpha	0.7
waiting time beta	life time beta	0.86
waiting time gamma	life time gamma	0.95

Supplementary Table 14 – Features used as references for distance correlation disattenuated analysis in patients

EEG feature	**EEG feature used as reference**	**dist corr**
mod index alpha-gamma	mod index delta-gamma	0.565685
mean ampl gamma	std ampl gamma	0.989949
mean ampl theta	kfd theta	0.979796
std ampl gamma	mean ampl gamma	0.989949
std ampl theta	kfd theta	0.974679
kurtosis ampl alpha	spectral entropy alpha	0.883176
kurtosis ampl gamma	mod index delta-gamma	0.927362
kurtosis ampl theta	coeff of var ampl theta	0.685565
skewness ampl beta	mod index delta-beta	0.678233
skewness ampl theta	spectral entropy theta	0.74162
ampl total power gamma	std ampl gamma	0.989949
ampl total power theta	kfd theta	0.979796
relative ampl beta	life time beta	0.655744
mod index delta-alpha	kurtosis ampl alpha	0.848528
mod index delta-beta	mod index delta-alpha	0.685565
mod index delta-gamma	kurtosis ampl gamma	0.927362
dfa exponent alpha	dfa exponent beta	0.655744
dfa exponent beta	dfa exponent alpha	0.655744
clust coeff e-icoh theta	clust coeff e-plv theta	0.877496
node str e-icoh gamma	node str s-lcoh gamma	0.556776
node str e-icoh theta	clust coeff e-plv theta	0.87178
betw cen e-plv delta	node str e-plv delta	0.489898
betw cen e-plv gamma	node str e-plv gamma	0.74162
clust coeff e-plv beta	node str e-plv beta	0.989949
clust coeff e-plv delta	node str e-plv theta	0.538516
clust coeff e-plv gamma	node str e-plv gamma	0.989949
clust coeff e-plv theta	clust coeff e-icoh theta	0.877496

node str e-plv alpha	mod index delta-alpha	0.6
node str e-plv beta	clust coeff e-plv beta	0.989949
node str e-plv delta	node str e-plv theta	0.556776
node str e-plv gamma	clust coeff e-plv gamma	0.989949
node str e-plv theta	clust coeff e-icoh theta	0.866025
hurst exponent	hfd delta	0.824621
hfd alpha	clust coeff e-icoh theta	0.72111
hfd beta	kfd theta	0.591608
hfd delta	hurst exponent	0.824621
hfd theta	spectral entropy alpha	0.761577
node str s-ips alpha	node str e-plv alpha	0.6
betw cen s-ips beta	node str s-ips alpha	0.244949
clust coeff s-ips theta	node str s-ips theta	0.911043
node str s-ips theta	clust coeff s-ips theta	0.911043
kfd delta	std ampl theta	0.793725
kfd gamma	mean ampl gamma	0.938083
kfd theta	mean ampl theta	0.979796
betw cen s-lcoh gamma	clust coeff s-lps gamma	0.412311
node str s-lcoh gamma	node str s-lps gamma	0.648074
clust coeff s-lcoh theta	node str s-lcoh theta	0.984886
node str s-lcoh theta	clust coeff s-lcoh theta	0.984886
clust coeff s-lps gamma	node str s-lps gamma	0.953939
node str s-lps gamma	clust coeff s-lps gamma	0.953939
clust coeff s-lps theta	node str s-lps theta	0.989949
node str s-lps theta	clust coeff s-lps theta	0.989949
life time beta	waiting time beta	0.8544
life time gamma	waiting time gamma	0.974679
lyapunov exponent	std ampl theta	0.74162
microstates temporal	microstates transitions	0.894427
microstates transitions	microstates temporal	0.894427
asymmetry ampl alpha	mod index delta-alpha	0.655744
asymmetry ampl theta	coeff of var ampl theta	0.6245
coeff of var ampl alpha	kurtosis ampl alpha	0.663325
coeff of var ampl beta	waiting time gamma	0.640312
coeff of var ampl theta	kurtosis ampl theta	0.685565
spectral entropy alpha	kurtosis ampl alpha	0.883176
spectral entropy delta	hfd delta	0.728011
spectral entropy gamma	kfd gamma	0.556776
spectral entropy theta	skewness ampl theta	0.74162
relative ampl theta	hfd alpha	0.714143
waiting time beta	life time beta	0.8544

waiting time gamma	life time gamma	0.974679

Supplementary Table 15 – Features that were significant after correcting for 13.112 comparisons using FDR method.

EEG features	# of variables	Corrected p-value	Cohens d	*p*<0.05 in original analysis
hjorth activity	2	0.037548	0.402494	0
mod index alpha-gamma	6	0.004373	0.533682	1
mean ampl alpha	1	0.03212	0.410184	0
mean ampl beta	1	0.047713	0.384551	0
mean ampl gamma	7	0.002526	0.548404	1
mean ampl theta	64	0.000193	0.680251	1
std ampl alpha	1	0.046047	0.387686	0
std ampl gamma	7	0.001585	0.569217	1
std ampl theta	64	0.000313	0.662274	1
kurtosis ampl alpha	53	0.000416	-0.65264	1
kurtosis ampl beta	2	0.023989	-0.4396	0
kurtosis ampl delta	2	0.028098	0.429546	0
kurtosis ampl gamma	12	0.003366	0.550778	1
kurtosis ampl theta	9	0.011816	-0.48141	1
skewness ampl beta	12	0.001206	-0.60171	1
skewness ampl delta	1	0.033655	0.4116	0
skewness ampl gamma	3	0.010383	0.488363	0
skewness ampl theta	12	0.004056	-0.53689	1
ampl total power alpha	1	0.03212	0.410186	0
ampl total power beta	1	0.047713	0.384551	0
ampl total power gamma	7	0.002526	0.548404	1
ampl total power theta	64	0.000193	0.680234	1
relative ampl beta	47	0.000264	-0.66563	1
relative ampl delta	1	0.02947	-0.42161	0
mod index delta-alpha	32	0.000903	-0.61597	1
mod index delta-beta	19	0.00033	-0.66201	1
mod index delta-gamma	11	0.006675	0.514622	1
dfa exponent alpha	50	0.000693	-0.62558	1
dfa exponent beta	38	6.34E-05	-0.73098	1
dfa exponent delta	2	0.029581	-0.41535	0
clust coeff e-dtf alpha	1	0.023315	-0.44117	0
clust coeff e-dtf beta	1	0.017739	-0.45786	0
clust coeff e-dtf delta	1	0.010986	-0.48595	0

clust coeff e-dtf gamma	1	0.032345	-0.42104	0
clust coeff e-dtf theta	1	0.016969	-0.45988	0
betw cen e-icoh alpha	1	0.042686	-0.40081	0
betw cen e-icoh gamma	1	0.03822	0.406318	0
betw cen e-icoh theta	2	0.015827	0.465332	0
clust coeff e-icoh gamma	3	0.011336	0.481156	0
clust coeff e-icoh theta	64	6.13E-06	0.822389	1
node str e-icoh beta	2	0.029093	-0.42633	0
node str e-icoh gamma	5	0.003301	0.548569	1
node str e-icoh theta	64	5.32E-06	0.828157	1
betw cen e-plv alpha	2	0.013825	-0.46623	0
betw cen e-plv beta	2	0.030768	-0.41749	0
betw cen e-plv delta	2	0.009355	0.49671	1
betw cen e-plv gamma	2	0.009523	0.489314	1
betw cen e-plv theta	1	0.031835	-0.42179	0
clust coeff e-plv alpha	4	0.022348	0.442603	0
clust coeff e-plv beta	17	0.00215	0.557263	1
clust coeff e-plv delta	22	0.004712	0.526582	1
clust coeff e-plv gamma	9	0.001416	0.590996	1
clust coeff e-plv theta	64	1.01E-07	1.037379	1
node str e-plv alpha	6	0.00751	0.50663	1
node str e-plv beta	14	0.00077	0.607197	1
node str e-plv delta	25	0.002461	0.559333	1
node str e-plv gamma	7	0.00042	0.647359	1
node str e-plv theta	64	1.01E-07	1.034402	1
hurst exponent	31	0.000598	-0.62045	1
hfd alpha	64	2.61E-06	-0.85347	1
hfd beta	9	0.008491	-0.4988	1
hfd delta	30	0.000922	0.604572	1
hfd gamma	1	0.024131	0.434072	0
hfd theta	54	0.001723	0.582939	1
clust coeff s-ips alpha	3	0.037706	0.406582	0
node str s-ips alpha	8	0.009737	0.486709	1
betw cen s-ips beta	2	0.001416	-0.5732	1
clust coeff s-ips beta	1	0.037644	0.410631	0
node str s-ips beta	1	0.04923	0.39443	0
clust coeff s-ips gamma	1	0.027919	0.428557	0
node str s-ips gamma	2	0.037706	0.411593	0
betw cen s-ips theta	3	0.016075	-0.46006	0
clust coeff s-ips theta	15	0.000443	0.638423	1
node str s-ips theta	11	0.000961	0.599869	1

kfd beta	2	0.02437	0.428255	0
kfd delta	26	0.003825	0.539222	1
kfd gamma	16	0.002438	0.56287	1
kfd theta	64	4.75E-05	0.743827	1
node str s-lcoh alpha	1	0.044417	0.394216	0
betw cen s-lcoh beta	1	0.024804	0.407169	0
betw cen s-lcoh gamma	2	0.003366	-0.53568	1
clust coeff s-lcoh gamma	5	0.010269	0.490027	0
node str s-lcoh gamma	6	0.006147	0.517428	1
betw cen s-lcoh theta	3	0.012934	-0.4572	0
clust coeff s-lcoh theta	5	0.00863	0.49205	1
node str s-lcoh theta	8	0.004101	0.530869	1
node str s-lps delta	1	0.02264	0.443563	0
betw cen s-lps gamma	1	0.011349	-0.47982	0
clust coeff s-lps gamma	11	0.001694	0.579457	1
node str s-lps gamma	10	0.001805	0.580039	1
clust coeff s-lps theta	53	0.000518	0.629447	1
node str s-lps theta	34	0.000765	0.606582	1
life time beta	32	7.60E-05	-0.72389	1
life time gamma	14	0.00209	0.574963	1
lyapunov exponent	13	5.84E-05	-0.73228	1
microstates temporal	8	8.36E-05	0.718154	1
microstates transitions	7	2.32E-07	0.954002	1
asymmetry ampl alpha	10	0.016543	-0.46345	1
asymmetry ampl theta	24	5.57E-05	-0.74216	1
coeff of var ampl alpha	58	8.67E-06	-0.80885	1
coeff of var ampl beta	8	0.001798	-0.57495	1
coeff of var ampl theta	17	0.000216	-0.66999	1
spectral entropy alpha	44	0.004594	-0.53462	1
spectral entropy delta	28	0.000233	0.672438	1
spectral entropy gamma	11	0.00515	0.523274	1
spectral entropy theta	56	7.45E-05	-0.72303	1
source ampl alpha	10	0.017502	0.44488	0
source ampl delta	2	0.030436	-0.41768	0
source ampl theta	5	0.010383	0.48586	0
relative ampl theta	37	0.000177	0.690304	1
waiting time beta	49	9.89E-06	-0.80877	1
waiting time gamma	10	0.002598	0.563688	1

2. Supplementary Methods

2.1 EEG Data Pre-Processing

Offline EEG data were downsampled to 256 Hz (128 Hz for the microstates analysis) and preprocessed using an automatic pipeline (APP; da Cruz et al., 2018). APP included the following steps: filtering via a bandpass filter of 1-100 Hz (1-40 Hz for the microstates analysis); removal of line-noise (CleanLine; www.nitrc.org/projects/cleanline); re-referencing to the bi-weight estimate of the mean of all electrodes; removal and 3D spline interpolation of bad electrodes; removal of bad epochs; independent component analysis to remove artifacts related to eye movements, muscle activity and bad electrodes (not conducted for the connectivity analysis); and re-referencing to the common average.

2.2 EEG Feature extraction

2.2.1 Time-Domain Amplitude Features

The most straight forward analysis of EEG signals is the quantification of its time-domain amplitude features. For that, we first filtered the EEG signal of each channel into five frequency bands (delta (1 - 4 Hz), theta (4 - 8 Hz), alpha (8 - 13 Hz), beta (13 - 30 Hz), gamma (30 - 70 Hz)). Then, for each frequency band, we computed several amplitude features: total power, mean of the envelope, standard deviation of the envelope, skewness of the signal amplitude, and kurtosis of the signal amplitude. The EEG signal was divided into 4-second epochs and the features were calculated for each epoch. Then the mean across epochs is used for group comparisons and main analyses.

Amplitude Total Power

If $y(t)$ is the time domain EEG signal of a given channel at time t, the amplitude total power is given by

$$Total\ Power\ = \frac{1}{T}\sum_{t=1}^{T}|y(t)|^2$$

where T is the total time.

Mean and Standard Deviation of the Envelope

If $\mathcal{H}\big(y(t)\big)$ is the Hilbert transform of the time domain EEG signal $y(t)$, then the envelope of the signal is given by

$$Envelope(t)\ = \left|\mathcal{H}\big(y(t)\big)\right|^2$$

and the measures of centrality and variability are given by the mean and standard deviation of the envelope.

Skewness and Kurtosis of the Signal

If $\bar{y}$ and y_{SD} are the mean and standard deviation of the EEG signal $y(t)$, respectively, then the skewness of the signal is given by

$$Skewness = \frac{\frac{1}{T}\sum_{t=1}^{T}|y(t)-\bar{y}|^3}{{y_{SD}}^3}$$

and the kurtosis of the signal is given by

$$Kurtosis = \frac{\frac{1}{T}\sum_{t=1}^{T}|y(t)-\bar{y}|^4}{{y_{SD}}^4}$$

2.2.2 Range EEG

Range EEG was introduced as a way to quantify the amplitude of the EEG data (O'Reilly et al., 2012). However, unlike the previously described features, range EEG focuses on a peak-to-peak measure of the EEG amplitude. Here, before calculating the range EEG features, we first filtered the EEG signal of each channel into five frequency bands (delta, theta, alpha, beta, gamma). Then, for each frequency band, we calculated the range EEG and two of its features: coefficient of variation and asymmetry. If $y(t)$ is the EEG signal, then over a time segment s the difference between the maximum and the minimum is given by

$$diff(s) = max\big(y(t)w(t-s\Delta)\big) - min\big(y(t)w(t-s\Delta)\big)$$

where $w(t)$ is a window (here, a 4-second Hanning window) and Δ is a time-shift factor related to the percentage of overlap (here, we used 50%). Then, the range EEG is given by

$$rEEG(s) = \begin{cases} \frac{50}{log50} log\big(diff(s)\big) & if\ diff(s) > 50 \\ diff(s) & otherwise \end{cases}$$

Coefficient of variation

If $\overline{rEEG}$ is the mean range EEG and $rEEG_{SD}$ is the standard deviation of the range EEG, the coefficient of variation of the range EEG ($rEEG_{CV}$) is given by

$$rEEG_{CV} = \frac{rEEG_{SD}}{\overline{rEEG}}$$

Asymmetry

If $rEEG_{median}$, $rEEG_{5\%}$, and $rEEG_{95\%}$ are the median, 5 and 95 percentile of the range EEG, respectively, and we let $A = rEEG_{median} - rEEG_{5\%}$ and $B = rEEG_{95\%} - rEEG_{median}$, then the range EEG asymmetry is given by

$$rEEG_{asymmetry} = \frac{B - A}{A + B}$$

The $rEEG_{asymmetry}$ ranges from -1 to 1, with values close to 0 representing symmetry and values close to -1 and 1 indicating asymmetry of the range EEG.

2.2.3 Hjorth Parameters

Hjorth parameters are descriptive statistical properties of the EEG time-domain signal and provide a bridge between time and frequency domain interpretation of the EEG signal (Hjorth, 1970). There are 3 Hjorth parameters: Activity, Mobility, and Complexity. The EEG signal was divided into 4-second epochs and the 3 Hjorth parameters were calculated for each epoch. Then, for each parameter, the mean across epochs was used for group comparisons and main analyses.

Activity

The Activity parameter quantifies the power of the signal. If $y(t)$ is the time domain EEG signal of a given channel, then Activity is the variance of the signal ($var\big(y(t)\big)$).

Mobility

The Mobility parameter approximates the mean frequency of the signal and is computed as

$$Mobility = \sqrt{\frac{var\left(\frac{dy(t)}{dt}\right)}{var\big(y(t)\big)}}$$

where $dy(t)/dt$ is the first derivative of the signal with respect to time.

Complexity

The Complexity parameter is sensitive to changes in the frequency of the signal as it quantifies the deviations from a pure sinusoidal signal. It is computed as

$$Complexity = \frac{Mobility\left(\frac{dy(t)}{dt}\right)}{Mobility\big(y(t)\big)}$$

2.2.4 Relative Spectral Amplitude

Fourier analysis is the most common method to decompose an EEG time series into frequency components. The analysis of the amplitude spectrum gives us the magnitude of the Fourier coefficients at different frequencies. It is thought that activity in high frequencies reflects processing within brain areas and activity in low frequencies is thought to reflect communication between brain areas (Uhlhaas & Singer, 2010; von Stein & Sarnthein, 2000). Here, for each of the 5 frequency bands (delta, theta, alpha, beta, and gamma), we computed their relative spectral amplitude. If $Y(f)$ is the spectral amplitude of the Fourier transform of the EEG signal $y(t)$ at frequency f, then, the relative amplitude for each frequency band is given by

$$Relative\ Amplitude\ (f_i, f_j)\ = \frac{\sum_{k=f_i}^{f_j} Y(k) \Big/ f_j - f_i}{\sum_{k=f_a}^{f_z} Y(k) \Big/ f_z - f_a}$$

where f_i and f_f are the boundaries of the frequency band of interest (e.g., for delta band, f_i and f_f are 1 and 4 Hz, respectively) and f_a and f_z are the boundaries of all the frequencies considered. Here, f_a and f_z are 1 and 70 Hz, respectively. For each of the 5 frequency bands, the relative amplitude was computed for non-overlapping windows of 4 seconds. Then for each frequency band the mean across windows was used for group comparisons and main analyses.

2.2.5 Source Spectral Amplitude

Besides quantifying the spectral amplitude in the electrode space, we also quantified the spectral amplitude in the source space. The three-dimensional cortical current source densities were computed using the software LORETA (Pascual-Marqui et al., 2011). First, the EEG data of each electrode is converted to the frequency domain using the Fourier transform and the cross-spectrum is obtained for each time epoch. Then, the cortical activity was reconstructed from the scalp signals, using the exact low-resolution electromagnetic tomography (eLORETA) algorithm to a space of 6239 gray matter voxels as implemented in LORETA. We defined 80 regions of interest (ROI; 40 per hemisphere) from the Automated Anatomical Labelling (AAL) atlas, similar to a previous schizophrenia EEG study (Andreou et al., 2015). We defined 5 frequency bands of interest (delta, theta, alpha, beta and gamma) and, for each frequency band, we computed the average current source densities for the 80 ROIs from the eLORETA solution space.

2.2.6 Modulation Index

Low-frequency brain oscillations exert a modulatory effect on high-frequency activity, potentially, allowing optimal coordination between large-scale networks and more local functional brain sub-systems (Canolty & Knight, 2010). Such cross-frequency interactions may occur via phase-amplitude coupling (PAC) and can be quantified using a modulation index (Tort et al., 2010). First, the phase and amplitude values are obtained from the band-pass filtered signals, f_p and f_A respectively, using Hilbert transform. Then, all the instantaneous phases from -180 to 180 corresponding to f_p are binned into 18 values. The bins take a mean amplitude value $\bar{a}$ and a vector of normalized amplitude values is defined as P given by

$$P(i) = \frac{\bar{a}}{\sum_{i=1}^{N} \bar{a}_i}$$

where N is 18. If there is no effect of the phase of f_p on f_A, the values of P would be roughly uniformly distributed. MI calculates the deviation of P from a uniform distribution using Kullback-Leibler (KL) divergence, which provides a value on how similar two distributions are. KL divergence is defined as

$$KL(U, X) = \ln(N) - H(P)$$

where $H(P)$ is the Shannon's information entropy given by

$$H(P) = -\sum_{i=1}^{N} P(i) \ln\ P(i)$$

Finally, the modulation index (MI) is defined as

$$MI = \frac{KL(U, X)}{\ln\,(N)}$$

Before estimating the MI, we segmented the continuous EEG signals into non-overlapping 4-second segments. The mean MI across non-overlapping segments is used for group comparisons and main analyses. We quantified 8 modulation indexes corresponding to: delta phase-alpha amplitude, delta phase-beta amplitude, delta phase-gamma amplitude, theta phase-alpha amplitude, theta phase-beta amplitude, theta phase-gamma amplitude, alpha phase-beta amplitude, alpha phase-gamma amplitude, and beta phase-gamma amplitude.

2.2.7 Fractal Dimension

Fractal dimension (FD) of a signal is a measure of the signal's irregularity and self-similarity in the time domain. It is different from the dimension of an attractor which is calculated in a phase-space. For EEG signals, FD values lie between 1 and 2, with high values associated with higher self-similarity (Eke et al., 2002). Here, we first filtered the EEG signal of each channel into the 5 frequency bands and for each frequency band we computed two FD: Katz's Fractal Dimension, and Higuchi's Fractal Dimension. The EEG signal was divided into 4 seconds epochs and the features were calculated for each epoch. Then, for each method, the mean across epochs was used for group comparisons and main analyses.

Katz's Fractal Dimension

Katz's method for FD (KFD) calculation is derived from the EEG time series by computing the sum (L) as well as the average (a) of the Euclidean distances between successive points of the sequence, and the maximum distance between the first point and all other points of the sequence (d) (Katz, 1988). Then the KFD is given by

$$KFD = \frac{log(L/a)}{log(d/a)}$$

Higuchi's Fractal Dimension

Higuchi's method for FD (HFD) calculation is derived from the EEG time series $y(t)$ by first deriving k new subsample sets (y_k) (Higuchi, 1988). Then the length of each y_k (L_m) is given by

$$L_m(k) = \frac{1}{k}\left(\frac{T-1}{Mk}\sum_{i=1}^{M}|y(m+ik) - y(m+(i-1)k)|\right)$$

where $m = 1, 2, \ldots, k$, T is the total number of samples, and $M = (T-m)/k$. The length of the signal is given by

$$L(k) = \sum_{m=1}^{k} L_m(k)$$

and it is proportional to k^{-D}, where D is the fractal dimension. Finally, $L(k)$ is plotted against k ($k = 1, 2, \ldots, k_{max}$; here, $k_{max} = 25$) on a double logarithm scale. The data should fall on a straight line, with the slope equal to the FD of $y(t)$.

2.2.8 Hurst Exponent

The Hurst Exponent was introduced by Harold Hurst as a measure of the long-term memory of a time series (Hurst, 1957). Hurst exponent ranges from 0 to 1. Values larger than 0.5 suggest long-term positive autocorrelation, values smaller than 0.5 indicate anti-persistent behavior, while a Hurst exponent of 0.5 suggests that the time-series is truly random. EEG time series tend to have Hurst exponents around 0.7 (Vorobyov & Cichocki, 2002).

For a time series $y(t)$, with T samples, we can calculate a cumulative deviate series as

$$Y(t,T) = \sum_{t=1}^{T} y(t) - \bar{y}$$

where $\bar{y}$ is the mean T samples. Then the range of the accumulated values is given by

$$R = max_{1 \le t \le T}\big(Y(t,T)\big) - min_{1 \le t \le T}\big(Y(t,T)\big)$$

If S is the standard deviation of the time series $y(t)$, the Hurst exponent H is related to the ratio R/S by

$$\frac{R}{S} = (cT)^H$$

where c is a constant (usually set to 0.5).

Here, we divided the EEG signal of each channel into 4-second epochs and used the code provided by (Davidson, 2006) to estimate the full band Hurst exponent. Then the mean across epochs was used for group comparisons and main analyses.

2.2.9 Detrended Fluctuation Analysis

Detrended fluctuation analysis (DFA) provides a suitable framework to analyze long-range (> 1s) temporal autocorrelations and the scaling behavior of brain oscillations (Hardstone et al., 2012). DFA is performed on the amplitude envelopes of band-pass filtered EEG time series. Here, we performed the DFA for the 5 frequency bands. The cumulative of the amplitude envelope is calculated as

$$Y(t) = \sum_{t\prime=1}^{T} A(t')$$

where $A(t)$ is the amplitude envelope, obtained using Hilbert transform. The integrated signal is subsequently split into 20 sets of 50% percent overlapping windows with sizes varying from 1 to 25 seconds. The windows were equidistant according to a logarithmic scale. The signals in each window are detrended using a least-squares fit and the fluctuation function is obtained. The fluctuation function is expressed as

$$F^2(\tau) = \frac{1}{N}\sum_{t=1}^{T}[Y(t) - Y_\tau(t)]^2$$

where τ is the window size of the subset defined initially, and N is the number of samples corresponding to the window size. The square-root of the fluctuation functions for each window are plotted on log-log axes with respect to the window sizes and a line is fitted to the data. The slope of the fitted line provides the DFA exponent which quantifies long-range temporal correlations (< 0.5: anti-correlated; ~0.5: uncorrelated; > 0.5: correlated; ~1: pink noise; > 1: non-stationary).

2.2.10 Life and Waiting Times

The structure of brain oscillations in short-to-mid temporal scales (< 1s) is estimated using life- and waiting-times (Montez et al., 2009). The analysis is performed on the instantaneous amplitude of the band-pass filtered signals, obtained using Hilbert transform. Here, we calculated the life and waiting times for the 5 frequency bands. The median of the amplitude envelope is set as a threshold, which allows identifying the onset and end of a burst. The time during which the amplitudes exceed or stay below the threshold is defined as life or waiting time respectively. The statistics of interest are the 95th percentiles of the empirical cumulative distributions of the life or waiting times.

2.2.11 Entropy in the Time-Domain

Entropy, in the sense of dynamical systems, provides a powerful approach to understanding biological systems by quantifying the amount of information contained in a time series like EEG. Here, we used two common ways to quantify the entropy of the time-domain of EEG signals: approximate entropy (Pincus et al., 1991) and sample entropy (Richman & Moorman, 2000). First we split the EEG data into non-overlapping 4-second epochs and for each epoch we estimated the embedding dimension m and the lag τ, using the delay embedding theorem (Takens, 1981) as implemented in the *phaseSpaceRecons* function of the Predictive Maintenance MATLAB Toolbox. Then, we estimated the approximate and sample entropy for each epoch and take the mean across epochs for the main analyses. Small values of approximate and sample entropy reflect repeatability of the signal and high values indicate irregularity.

Approximate Entropy

If $y(t)$ is the EEG time series with length T, m is the embedding dimension, and r the radius of similarity (here, we set $r = 0.2 \times std\big(y(t)\big)$), then we can embed the signal in blocks $Y_m(i) = \{y(i), y(i+1), \dots, y(i+m-1)\}$ and $Y_m(j) = \{y(j), y(j+1), \dots, y(j+m-1)\}$. The distance between $Y_m(i)$ and $Y_m(j)$ is given by

$$d[Y_m(i), Y_m(j)] \ = max_{k=1,2,..,m}(|\ y(i+k-1) - \ y(j+k-1)|)$$

If we let $N(i)$ be the number of within range points, at point i, given by

$$N(i) = \sum_{i=1,\ \ i\neq j}^{T} \mathbf{1}(d[Y_m(i), Y_m(j)] < r)$$

where 1 is the indicator operator, and let $C_m(i) = N(i)/(T-m+1)$, we can compute the average logarithm of $C_m(i)$ as

$$\Psi(m) = \frac{1}{T-m+1} \sum_{j=1}^{T-m+1} log\big(C_m(i)\big)$$

Then, the approximate entropy is given by

$$ApEn = \Psi(m) - \Psi(m+1)$$

Sample Entropy

Sample entropy was introduced by Richman and Moorman as a measure of complexity, which contrary to approximate entropy, does not include self-similarity patterns (Richman & Moorman, 2000). Similar to approximate entropy, if we have embedded times series in blocks with m dimensions $(Y_m(i), Y_m(j))$ as well as with $m+1$ dimensions $(Y_{m+1}(i), Y_{m+1}(j))$, we calculate $A =$ the number of template vectors having $d[Y_m(i), Y_m(j)] < r$ and $B =$ the number of template vectors having $d[Y_{m+1}(i), Y_{m+1}(j)] < r$. Then, the sample entropy can be calculated as

$$SampEn = -log\left(\frac{A}{B}\right)$$

Spectral Entropy

Besides time-domain, entropy can also be calculated in the spectral domain as a measure of information of a signal. Spectral entropy quantifies the irregularity of the EEG signal, i.e., the peakedness, or flatness of the EEG power spectrum (Inouye et al., 1991). Here, for each of the 5 frequency bands (delta, theta, alpha, beta, and gamma), we computed their spectral entropy for non-overlapping windows of 4 seconds. Then the mean across windows is used for group comparisons and main analyses

For the spectral entropy calculation, we first calculated the power spectral density (PSD) via Fourier transform. Then, given two frequencies of interest f_i and f_f (i.e., the boundaries of a frequency band of interest; for delta band, for example, f_i and f_f are 1 and 4 Hz, respectively), the PSD between these two frequencies is normalized (PSD_n) by the total energy in the EEG segment. Finally, the spectral entropy is calculated using the Shannon Entropy as

$$SE(f_i, f_f) = -\sum_{f=f_i}^{f_f} PSD_n(f) log\big(PSD_n(f)\big)$$

2.2.12 Complexity

EEG exhibits complex nonlinear behavior with nonlinear dynamical properties. This complexity should not be seen as randomness but as an intermediate condition between randomness and order (Stam, 2005). High values of complexity are associated with highly distributed and desynchronized neural generators of the EEG signal, while low values of complexity are associated with local and synchronized generators (Ibáñez-Molina et al., 2018). Here, we computed three estimates of the complexity of the EEG signal: Lempel-Ziv complexity (which is based on algorithmic complexity), Lyapunov Exponent, and Correlation Dimension (which are chaos-based estimates of complexity). The EEG signal was divided into 4-second epochs and the features were calculated for each epoch. Then the mean across epochs is used for group comparisons and main analyses.

Lempel-Ziv Complexity

Lempel-Ziv Complexity (LZC) was introduced as a measure of complexity of finite sequences and is related to the number of steps by which a given sequence is presumed to be generated (Lempel & Ziv, 1976). In essence, given a string (in our case an EEG signal), LZC estimates the number of bits of the shortest computer that can generate the string. The first step of the LZC computation is to transform the EEG signal ($y(t)$) into a binary sequence $P = s(1), s(2), \ldots, s(n)$, by thresholding the signal based on the median (y_{median}):

$$s(i) = \begin{cases} 0 & if\ y(i) < y_{median} \\ 1 & if\ y(i) > y_{median} \end{cases}$$

Then the sequence P is scanned from left to right and every time that a new sequence of consecutive numbers is found one unit is added to a complexity counter ($C(n)$). Finally, the complexity counter is normalized by the length of the sequence P (L) and the LZC is given by

$$LZC = \frac{C(n)}{L/log_2(L)}$$

Here, we used the code provide by Thai (2019), to estimate the LZC based on the decomposition of the sequence P into an exhaustive and a primitive production process. The exhaustive LZC and the primitive LZC can be seen as lower and upper limit of the complexity, respectively.

Lyapunov Exponent

The complexity of an EEG time series $y(t)$ can be considered a chaotic phenomenon (Stam, 2005). One of the most important properties of a chaotic system is its sensitive dependence on initial conditions. Lyapunov exponents can be used to quantify how a slight perturbation in the initial conditions can cause divergent trajectories in a system. Given two phase space trajectories with initial separation vector $\delta \boldsymbol{y}_0$, the rate at which these two trajectories diverge can be estimated by

$$|\delta \boldsymbol{y}(t)| \approx e^{\lambda t} |\delta \boldsymbol{y}_0|$$

where λ is the Lyapunov exponent. Because the rate of divergence can be different for different orientations of the initial separation vector, it is common to refer to the Largest Lyapunov exponent (LLE) since it characterizes the stability of a system (positive LLE is unstable and negative LLE is stable). Here, we used the code provided by Mohammadi .(2009) to estimate the LLE of the EEG signal. The code is based on Rosenstein's method to estimate the LLE (Rosenstein et al.,

1993) and uses the False Nearest Neighbors and the Symplectic Geometry methods to choose the embedding dimension m (Hegger & Kantz, 1999; Lei et al., 2002).

Correlation Dimension

As a measure of chaotic signal complexity, Correlation Dimension (D_2) can be seen as the number of independent variables or degrees of freedom that describe the behavior of a dynamic system (Stam, 2005). In the EEG literature, D_2 is often interpreted as a proxy of the integration of information in the brain. To estimate D_2, we first estimated the embedding dimension m and the lag τ of the EEG time series $y(t)$ with length T using the delay embedding theorem (Takens, 1981) as implemented in the *phaseSpaceRecons* function of the Predictive Maintenance MATLAB Toolbox. Second, we embedded the signal in blocks $Y_m(i) = \{y(i), y(i+1), \dots, y(i+m-1)\}$ and $Y_m(j) = \{y(j), y(j+1), \dots, y(j+m-1)\}$. The distance between $Y_m(i)$ and $Y_m(j)$ is given by

$$d[Y_m(i), Y_m(j)] = max_{k=1,2,..,m}(|\, y(i+k-1) - y(j+k-1)|)$$

Then we calculated the number of within range points, at point i ($N_i(R)$), as

$$N_i(R) = \sum_{i=1,\ i\neq j}^{T} \mathbf{1}(d[Y_m(i), Y_m(j)] < R)$$

where 1 is the indicator operator and R is the radius of similarity (we used Matlab's function *correlationDimension* default value). Finally, the correlation integral $C(R)$ is given by

$$C(R) = \frac{2}{T(T-1)} \sum_{i=1}^{T} N_i(R)$$

and D_2 is the slope of $C(R)$ vs. R.

2.2.13 Recurrence Quantification Analysis

Recurrence plots (RPs) and recurrence quantification analysis (RQA) are nonlinear methods that permit to explore several aspects of the dynamics of complex systems, such as EEG signals, in a reconstructed phase space (Eckmann et al., 1987; Marwan et al., 2007). Mathematically, the RPs are expressed as

$$R_{i,j}(\varepsilon) = \Theta(\varepsilon - \|\vec{y_i} - \vec{y_j}\|), \quad i, j = 1, \dots, N$$

where $\vec{y_i}$ is the phase space reconstruction of the time series $y(t)$, Θ corresponds to the Heaviside function, $\|\,.\,\|$ to the Euclidean norm, and ε to the recurrence threshold. If the system is close enough (determined by ε) to a previously visited state, a 1 will be assigned to the RP in the corresponding (i, j) coordinates, a value of 0 otherwise. The structures of the RP are quantified using RQA complexity measures. To build the recurrence plots, continuous EEG signals were split into non-overlapping 4-second segments. For each segment, a phase space is reconstructed using the delay embedding theorem (Takens, 1981) as implemented in the function *phaseSpaceRecons* of the Predictive Maintenance MATLAB Toolbox. We extracted 8 different measures from the recurrence matrix using the CRP Toolbox for MATLAB (Marwan, 2017) and used the mean across segments group comparisons and main analyses. The recurrence threshold is set for each EEG channel at each time-window as the 10th percentile of the distribution of distances.

Determinism

If the trajectory of a system is similar at different moments in time, the RP will produce diagonal lines parallel to the main diagonal. Determinism quantifies the proportion of recurrence points (denoted as "1" in the recurrence matrix) that form diagonal lines and is defined as

$$DET = \frac{\sum_{l=l_{min}}^{N} l\,P(l)}{\sum_{l=1}^{N} l\,P(l)}$$

where $P(l)$ indicates a distribution of diagonal lines. We set l_{min} to 2.

Entropy

The complexity of the distribution of diagonal lines can be quantified using Shannon's information entropy

$$ENTR = -\sum_{l=l_{min}}^{N} p(l) \ln p(l)$$

where $p(l) = P(l)/N_l$ indicates the probability of finding a diagonal line of a given length l. If the system shows periodicity, the value of entropy will be low.

Laminarity

If a system evolves subtletly, or if it is "trapped" in a state, the recurrence plot will reflect vertical structures. Laminarity quantifies the proportion of recurrence points forming vertical lines and is defined as

$$LAM = \frac{\sum_{v=v_{min}}^{N} v\,P(v)}{\sum_{v=1}^{N} v\,P(v)}$$

where $P(v)$ denotes the distribution of all vertical lines that exceed two points ($v_{min} = 2$).

Maximal Diagonal Line Length

The maximal diagonal line length of the distribution of diagonal lines is defines as

$$L_{max} = \max(\{l_i\}_{i=1}^{N_l})$$

where N_l indicates the total number of vertical lines. The inverse of L_{max} is related to the divergence of the system.

Maximal Vertical Line Length

The utility of the vertical structures in the recurrence plots is mainly related to the detection of chaos-chaos transitions (Marwan et al., 2002). The maximal length of vertical lines is also a recurrence statistic of interest and is expressed as

$$V_{max} = \max(\{v_i\}_{i=1}^{N_v})$$

where N_v indicates the total number of vertical lines.

Mean Diagonal Line Length

Given the nature of diagonal structures on recurrence plots, the mean length of diagonal lines provides a value for the predictability of the system. It is formulated as

$$L = \frac{\sum_{l=l_{min}}^{N} l\, P(l)}{\sum_{l=l_{min}}^{N} P(l)}$$

where $P(l)$ indicates a distribution of diagonal lines.

Recurrence Times Entropy

Recurrence times entropy (RTE) denotes the entropy of the frequency distribution of vertical "white" or not-recurrent segments, which provide information about the time that it takes for the system to return to previously visited states. The entropy of recurrence times is thus formulated as

$$RTE = -\frac{1}{\ln\,(T_{max})} \sum_{tw=1}^{T_{max}} p(tw) \ln p(tw)$$

where T_{max} is the maximum white vertical line length, and $p(tw)$ is the probability of finding a white segment of length tw.

Trapping Time

The mean vertical line length, also denoted in the literature as trapping time is formulated as

$$TT = \frac{\sum_{v=v_{min}}^{N} v\, P(v)}{\sum_{v=v_{min}}^{N} P(v)}$$

where $P(v)$ indicates the distribution of vertical lines. Trapping time provides information on the average time during which the system does not evolve significantly or stays within the limits of the recurrence neighborhood. Similar to the case of Laminarity, we set $v_{min} = 2$.

2.2.14 Microstates Analysis

EEG microstates are on-going scalp potential topographies that remain stable for around 60 to 120 ms before changing to another topography that remains stable again, suggesting quasi-simultaneity of activity of large scale brain networks (Lehmann et al., 1987). Four recurrent and dominant classes of microstates (commonly labeled A, B, C, and D, based on their topographies) are observed in resting-state EEG, explaining around 65 to 84% of the variance of the data (Michel & Koenig, 2018). EEG microstates are closely related to resting-state networks found in resting-state functional magnetic resonance (Britz et al., 2010). Here, we used Cartool (Brunet et al., 2011) to extract the above-mentioned four microstate classes from the EEG data and compute their temporal parameters as well as the transition probability from one microstate class to another one.

Temporal Parameters of EEG microstates

We conducted the same analysis as in da Cruz et al. (2020). For each participant and microstate class, we computed three microstate temporal parameters: mean duration, time of coverage, and frequency of occurrence. Mean duration (in ms) is the average time that a given microstate is present uninterruptedly. Time of coverage (%) is the percentage of the total recording time spent in a given microstate. Occurrence is the average number of times a given microstate occurred per second.

Transition Probabilities

To investigate the transition probability from one microstate class to another one, also known as the syntax analysis, we computed the occurrence frequency of transitions from one class to all the others (Lehmann et al., 2005). After normalization to fractions of all between-class transitions of the participant, we obtained, for each participant, the observed probability of each possible transition. Twelve transitions between microstates classes (sum of transitions from one of the 4 classes to all the remaining 3 classes) were obtained for each subject. Similarly to Lehmann and colleagues (2005), given the occurrence of each microstate class, we also calculated the expected transition probability for each possible transition. We then used the difference between the expected and the observed transition probabilities for the statistical analyses.

2.2.15 Functional Connectivity Analysis (across electrodes)

Normal brain functioning requires coordinated flow of information between different brain areas. A way to quantify this flow of information is through functional connectivity analysis. Formally, functional connectivity is defined as the statistical relationship between the measures of activity of spatially distant neurophysiological events over time (Friston, 1994). In EEG, functional connectivity can be assessed both at the electrode and source level. Here, we describe how we conducted the connectivity estimation in the electrode space. All connectivity estimation measures were computed on a spatial Laplacian transformed EEG, also commonly referred to as current source density (CSD) or scalp current density (SCD) (Kayser & Tenke, 2006). The analysis was conducted on FieldTrip (Oostenveld et al., 2010). First, the spatial Laplacian transformed EEG time-series were converted into the frequency domain by using multitaper frequency transformation. Then we calculated the connectivity matrices for the directed transfer function, the imaginary part of coherency, and the phase-locking value. Finally, we performed a network analysis on the connectivity matrices to characterize them with a small number of measures. Please see 2.2.17 Network Analysis for more information.

Directed Transfer Function (DTF)

Directed Transfer Function (DTF) was first introduced by Kaminski and Blinowska as a method to determine the direction and frequency content of brain activity flow (Kaminski & Blinowska, 1991). DTF is based on the transfer function $H(f)$ of a multivariate autoregressive (MVAR) model, describing the causal influence of electrode l on electrode k at a frequency f as follows:

$$DTF_{l \to k}(f) = \frac{|H_{kl}(f)|^2}{\sum_{j=1}^{J} \left|H_{kj}(f)\right|^2}$$

where J is the total number of electrodes. DTF is zero only if there is no delay between electrode l and electrode k. For more information, see (Kaminski & Blinowska, 1991).

Imaginary Part of Coherence

Coherence measures the phase coupling between electrode k and electrode l (Nunez et al., 1997). If $Y_{kt}(f)$ is the Fourier transform of the time series $y(t)$ of electrode k, then the cross-spectrum of electrode k and electrode l is given by

$$S_{kl}(f) = \frac{1}{T} \sum_{t=1}^{T} Y_{kt}(f) Y_{lt}^{*}(f)$$

Then the complex coherence at frequency f is given by

$$C_{kl}(f) = \frac{S_{kl}(f)}{\left(S_{kk}(f) S_{ll}(f)\right)^{\frac{1}{2}}}$$

Here, we used the imaginary part of coherency since it minimizes effects of volume conduction (Nolte et al., 2004).

Phase-Locking Value

Phase-Locking Value (PLV) was introduced by Lachaux et al. as a method to detect frequency specific phase coupling between two signals (Lachaux et al., 1999). If $\Phi_{kt}(f)$ is the phase of the Fourier coefficient of electrode k of the time segment $y(t)$ at frequency f, then PLV between the electrode k and electrode l at frequency f is given by

$$PLV_{kl}(f) = \frac{1}{T}\sum_{t=1}^{T} exp\left(i\left(\Phi_{kt}(f) - \Phi_{lt}(f)\right)\right)$$

2.2.16 Functional Connectivity Analysis (across brain regions)

Besides conducting functional connectivity analysis across electrodes, we also conducted the analysis in the source space across brain regions. Functional connectivity analysis at the source level was conducted using the software LORETA (Pascual-Marqui et al., 2011). Cortical activity was reconstructed from scalp EEG signals, using the exact low-resolution electromagnetic tomography (eLORETA) algorithm, to a space of 6239 gray matter voxels as implemented in LORETA. We defined 80 seeds of interest (40 per hemisphere) from the Automated Anatomical Labelling (AAL) atlas, similar to a previous schizophrenia EEG study (Andreou et al., 2015). From the solution space, we included all gray matter voxels within a range of 10-mm radius of the seed. Connectivity between reconstructed brain sources was calculated for each frequency band using three different methods: instantaneous phase synchronization, lagged phase synchronization, and lagged coherence. Finally, we performed a network analysis on the connectivity matrices to characterize them with a small number of measures. Please see 2.2.17 Network Analysis for more information.

Instantaneous and lagged phase synchronization

Nonlinear interactions between two time-series may be quantified in the frequency domain using the measure of phase synchronization (Pascual-Marqui, 2007). The instantaneous phase synchronization is defined as

$$\varphi_{k,l}^2(\omega) = \left\{\mathrm{Re}\left[f_{k,l}(\omega)\right]\right\}^2 + \left\{\mathrm{Im}\left[f_{k,l}(\omega)\right]\right\}^2$$

which, to reduce the effects of instantaneous non-physiological components, can be reformulated as the lagged phase synchronization given by

$$\varphi_{k,l}^2(\omega) = \frac{\left\{\mathrm{Im}\left[f_{k,l}(\omega)\right]\right\}^2}{1 - \left\{\mathrm{Re}\left[f_{k,l}(\omega)\right]\right\}^2}$$

where

$$f_{k,l}(\omega) = \frac{1}{N_R}\sum_{a=1}^{N_R}\left[\frac{k_a(\omega)}{|k_a(\omega)|}\right]\left[\frac{l_a^*(\omega)}{|l_a(\omega)|}\right]$$

with the Fourier transforms of the signals denoted as $k_a(\omega)$ and $l_a(\omega)$, N_R accounting for the number of epochs, and the superscript "*" indicating a complex conjugate. $\mathrm{Re}[c]$ and $\mathrm{Im}[c]$ are respectively the real and imaginary part of a complex number c, with brackets indicating the modulus.

Lagged coherence

Linear lagged connectivity measures the lagged linear dependence between two time-series without being affected by the covariance structure within each time series (Pascual-Marqui, 2007). Lagged coherence is defined as

$$\rho_{k,l}^2(\omega) = \frac{\left\{\mathrm{Im}\left[f_{k,l}(\omega)\right]\right\}^2}{\left[f_{k,k}(\omega)\right]\left[f_{l,l}(\omega)\right] - \left\{\mathrm{Re}\left[f_{k,l}(\omega)\right]\right\}^2}$$

where, $f_{k,l}$, contrary to the phase synchronization cases, is not normalized, and thus there is an effect of amplitude on the estimation.

2.2.17 Network Analysis

Network analysis provides a way to characterize brain networks with a small number of neurobiological meaningful measures (Rubinov & Sporns, 2010). We conducted the analysis on FieldTrip (Oostenveld et al., 2010) with the Brain Connectivity Toolbox (Rubinov & Sporns, 2010). From the connectivity matrices obtained with directed transfer function, imaginary part of coherency, and phase-locking value in the electrode space as well as instantaneous and lagged phase synchronization, and lagged coherence in the source space, we calculated the node strength, the clustering coefficient, and the betweenness centrality. We applied the analysis to the whole spectrum and aggregated the results into the 5 frequency bands.

Node Strength

Node strength is the typical measurement for quantifying the level of node centrality. Important electrodes or brain regions interact with many other electrodes or regions, facilitating functional integration and measures of node centrality assess the importance of individual nodes (Rubinov & Sporns, 2010). Given a node i, its strength is defined as the sum of all the weights of all edges of the node i as follows

$$S_i = \sum_{j}^{N} w_{ij}$$

where w_{ij} is the weight of node i to node j (Opsahl et al., 2010).

Clustering Coefficient

Clustering coefficient qualifies the level of connection of a node with other neighboring nodes (Onnela et al., 2005). Given a node i, the clustering coefficient is calculated as follows

$$C_i = \frac{2}{k_i(k_i-1)}\sum_{j,k}(w_{ij}w_{jk}w_{ki})^{1/3}$$

where w_{ij} is the weight of node i to node j and k is the degree of the node.

Betweenness Centrality

Betweenness centrality is based on the idea that central nodes take part in many short paths in a network and, therefore, are considered key controls of information flow (Freeman, 1978). More specifically, it is defined as the fraction of all shortest paths in the network that pass through a given node (Brandes, 2001). Betweenness centrality is calculated as follows

$$B(i) = \sum\nolimits_{i\neq j\neq k}\frac{\sigma_{jk}(i)}{\sigma_{jk}}$$

where $\sigma_{jk}(i)$ is the shortest path of two nodes that contain i.

2.3 Partial Least Squares Correlations

Partial Least Squares Correlation (PLSC) is the generalization of the correlation between two variables to two matrices (McIntosh et al., 1996; Tucker, 1958). Let $\mathbf{X}$ be an $N \times J$ matrix, containing the data of N participants (121 patients or 75 controls) for all J variables (64 electrodes, 80 brain regions, or 12 microstate parameters) of a certain EEG feature (alpha, beta, etc.), and $\mathbf{Z}$ be an $N \times K$ matrix, containing data of the N participants for all K variables (64 electrodes, 80 brain regions, or 12 microstate parameters) of another EEG feature. With both $\mathbf{X}$ and $\mathbf{Z}$ mean-centered and normalized, the pattern of relationship between the columns of $\mathbf{X}$ and $\mathbf{Z}$ can be stored in a $K \times J$ cross-product correlation matrix, denoted $\mathbf{R}$, computed as:

$$\mathrm{R} = \mathrm{Z}^{\mathrm{T}}\mathrm{X}$$

The goal of PLSC is to analyze the *shared information* between $\mathbf{X}$ and $\mathbf{Z}$, which is stored in the matrix $\mathbf{R}$. This is done by deriving two sets of latent variables, one for $\mathbf{X}$ and another for $\mathbf{Z}$, that are linear combinations of the respective original variables. These latent variables are computed in order to obtain the maximal covariance between $\mathbf{X}$ and $\mathbf{Z}$. The original variables are described by their *saliences*, which are similar to loadings in principal components analysis (Krishnan et al., 2011). This is achieved by the singular value decomposition (SVD) of the correlation matrix $\mathbf{R}$:

$$\mathrm{R} = \mathrm{U}\Delta\mathrm{V}^{\mathrm{T}}$$

where U **is the** $J \times L$ matrix of $\mathbf{X}$-saliences and V is the $K \times L$ matrix of $\mathbf{Z}$-saliences, while Δ is the $L \times L$ diagonal matrix of the L singular values (with L being the rank of R).

The quantity of *shared information* between $\mathbf{X}$ and $\mathbf{Z}$ can be directly quantified as the *inertia* common to the two features (Krishnan et al., 2011). The inertia, denoted $\mathfrak{I}$, is defined as:

$$\mathfrak{I} = \sum_{l=1}^{L} \delta_l$$

where δ_l is the lth diagonal element, i.e., singular value, of Δ, and L is the number of non-zero singular values of $\mathbf{R}$, i.e., the rank of the correlation matrix**.**

The statistical significance of the inertia is assessed using a permutation test (Abdi & Williams, 2013; McIntosh et al., 2004). A permutation sample is created by shuffling the rows of $\mathbf{X}$ (i.e., the participants) while keeping $\mathbf{Z}$ fixed. Then PLSC is used to recompute a new value of inertia for the permutated sample. This procedure is repeated 10,000 times, which produces a null distribution of inertias that can be used for null hypothesis testing. The *p*-values are given by counting how many times the permutated inertias where larger than the original inertia and dividing by the number of permutations (10,000).

Here, since some EEG features have different numbers of variables (64 electrodes, 80 brain regions, or 12 microstates parameters), within and across the pairwise comparisons, which results in different orders of the R matrix, we normalized the inertias for better comparability across pairwise comparisons of EEG features. In essence, we divided the computed inertias by the square-root of the product of dimensions of the R matrix ($\sqrt{K \times J}$) (Srebro & Shraibman, 2005), resulting in relative inertias ($\mathfrak{I}_{relative}$). In this case, the inertias range from 0 ($\mathbf{X}$ and $\mathbf{Z}$ are completely unrelated) to 1 ($\mathbf{X}$ and $\mathbf{Z}$ are basically the same).

2.4 Distance correlations

Distance correlations measure linear and nonlinear relationships between random vectors. The value of distance correlation is only zero if the vectors are truly independent. Since distance correlations impose no constraint on the dimensionality of the data, in principle, arrays of arbitrary dimensions could be analyzed with this method. However, since it has been observed that the value of distance correlation increases with increasing dimensionality of the compared arrays, Székely and Rizzo (2013) proposed an unbiased metric of distance correlation. In our analysis, we used the squared root of the unbiased estimate of distance correlation, since it was proposed that the unbiased estimate approximates asymptotically the population squared distance correlation. The p-value is obtained from the distance correlation test statistic proposed by Székely and Rizzo (2013) and implemented in the energy 1.7_10 R studio package in the function *dcorT.test* (Rizzo & Székely, 2022).

2.5 Disattenuated Pearson correlation analysis

We approximated the reliability of the EEG features using the correlation value to another EEG feature. For instance, for the Pearson correlation analysis, for each representative variable of each EEG feature we selected the largest correlation value to a different EEG feature. As an example, for spectral entropy the estimated reliability was 0.64, since it was the largest Pearson correlation to another EEG feature, which was Higuchi fractal dimension in delta band (See **Supplementary Table 9** and **Supplementary Table 10** for the approximated reliabilities in patients and controls). Then we calculated the disattenuated correlations using the Spearman equation (Spearman, 1904) dis r = *r*xy/sqrt(*r*xx,*r*yy)

$$r_{dis} = \frac{r_{xy}}{\sqrt{r_{xx}, r_{yy}}}$$

, where x and y are two EEG features (two representative variables of two EEG features for the Pearson correlation analysis). This analysis assumes that noise always decreases the correlations.

3. Supplementary Results

3.1 Disattenuated correlation analysis

For the Pearson correlation analysis, using the variable showing the largest effect between patients and controls as the representative variable of each EEG feature, the approximated reliabilities are shown in ***Supplementary Table 9*** for patients and in ***Supplementary Table 10*** for controls. For the control group, the 25^{th}, 50^{th}, and 75^{th} percentiles of the absolute disattenuated *r*-values were 0.091, 0.208, and 0.392, whereas for patients the disattenuated *r*-values were 0.084, 0.188, and 0.395. Instead of the variable showing the largest effect, for each EEG feature, we selected the first principal component as the representative variable. The proportions of variance explained by the first principal component of each of the 69 EEG features were 0.438, 0.575, and 0.681 in patients, and 0.413, 0.566, and 0.707 in controls, for the 25th, 50th, and 75th percentiles. We calculated the disattenuated correlations. The disattenuated *r*-values were 0.085, 0.204, and 0.394 for controls, and 0.088, 0.208, and 0.431 for patients. The estimated reliabilities are shown in ***Supplementary Table 11*** and ***Supplementary Table 12*** for patients and controls, respectively. The same analysis was performed for the multivariate analyses. The disattenuated values of relative inertias were 0.380, 0.479, and 0.600 for controls, and 0.313, 0.426, and 0.549 for patients, for the 25^{th}, 50^{th}, and 75^{th} percentiles of all pairwise relative inertia values. The disattenuated distance correlation values were 0.127, 0.225, and 0.382 for controls, and for patients the values were 0.133, 0.250, and 0.438 for the 25^{th}, 50^{th}, and 75^{th} percentiles. The estimated reliabilities for relative inertias in patients are shown in ***Supplementary Table 13***. For distance correlations, the estimated reliabilities are shown in ***Supplementary Table 14***.

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