Functional Brain Network Mechanism of Hypersensitivity in Chronic Pain

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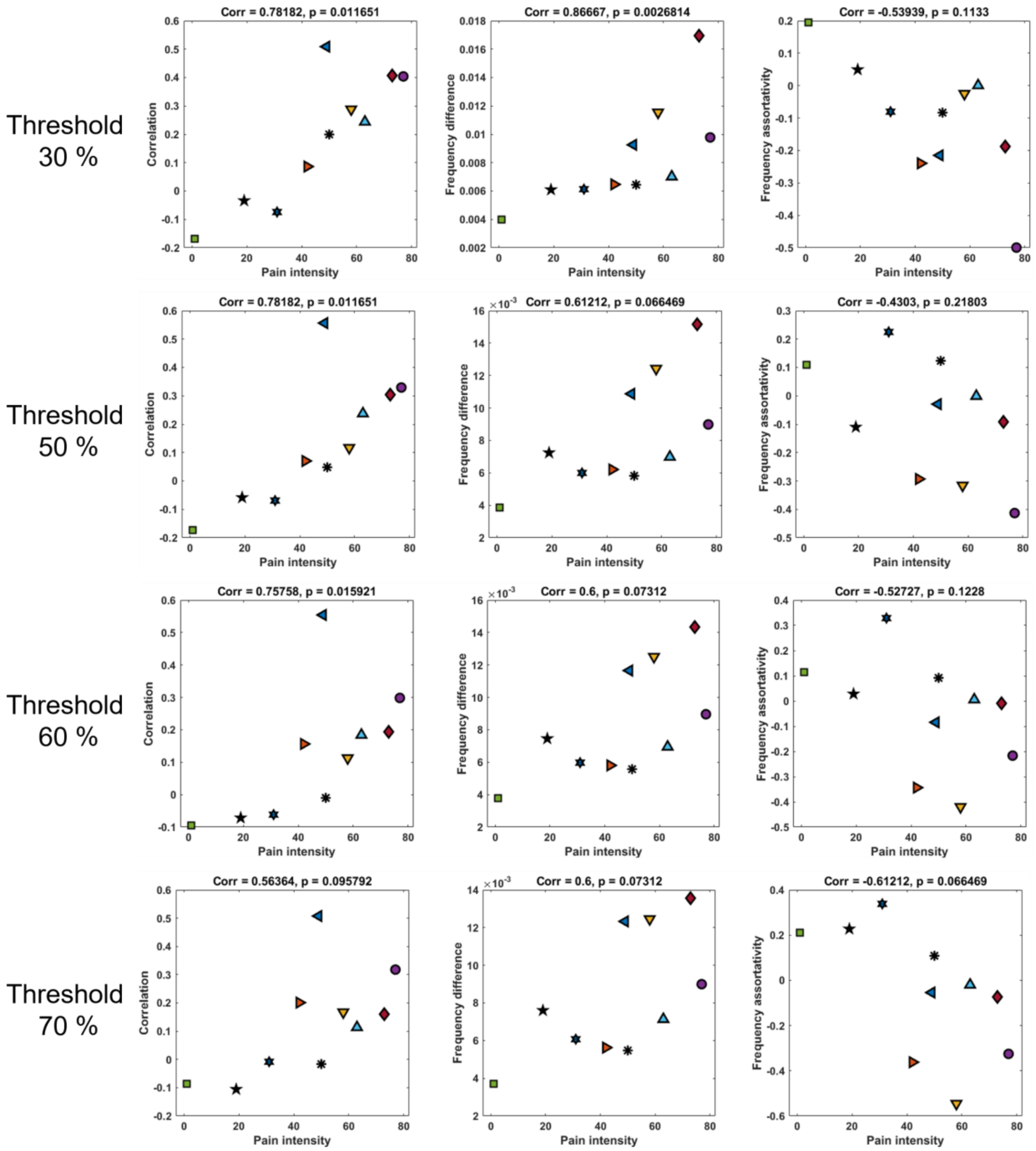

Figure S1. Three explosive synchronization conditions (Correlation between degree and frequency, frequency difference, frequency assortativity) for the threshold 30%, 50%, 60%, and 70%. A Spearman correlation and a p-value was calculated and written in the title of each figure. Below the 50% threshold our three ES conditions are consistent. We chose to report the 40% threshold for our analysis.

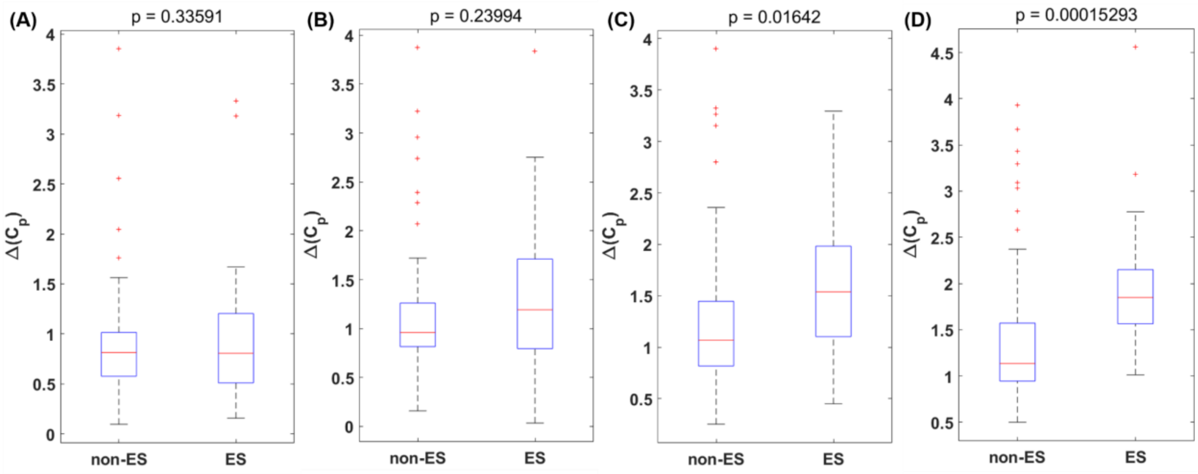

Figure S2. The network sensitivity of non-ES and ES networks with the various number of perturbed nodes. The largest degree nodes, (A) 1, (B) 5, (C) 10, and (D) 20 in the descending order are perturbed. In our simulation, the significant difference between non-ES and ES conditions is appeared from the perturbations to the top 10 degree nodes out of 82 nodes.

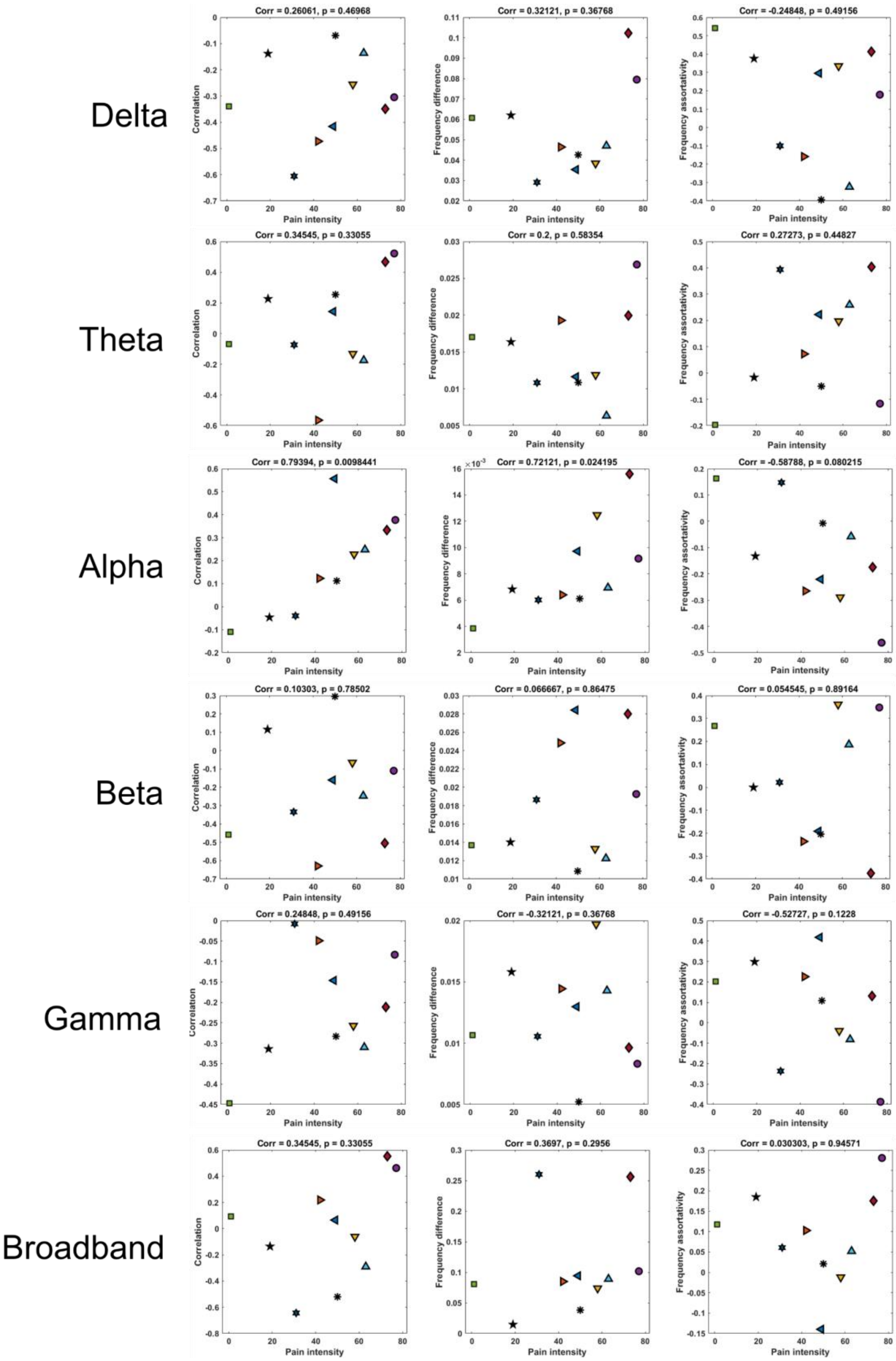

Figure S3. Three explosive synchronization conditions (Correlation between degree and frequency, frequency difference, frequency assortativity) for delta, theta, alpha, beta, gamma, and broadband (1-50Hz). A Spearman correlation and a p-value was calculated and written in the title of each figure. The results show only the alpha band has significant correlation coefficient for the pain intensity and the correlation between degree and frequency (0.79, $p<0.05$), and the correlation coefficient for the pain intensity and frequency difference (0.72, $p<0.05$). Otherwise, the others are not significant ($p>0.05$).

Supplementary Table S1. Names and abbreviations of brain regions.

	Region name
Subcortex	L. Thalamus
	R. Thalamus
	L. Caudate
	R. Caudate
	L. Putamen
	R. Putamen
	L. Pallidum
	R. Pallidum
	L. Hippocampus
	R. Hippocampus
	L. Amygdala
	R. Amygdala
	L. Accumbens
	R. Accumbens
Prefrontal	L. lateral orbitofrontal
	R. lateral orbitofrontal
	L. medial orbitofrontal
	R. medial orbitofrontal
	L. frontal pole
	R. frontal pole
Frontal	L. caudal middle frontal
	R. caudal middle frontal
	L. parsopercularis
	R. parsopercularis
	L. parsorbitalis
	R. parsorbitalis
	L. parstriangularis
	R. parstriangularis
	L. precentral
	R. precentral
	L. rostral middle frontal
	R. rostral middle frontal
	L. superior frontal
	R. superior frontal

Central	L. paracentral
	R. paracentral
	L. postcentral
	R. postcentral
Temporal	L. bankssts
	R. bankssts
	L. fusiform
	R. fusiform
	L. inferior temporal
	R. inferior temporal
	L. middle temporal
	R. middle temporal
	L. superior temporal
	R. superior temporal
	L. temporal pole
	R. temporal pole
	L. transverse temporal
	R. transverse temporal
Parietal	L. inferior parietal
	R. inferior parietal
	L. precuneus
	R. precuneus
	L. superior parietal
	R. superior parietal
	L. supramarginal
	R. supramarginal
Occipital	L. cuneus
	R. cuneus
	L. lateral occipital
	R. lateral occipital
	L. lingual
	R. lingual
	L. pericalcarine
	R. pericalcarine
	L. caudal anterior cingulate
	R. caudal anterior cingulate
	L. isthmus cingulate

Cigulate cortex	R. isthmus cingulate
	L. posterior cingulate
	R. posterior cingulate
	L. rostral anterior cingulate
	R. rostral anterior cingulate
Parahippocampal cortex	L. entorhinal
	R. entorhinal
	L. parahippocampal
	R. parahippocampal
Insula	L. insula
	R. insula