

Figure S1. Periodograms of all the EEG and ECG metrics in the delta frequency band. HRV: heart rate variability, HR: heart rate, C^E : eigenvector centrality, C^B : betweenness centrality, S^M : mean strength, S^V : variance of strength. Note that participants KCL 3, KCL 5 and KCL 12 do not have ECG metrics due to the absence of available ECG recordings (see Table 1).

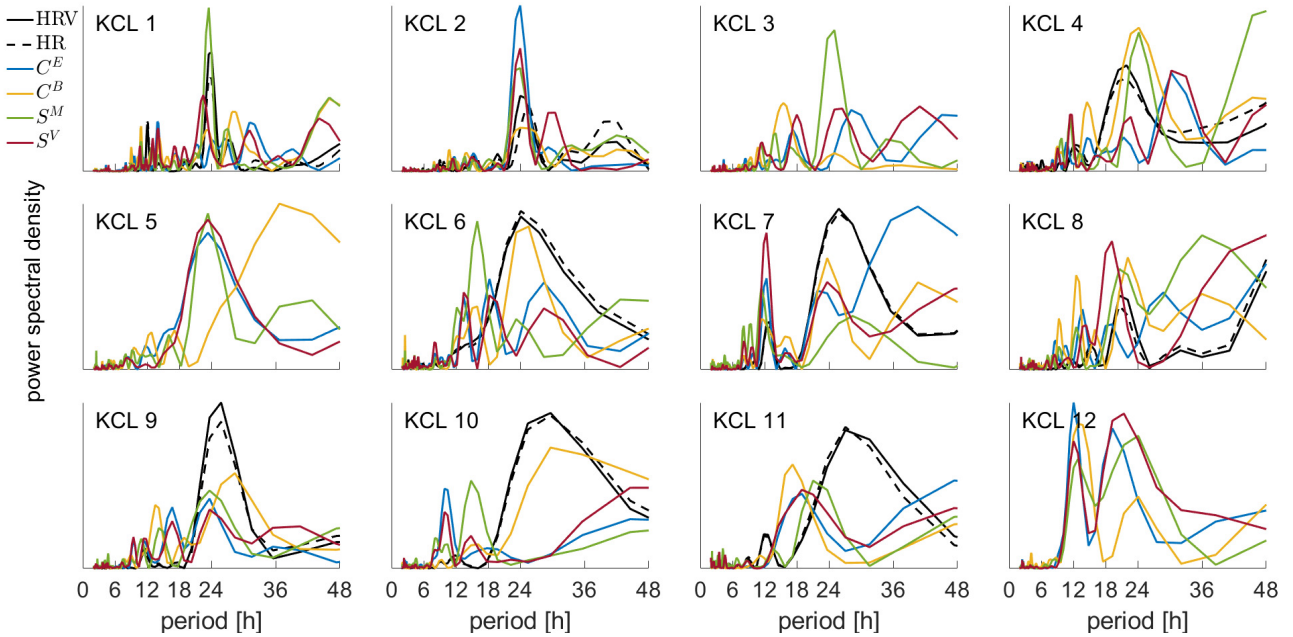


Figure S2. Same as Figure S1, but in the theta band.

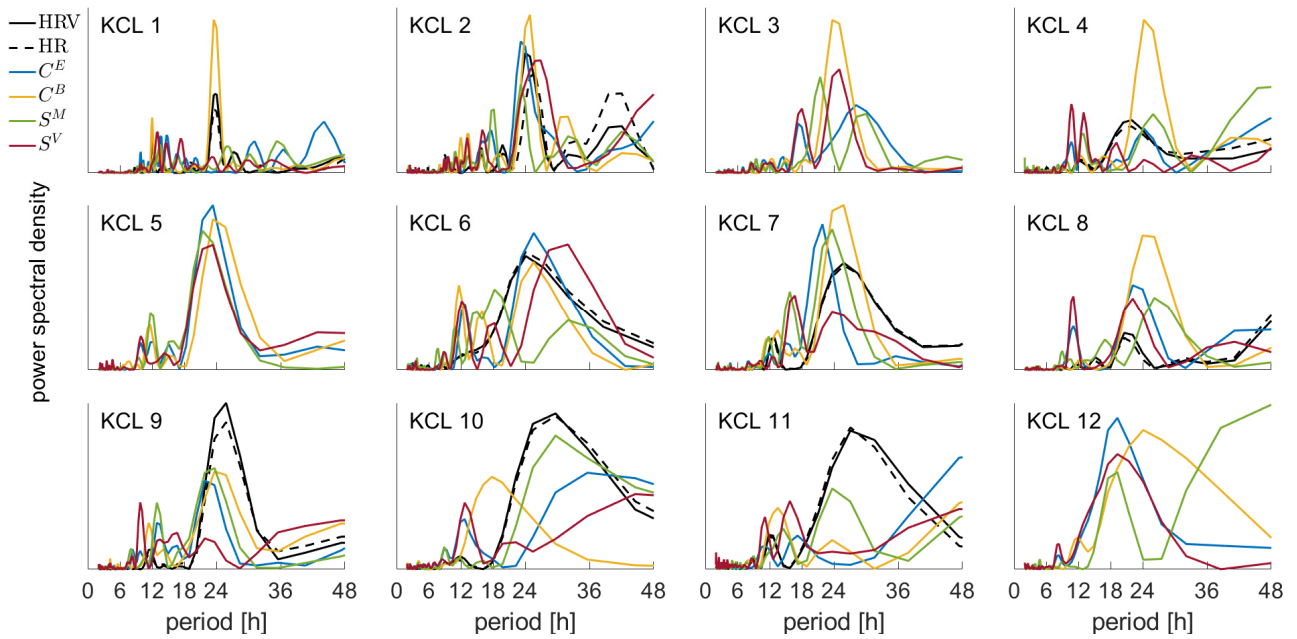


Figure S3. Same as Figure S1, but in the beta band.

Table S1. Table with the original p-values (one-sided Wilcoxon rank-sum test) between the variance of strength distribution of the day prior to seizure (d_{-1}) and the corresponding distribution of all previous days.

[illegible]

Table S2. Table with the Patients Antiepileptic drug treatment before their admission to the hospital and the drug changes during patients stay to the hospital.

Patient ID	Antiepileptic drugs (daily dosage) before patients' admission to the hospital	Drug changes during patients stay to the hospital
KCL1	Oxcarbazepine 450mg; Gabapentin 800mg; Levetiracetam 1g	Oxcarbazepine halved (day: -11); Oxcarbazepine stopped (day: -9); Levetiracetam reduced to 750mg (day: -7); Levetiracetam reduced to 500mg (day: -5); Levetiracetam night dosage stopped (day: -3); Levetiracetam morning dosage stopped (day: -1)
KCL2	Lamotrigine 50mg; Levetiracetam 500mg	Levetiracetam reduced to 250mg (day: -4); Levetiracetam stopped (day: -2)
KCL3	Sodium Valporate 300mg/800mg; Carbamazepine 200mg	Carbamazepine stopped (day: -3); Sodium Valporate reduced to 200mg (day: -1)
KCL4	Carbamazepine 1200mg; Levetiracetam 500mg	Carbamazepine reduced to 400/400mg (from 400/800mg) (day: -2)
KCL5	Pregabalin 100mg; Levetiracetam 750mg; Carbamazepine 1000mg	Levetiracetam reduced 250mg (day: -2); Levetiracetam stopped (day: -1)
KCL6	Lacosamide 100mg; Carbamazepine 800mg; Pregabalin 225mg	Carbamazepine dose halved (day: -2)
KCL7	Carbamazepine 600mg; Sodium Valproate 1000 mg; Brivaracetam 75mg	Carbamazepine reduced to 300mg (day: -3); Carbamazepine stopped (day: -1)
KCL8	Carbamazepine 400mg	Carbamazepine stopped (day: -2)
KCL9	Lamotrigine 300mg	Lamotrigine reduced to 200mg (day: -1)
KCL10	Lamotrigine 300mg; Levetiracetam 1250 mg	Levetiracetam reduced to 250mg (day: -2); Levetiracetam stopped, Lamotrigine reduced to 100/150mg (from 100/200) (day: -1)
KCL11	Lamotrigine 200mg; Levetiracetam 300mg	Levetiracetam stopped (day: -1)
KCL12	Gabapentin 600 mg; Levetiracetam 1500 mg; Carbamazepine 300mg	Levetiracetam reduced to 1g (day: -2)

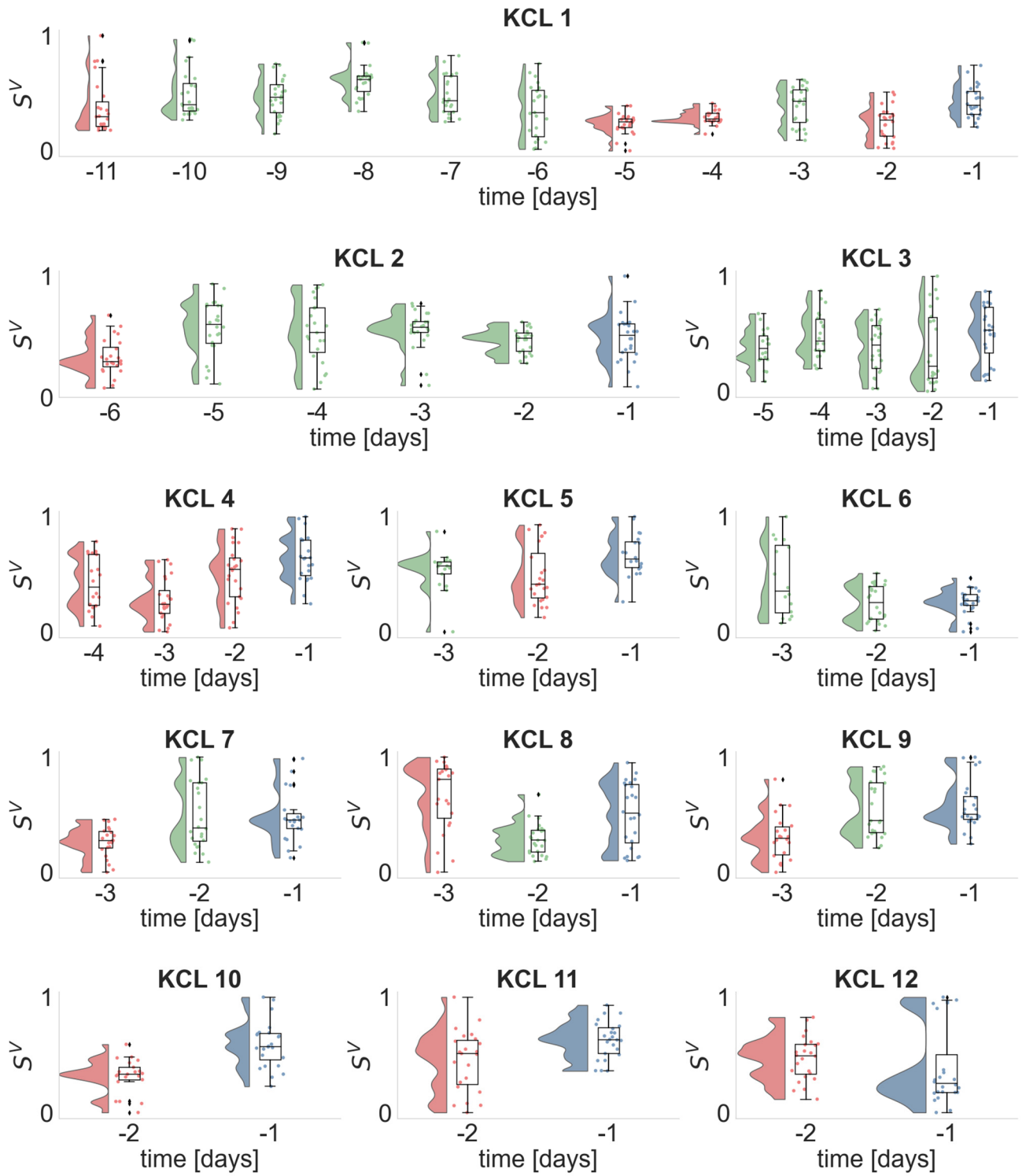


Figure S4. Daily distributions of the variance of strength S^V (delta frequency band) for each seizure free day prior to seizure occurrence. Dots illustrate the S^V values obtained from each analyzed EEG segment, whilst histograms and boxplots depict their distribution. Horizontal lines in the boxplots indicate the median. The day before the seizure occurrence, i.e., d_{-1} is denoted with blue. Days whose distributions are statistically significantly different (one-sided Wilcoxon rank sum test) from the distribution of day d_{-1} are illustrated in red, otherwise are depicted in green.

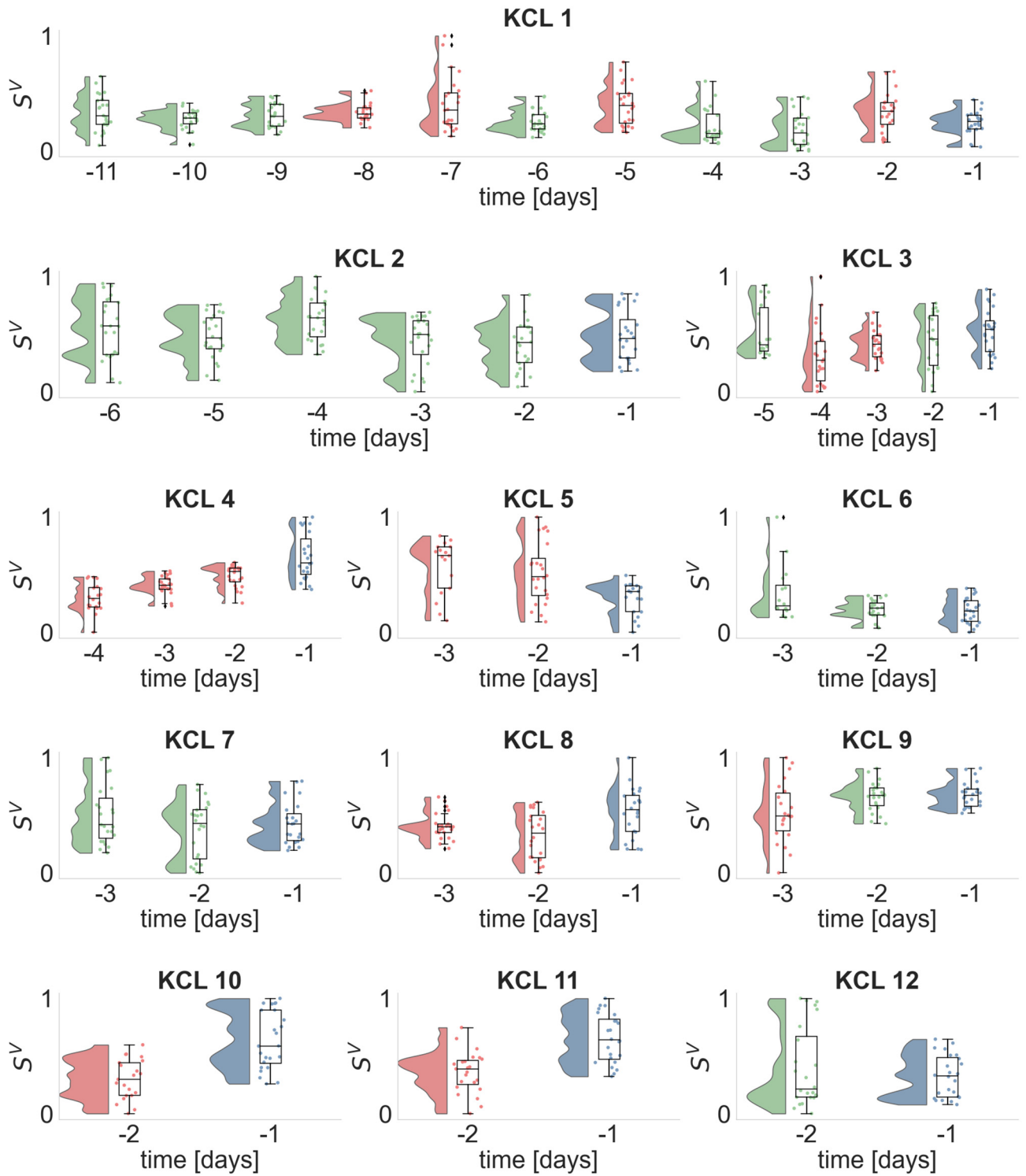


Figure S5. Same as Figure S4 for the theta band.

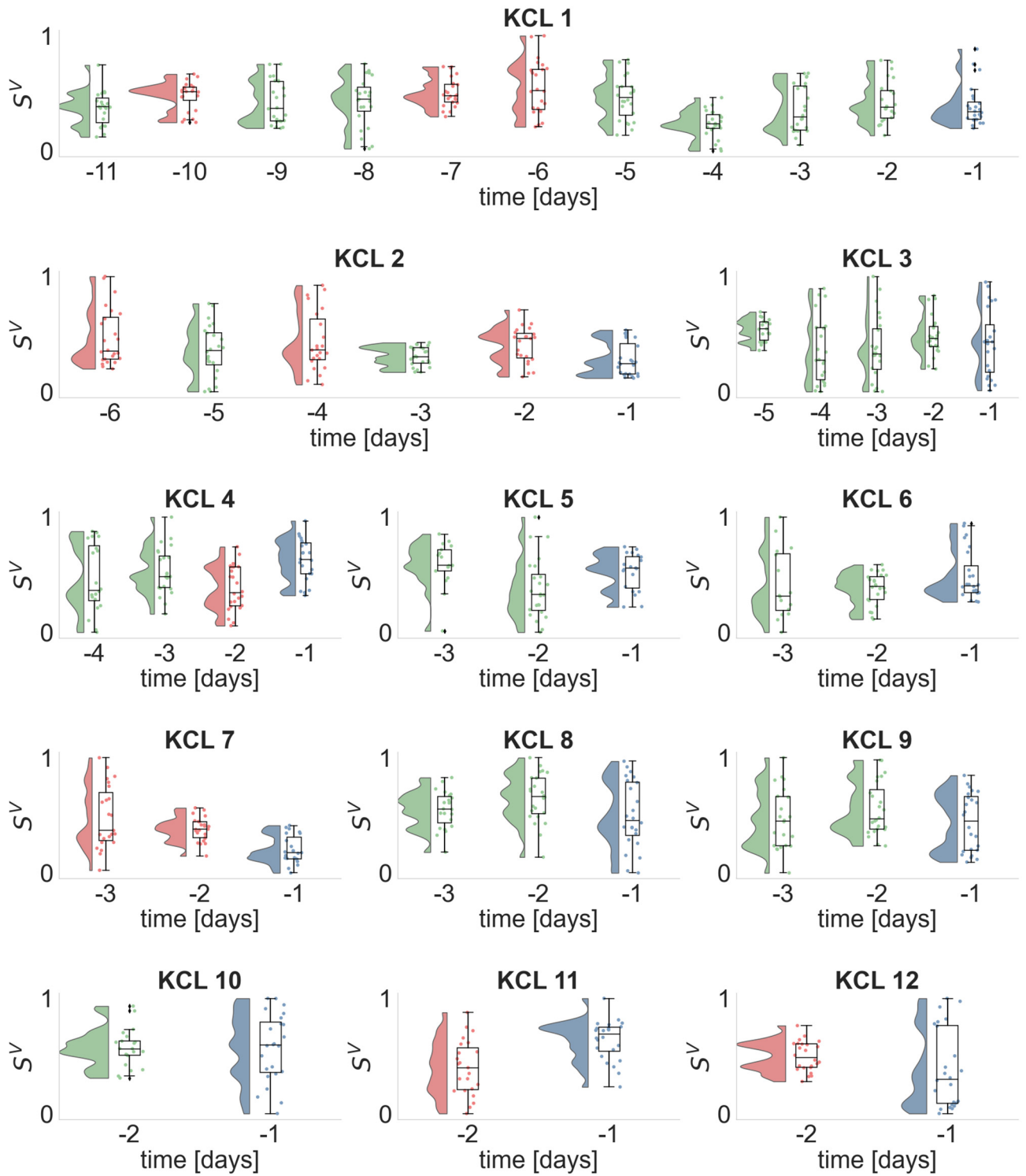


Figure S6. Same as Figure S4 for the beta band.

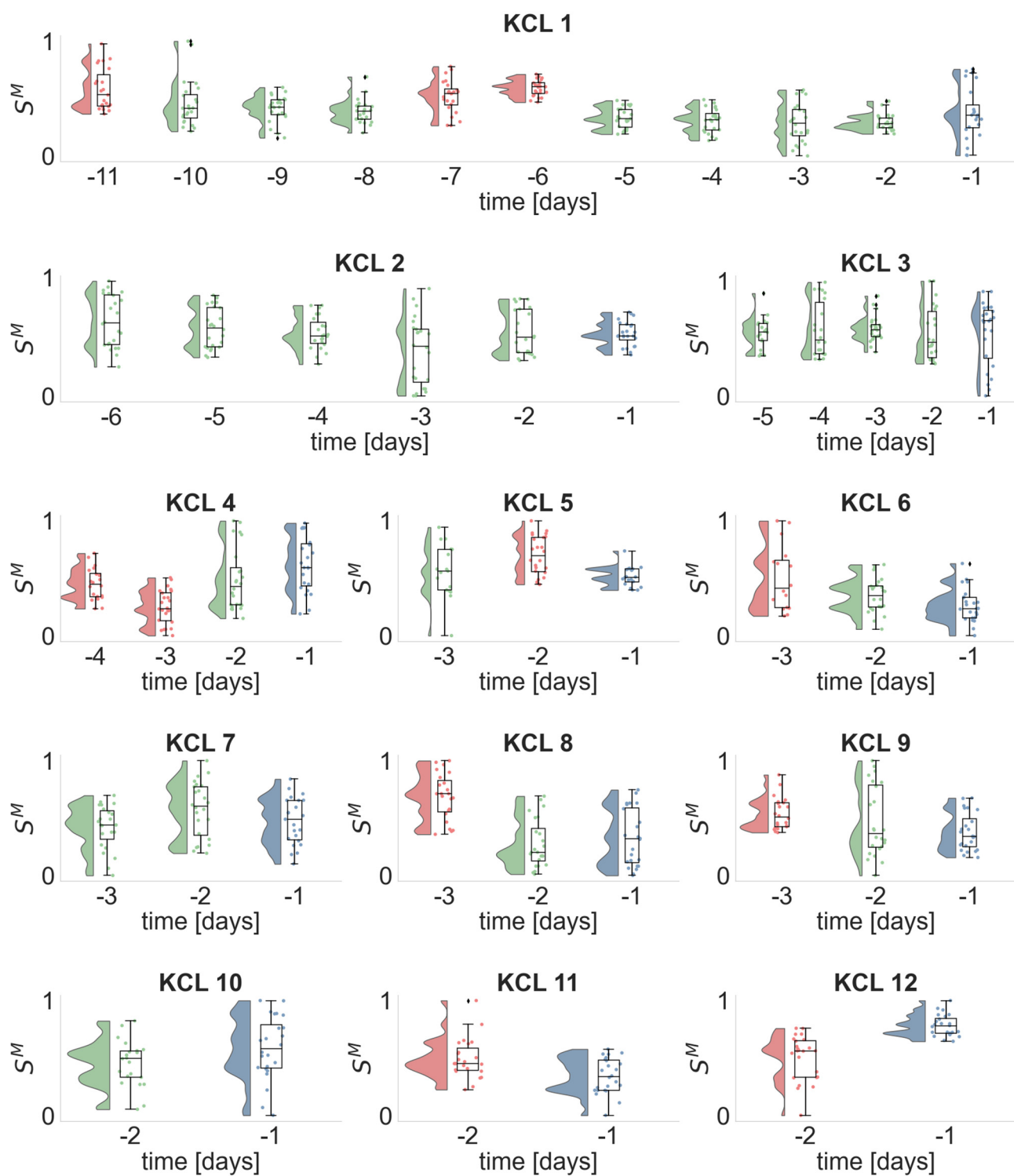


Figure S7. Same as Figure S4 for the mean strength and delta band.

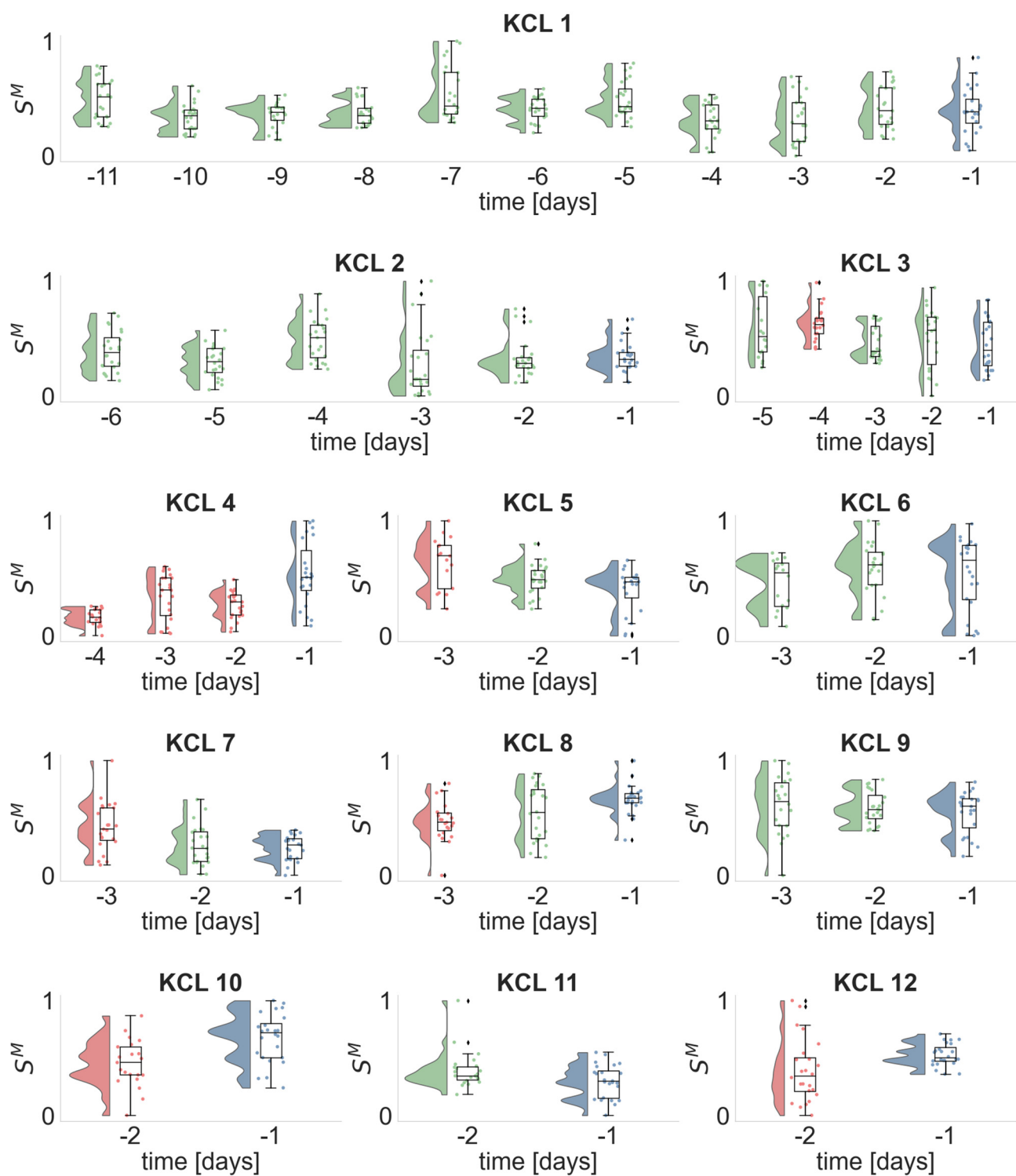


Figure S8. Same as Figure S4 for the mean strength and theta band.

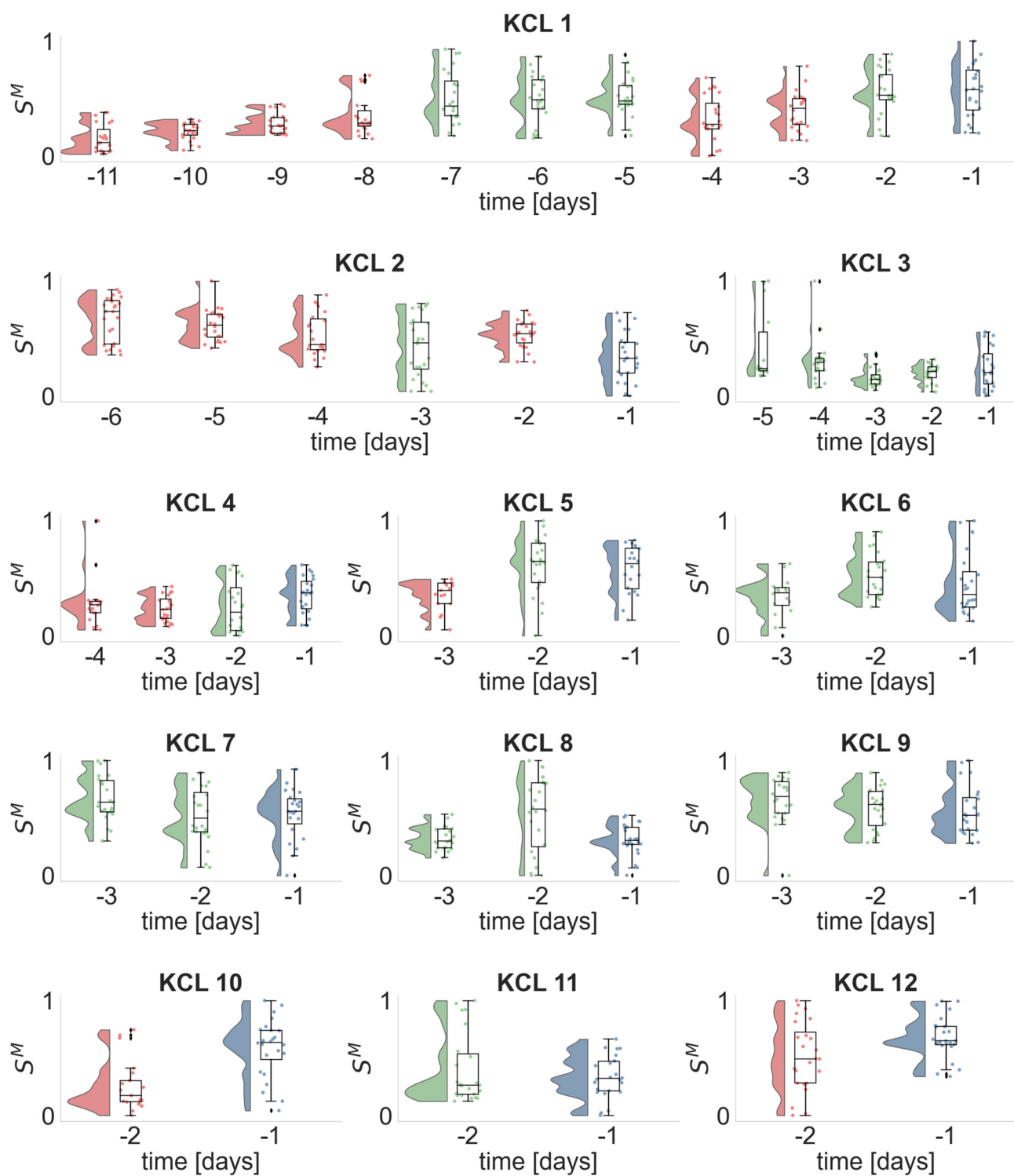


Figure S9. Same as Figure S4 for the mean strength and alpha band.

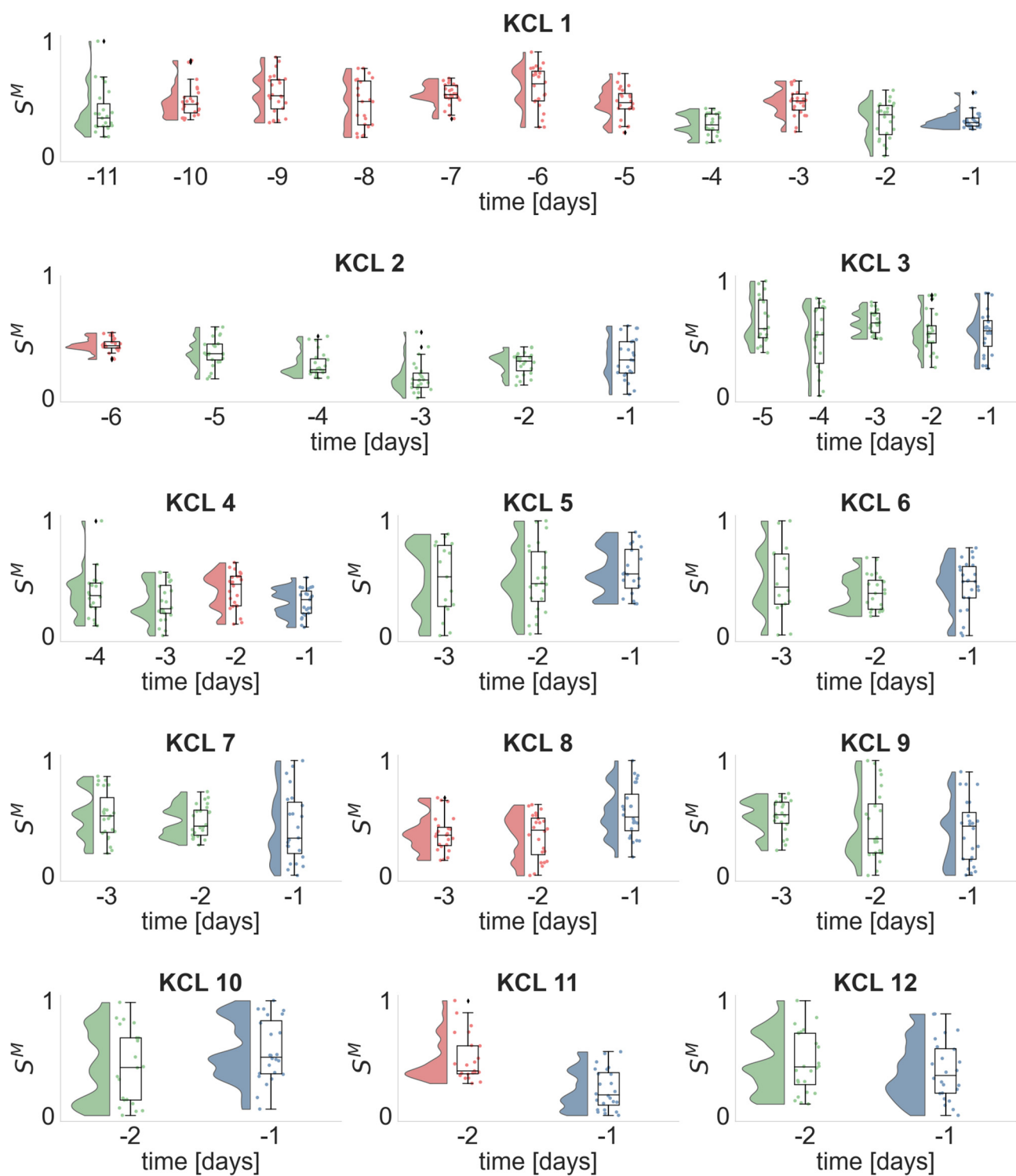


Figure S10. Same as Figure S4 for the mean strength and beta band.

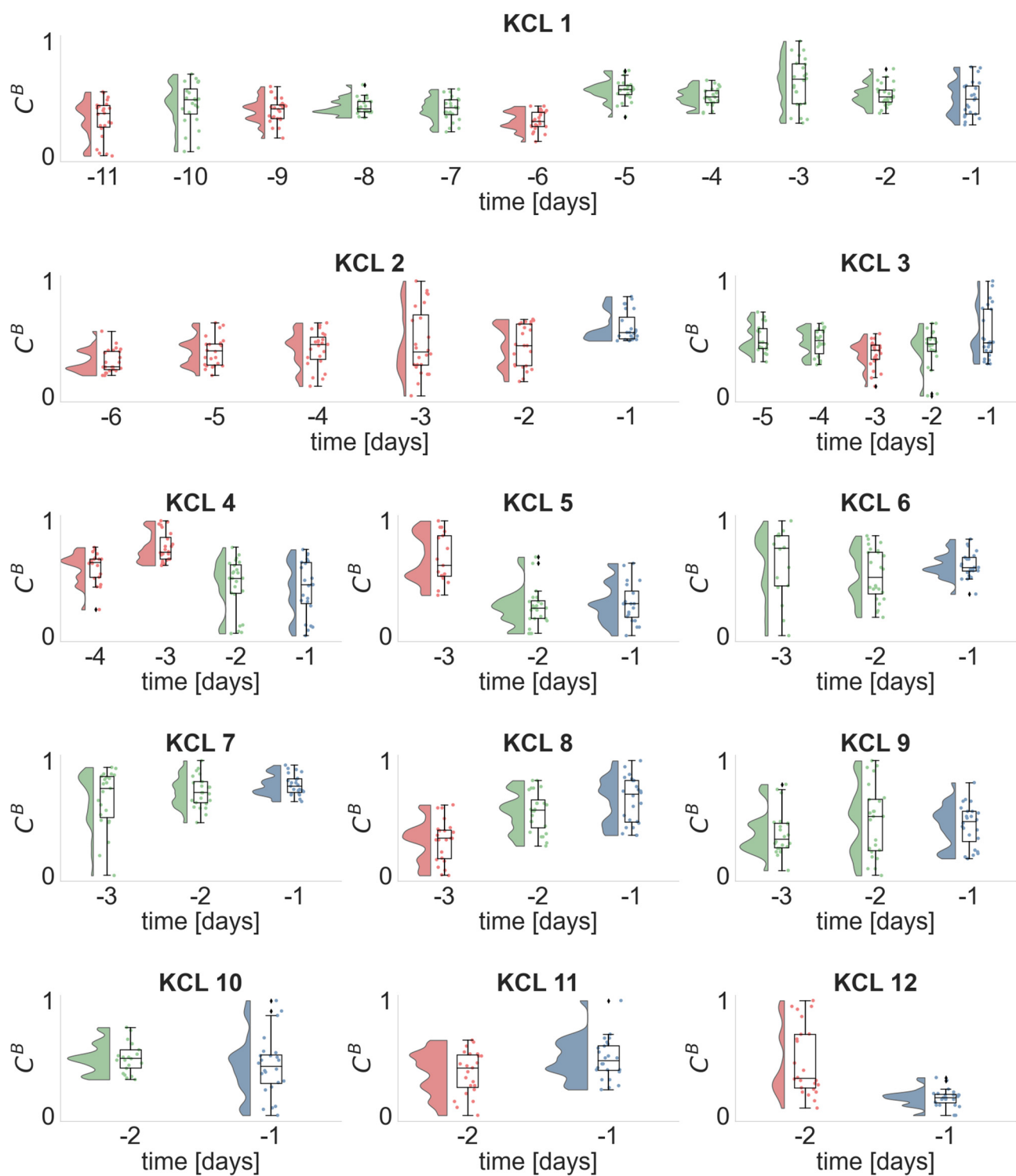


Figure S11. Same as Figure S4 for the average betweenness centrality and delta band.

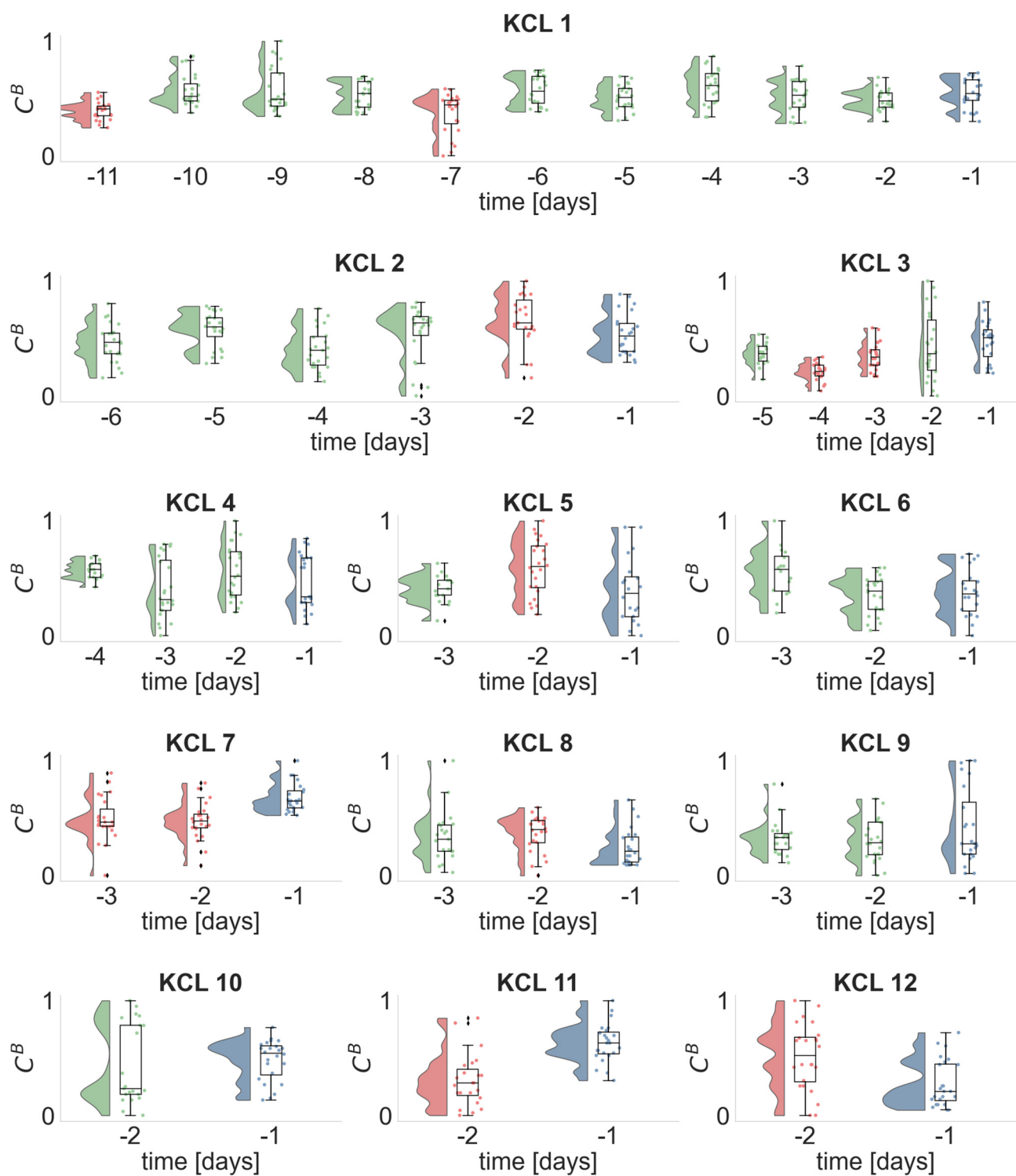


Figure S12. Same as Figure S4 for the average betweenness centrality and theta band.

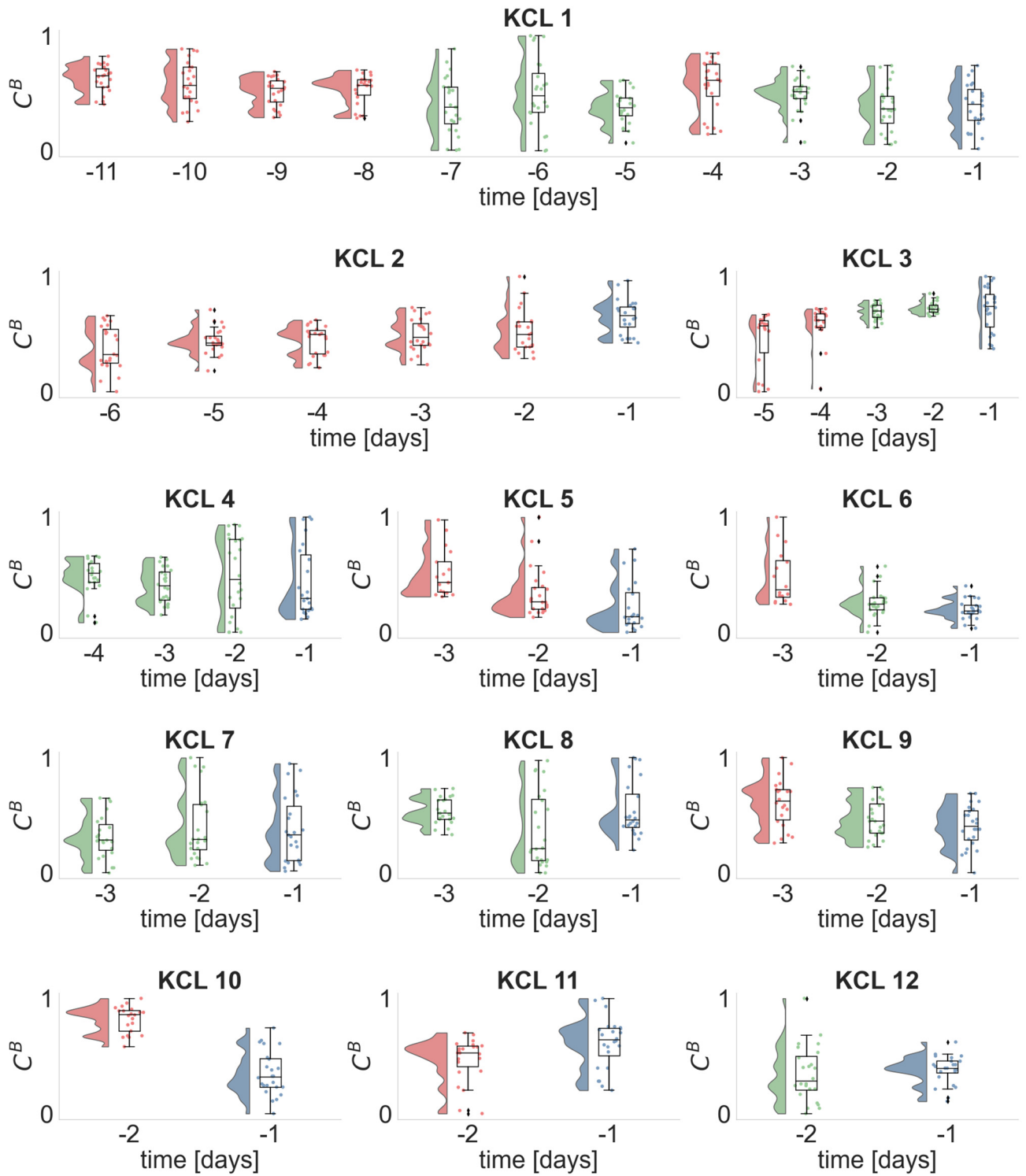


Figure S13. Same as Figure S4 for the average betweenness centrality and alpha band.

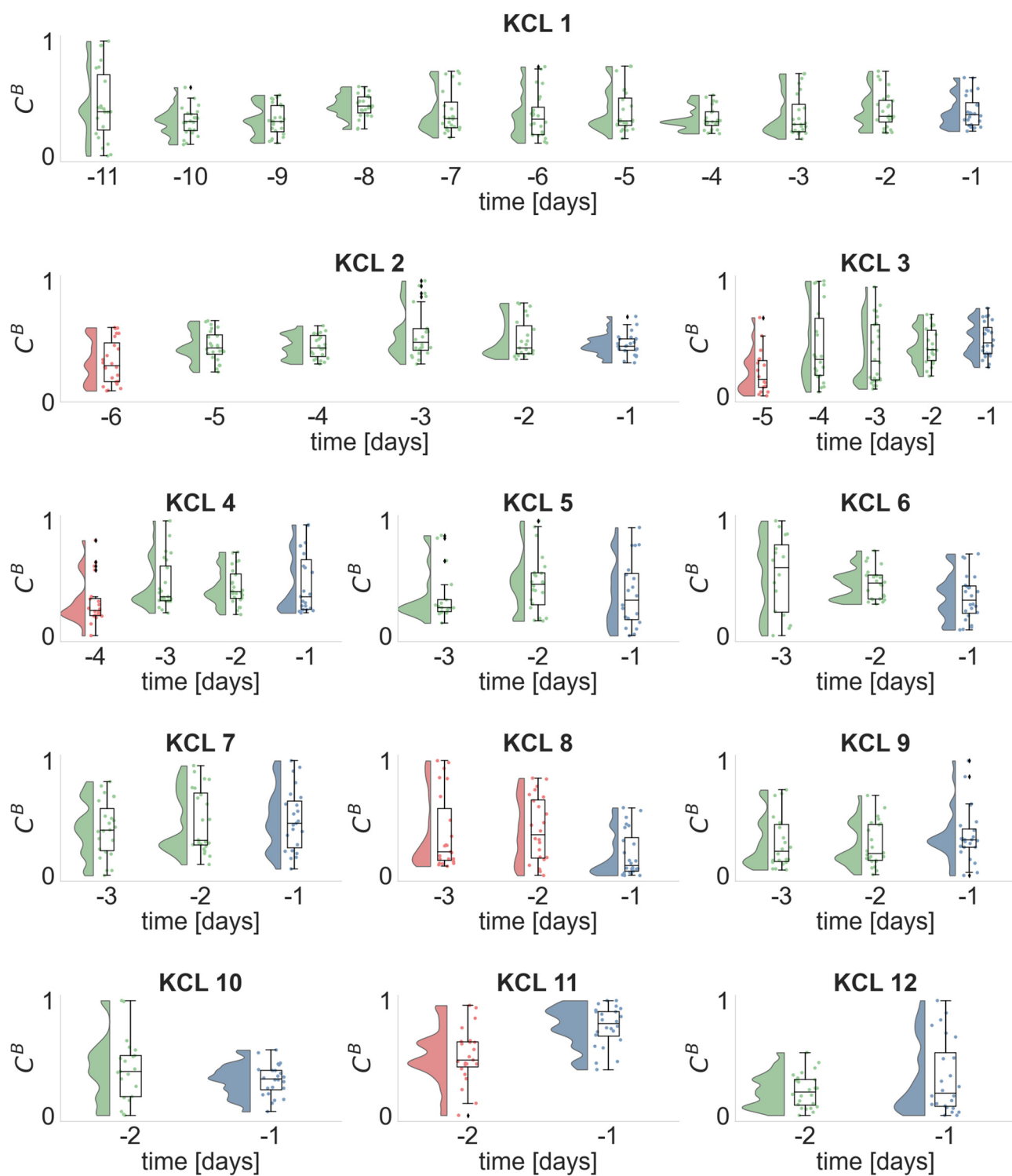


Figure S14. Same as Figure S4 for the average betweenness centrality and beta band.

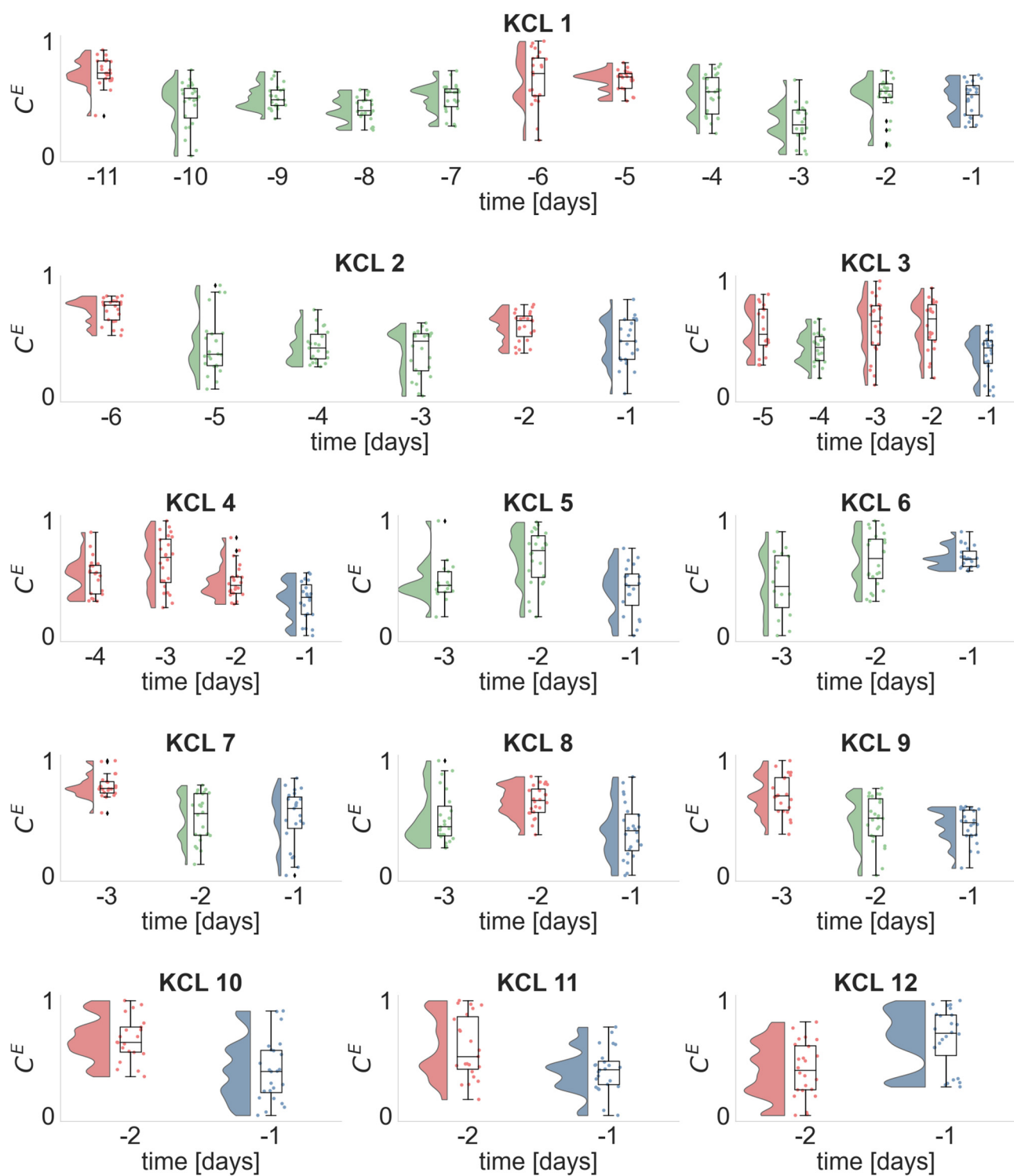


Figure S15. Same as Figure S4 for the average eigenvector centrality and delta band.

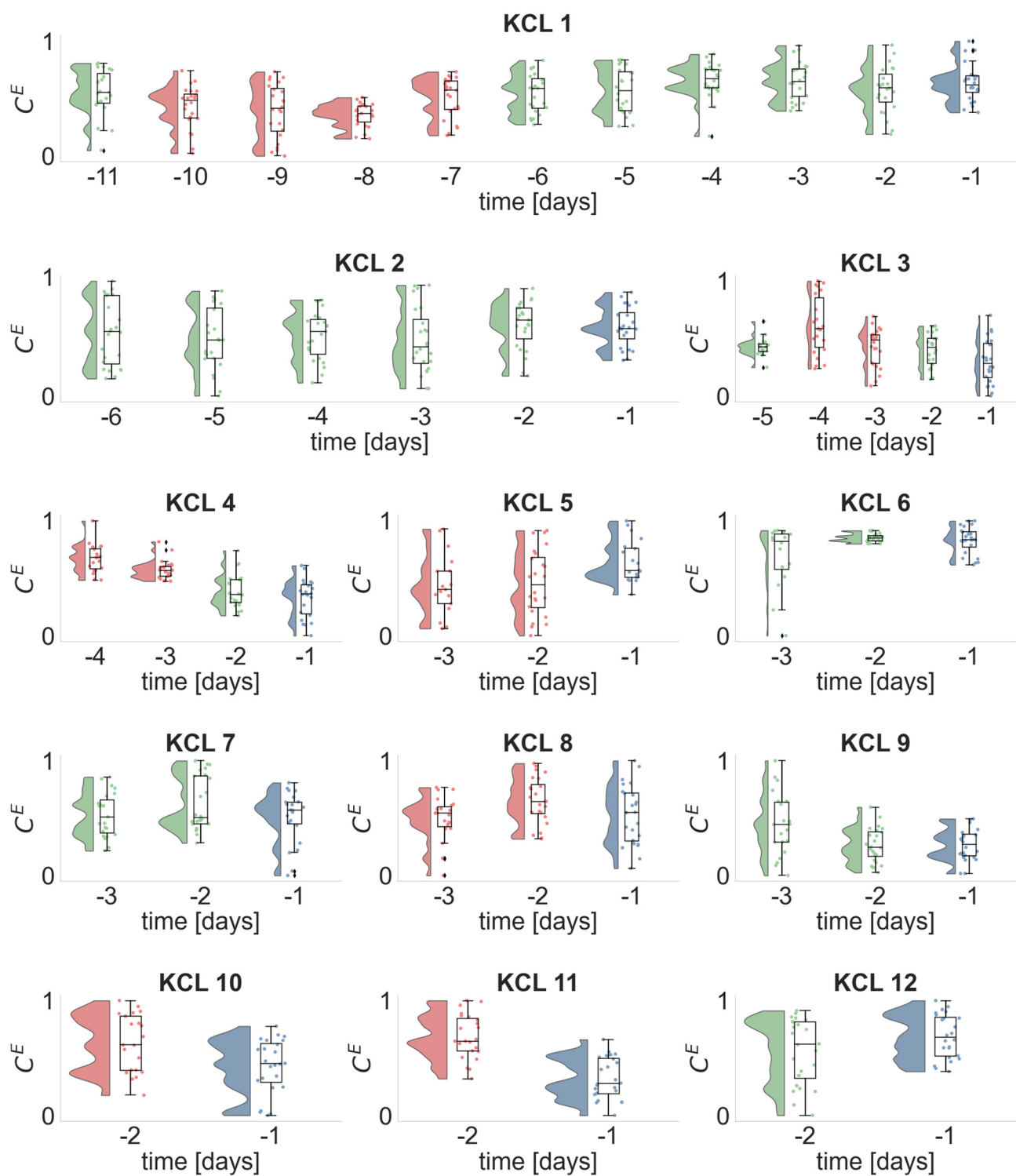


Figure S16. Same as Figure S4 for the average eigenvector centrality and theta band.

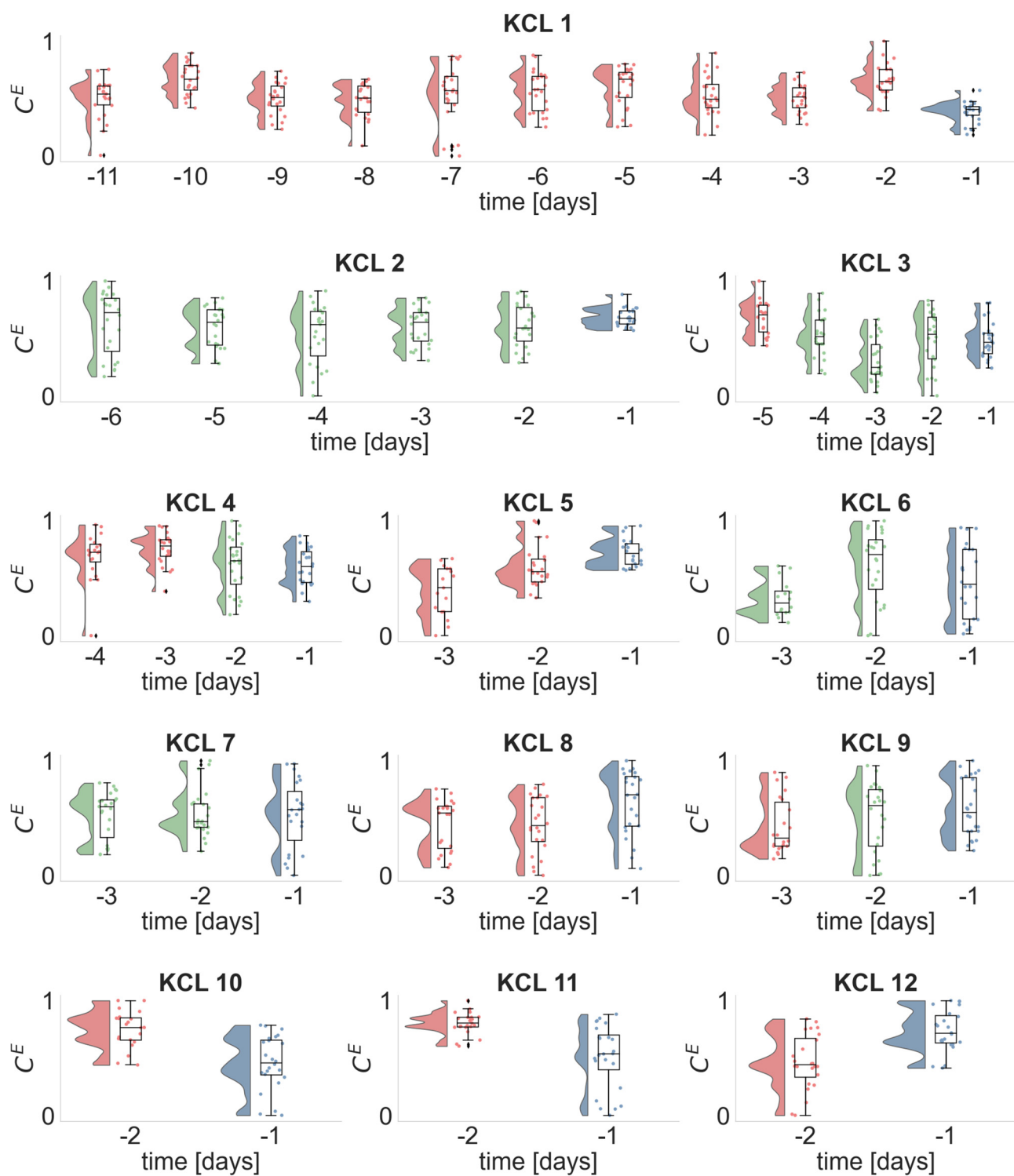


Figure S17. Same as Figure S4 for the average eigenvector centrality and alpha band.

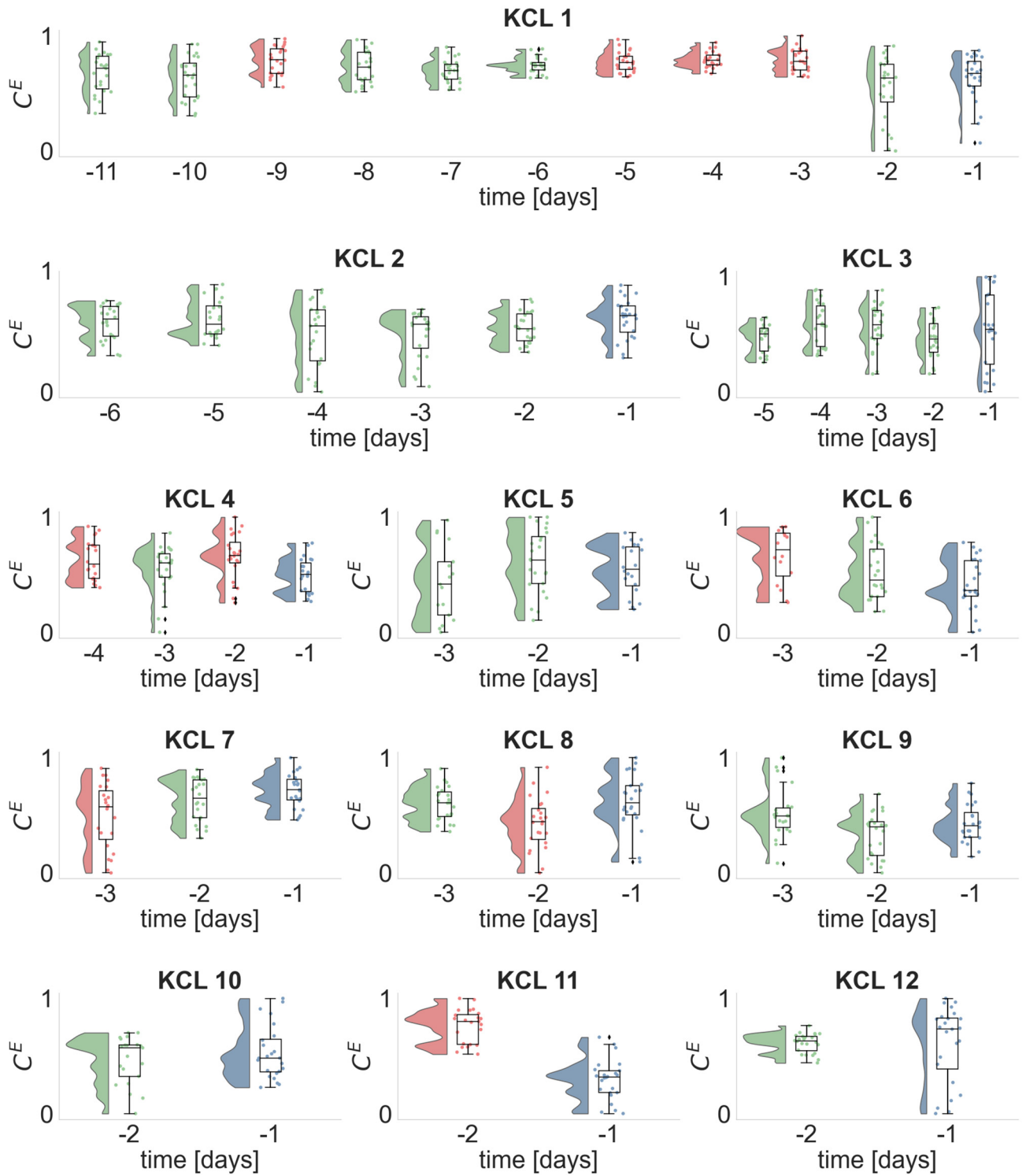


Figure S18. Same as Figure S4 for the average eigenvector centrality and beta band.

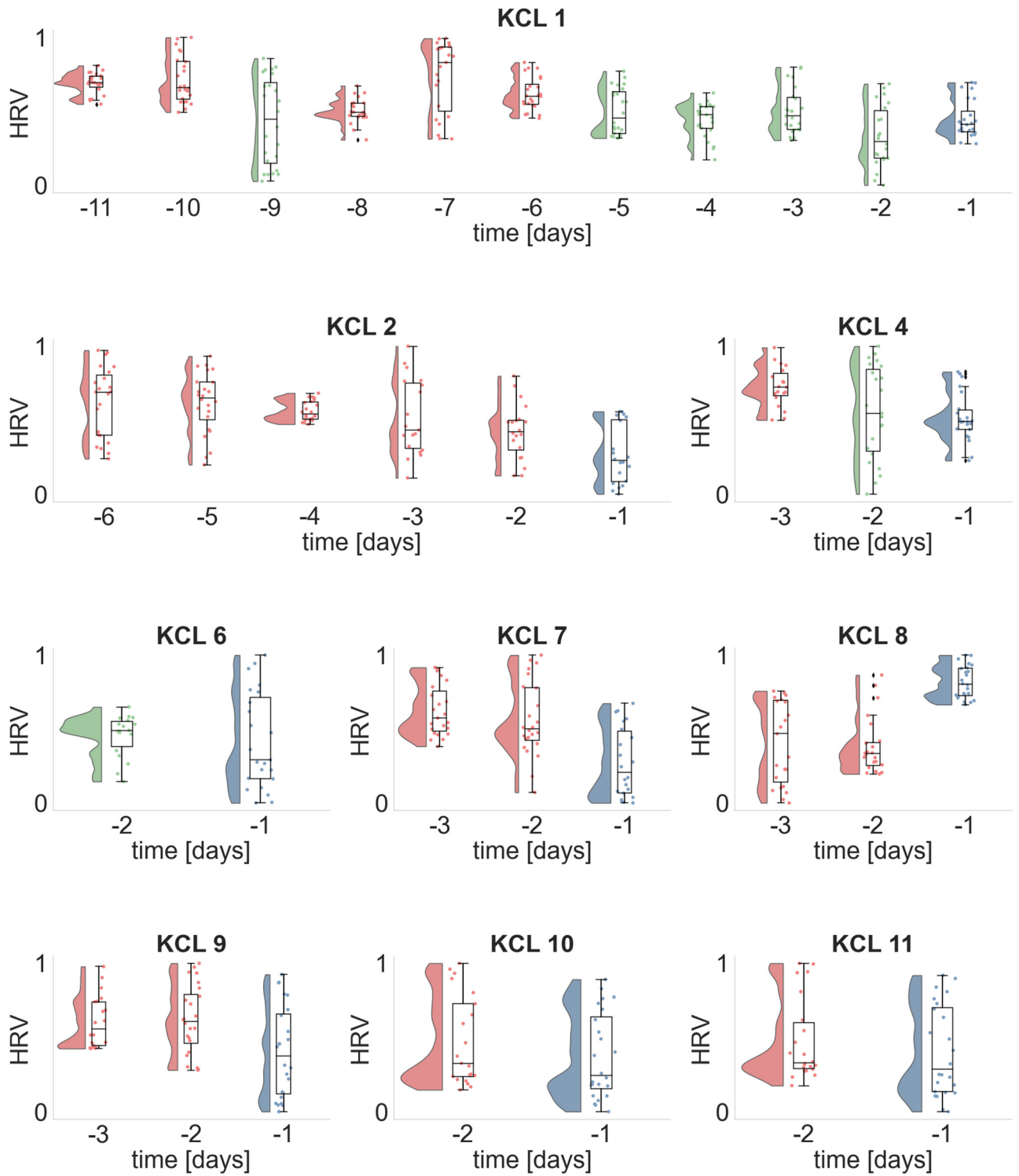


Figure S19. Daily distributions of the heart rate variability HRV for each seizure free day prior to seizure occurrence. Dots illustrate the HRV values obtained from each analyzed ECG segment, whilst histograms and boxplots depict their distribution. Horizontal lines in the boxplots indicate the median. The day before the seizure occurrence, i.e., d_{-1} is denoted with blue. Days whose distributions are statistically significantly different (one-sided Wilcoxon rank sum test) from the distribution of day d_{-1} are illustrated in red, otherwise are depicted in green.

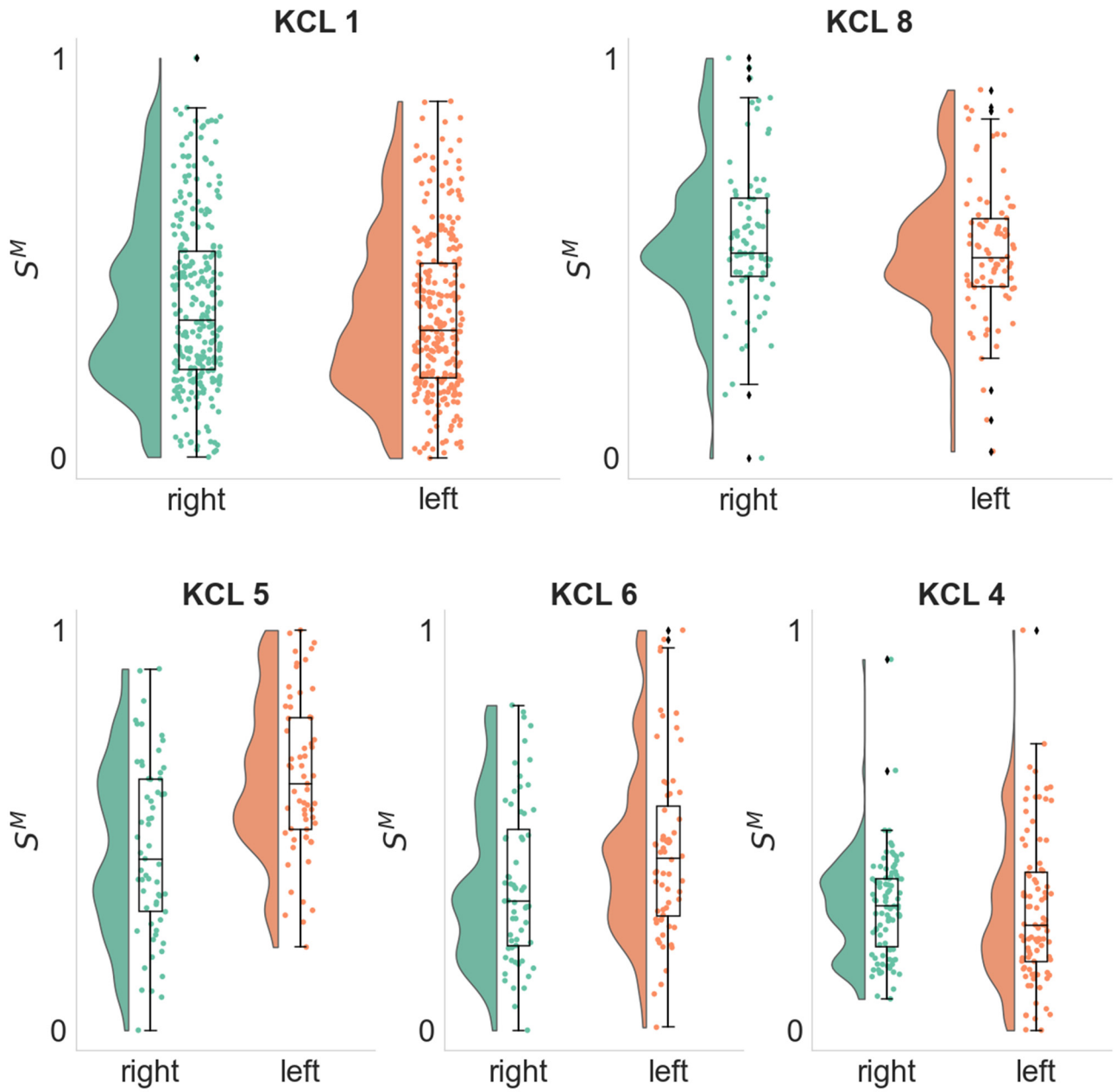


Figure S20. Distributions of the Mean Strength S^M of each hemisphere in the alpha frequency band. Each dot depicts the S^M value of the right (green) or left (orange) hemisphere as computed from a single EEG segment. KCL 1 and KCL 2 participants had the seizure focus on the right hemisphere whilst KCL 5, KCL 6 and KCL 4 had the seizure focus on the left hemisphere (p-values= 1.34×10^{-5} , only significant for KCL 5, one-sided Wilcoxon rank-sum test).

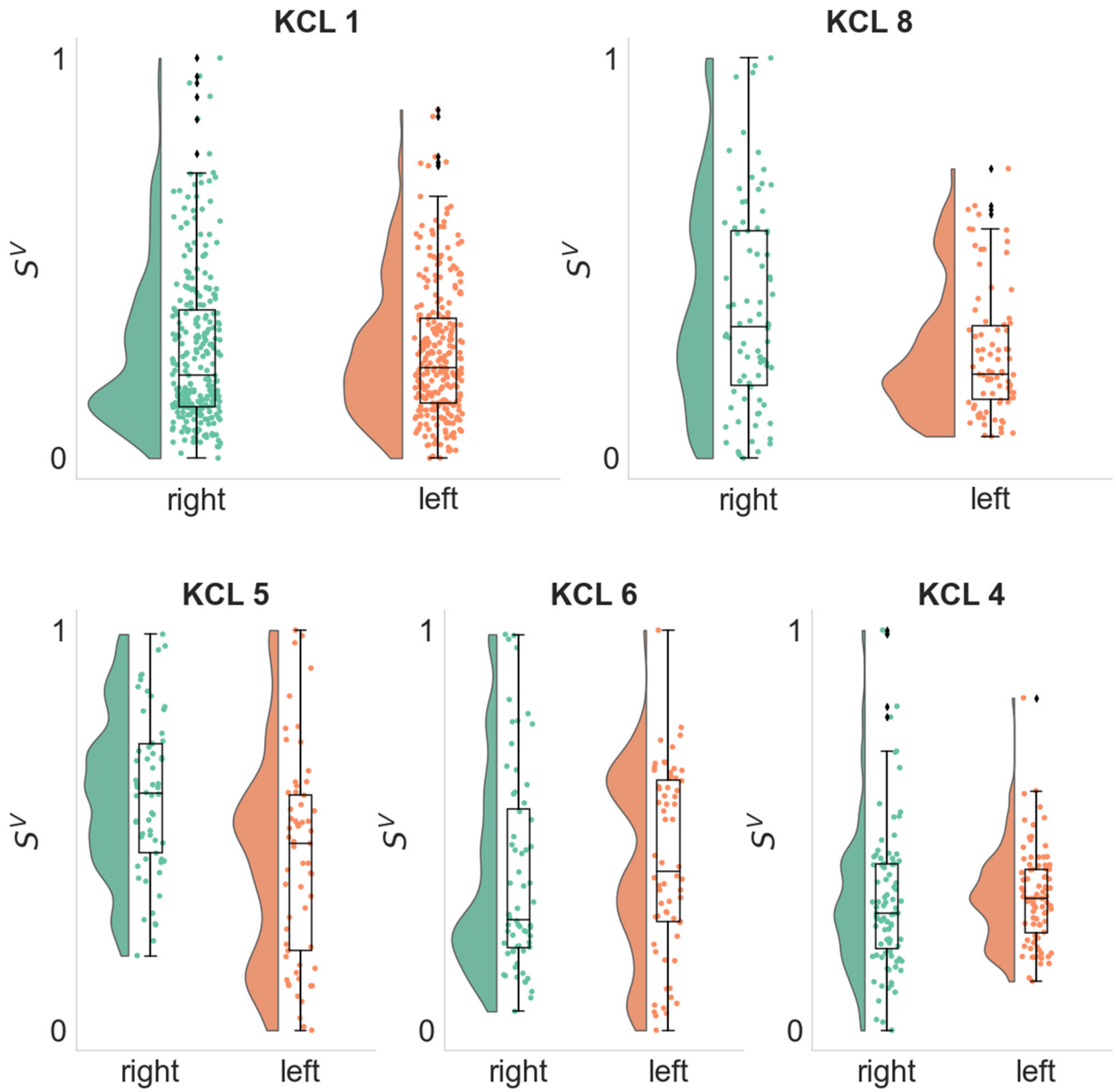


Figure S21. Distributions of the Variance of Strength S^V of each hemisphere in the alpha frequency band. Each dot depicts the S^V value of the right (green) or left (orange) hemisphere as computed from a single EEG segment. KCL 1 and KCL 2 participants had the seizure focus on the right hemisphere whilst KCL 5, KCL 6 and KCL 4 had the seizure focus on the left hemisphere (p-values= 0.001 and 0.0001, only significant for KCL 8 and KCL 5, respectively one-sided Wilcoxon rank-sum test).

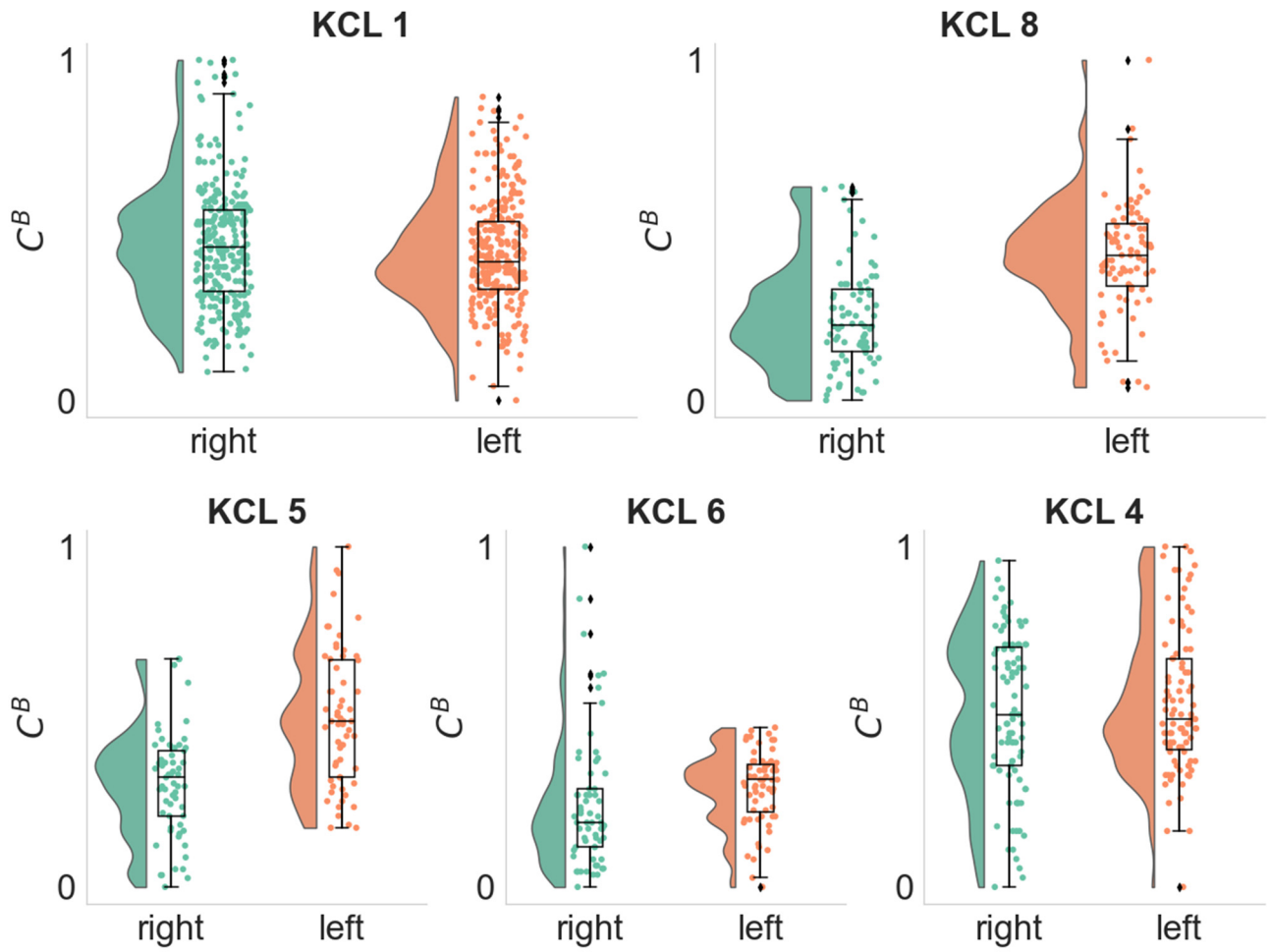


Figure S22. Distributions of the Betweenness Centrality C^B of each hemisphere in the alpha frequency band. Each dot depicts the C^B value of the right (green) or left (orange) hemisphere as computed from a single EEG segment. KCL 1 and KCL 2 participants had the seizure focus on the right hemisphere whilst KCL 5, KCL 6 and KCL 4 had the seizure focus on the left hemisphere (p-values= 1.41×10^{-7} and 0.0002, only significant for KCL 5 and KCL 6, respectively one-sided Wilcoxon rank-sum test. In KCL 8 there is a statistically significantly difference between the two distributions p-value = 6.24×10^{-11} , however it is in the opposite direction).