**Supplemental Digital Content 2:** Parameter Selection of the Dynamic Connectivity and Cluster Analysis

As described in the main text, the selection of the number of clusters and the number of retained principal components (PCs) was determined by (1) the stability index that quantifies the reproducibility of clustering solutions for the studied dataset (Lange et al. 2014), (2) the amount of explained variance by the retained PCs, and (3) the interpretability of the clustering results.

In this study, we employed the solution of 5 clusters with the first 5 PCs retained. First, though the minimal stability index was achieved with the solution of 4 clusters using 4 retained PCs, the reproducibility of the employed solution, with the stability index of 0.30±0.08, or equivalently the 1-minimum Hamming distance of 0.76±0.07 (fig. A), was comparable to the other studies based on the same stability analysis method (Hudson et al. 2014; Reinen et al. 2018; Wang et al. 2018; Nastase et al. 2017). Second, in terms of the total variance of the original connectivity patterns, the first 4 PCs and 5 PCs explained 58.0% and 63.1% of the variance (fig. B), thus the 5th PCs contained a considerable amount (5.1%) of information in the frequency-resolved patterns. Consistently, the employed solution using 5 PCs yielded the clusters associated with distinct spatial (frontal-parietal and prefrontal-frontal) and spectral (delta, theta and alpha) properties, while under the alternative solution with 4 PCs, there was no characterized pattern specific for delta connectivity (i.e., State 3 as in the employed solution), which was combined into the patterns associated with alpha and theta connectivity (i.e. the first and third clusters) (fig. C). As such, it is likely the connectivity patterns were over-compressed with the solution of 4 PCs. Taken together, the employed solution is a suitable option in terms of the tradeoff between reproducibility, specificity and interpretability.



Parameter selection in the dynamic connectivity analysis. (A) The stability index that estimates the normalized minimum Hamming distance between different clustering solutions for the studied dataset, as a function of number of retained principal components (PCs) and number of clusters (connectivity states), with the mean (left) and SD (right) values across the 100 realizations. (B) The cumulative sum of explained variance as a function of the number of retained PCs. (C) The representative connectivity patterns (blue: frontal-parietal wPLI, red: prefrontal-frontal wPLI), for the clustering solution with 4 retained PCs and 4 clusters (top) and the employed one with 5 retained PCs and 5 clusters (bottom, equivalent to manuscript fig. 5A).