**Description of Source Data files**

**Source Data 1**

Effect sizes (Mean condition), correlation coefficients (Load condition) and uncorrected *p* values (both conditions) for cross-frequency synchrony (CFS) parcel-parcel interactions presented in Figure 3. Effect sizes were calculated as means of the PLV differences between the retention and baseline period divided by the standard deviation of the PLV differences. Rows and columns represent individual parcels of the Destrieux atlas (see Figure 2 – Source Data 1 and Supplement 2) at low and high frequencies, respectively. Time windows T1-4 are stacked over rows, so that: rows 1−148 = parcels 1−148 in T1; rows 149−296 = parcels 1−148 in T2; rows 297−444 = parcels 1−148 in T3; rows 445−592 = parcels 1−148 in T4.

**Source Data 2**

Effect sizes, correlation coefficients, and *p* values as in Source Data 1, but for cross-frequency amplitude-amplitude coupling. Positive tail of Mean and Load conditions is presented in Figure 3 – Figure Supplement 7.

**Source Data 3**

CFS interaction matrices of θ-consistent (Mean condition, positive tail, ratios 1:2–1:9) and high-α-consistent (Mean condition, positive tail, ratios 1:3–1:9) CFS underlying the graphs in Figure 4. Significant edges from the ratios of interest were bundled by hierarchical clustering of the edge-edge adjacency matrix to find the hyperedges that are likely to represent the same underlying cortico-cortical interaction (see Methods). Permutation statistics ($p < 0.05$, uncorrected) were used to exclude those hyperedges that were likely to be attributable to a single ratio and thus not representative of the ratio range. The remaining hyperedges were flattened by summation of their constituent single edges into a regular parcel-parcel adjacency matrix. Rows and column represent parcels of the Destrieux atlas at low and high frequencies, respectively.

**Source Data 4**

CFS interaction matrices of high-α-consistent CFS (Load condition, positive tail, ratios 1:3–1:9) presented in the graphs in Figure 5. These source data were created as described for Source Data 3.

**Source Data 5**

Interaction matrices for α:β CFS (Mean and Load conditions, positive tail, ratio 1:2). The Mean condition is presented in the graphs in Figure 4 – Figure Supplement 1. These source data were created as described for Source Data 3.

**Source Data 6**

CFS interaction matrices of low-α consistent CFS, (Mean condition, negative tail, ratios 1:2–1:9) presented in the graphs in Figure 4 – Figure Supplement 2, created as described for Source Data 3.

**Source Data 7**

Effect sizes, correlation coefficients, and *p* values, as in Source Data 1, but for phase-amplitude coupling (PAC) data presented in Figure 8.