**S1 Text - Power spectral analysis:**

Power spectral analysis (for both power spectral snapshots and wavelet decomposition) was performed for frequencies between 1 and 200 Hz, in 1Hz bins, excepting line noise at 60Hz harmonics (57-63Hz, 117-123Hz, 177-183Hz).

**Power spectral snapshots:** A set of epochs surrounding the middle of each face or house visual stimulus and each inter-stimulus-interval (ISI) period, \( \tau_q \), were extracted from \( V(t) \); each epoch was of duration \( T = 1s, \left( \tau_q - \frac{1}{2}T \right) < t < \left( \tau_q + \frac{1}{2}T \right) \). The power spectral density (PSD) of the epoch flanking time \( \tau_q \) was calculated as

\[
P(f,q) = \left| \frac{1}{\sqrt{T}} \sum_{t=-T/2}^{T/2} V(t+\tau_q)H(t)e^{i2\pi ft} \right|^2
\]

with Hann window (42)

\[
H(t) = \frac{1}{2} \left( 1 + \cos \left( \frac{2\pi t}{T} \right) \right).
\]

**Wavelet approach:** A Morlet wavelet (43) of the form: \( \psi(t,\tau) = \exp \frac{i2\pi t}{\tau} \exp \frac{-t^2}{2\tau^2} \) was convolved with the timeseries to get a time-frequency estimate for every \( f = 1/\tau \):

\[
\tilde{V}(1/\tau, t) = \sum_{t'=-5\tau/2}^{5\tau/2} V(t+t')\psi(t',\tau)
\]

A total of 5 cycles (5\( \tau \)) were used to estimate the amplitude and phase of the signal at each frequency for every point in time. In this way, a time-varying Fourier component \( \tilde{V}(f,t) = r(f,t)e^{i\phi(f,t)} \), with fixed uncertainty between the confidence in the estimate of the instantaneous amplitude and phase versus the confidence in temporal resolution is obtained at each frequency.