



Figure S7. No hierarchy of correlation timescales is found for a small fitting range. To demonstrate the effect of the fitting range on the inferred hierarchy of correlation timescales τ_C , we repeated the same analysis from Fig. 2D for a smaller maximum time lag $T_{\max} = 500$ ms, and different minimum time lags T_{\min} . For this choice of T_{\max} , no hierarchy is found, and median values of τ_C are in general much lower (dots, bars indicate bootstrapping confidence intervals on median). This is found for all choices of T_{\min} , indicating that this is primarily caused by omitting larger time lags $T > T_{\max}$ during fitting. Here, correlation timescales were computed for spiking activity under natural movie stimulation in the *Functional Connectivity* data set. Moreover, τ_C was obtained from a single timescale fit to enable a comparison to previous analyses (c.f. Extended Data Fig. 9 in [32]), but we obtained a similar result also for the two-timescale fit, although this approach is generally much more robust to the choice of fitting range (c.f. Supplementary Fig. S5).