

Supplementary material

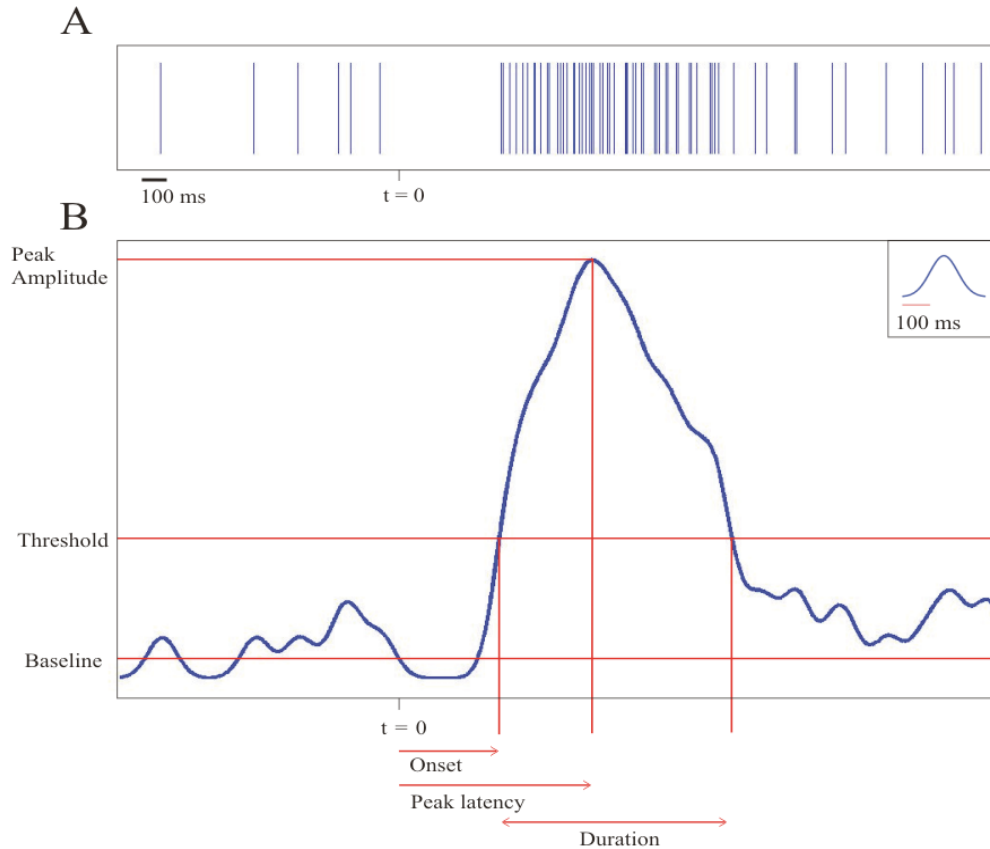


Figure S1: Parameters used for timecourse statistical analysis. **A:** Raster plot of a response from an idealized neuron. **B:** Instantaneous firing rate corresponding to the raster plot in A obtained by convolving the spike train with a Gaussian kernel with $\sigma = 100\text{ms}$. A threshold was defined as the mean of the baseline plus 4 s.d. The onset of the response was defined as the time when the firing rate curve crossed this threshold and stayed above it for at least 100 ms. The offset was defined similarly, but with the firing rate curve crossing the threshold downward for at least 100 ms. Duration was the difference between the offset and the onset times. Time $t=0$ ms symbolizes the onset of the picture.

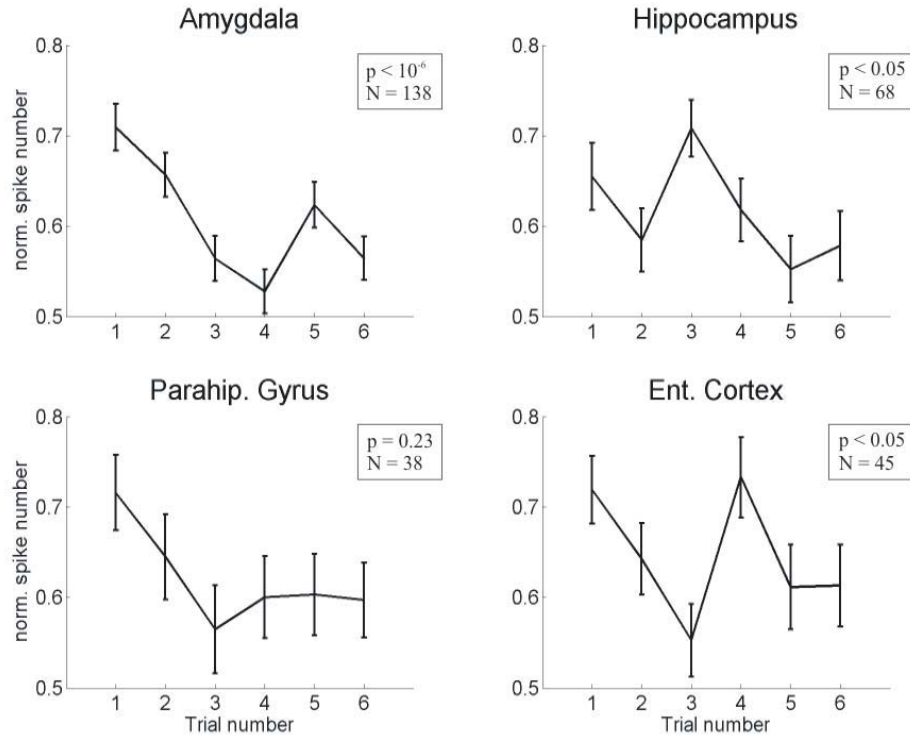


Figure S2: Mean number of spikes per trial for different MTL regions in the second session. Responses had a significant decay with picture repetition for amygdala, hippocampus and entorhinal cortex ($F(5,754) = 7.55$, $p < 10^{-6}$; $F(5,373) = 2.5$, $p < 0.05$; $F(5,249) = 2.68$, $p < 0.05$, respectively) but not for parahippocampal gyrus ($F(5,219) = 1.38$, $p = 0.23$). N refers to the number of responses for each particular region. Note that the patterns for the second session were not as clear as the ones found in the first experimental session, in agreement with data shown in Figure 4. Bars denote s.e.m.

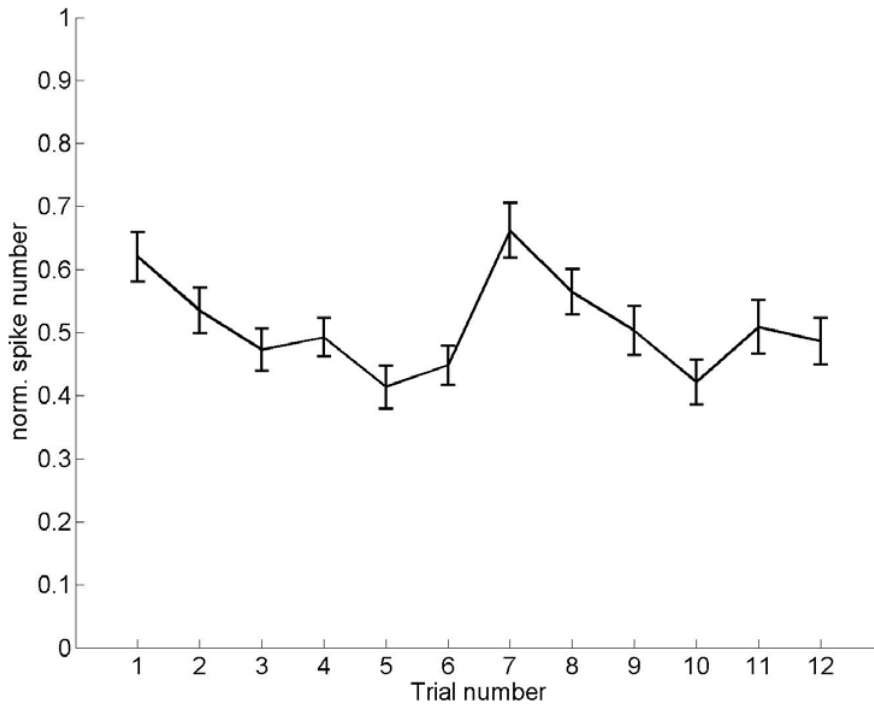


Figure S3: Normalized spike responses for 51 responses from 18 neurons traceable along the 2 sessions. Trials 1-6 correspond to the first experiment, and trials 7-12 to the second one. The normalization for all 12 trials is made using the same value. Given that the 51 responses come from traceable neurons we divided the response of each trial by the maximum response within the 12 of them. The difference in firing between the 12 trials was highly significant ($F(11,592) = 4.21$, $p < 10^{-5}$, ANOVA test with trial number as the independent variable and the repeated measures were the normalized number of spikes per response). The difference between trial 6 and 7 was also significant ($t = -4.15$, d.f. = 100, $p < 10^{-4}$, paired T-Test between both trials). Comparison between the mean of all the responses corresponding to each of the sessions did not show a significant difference between the experiments ($t = -1.39$, d.f. = 610, $p = 0.166$ for a paired T-Test between all the normalized responses from the corresponding experiment). With the analysis for the unnormalized value of the

responses, a significant difference between the 12 trials was still present, although due to a higher variability, corresponding to different firing rates of the responsive neurons, the value was slightly lower ($F(11,592) = 2.35, p < 0.01$). Similarly for the unnormalized responses, a statistical difference was found between trials 6 and 7 ($t = -2.93, d.f. = 100, p < 0.005$), but not between all the mean of the different experiments ($t = -0.72, d.f. = 610, p = 0.47$). Bars denote s.e.m.