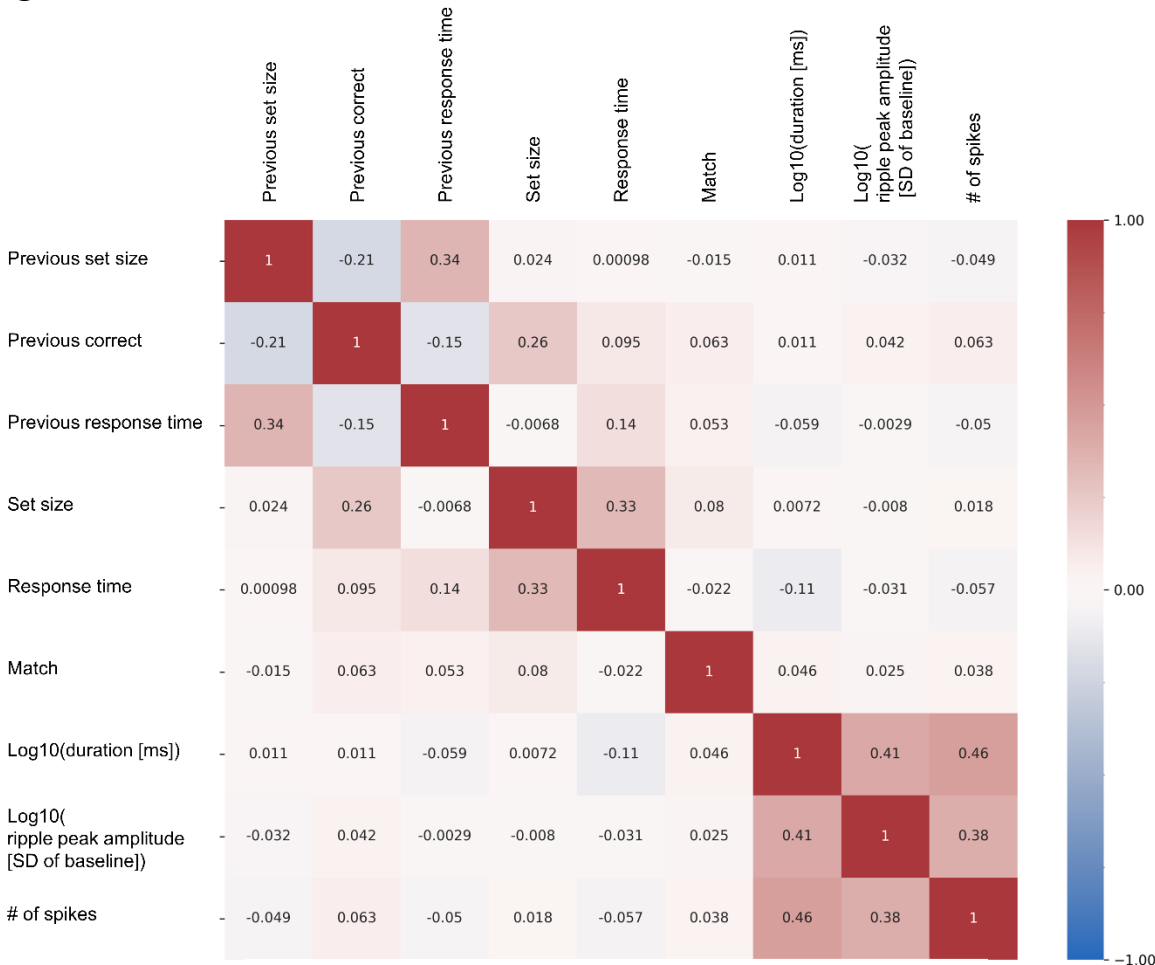


1 **Hippocampal neural fluctuation between memory encoding and retrieval states during a**  
 2 **working memory task in humans**

3

4 **Figures**

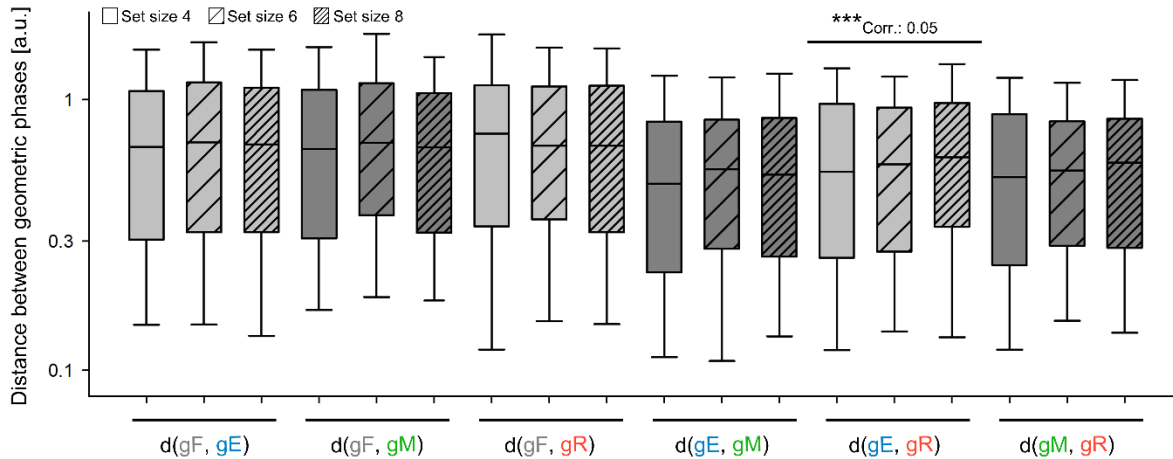


5

6 **Figure S1. Correlations among variables**

7 The heatmap shows the correlation coefficients among variables related to the modified  
 8 Sternberg task and detected sharp-wave ripples (SWRs) parameters. Note that, the “previous  
 9 correct” and set size (= the number of alphabetical letters to encode) showed the 0.26 correlation  
 10 coefficient because the set size was always fixed as four after incorrect tasks. Abbreviations:  
 11 previous set size, the set size of a previous trial; previous correct, incorrect (= 0) or correct (= 1)  
 12 of the previous trial; match, Match IN (0) or Mismatch OUT (1) of the trial; log10(duration

13 [ms]), log10(duration [ms]) of sharp-wave ripple (SWR) event; log10(ripple peak amplitude [SD  
14 of baseline]), log10(ripple peak amplitude [SD of baseline]) of SWR event; # of spikes, the  
15 number of spikes during a SWR event.  
16



17

18 **Figure S2. Memory load-dependent distance between the encoding and retrieval states**

19 The figure shows distances between the four geometric phases (*i.e.*, the fixation, encoding,  
 20 maintenance, and retrieval phases). Among all the combinations, d(gE, gR) showed a significant  
 21 correlation with set size (= the number of letters to encode) (\*\*\*)  $p < 0.001$ ; correlation analysis  
 22 using set-size-shuffled surrogate).