**Inventory of Supporting Information**

Our manuscripts include three types of supporting information:

1. Extended Data
2. Supplementary Information
3. Source Data

EXTENDED DATA: There is a limit of 8 display items in the main text (combination of Figures and Tables). However, we also allow up to 10 Extended Data figures. Extended Data are an integral part of the paper and only data that directly contribute to the main message should be presented. These figures will be integrated into the full-text HTML version of your paper and will be appended to the online PDF (for a published example, please see <https://www.nature.com/articles/s41591-019-0508-1>). There is a limit of 10 Extended Data figures, and each must be referred to in the main text. Each Extended Data figure should be of the same quality as the main figures, and should be supplied at a size that will allow both the figure and legend to be presented on a single A4 page. Each figure should be submitted as an individual .jpg, .tif or .eps file with a maximum size of 10 MB each, using the ‘Figure File’ article type in our Manuscript Tracking system. All Extended Data figure legends must be provided in the Inventory of Supporting Information provided below, not in the figure files themselves.

SUPPLEMENTARY INFORMATION: Supplementary Information is material that is essential background to the study but which it is not practical to include in the main text or extended data (for example, video files, large data sets and calculations). Each item must be referred to in the main manuscript and detailed in the attached Inventory of Supplementary Information. Tables containing large data sets should be in Excel format, with the table number and title included within the body of the table. All textual information and any additional Supplementary Figures (which should be presented with the legends directly below each figure) should be provided as a single, combined PDF. Please note that Supplementary Information is not copyedited and we cannot replace any Supplementary Information after the paper has been formally accepted unless there has been a critical scientific error.

All Extended Data Figures must be referred to in your manuscript and cited as *Extended Data Figure 1, Extended Data Figure 2*, etc. Additional Supplementary Figures and other items are not required to be called out in your manuscript text, but should be numerically numbered, starting at one, as Supplementary Figure 1, etc., not SI1.

SOURCE DATA: We encourage you to provide Source Data for your Figures (including Extended Data Figures) whenever possible. Statistical Source Data for any relevant Figures should be provided as individual Excel files (one for each figure) with the linked figure noted within the Excel file. For imaging Source Data, we encourage deposition in a relevant repository.

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| **Instructions:**  Please complete each of the Inventory Tables below to outline your Extended Data and Supplementary Information items.  There are four sections; *1. Extended Data, 2A. Supplementary Information: Flat Files, 2B. Supplementary Information: Additional Files,* and *3. Source Data.* Each section includes specific instructions. Please complete these tables as fully as possible.  Please note that titles and descriptive captions will only be lightly edited, so please ensure that you are satisfied with these prior to submission.  If you have any questions about any of the information contained in this inventory, please contact the Editorial Assistant: humanbehaviour@nature.com |

1. **Extended Data**

**Complete the Inventory below for all Extended Data figures.**

* Keep Figure Titles to one sentence only
* File names should include the Figure Number. i.e.: *Smith\_ED Fig1.jpg*
* Please be sure to include the file extension in the Filename. Note that Extended Data files must be submitted as .jpg, .tif or .eps files *only*
* All Extended Data figure legends must be provided in the Inventory below and should not exceed 300 words each *(if possible)*
* Please include Extended Data *ONLY* in this table

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| **Figure #** | **Figure title**  One sentence only | **Filename**  This should be the name the file is saved as when it is uploaded to our system. Please include the file extension. i.e.: *Smith\_ED Fig1.jpg* | **Figure Legend**  If you are citing a reference for the first time in these legends, please include all new references in the Online Methods References section, and carry on the numbering from the main References section of the paper. |
| **Extended Data Fig. 1** | **Methods detail for recall trajectory analysis displayed in Figure 6B.** | Extended\_Data\_Figure\_1.jpg | **A.** This panel replicates Figure 6B, but with two additions. First, individual participants' recall trajectories are displayed (faintly) as light gray lines. Second, three locations on the trajectory have been highlighted (blue, yellow, and red circles). **B.** These zoomed-in views of the locations highlighted in Panel A show the average trajectory (black) and individual participants' trajectories (gray lines) that intersect the given region of topic space. **C.** For each circular region of topic space tiling the 2D embedding plane displayed in Panel A, we compute the distribution of angles formed between each participant's trajectory segment (i.e., the point at which the trajectory enters and exists the region of topic space) and the *x*-axis. The distributions of angles for these three example regions are displayed in the colored rose plots. We use Rayleigh tests to assign an arrow direction, length, and color for that region of topic space. Arrows displayed in color are significant at the *p* < 0.05 level (corrected). The arrow directions are oriented according to the circular means of each distribution, and the arrow lengths are proportional to the lengths of those mean vectors. The example regions have been oriented from left to right in decreasing order of consistency across participants. |
| **Extended Data Fig. 2** | **Recall temporal correlation matrices and event segmentation fits.** | Extended\_Data\_Figure\_2.jpg | Each panel is in the same format as Figure 2E. The yellow boxes indicate HMM-identified event boundaries. |
| **Extended Data Fig. 3** | **Episode-recall event correlation matrices.** | Extended\_Data\_Figure\_3.jpg | Each panel is in the same format as Figure 2G. The yellow boxes mark the matched episode event for each recall event (i.e., the maximum correlation in each column). |
| **Extended Data Fig. 4** | **Episode and recall topic proportions matrix *K*-optimization functions.** | Extended\_Data\_Figure\_4.jpg | We selected the optimal *K*-value for the episode and each recall topic proportions matrix using the formula described in *Methods*. This computation resulted in a curve for each matrix, describing the Wasserstein distance between the distributions of within-event and across-event topic vector correlations, as a function of *K*. |

***Delete rows as needed to accommodate the number of figures (10 is the maximum allowed).***

1. **Supplementary Information:**
2. **Flat Files**

**Complete the Inventory below for all additional textual information and any additional Supplementary Figures, which should be supplied in one combined PDF file.**

* **Row 1:** A combined, flat PDF containing any **Supplementary Methods, Supplementary Results, Supplementary Discussion, Supplementary Figures, Supplementary Tables (if simple), and Supplementary References**. Only one such file is permitted and all information must be organized under the above headings [no custom headings permitted, but there are no restrictions regarding subheadings].
* **Row 2:** Nature Research’s Reporting Summary; please provide an updated Summary, fully completed, without any mark-ups or comments. **Please note that this is a required document.**

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| **Item** | **Present?** | **Filename**  This should be the name the file is saved as when it is uploaded to our system, and should include the file extension. The extension must be .pdf | **A brief, numerical description of file contents.**  i.e.: *Supplementary Discussion, Supplementary Figures 1-4, Supplementary Tables 1-4, Supplementary References.* |
| **Supplementary Information** | Choose an item. | supplementary\_information.pdf | Supplementary Methods, Supplementary Figures 1-3, Supplementary references |
| **Reporting Summary** | Choose an item. | nr-reporting-summary.pdf |

1. **Additional Supplementary Files**

**Complete the Inventory below for all additional Supplementary Files that cannot be submitted as part of the Combined PDF.**

* Do not list Supplementary Figures in this table (see section 2A)
* Where possible, include the title and description within the file itself
* Spreadsheet-based tables and data should be combined into a workbook with multiple tabs, not submitted as individual files.
* Please note that the *ONLY* allowable types of additional Supplementary Files are:

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| * Supplementary Tables | * Supplementary Audio | Suppl. Software | * Computational Data |
| * Supplementary Videos | * Supplementary Data |  |  |

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| **Type** | **Number**  If there are multiple files of the same type this should be the numerical indicator. i.e. “1” for Video 1, “2” for Video 2, etc. | **Filename**  This should be the name the file is saved as when it is uploaded to our system, and should include the file extension. i.e.: *Smith\_ Supplementary Video 1.mov* | **Legend or Descriptive Caption**  Describe the contents of the file |
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***Add rows as needed to accommodate the number of files.***

1. **Source Data**

**Complete the Inventory below for all Source Data files.**

* Acceptable types of Source Data are:
  + Statistical Source Data
    - Excel format only
    - One file for each relevant Figure, containing all source data

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| **Figure** | **Filename**  This should be the name the file is saved as when it is uploaded to our system, and should include the file extension. i.e.: *Smith\_Source Data Fig1.xls* | **Data description**  i.e.: Statistical Source Data, etc. |
| **Source Data Fig. 1** |  |  |
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