**Supplementary Information**

**Supplementary Table 1.** Demographic information and clinical characteristics of the participants in the iEEG sample.

| Subject ID | Age | Sex | IQ  | Language Dominance | Seizure Focus | Resection                                                                 | Behavioral<sup>a</sup> (n=30) | ATL<sup>b</sup> (n=19) | PTL<sup>b</sup> (n=18) |
|------------|-----|-----|-----|--------------------|---------------|----------------------------------------------------------------------------|-------------------------------|--------------------------|--------------------------|
| NIH026     | 34  | F   | 80  | L                  | L temporal    | L temporal lobectomy w/ amygdalohippocampectomy                           | *                             | *                        | *                        |
| NIH028     | 33  | M   | 106 | L                  | L temporal    | L temporal lobectomy, amygdalohippocampectomy                             | *                             | *                        | *                        |
| NIH029     | 28  | M   | 75  | L                  | L temporal    | None                                                                      | *                             | *                        | *                        |
| NIH032     | 33  | F   | 94  | L                  | R temporal    | R temporal lobectomy, amygdalohippocampectomy                             | *                             | *                        | *                        |
| NIH033     | 22  | F   | 100 | R                  | L temporal    | None                                                                      | *                             |                          |                          |
| NIH034     | 51  | M   | 74  | L                  | L temporal    | L selective amygdalohippocampectomy                                      | *                             | *                        | *                        |
| NIH035     | 43  | F   | 79  | L                  | R temporal    | R inferior, middle temporal gyrus corticectomy                            | *                             |                          |                          |
| NIH036     | 33  | M   | 91  | L                  | L temporal    | L temporal lobectomy w/ amygdalohippocampectomy, Resection of periventricular heterotopia | *                             | *                        | *                        |
| NIH037     | 43  | F   | 92  | L                  | L temporal    | L temporal lobectomy w/ amygdalohippocampectomy                           | *                             |                          |                          |
| NIH038     | 40  | F   | 80  | R                  | R frontal     | R superior frontal gyrus, anterior cingulate, gyrus rectus                | *                             |                          |                          |
| NIH039     | 28  | F   | 86  | L                  | L temporal    | L temporal lobectomy w/ amygdalohippocampectomy                           | *                             | *                        | *                        |
| NIH040     | 30  | F   | 79  | L                  | R temporal    | R temporal lobectomy w/ amygdalohippocampectomy                           | *                             | *                        | *                        |
| NIH041     | 33  | M   | 74  | L                  | R parietal    | R parietal corticectomy                                                  | *                             | *                        | *                        |
| NIH042     | 20  | M   | 78  | L                  | L temporal    | L superior temporal corticectomy                                          | *                             | *                        | *                        |
| Subject ID | Age | Sex | IQ | Language Dominance | Seizure Focus | Resection | Behavioral\(^a\) (n=30) | ATL\(^b\) (n=19) | PTL\(^b\) (n=18) |
|------------|-----|-----|----|-------------------|--------------|-----------|-----------------|----------------|----------------|
| NIH043     | 17  | M   | 106| L                 | None         |           | *               | *              | *              |
| NIH046     | 29  | M   | N/A| L                 | R parietal   | R parietal topectomy | *              | *              | *              |
| NIH047     | 32  | M   | 88 | L \& R            | L temporal   | L temporal lobectomy, amygdalohippocampectomy, resection of heteropia | *              | *              | *              |
| NIH050     | 20  | M   | 78 | L                 | R temporal   | R temporal lobectomy, amygdalohippocampectomy | *              | *              | *              |
| NIH051     | 36  | M   | 105| L                 | L frontal    | L cingulate topectomy | *              |          |              |
| NIH052     | 57  | M   | 108| L                 | R temporal   | R temporal lobectomy, amygdalohippocampectomy | *              | *              | *              |
| NIH053     | 53  | F   | 100| L                 | bitemporal   | R temporal lobectomy, amygdalohippocampectomy | *              |          |              |
| NIH055     | 21  | F   | 76 | L                 | R parietal   | R parietal topectomy | *              | *              | *              |
| NIH056     | 22  | M   | 83 | L                 | R parietal   | None       | *              |              |              |
| NIH057     | 34  | M   | 80 | L                 | L temporal   | L anterior temporal lobectomy and amygdalohippocampectomy | *              |          |              |
| NIH058     | 22  | M   | 81 | L                 | R frontal    | R frontal topectomy | *              |          |              |
| NIH062     | 34  | M   | 106| L                 | L temporal   | None       | *              | *              | *              |
| NIH064\(^c\) | 45  | M   | 78 | L                 | R temporal   | R posterior temporal lobe topectomy | *              |          |              |
| NIH065     | 44  | M   | 89 | L                 | R temporal   | R temporal lobe epilepsy; mesial frontal lobe epilepsy | *              |          |              |
| NIH066     | 24  | M   | 89 | L                 | L temporal   | L anterior temporal lobectomy and amygdalohippocampectomy | *              | *              | *              |
| NIH075     | 21  | M   | 87 | L                 | L temporal   | L anterior temporal lobectomy and amygdalohippocampectomy | *              | *              | *              |

*Note: R = Right; L = Left. \(^a\) All participants’ data were used for the behavioral analysis. \(^b\) Participants should have at least 3 electrodes after artifacts correction with more than 10 accurate recall trials. \(^c\) This participant had a pacemaker, and thus MRI scan was not available.*
Supplementary Table 2. Trial counts for data included for the correlational analysis between response times and the memorability of responded words.

| Subject ID | Total Trials | Correct Trials | Responded Trials | Intrusion Trials | Other Intrusions |
|------------|--------------|----------------|------------------|-----------------|-----------------|
| NIH051     | 300          | 243            | 265              | 20              | 2               |
| NIH032     | 300          | 242            | 251              | 9               | 0               |
| NIH035     | 300          | 192            | 215              | 22              | 1               |
| NIH043     | 300          | 200            | 207              | 7               | 0               |
| NIH046     | 300          | 144            | 178              | 33              | 1               |
| NIH058     | 300          | 137            | 163              | 24              | 2               |
| NIH026     | 300          | 122            | 160              | 35              | 3               |
| NIH041     | 300          | 41             | 159              | 93              | 25              |
| NIH042     | 276          | 122            | 154              | 28              | 4               |
| NIH040     | 300          | 107            | 151              | 39              | 5               |
| NIH047     | 300          | 77             | 134              | 51              | 6               |
| NIH065     | 150          | 68             | 116              | 47              | 1               |
| NIH064     | 150          | 17             | 108              | 51              | 40              |
| NIH036     | 300          | 36             | 100              | 51              | 13              |
| NIH056     | 223          | 31             | 87               | 48              | 8               |
| NIH050     | 150          | 77             | 83               | 6               | 0               |
| NIH038     | 150          | 7              | 77               | 64              | 6               |
| NIH034     | 150          | 14             | 75               | 40              | 21              |
| NIH055     | 150          | 49             | 74               | 22              | 3               |
| NIH039     | 300          | 33             | 67               | 31              | 3               |
| NIH066     | 114          | 47             | 60               | 13              | 0               |
| NIH062     | 72           | 19             | 54               | 32              | 3               |
| NIH052     | 150          | 44             | 52               | 8               | 0               |
| NIH028     | 300          | 41             | 49               | 8               | 0               |
| NIH075     | 120          | 18             | 40               | 19              | 3               |
| NIH029     | 300          | 19             | 35               | 16              | 0               |
| NIH053     | 150          | 6              | 11\textsuperscript{d} | 5               | 0               |

Excluded below

| Subject ID | Total Trials | Correct Trials | Responded Trials | Intrusion Trials | Other Intrusions |
|------------|--------------|----------------|------------------|-----------------|-----------------|
| NIH037     | 150          | 9              | 10               | 1               | 0               |
| NIH057     | 108          | 7              | 9                | 2               | 0               |
| NIH033     | 24           | 5              | 9                | 3               | 1               |

Note: a) Responded trials refer to the trials in which participants vocalize a word from the word pool during the retrieval phase. b) Intrusion trials refer to the trials in which participants respond a wrong word, and this word was in the word pool. c) Other intrusions refer to the trials in which participants vocalize a wrong word, but this word is not from the pool, and hence no memorability analysis is available. d) As shown in Extended Data Fig. S1, inclusion or exclusion of this participant does not impact the mean estimate and significant testing outcomes.
**Supplementary Table 3.** Trial counts for data included for the analysis between intrusion errors and the memorability of intruded words.

| Subject ID | Total Trials | Correct Trials | Responded Trials<sup>a</sup> | Intrusion Trials<sup>b</sup> | Other Intrusions<sup>c</sup> |
|------------|--------------|----------------|-----------------------------|-----------------------------|-----------------------------|
| NIH041     | 300          | 41             | 159                         | 93                          | 25                          |
| NIH038     | 150          | 7              | 77                          | 64                          | 6                           |
| NIH047     | 300          | 77             | 134                         | 51                          | 6                           |
| NIH064     | 150          | 17             | 108                         | 51                          | 40                          |
| NIH036     | 300          | 36             | 100                         | 51                          | 13                          |
| NIH065     | 150          | 68             | 116                         | 47                          | 1                           |
| NIH056     | 223          | 31             | 87                          | 48                          | 8                           |
| NIH034     | 150          | 14             | 75                          | 40                          | 21                          |
| NIH040     | 300          | 107            | 151                         | 39                          | 5                           |
| NIH026     | 300          | 122            | 160                         | 35                          | 3                           |
| NIH046     | 300          | 144            | 178                         | 33                          | 1                           |
| NIH062     | 72           | 19             | 54                          | 32                          | 3                           |
| NIH039     | 300          | 33             | 67                          | 31                          | 3                           |
| NIH042     | 276          | 122            | 154                         | 28                          | 4                           |
| NIH058     | 300          | 137            | 163                         | 24                          | 2                           |
| NIH035     | 300          | 192            | 215                         | 22                          | 1                           |
| NIH055     | 150          | 49             | 74                          | 22                          | 3                           |
| NIH051     | 300          | 243            | 265                         | 20                          | 2                           |
| NIH075     | 120          | 18             | 40                          | 19                          | 3                           |
| NIH029     | 300          | 19             | 35                          | 16                          | 0                           |
| NIH066     | 114          | 47             | 60                          | 13                          | 0                           |

**Excluded Below**

| Subject ID | Total Trials | Correct Trials | Responded Trials<sup>a</sup> | Intrusion Trials<sup>b</sup> | Other Intrusions<sup>c</sup> |
|------------|--------------|----------------|-----------------------------|-----------------------------|-----------------------------|
| NIH032     | 300          | 242            | 251                         | 9                          | 0                           |
| NIH052     | 150          | 44             | 52                          | 8                          | 0                           |
| NIH028     | 300          | 41             | 49                          | 8                          | 0                           |
| NIH043     | 300          | 200            | 207                         | 7                          | 0                           |
| NIH050     | 150          | 77             | 83                          | 6                          | 0                           |
| NIH053     | 150          | 6              | 11                          | 5                          | 0                           |
| NIH033     | 24           | 5              | 9                           | 3                          | 1                           |
| NIH057     | 108          | 7              | 9                           | 2                          | 0                           |
| NIH037     | 150          | 9              | 10                          | 1                           | 0                           |

*Note: a). Responded trials refer to the trials in which participants vocalize a word from the word pool during the retrieval phase. b). Intrusion trials refer to the trials in which participants respond a word from the word pool, which however is NOT the correct target word but appears somewhere in the task. c). Other intrusions refer to the trials in which participants vocalize a word, but this word is not from the pool, and hence no memorability analysis is available.*
Supplementary Table 4. Trial and channel counts per subject for the data included for iEEG analysis.

| Subject ID | Accuracy | Trial count | Channel count |
|------------|----------|-------------|---------------|
|            |          | Total       | Correct       | Correct & non-memorable | ATL | PTL |
| NIH026     | 0.407    | 300         | 122           | 67                        | 55  | 40  |
| NIH028     | 0.137    | 300         | 41            | 25                        | 16  | 36  |
| NIH029     | 0.063    | 300         | 19            | 15                        | 4   | 35  |
| NIH032     | 0.807    | 300         | 242           | 136                       | 106 | 51  |
| NIH034     | 0.093    | 150         | 14            | 9                         | 5   | 28  |
| NIH036     | 0.120    | 300         | 36            | 24                        | 12  | 30  |
| NIH039     | 0.110    | 300         | 33            | 20                        | 13  | 36  |
| NIH040     | 0.357    | 300         | 107           | 67                        | 40  | 17  |
| NIH041     | 0.137    | 300         | 41            | 26                        | 15  | 34  |
| NIH042     | 0.442    | 276         | 122           | 66                        | 56  | 26  |
| NIH043     | 0.667    | 300         | 200           | 104                       | 96  | 10  |
| NIH046     | 0.480    | 300         | 144           | 79                        | 65  | 4   |
| NIH047     | 0.258    | 300         | 78            | 46                        | 31  | 39  |
| NIH050     | 0.513    | 150         | 77            | 47                        | 30  | 43  |
| NIH052     | 0.293    | 150         | 44            | 26                        | 18  | 25  |
| NIH055     | 0.327    | 150         | 49            | 29                        | 20  | 24  |
| NIH062     | 0.264    | 72          | 19            | 9                         | 10  | 81  |
| NIH066     | 0.412    | 114         | 47            | 30                        | 17  | 85  |
| NIH075     | 0.150    | 120         | 18            | 12                        | 6   | 30  |

Note: a) Memorable vs. non-memorable categorization was based on the median memorability score of all words estimated from the behavioral performance from 30 iEEG participants. Memorable words should have a memorability score greater than the median, whereas non-memorable words should have a memorability score lower than the median. Words that have the median memorability score were not included for analysis. b) NIH043 was not included in the data analysis for PTL.
Supplementary Table 5. Spearman correlation matrix of predictors used for Table 1 in the main text.

|                              | Predicted Memorability | Word frequency (rank) |
|------------------------------|-------------------------|-----------------------|
| Predicted Memorability      |                         |                       |
| Word frequency (rank)        | $\rho = -.37 [-.46, -.26], p < .001$ | -                     |
| Concreteness                 | $\rho = .19 [.08, .31], p < .001$ | $\rho = .08 [-.04, .19], p = .18$ |

**Note:** Data in the table are Spearman correlation $\rho$ and its 95% confidence interval, as well as $p$ value. a). Word frequency values were ranked in the Corpus of Contemporary American English in ascending order. That is, a smaller value means higher word frequency. b). Concreteness values were extracted from a large-scale word rating study, with a larger value indicate more concrete meaning.

Supplementary Table 6. Stepwise regression results

|                              | Observed Memorability (iEEG sample) | Observed Memorability (Online sample) |
|------------------------------|------------------------------------|--------------------------------------|
|                              | Model 1                            | Model 2                              | Model 3                              | Model 1                            | Model 2                              | Model 3                              |
| Word frequency (rank)$^a$     | $\beta = -.17 [-.28, -.05], p = .004$ | $\beta = -.09 [-.21, .03], p = .16$ | $\beta = -.09 [-.21, .03], p = .16$ | $\beta = -.10 [-.22, .10], p = .072$ | $\beta = -.02 [-.14, .10], p = .70$ | $\beta = -.03 [-.15, .10], p = .68$ |
| Predicted Memorability       | $\beta = .19 [.07, .31], p = .003$ | $\beta = .19 [.06, .31], p = .003$ | $\beta = .20 [.08, .33], p = .001$ | $\beta = .18 [.05, .30], p = .005$ |
| Concreteness$^b$              |                                    | $\beta = .07 [-.12, .11], p = .94$ | $\beta = .09 [-.02, .21], p = .11$ |

**Note:** Data in the table are standardized regression coefficient $\beta$ and its 95% confidence interval, as well as $p$ value. Statistically significant values are bolded in the table. a). Word frequency values were ranked in the Corpus of Contemporary American English in ascending order. That is, a smaller value means higher word frequency. b). Concreteness values were extracted from a large-scale word rating study, with a larger value indicate more concrete meaning. As summarized in Supplementary Table 6, word frequency can significantly predict observed memorability scores in the iEEG sample ($\beta = -.17 [-.28, -.05], p = .004$). However, it fails to significantly predict observed memorability in the online sample ($\beta = -.10 [-.22, .10], p = .072$; Model 1). In contrast, adding the model-predicted memorability value could significantly account for a substantial amount of variance in observed memorability values across samples, regardless of whether other predictors are included or not (Model 2 and 3). These results suggest that the model-predicted memorability contributes unique variances to observed memorability values.