**Table S1** behavioral performance (Mean ± SD) on the AID task in the MRI scanner

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | WM training group ( n= 15) | |  | TAU control group (n = 11) | |
|  | pre-training | post-training |  | pre-training | post-training |
| **RTs (ms)** |  |  |  |  |  |
| Control | 239.67±37.98 | 228.72±25.33 |  | 228.94±33.12 | 230.12±24.36 |
| Negative | 241.02±49.56 | 231.17±28.1 |  | 232.58±31.8 | 228.33±35.67 |
| Positive | 231.67±39.55 | 228.61±21.94 |  | 232.73±24.01 | 222.66±30.26 |
| **Accuracy (%)** |  |  |  |  |  |
| Control | 61±10.04 | 60.67±7.29 |  | 68.64±8.09 | 64.55±8.5 |
| Negative | 61.67±16.11 | 57.67±6.51 |  | 63.64±10.98 | 63.18±8.45 |
| Positive | 65.33±10.43 | 62.33±7.53 |  | 63.64±5.95 | 63.18±4.62 |

Abbreviations: The AID task: the affective incentive delay task; WM: working memory; TAU: treatment-as-usual

**Table S2** Brain activation in the anticipation and consummation phases in the WM training group (TG) and the TAU control group (CG) at pre-training session

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Group** | **Contrast** | **Numbers of**  **Sig. Clusters** | **Cluster Size** | **X** | **Y** | **Z** | **peak *t*** |  | **brain Regions** | **Brodmann's Area** |
| **TG** | **Anticipation phase** |  |  |  |  |  |  |  |  |  |
|  | Positive cue > Neutral cue | 2 | 11 | -33 | -81 | -12 | 5.530 |  | Inferior Occipital Gyrus | 18/19 |
|  |  |  | 27 | 30 | -87 | -3 | 5.471 |  | Middle Occipital Gyrus | 18 |
|  |  |  |  | 42 | -81 | -6 | 4.580 |  |  |  |
|  | Negative cue > Neutral cue | 0 |  |  |  |  |  |  |  |  |
|  | **Consummation phase** |  |  |  |  |  |  |  |  |  |
|  | Positive cue hit > Neutral cue hit | 6 | 1765 | 51 | -69 | 0 | 12.952 |  | Inferior/Middle Temporal Gyrus | 37/19 |
|  |  |  |  | 45 | -54 | 6 | 10.927 |  |  |  |
|  |  |  |  | -51 | -72 | 12 | 9.319 |  |  |  |
|  |  |  | 35 | 48 | 6 | 39 | 6.191 |  | Inferior Frontal Gyrus | 9 |
|  |  |  | 10 | 21 | 0 | -18 | 5.637 |  | Parahippocampus |  |
|  |  |  | 46 | -6 | 57 | 27 | 5.630 |  | Superior Frontal Gyrus | 9/10 |
|  |  |  |  | -12 | 54 | 39 | 4.965 |  |  |  |
|  |  |  |  | 3 | 57 | 27 | 4.228 |  |  |  |
|  |  |  | 16 | -36 | 24 | -21 | 4.377 |  | Superior Temporal Gyrus | 38 |
|  |  |  |  | -48 | 18 | -21 | 4.272 |  |  |  |
|  |  |  | 17 | 39 | 30 | -15 | 4.359 |  | Inferior Frontal Gyrus | 47 |
|  |  |  |  | 42 | 21 | -18 | 4.202 |  |  |  |
|  | Negative cue miss > Neutral cue miss | 6 | 29 | 51 | 9 | 39 | 5.123 |  | Inferior Frontal Gyrus | 9 |
|  |  |  |  | 45 | 3 | 33 | 4.817 |  |  |  |
|  |  |  | 53 | -54 | -60 | 6 | 4.723 |  | Middle Temporal Gyrus | 21 |
|  |  |  |  | -45 | -63 | 9 | 4.581 |  |  |  |
|  |  |  | 32 | 48 | -54 | 6 | 4.700 |  | Middle Temporal Gyrus | 39/22 |
|  |  |  | 10 | -51 | 24 | 12 | 4.538 |  | Inferior Frontal Gyrus |  |
|  |  |  | 10 | 42 | -48 | -15 | 4.479 |  | Fusiform Gyrus |  |
|  |  |  | 21 | 51 | -66 | -3 | 4.155 |  | Middle Temporal Gyrus | 37 |
| **CG** | **Anticipation phase** |  |  |  |  |  |  |  |  |  |
|  | Positive cue > Neutral cue | 0 |  |  |  |  |  |  |  |  |
|  | Negative cue > Neutral cue | 1 | 15 | 51 | -18 | 0 | 5.624 |  | Superior Temporal Gyrus |  |
|  | **Consummation phase** |  |  |  |  |  |  |  |  |  |
|  | Positive cue hit > Neutral cue hit | 4 | 274 | 48 | -66 | 3 | 7.973 |  | Middle Temporal Gyrus | 19/37 |
|  |  |  |  | 42 | -78 | -6 | 7.151 |  |  |  |
|  |  |  |  | 33 | -90 | -9 | 5.850 |  |  |  |
|  |  |  | 26 | -51 | -57 | 15 | 7.602 |  | Middle Temporal Gyrus | 19 |
|  |  |  | 15 | 42 | -42 | -18 | 5.939 |  | Fusiform Gyrus | 37 |
|  |  |  | 35 | -9 | -99 | -3 | 5.685 |  | Lingual Gyrus | 17 |
|  |  |  |  | -24 | -93 | -12 | 5.057 |  |  |  |
|  |  |  |  | -15 | -87 | -12 | 4.564 |  |  |  |
|  | Negative cue miss > Neutral cue miss | 6 | 109 | 42 | -72 | -3 | 7.124 |  | Middle Temporal Gyrus | 19/37 |
|  |  |  |  | 48 | -57 | -3 | 5.662 |  |  |  |
|  |  |  |  | 48 | -60 | 9 | 4.378 |  |  |  |
|  |  |  | 14 | 42 | -42 | -18 | 6.764 |  | Fusiform Gyrus | 37 |
|  |  |  | 29 | -21 | -33 | -6 | 6.395 |  | Parahippocampus |  |
|  |  |  |  | -18 | -24 | -9 | 5.121 |  |  |  |
|  |  |  |  | -30 | -27 | -6 | 4.714 |  |  |  |
|  |  |  | 18 | -39 | -48 | -21 | 5.955 |  | Fusiform Gyrus | 37 |
|  |  |  | 21 | -54 | -51 | 12 | 5.655 |  | Middle Temporal Gyrus | 39/22 |
|  |  |  | 22 | -9 | -48 | 21 | 5.566 |  | Posterior Cingulate |  |
|  |  |  |  | 3 | -54 | 24 | 4.631 |  |  |  |

**Table S3** Comparisons of brain activation differences in the anticipation and consummation phases between the WM training group (TG) and the TAU control group (CG) at pre-training session

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Conditions** | **Contrast** | **Numbers of**  **Sig. Clusters** | **Cluster Size** | **X** | **Y** | **Z** | **Peak *t*** | **Brain Regions** |
| **Anticipation phase** |  |  |  |  |  |  |  |  |
| Positive cue > Neutral cue |  |  |  |  |  |  |  |  |
|  | TG>CG | 0 |  |  |  |  |  |  |
|  | CG>TG | 0 |  |  |  |  |  |  |
| Negative cue > Neutral cue |  |  |  |  |  |  |  |  |
|  | TG>CG | 0 |  |  |  |  |  |  |
|  | CG>TG | 0 |  |  |  |  |  |  |
| **Consummation phase** | |  |  |  |  |  |  |  |
| Positive cue hit > Neutral cue hit |  |  |  |  |  |  |  |  |
|  | TG>CG | 4 | 48 | -6 | -30 | 69 | 6.153 | Medial Frontal Gyrus |
|  |  |  | 13 | -21 | -33 | -3 | 4.794 | Hippocampus |
|  |  |  | 28 | 30 | -63 | -18 | 4.507 | Fusiform Gyrus |
|  |  |  |  | 42 | -57 | -15 | 3.836 |  |
|  |  |  | 16 | 24 | -78 | 48 | 4.159 | Superior Parietal Lobule |
|  |  |  |  | 33 | -75 | 42 | 3.599 |  |
|  | CG>TG | 0 |  |  |  |  |  |  |
| Negative cue miss > Neutral cue miss |  |  |  |  |  |  |  |  |
|  | TG>CG | 0 |  |  |  |  |  |  |
|  | CG>TG | 0 |  |  |  |  |  |  |

**Table S4** Brain regions showing significant activation changes from pre- to post-training session in the WM training group

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Contrasts** | **Numbers of**  **Sig. Clusters** | **Cluster Size** | **X** | **Y** | **Z** | **Peak *t*** | **Laterality** | **Brain Regions** |
| **Anticipation phase** |  |  |  |  |  |  |  |  |
| Positive cue > Neutral cue | 1 | 12 | 48 | -42 | 27 | 4.475 | Right | Insula |
| Negative cue > Neutral cue | 0 |  |  |  |  |  |  |  |
| **Consummation phase** |  |  |  |  |  |  |  |  |
| Positive cue hit > Neutral cue hit | 3 | 12 | -57 | 12 | 0 | 7.545 | Left | Superior Temporal Gyrus |
|  |  | 11 | 30 | -18 | 27 | 6.182 | Right | Frontal Sub-Gyral |
|  |  | 10 | -42 | -51 | 6 | 4.42 | Left | Middle Temporal Gyrus |
|  |  |  | -42 | -45 | 15 | 4.238 | Left |  |
| Negative cue miss > Neutral cue miss | 0 |  |  |  |  |  |  |  |