**Supplementary Information**

**Supplementary Table 1.** Regions of significant activation in the ‘full’ > ‘empty’ contrast in the virtual reality task.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **MNI coordinates** |  |  |  |
| **Region** | ***x*** | ***y*** | ***z*** | ***Z*** | ***k*** | ***p*** |
| *Controls (HC)* |  |  |  |  |  |  |
| Middle temporal cortex | 52 | -74 | 0 | 8.94 | 32302 | <0.001 |
|  Fusiform gyrus | 44 | -52 | -22 | 7.93 |  |  |
|  Superior temporal cortex | 56 | -48 | 20 | 7.88 |  |  |
|  Inferior occipital cortex | 42 | -78 | -12 | 7.82 |  |  |
|  Precuneus | 4 | -62 | 48 | 7.52 |  |  |
|  Thalamus | 20 | -30 | 4 | 7.41 |  |  |
|  IFG, *pars triangularis* | 40 | 16 | 24 | 6.82 |  |  |
|  Cerebellum | 48 | -64 | -20 | 6.81 |  |  |
|  Lingual gyrus | 16 | -62 | -8 | 6.75 |  |  |
|  Angular gyrus | 28 | -52 | 46 | 6.58 |  |  |
|  Calcarine cortex | -12 | -74 | 6 | 6.55 |  |  |
|  Hippocampus | -18 | -32 | 0 | 6.54 |  |  |
|  IFG, *pars opercularis* | 40 | 8 | 30 | 6.52 |  |  |
| Middle occipital cortex | -48 | -80 | 4 | 8.93 | 6219 | <0.001 |
|  Middle temporal cortex | -50 | -56 | 14 | 7.05 |  |  |
|  Cerebellum | -44 | -72 | -22 | 6.53 |  |  |
|  Fusiform gyrus | -42 | -44 | -24 | 6.51 |  |  |
|  Inferior occipital cortex | -38 | -86 | -12 | 6.50 |  |  |
|  Supramarginal gyrus | -52 | -50 | 26 | 4.29 |  |  |
|  Superior temporal cortex | -50 | -30 | 22 | 4.16 |  |  |
| IFG, *pars triangularis* | -38 | 12 | 28 | 5.35 | 789 | <0.001 |
| Superior medial frontal cortex | 8 | 54 | 28 | 5.27 | 653 | <0.001 |
| Temporal pole | -40 | 26 | -32 | 4.10 | 131 | 0.016 |
| Thalamus | -8 | -14 | 0 | 4.45 | 108 | 0.038 |
| *Patients (SZ)* |  |  |  |  |  |  |
| Middle temporal gyrus | 50 | -72 | 2 | 12.3 | 59023 | <0.001 |
|  | -48 | -60 | 14 | 9.72 |  |  |
|  Fusiform gyrus | 44 | -44 | -22 | 11.9 |  |  |
|  | -40 | -50 | -20 | 10.3 |  |  |
|  Middle occipital cortex | -48 | -74 | 8 | 11.0 |  |  |
|  Lingual gyrus | -16 | -64 | -6 | 10.6 |  |  |
|  Inferior occipital cortex | 46 | -76 | -6 | 10.5 |  |  |
|  Thalamus | 20 | -30 | 6 | 10.2 |  |  |
|  | -16 | -32 | 4 | 9.17 |  |  |
|  Inferior occipital cortex | 40 | -72 | -12 | 10.1 |  |  |
|  | -40 | -78 | -2 | 9.89 |  |  |
|  Precuneus | 6 | -56 | 54 | 9.53 |  |  |
|  Calcarine cortex | -12 | -76 | 8 | 9.41 |  |  |
|  Cuneus | 12 | -88 | 30 | 9.01 |  |  |
| DLPFC | -32 | -4 | 52 | 6.38 | 1991 | <0.001 |
|  SMA | -14 | -2 | 64 | 6.16 |  |  |
|  Superior frontal cortex | -24 | -6 | 66 | 5.42 |  |  |
|  IFG, *pars opercularis* | -40 | 2 | 24 | 4.50 |  |  |
|  IFG, *pars triangularis* | -38 | 16 | 26 | 4.47 |  |  |
|  Precentral gyrus | -54 | 0 | 40 | 3.71 |  |  |
|  Postcentral gyrus | -44 | -10 | 52 | 3.64 |  |  |
| Superior medial frontal cortex | 6 | 52 | 30 | 5.59 | 393 | <0.001 |
| IFG, *pars orbitalis* | -32 | 34 | -2 | 4.53 | 348 | <0.001 |
| Middle temporal cortex | -54 | -4 | -16 | 5.84 | 264 | <0.001 |

IFG: Inferior frontal gyrus, DLPFC: Dorsolateral prefrontal cortex, SMA: Supplementary Motor Area.

**Supplementary Figure S1.** Histograms depicting the distribution of the SSPS scores in the healthy controls and patients with schizophrenia.



**Supplementary Figure S2.** Histograms depicting the distribution of the clinical variables in the schizophrenia group.

