

Description of uploaded data

Behavioral data: To take into account individual variability in performance, we estimated behavioral improvement as the difference in mean performance (i.e. mean accuracy per 200 trials) between the first training block and the training block with maximum performance per participant (85% of the participants achieved maximum performance during the last two MRS measurements), divided by performance in the first training block.

rs-fMRI connectivity data: Connectivity values within occipito-temporal cortex (OCT connectivity) and between occipito-temporal and posterior-parietal cortex (OCT-PPC connectivity) for each participant reported in this study. These values were used for the correlations presented in Figures 5 and 6. Data were acquired before training using the following parameters: gradient echo-pulse sequences from 40 slices (TR 2250 ms; TE 28 ms; slice thickness 3.0 mm; in-plane resolution $3.0 \times 3.0\text{mm}^2$; GRAPPA factor = 2, 140 volumes). rs-fMRI pre-processing included the following steps:

1. Corrected for slice scan timing, motion, susceptibility distortions.
2. Coregistered data to the T1.
3. Normalised data to MNI space.
4. Spatially smoothed data.
5. Wavelet despiked data.

Magnetic resonance spectroscopy (MRS) data: γ -aminobutyric acid (GABA) and Glutamate (Glu) concentrations referenced over the concentration of total Creatine (tCr) in two MRS voxels ($2 \times 2 \times 2\text{cm}^3$), one in left occipito-temporal cortex (OCT voxel) and one in left posterior parietal cortex (PPC voxel), across baseline and training blocks (T1, T2, T3) per participant for the two tasks, Signal in Noise (SN) and Feature Differences (FD). We acquired MRS data using a semi-localization by adiabatic selective refocusing (semi-LASER) sequence (64 averages, TR 5010 ms, TE 36 ms). LC-Model was used to quantify metabolite concentrations in the range of 0.5 to 4.2 ppm.

Raw and pre-processed data are available upon request from zk240@cam.ac.uk.