MDLoc spatWM visual PTB

Brief description

Participants see a 3x4 grid, and squares appear in various locations sequentially (one at a time in the easier condition, and two at a time in the harder condition). Participants have to keep track of the locations. At the end of each trial, they will be presented with two sets of locations and asked to choose the set they just saw. They will be given feedback on whether they answered correctly. The harder>easier condition robustly identifies the domain-general fronto-parietal Multiple Demand (MD) network (e.g., Duncan, 2010, 2013; Fedorenko et al., 2013) that has been implicated in diverse executive functions like working memory and cognitive control.

Timing

Each run lasts 448 s (7 min 28 s) (ips=224 for TR=2).

Each run consists of 12 experimental blocks (6 per condition, each block = 32 s) and 4 fixation blocks (each block = 16 s).

One run is sufficient to localize the MD regions in most participants, but we always recommend doing 2 runs, so as to be able to estimate the magnitudes of response using across-runs cross-validation.

Location

~/MDLoc_spatWM_visual_PTB/Spatial_WM_fmri

Command

Runs in MATLAB: Spatial_WM_fmri(<subjID>, <run>)

- subjectID = subject ID (any string; must the be same across runs for a subject)
- run = 1 or 2 (must vary across runs for a subject)

Subject Instructions

In this task, on each trial, you will see a 3x4 grid. Within this grid, locations will flash up in blue (one at a time, or two at a time). Your task is to keep track of these locations. At the end of each trial, you will see two grids side by side showing two sets of locations. Press “1” if you think the grid on the left shows the locations you just saw, and “2” if you think the grid on the right shows the locations you just saw. You will be told whether you answered correctly (a green checkmark) or not (a red cross). The task is designed to be challenging, so please do not worry if you make some errors. It is just important to focus on the task and try to do the best you can.