Instructions Visual Rhythms

September 14, 2020

1 Matlab files

- **run_vrhy.m**: run the experiment. Used for both training and main experiment. Run the file and follow instructions.

  Inputs to give (give whatever is between " "):

  - Subject name: "MXX" (e.g. "M14")
  - Session (train or block): give "train" if running the training phase, "block" if running the main experiment[1].
  - Difficulty level: "X" (e.g "1.5"). Levels range from 1 (easy) to 5 (hard), including half-steps.

  If at any point it is useful to go into debug-mode: go to line 13 and say Info.debug = 'yes';

  If for some reason the eyetracker cannot be used, go to line 14 and say Info.eyetracker = 'no';

- **show_fixation.m**: presents the fixation cross on the screen. This is useful when the participant is seated into the scanner, to make sure that the height of the fixation cross is correct. When pressing the spacebar, the zero stimulus is shown. This is useful to check whether the participant can clearly see the stimulus.

[1] It is actually running the full experiment rather than one block, but the term is a leftover of old code. Not changing it without access to the lab to avoid errors.

2 Lab preparation

1. Eye tracker
2. Button box
3. Sound system
4. Matlab (stimulus PC and Realtime PC)
5. Castor form open
6. Present fixation cross: run show_fixation.m
7. Lightning: most subjects in the past used the first-dot lightning, but for some it was increased to the second dot as the screen was too bright for them. But the new screen may give different preferences.
8. Consent form and pen ready

3 Participant preparation

1. Sign consent form
2. Fill in Castor forms
3. Explain MEG. Things to mention:
   - Limit the head movements
   - No metal
4. Make participant change clothes.

5. Explain task. Things to mention/present:
    - The stimuli (see attached file)
    - Respond as fast as you can, but accurately. Keep the task in mind.
    - You don't have to respond to the stream of zeros, but do attend them as they could help predict the timing of the target.
    - The target does not always appear.
    - Keep fixation at the center.
    - There are 12 blocks in total (excluding training phase).
    - There will be breaks between blocks.

4 To the scanner

1. Pick ear plugs
2. Add Neckbrace
3. In the scanner:
    - Place coils
    - Tape button box (participant should use the right index finger)
4. Increase height of participant: check whether the top and back of the scanner are touched, whether the fixation cross is at the correct height, and whether the eye tracker can see the eye.
5. Things to mention/explain:
    - Use of buttons: the two left ones are used during the task. Right index finger should be placed in between them. All 4 buttons are used when answering some of the questions during the experiment.
    - Eye tracker
    - Communication between participant and experimenter

5 Training phase

1. Run run_vrhy.m
2. Explain:
    - Feedback after each trial
    - Three blocks
    - Difficulty to be determined during this phase
3. Start MEG acquisition programme
4. Perform at least 3 blocks, take note of them in Castor, and change difficulty if needed.

    Difficulty: in the past most subjects had a difficulty of 1.5-2.5, but the new screen may change this. It is good to start low, as the first block is mostly used to learn to task itself rather than trying to distinguish the stimuli. Aim for 70-85 percent before ending the training phase.

6 Main experiment

1. Run run_vrhy.m
2. Calibrate and validate eye tracking
3. MEG PC: start head localisation
4. Realtime PC: start script and reset
5. MEG PC: start data acquisition (!!)
6. Press critical measurement button
7. Things to mention:
    - Feedback will now only be at block level
    - Time between fixation cross and first zero onset will be shorter as compared to during the training phase
    - Please don't crunch your teeth.
    - Try not to move, also not during baseline period (between fixation cross and onset zero).
8. Questions about sleepiness and rhythmicity will pop-up.
9. Perform 12 blocks

7 Final tasks

1. Measure head shape
2. Clean ear plugs
3. Plan MRI session if anatomical MRI scan is not yet available
4. Send to projectfolder and check files: logfile (in Logfiles/), eyetracker (in EyeData/), headshape file
5. Write session in Log book
6. Arrange on SONA: payment now or only after MRI
7. Fill in remaining parts of the Castor form
8. Clean the lab