voltage 🤖 experimenter instructions

SESSION 0

When the participant arrives …

1. Participant should fill out the consent and demographic forms.
2. Participant should fill out the video game and spatial questionnaires.

After filling out forms …

Experiment setup and training practice

3. Read over page 1 of the instructions with the participant.
4. Major points
   a. They will be completing a memory experiment in which they will be learning the locations of objects within virtual environments on the computer screen.
   b. First, they will be free roaming in one environment (the volcano world) to get comfortable with the controls and how their movement is visualized within the environment.
   c. They will then be doing a practice of the learning and testing portions of the navigation task.

In MATLAB, type the following commands and press enter after each.

2. Navigate to the experiment directory
   >> cd ~/experiments/voltage/exp
3. Create the subject header (subject # [e.g. 3], age, and gender)
   >> voltage_header

Free roam slow

1. Complete free roam
   a. In a terminal, run the free roam bash script, filling in [subject#] with the subject's number (e.g. 3).
   >> cd ~/experiments/voltage
   >> ./voltage.sh [subject#] free_roam_slow 1 1
   b. A GUI will pop up for the experimental build. You will be using this from now on to run all portions of the navigation task. For all portions of the navigation task, 1 is left, 2 is straight, and 3 is right. Participants can hold two keys at once for smoother movement. Usually the best method is to hold 2 (straight) and tap 1 and 3 (left and right) as you move – you should mention this to the participant.
      i. Make sure the screen resolution is set to 1440x900 and the graphics quality is set to "Fantastic".
      ii. Hit "Play!" (The experiment will automatically run after a Unity intro.)

   IMPORTANT: They need to be comfortable with moving through the environment. It needs to be second nature to them. They shouldn't be focusing on their movement or the controls; they need to be learning the object locations. It's guaranteed they will try to cut this portion short ("OK, got it!). You should test them by having them move to the four corners of the environment ("how about you move to the corner to the left of the ship."). Let them experience the boundaries within the environment, so they know they can't just

go anywhere. For some people this may seem like overkill, but this will save you time as we progress. It's for your benefit as well as to improve their performance.

    iii.   To exit free roam, hit Command+Q.

Free roam

2.   In the terminal, load the voltage bash script.
     >> ./voltage.sh [subject#] free_roam 1 1
3.   Hit "Play!" to run the full-speed free roam phase.

Practice study (runs 1–4)

4.   Read over page 2 of the instructions with the participant.
5.   In the terminal, load the voltage bash script.
     >> ./voltage.sh [subject#] prac_study 1 [run#]
6.   Hit "Play!" to do one run of the practice study phase.
7.   Repeat (changing the run#) until all 4 runs are finished (hit up to get the last command, which you can then change).

Practice test

8.   Read over page 3 of the instructions with the participant.
9.   In the terminal, load the voltage bash script.
     >> ./voltage.sh [subject#] prac_test 1 1
10. Hit "Play!" to run the practice study test.

Practice detection task

1.   Read over page 4 of the instructions with the participant.
2.   In MATLAB, load the practice detection task.
     >> voltage_disp(hdr, 'prac_disp', 1, 1, 1)
     Once the intro loads, hit the spacebar to begin.

SESSIONS 1 and 2

Detection task part 1

3.   In MATLAB, load the first detection task. They will be completing four runs of this task. Below, the "1" represents the first round of the detection task. For run #, you'll have to input 1-4 as they move through the runs. Session# should be 1 (for the first non-practice session) or 2 (for the second non-practice session).
     >> voltage_disp(hdr, 'disp', [session#], 1, [run#])
     Once the intro loads, hit the spacebar to begin.
4.   Repeat (changing the run#) until all 4 runs are finished.

Study (runs 1–3)

5.   Read over page 5 of the instructions with the participant. There are 3 learning runs!
6.   In the terminal, load the voltage bash script.
     >> ./voltage.sh [subject#] study [session#] [run#]
7.   Hit "Play!" to run the learning phase.
     NOTE: The participant can pause and restart the learning phase by hitting the "Esc" key.
8.   Repeat (changing the run#) until all 3 runs are finished.

Test

9.   Read over page 6 of the instructions with the participant.

10. In the terminal, load the voltage bash script.
    >> ./voltage.sh [subject#] test [session#] 1
11. Hit "Play!" to run the learning phase.

Detection task part 2

12. Read over page 7 of the instructions with the participant.
13. In MATLAB, load the first detection task. They will be completing four runs of this task. Below, the "2" represents the second round of the detection task. For run #, you'll have to input 1-4 as they move through the runs.
    >> voltage_disp(hdr, 'disp', [session#], 2, [run#])
    Once the intro loads, hit the spacebar to begin.
14. Repeat (changing the run#) until all 4 runs are finished.

Questionnaire
15. Have them fill out the questionnaire.