

Dual Task Protocol EXPERIMENTERS' GUIDE

Hardware requirements

The following devices are required to administrate the dual-task protocol:

- a **laptop** (Windows or Linux system);
- a Bluetooth **headphone** (with an integrated microphone);
- a **speaker** (connected to the laptop by a cable). The speaker would be not necessary if the laptop volume is sufficient to be heard.
- a **chronometer**, to assess the motor task PIS (the time spent ascending and descending the stairs).

Software requirements

The protocol is administrated by **OpenSesame** (You can download it [here](#)).

Pymedia plug-in have to be added to OpenSesame (You can download the plug-in [here](#)).

Pymedia reads audio from the microphone and compresses it to mp3. For creating wav files, the standard python wave module is used.

OpenSesame

Run the protocol by opening the OpenSesame file, clicking on the button “Run fullscreen”, and setting up the participant’s number (avoiding files overwriting).

All the OpenSesame administrated protocol proceeds via mouse controller.

Every participant’s vocal answers will be recorded. The recording of each trial ends when the experimenter click on the right or left mouse button.

Procedure

General Instructions:

The instruction for the participant are presented at the beginning of the protocol.

It is not necessary for the participant to be in front of the laptop.

The experimenter reads the instructions to the participant.

Practice: this initial phase allows the participant to try the test and learn about its speed and the item structure.

The participant does not wear the LLE nor go up and down the stairs.

The participant wears the headphones-integrated microphone (not necessarily covering ears) in order to record the answers.

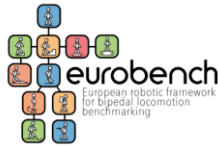
It is not necessary for the participant to be in front of the laptop.

Single task-cognitive:

This phase assesses the participant cognitive task base-line.

The participant does not wear the LLE nor go up and down the stairs.

After the participant has answered, the experimenter uses the mouse to mark whether the answer was right or wrong as mouse response (left button when the participant says “Yes” or right button when the participant says “No”).



Dual task-motor and cognitive:

This phase record the participant cognitive and motor task abilities that will be confronted to the cognitive and motor task base-line (the motor task PIs consist in the time spent ascending and descending the stairs).

The participant wears the LLE and stats the motor task (go up and down the stairs).

After the participant has answered, the experimenter uses the mouse to mark whether the answer was right or wrong as mouse response (left button when the participant says “Yes” or right button when the participant says “No”).

Output

An Excel file will be saved in the same folder as the experiment file is located.

The Excel organises the trial-numbers in rows and the variables in columns.

- The first eight rows contain the Practice-session’s data, from row 2 to 9.
- The rows from 10 to 69 concern the Single Task-cognitive session data.
- The row from 70 to 129 concern the Dual Task-motor and cognitive session data.

Number of errors (accuracy):

0 is reported when the experimenter signed a wrong answer, 1 when correct answers are reported.

Regarding the Practice session, the data are located in the N column (correct_mouse_response).

Regarding the Single Task-cognitive session, the data are located in the O column (correct_new_mouse_response).

Regarding the Dual Task-motor and cognitive session, the data are located in the L column (correct_DualTask_mouse_response).

Reaction Time:

The RT are measured in milliseconds.

Regarding the Practice session, the data are located in the CL column (response_time_mouse_response).

Regarding the Single Task-cognitive session, the data are located in the CM column (response_time_new_mouse_response).

Regarding the Dual Task-motor and cognitive session, the data are located in the CJ column (response_time_DualTask_mouse_response).

Each audio recording will be saved in the same folder as the experiment file is located.

The files’ name will be: recordings_subject-n_trial-n.wav

If distractions occurred during data collection, the audio recordings may be used to verify the experimenter’s responses and reaction time.

Audacity software is recommended (you can download it [here](#)).

