MemLear Experiment Manual.

Study info

This paradigm aims at exploring the relationship between learning and memory formation. Participants learn to associate a character to an object category. The associations are probabilistic, regulated by a fixed contingency.

The experiment has one phase, divided into two different parts:
1) Part 01. Practice task. Main task (statistical learning task).
2) Part 02. Distractor task and surprise recognition test.

- Contingency levels are kept 70% - 30%, or, more precisely, 70%, 10%, 10%, 10%,
- Memory tests include: object recognition memory and confidence judgment, and association test (source memory)

Testing platform

Pavlovia.

Setting up an appointment

Recruitment for this experiment is done through SONA system.
- Experimenters set up some slots and participants sign up.
- Participant and experimenter can meet at the jitsi room https://meet.jit.si/memlear or at zoom at the predefined time.
- As soon as the participant signs up, send an email to participant.
(use the following address: memlear@web.de, psswd: statistikfragezeichen). Send the informed consent link: https://forms.gle/p2v8PwkAQZQfpns19, and invite them to watch the video with instructions for online testing: https://www.psychologie.uni-frankfurt.de/102061105/Instruktionen_f%C3%BCr_Onlinetestungen___Erwachsene
- Send info on the videoconference service used (jitsi, zoom)

Testing

Before the session

Check the following before meeting the participant.
- You have the needed participant's experiment links that can be found on the log_book.
- You have the participants' protocols sheet.
- you have started the session on https://meet.jit.si/memlear
- Connection is stable on jitsi/zoom

During the session

- Meet-up in jitsi https://meet.jit.si/memlear or zoom
- Welcome participant:
      - "Thank you for your participation"
- "How are you today? Do you feel ready to participate"
- Ask whether the participant signed the consent form
- Make sure the setting is okay:

- "Are you sitting in a quiet room at a table? Are you using a Computer/ Laptop not a Tablet etc.?"
- "If you are using a laptop, is it connected to a power source?"
- "Make sure that you won't get disturbed during the session."
- Tell them about the structure and procedure of the experiment:
    - The experiment consists of 2 parts
    - The first part will last about 20 minutes, while the second about 35 minutes.
    - "I will stay in the videocall during the entire experiment. When you are asked to return to me, please don't close the tab. Instead, just speak up and I will return to you".
    - "Please use Google Chrome (or Chromium) and open an "incognito window". In this way there will be no data cached and no interference with experiment variables".
    - "It is *important* that you stay focused during the task. Put your phone aside and rather go to the bathroom beforehand. The single PARTS do not last very long and we have planned short breaks to use the bathroom if necessary. Please, try to only leave your computer during those breaks since stopping halfway through one block might ruin the entire session.

- Provide instructions for part 01:
    - You will learn about some monsters.
    - Every monster buys preferably on object that belongs to one of four categories. Your task will be to predict what kind of object each monster will buy.
    - From the time when the category appear, you have up to 4 seconds to make your choice. If no choice is made, the trial will be considered as incorrect, and the study will continue. Therefore, please try to respond as quickly as possible.
    - After choosing an object category, the monster will appear under the category you have chosen.
    - Finally, you will see the object that the monster buys.
    - Before you start you will be provided again with the detailed instructions, and you will be asked to repeat these instructions back to me afterwards.
    - Although at the beginning it might be difficult, you will learn over time. Please do not feel bad if you make some mistakes even by the end of the sessions.
    - You will start by practicing on few trials. On this trials, you will receive feedback, telling you if your choice was correct or incorrect. After those, you will be invited to work on the actual task.
    - The keys you are going to need are the numbers 1 to 4, on the top-left part of your keyboard.
    - Please try to leave your fingers on those keys for the duration of this task, as this will make your response faster.
    - At the end of the practice block, you will be also asked to either continue or do the previous block again. Please return to the Jitsi meeting room when this question appears.
    - Once you have finished Part 1 return to the Jitsi meeting room.

- **Do you have any further questions?**

- **Send session 01 - part 01 Link**
    - Ask if the task is downloading. If yes, proceed. If no, try again and/or contact Francesco.
    - Mention the Expra Code: Invite participants to fill it in or ignore it, depending on whether he/she is an Expra student.
    - Invite participant to read the instruction and to repeat the instruction back to you.
    - Invite participant to start the practice block when ready.
    - When the practice block ends and participant comes back to jitsi, ask participant to read the percentage presented on the screen. Has the participant reached at least 80% correct? If yes, invite participant to press "n" to continue, if not, explain procedure again until

participant is   sure and invite participant to do the task again by pressing "j". Check percentage again afterwards and repeat if necessary. It is **absolutely important** that the participants reach at least 80% at this point. Otherwise, the data cannot be accepted.
- When sure that participant got the task (percentage of correct trials is at least 80%), congratulate to them and give the participant instructions on the next block.
- "In the next block, you will be asked to do the same task as before. However, you will now see some new characters. Each character will buy preferably object of a specific category. Your task will be to predict which kind of objects each character will buy."
- "For one of the two characters, you will be told which object category that character prefers. For the other one, you will have to find out."
- Explain the four categories: Electronic Device and Accessories, Kitchen and Utensils, Outdoor Activities and Sport Items, and Hand Labour Tool and Accessories. Be careful not to mention any specific item as an example.
- "This time you will not receive any explicit feedback. However, you will know if your choice was correct by looking at the objects that will be shown in the end".
- "Could you please repeat the instructions back to me ?"
- Tell the participant that the instructions will be repeated on the screen and that he/she can ask questions in case anything should not be clear. If the participant is confident that everything is clear, he/she can press space to start with the task.

After session Part 1:

- Participant returns to Jitsi

- Ask participant to wait until the data from Pavlovia are downloaded and a green window appears on the screen before closing the page.

- "How was it for you"?
- "Any comments?" (Note potential comments in protocol)

- **send 2-back link**
	- Ask if the task is downloading. If yes, proceed. If no, try again and/or contact Francesco.
- **Provide instructions for 2-back task:**
	- "Now we would like you to work on a slightly different task. In this task,
	you will see a series of words on the screen. You task is to press the "D" button for "Yes" every time the word you are seeing is the same as the word you have seen two trials earlier. If this is not the case, press the L button for No.
	Please repeat the instructions back to me." If participants understands the task, invite to start the task and tell the participant that the instructions will be repeated on the screen and an example will also be provided.
	- "Once you have finished, please return to the jitsi room".

After session n-Back:

- Thank the participant for doing the task.

- Inform the participant that there will be the last part of the experiment now.

- send **session 01 - part 02 Link**
	- Ask if the task is downloading. If yes, proceed. If no, try again and/or contact Francesco.

- **Provide instructions for Part 02**:
	- Now we would like to know which object you have memorized.
	- We will show you a few objects and you will need to tell us:
	- "Have you seen that object before? Use the arrow keys and your right hand".

- "How sure are you? Use the number keys from 1 to 4 on the top part of your keyboard and your left hand."
- "In this task, there is no time limit. Please take the time you need but try to be accurate".
- "That task may be a bit longer. Bear in mind that you will be given the possibility to take a break in the middle of the task. Please use that time in case you needed to take a break. During the task, please always try to stay focused and avoid distractions. "
- Once you have finished part 02, return to the Jitsi meeting room.

After session Part 2:

- When participant is done with the task, ask participant to wait until the data from Pavlovia are downloaded and a green window appears on the screen before closing the page.

- "How was it for you"?
- "Any comments?" (Note potential comments in protocol)
- "Thank you for doing the experiment"
- "Do you have any question"?
- Fill up the protocols document with testing info.