

## Checklist: Experiment Design

- How many **conditions** does your experiment have?  
You need to know what the **independent** and **dependent variables** are in the experiment. You also need to know if you are doing a **within-subjects** design or a **between-subjects** design. (If the boldfaced terms are unfamiliar to you, please look them up.)
- Is your experiment **counter-balanced**?  
You must make sure that your software is set-up so this design requirement is satisfied. An easy solution is to use a **Latin square** design. (If the boldfaced terms are unfamiliar to you, please look them up.)
- Where is your experiment taking place?  
It is most likely to take place either in the HCI lab, or in the Windows lab. If it is in the Windows lab, you need to make the appropriate room booking with the main office. If it is in the HCI lab, you need to make sure your schedule doesn't coincide with any major events already scheduled in the lab.
- Did you write down the instructions for each part of the experiment?  
Instructions should ideally be programmed as part of the software so ALL your participants follow the same set of instructions. If it is not already in the program, you should have a piece of paper that has the printed instructions on them.
- Did you run a **pre-pilot** experiment?  
A *pre-pilot* experiment is usually done by the researcher or programmer. The purpose of this experiment is to go through an entire experiment to ensure that nothing crashes and all parts of the program works as expected. If your experiment has multiple conditions, each condition should also be tested. Typically, a pre-pilot is done with 1 or 2 people. If bugs are found, the same people can re-do the pre-pilot until the program works perfectly.
- Did you run a **pilot** experiment?  
A *pilot* experiment is usually done by lab mates or friends who are not familiar with your study objectives. If participants are not scarce, you can also use the participant pool for a pilot study. The purpose of this experiment is to make sure that **the data** you obtain from a working experiment (after your pre-pilot is over) makes sense. That is, after you do a pilot study with a few people, take a look at what the results give you. Do they tell you something you are testing? Or do you need to re-design the experiment or change your hypotheses? Typically, a pilot is done with ~4 people (or 1 row of your Latin square). If a pilot needs to be done again, you should avoid using the same people for future pilots.
- How long does your experiment take?  
Based on the pilot experiment, you should have a good idea how long you expect participants to come in for. In your time estimate, please make sure to include time for participants reading and signing the consent form, possible short breaks, as well as individual variances in speed. Participants are really only cognitively "sane" for one-hour experiments, but if you place short breaks at appropriate intervals, you can get away with 90 minute sessions. (Short experiments, e.g., 10 minutes long, may be a bit wasteful and so should be avoided as well.) If your experiment involves a lot of repetitive motor movements or strenuous cognitive/sensory requirements, be sure to allow for many opportunities for breaks.
- How many participants do you need for the actual experiment?  
The number of participants needed is a function of the Latin square design. More participants are needed if there is a lot of variance in your data. You could compute the **power** of your experiment to estimate the number of participants needed, but these calculations are generally very conservative and an over-kill for computing experiments (but necessary for psychology).

- Is your experiment schedule available and updated online?  
Participants often want to view or change their registered time, so it is very helpful to make your experiment schedule available. Personally, I make my email and work number available so they can contact me for changes or cancellations.
- Did you send out reminders to participants about their experiment?  
Please remember to send an email reminder to your participants 1 or 2 days before their session. Make sure to include the experiment **day, time, location, and the name** of the person who is running the experiment.
- Have you posted appropriate signage at common/visible areas?  
Your participants may not be familiar with your department or the lab where you are running the experiment. Even if they get to the right building, they may not know how to get to the lab.

### **Extended Checklist: Running multiple participants in parallel**

- Is your program installed on all the machines?
- Can you log into these lab machines?  
You need to be able to log onto the machines to test and run the experiment.
- Do you have door access to the lab?
- Did you check if your program runs properly on the lab machines?  
In case there are any special settings that may differ from your machine, you should test your program in the lab to ensure the experiment runs smoothly. It is important to verify that all the logs appear as desired (and in the right directories).

### **Checklist: Experiment Day**

- Is your program working as expected?
- Did you print out a consent form for each participant?
- Do you have extra pens for your participants?
- Did you print out the list of participants for today's experiment?
- Are all the machines ready to go as soon as participants sit at their desks?  
If you are running in the lab, make sure you log everyone in before the experiment, and have the right window showing (so to save time and minimize problems/errors).

### **Checklist: AFTER An Experiment Is Completed**

- Did you check off all those who showed up so they get their bonus marks/other compensation?