

Alternative interpretations of data based conclusions. New York, NY: Harper & Row.

History, Maturation, Testing, Instrumentation, Statistical regression, selection bias, Experimental mortality, Experimenter effect are some effects.

1. A vision study in a large lab in a psychology department was getting different results when subjects were run in the afternoon than in the morning.
2. Subjects in a study on caffeine and stress were uniformly having greater working memory in the after test than in the before caffeine and stress.
3. A group of subjects working with a striped background (N=5) were showing a large difference in transfer compared to another group (N=5) that did not have a striped background.
4. Subjects in a study performed a task very, very much like a model predicted.
5. Restaurants are not as good the second time, typically, as the first time you visit them.
6. Subjects in a study on different training schedules (some 4 hours for 2 days, some 8 days one hour per day) all get faster at playing Minesweeper.
7. Subjects in an air traffic control interface study in two different conditions when eye-tracked both end up looking at the bottom of the screen more over the course of the session.

3A. An overview of cognitive architecture components and example architectures

3B. Small group: discussion and gather data for later modeling on the task in lecture 5

the Klingon Laser Bank Task Lab for 21st International Summer School in Cognitive Science

Instructions for Experimenters and Subjects

Work in pairs. Before reading the experiment instructions set up the following materials:

(1) Choose a way to time. RUI will work, as will a stop watch, or a Java-timer findable on the web.

(2) Download the files from <http://acs.ist.psu.edu/ist331/diag/>

Then,

(3) Ask the subject to read the materials (pages 2 and 3) and study them. It will take about 20 min. to run a subject, so you will have time to run at least one of your group members as a subject. Give them 5 min. to study the materials.

(4) Ask them, when ready, to draw the schematic from memory. If they fail, have them study again. About 10% will fail on the first attempt; none should fail on the second.

(5) When they have drawn the schematic correctly, remove it. Open up the stimuli-S1.pdf (or one of the other stimuli files). Start timing from their page clicks, and then time when they point and click on the screen to the broken part. Do not give them feedback. Note in a computer file or on a sheet of paper their answer.

Their answers and the times represent the primary data for analysis. We will take up the analysis in the last group session.

(6) You should run at least one person.

(7) The lab writeup should follow the format on the last page.

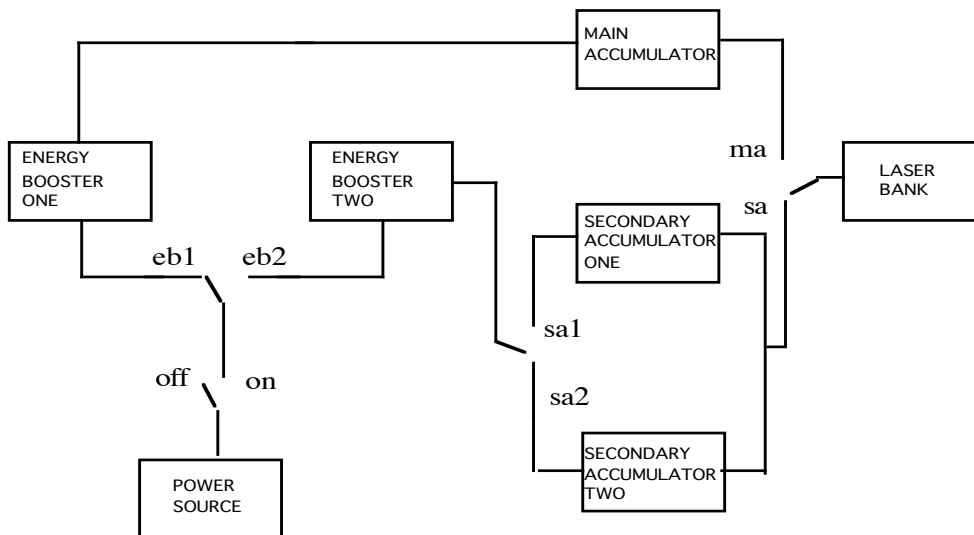
Instructions to Subjects

Imagine that you are on board a Klingon warship under attack from the Starship Enterprise for attempting to smuggle arms to the planet Orion III, your new allies. Your job is to operate the new laser weaponry developed using designs based on the phasers on board the Enterprise. The laser system has been designed so that it can be made to work when some of the components are broken.

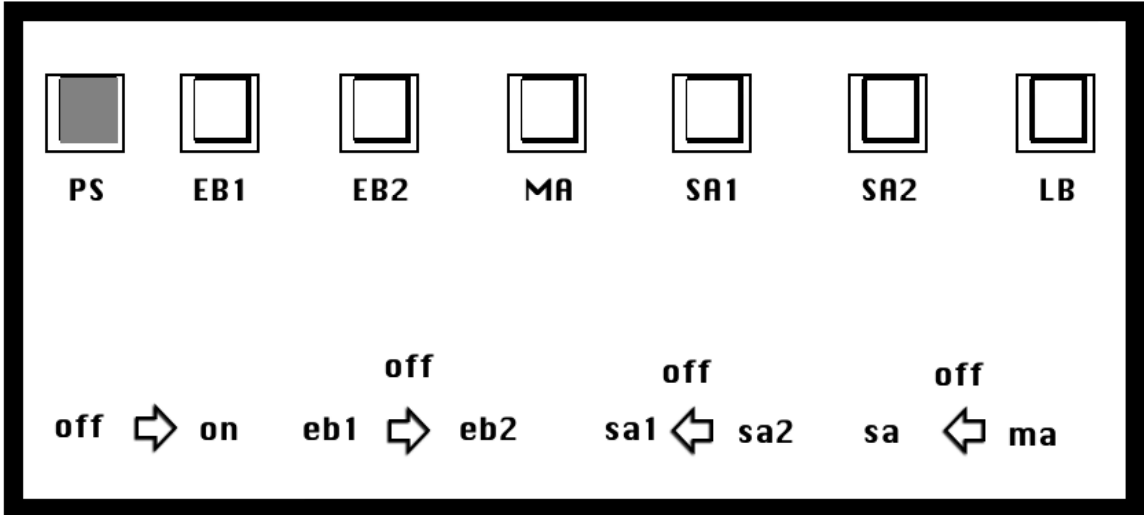
The laser system comprises a power source (PS), two energy boosters (EB1 and EB2), accumulators (MA, SA1 and SA2) and the laser bank (LB).

Power is routed through the system by changing the position of switches directing the power from the power source on to one of the energy boosters then to one of the accumulators and finally an accumulator is selected to send power to the Laser Bank.

If a component is in working order then its indicator light will come on when it is receiving power.



Device Schematic



Example Interface with a fault.

Lab writeup (optional)

This is a shorter lab write up format, but covers essentially what makes a lab report.

- a) Note in 1-3 paragraphs why this might be an interesting task.
- b) Note in 1-3 paragraphs what you did, noting (i) Subjects, who were they, (ii) What materials you used, (iii) what they did.
- c) Note what you found, using a plot.
- d) Discuss what this means for learning and interfaces.
- e) Note how the interface could be improved to help Klingons.
- f) Note how the interface could be improved to stop Humans from using it if they were to get on the ship.

4A. Soar, an example cognitive architecture

4B. Discussion about model testing

1. prepare 1 para on how you could prove Soar

2. prepare 1 para on how you could disprove Soar

3. prepare 1 para on how you could prove a model in Soar

4. prepare 1 para on how you could apportion credit/blame between a model in Soar and Soar

5. prepare 1 para on how your answers would vary for ACT-R or Clarion or NN.

BONUS: Do the ACT-R or Soar tutorials.

5A. A model of multiple strategies and fitting them and considerations about how to fit and test models in general **

5B. Small group: compare data from small group session 3 with model predictions from session 5

he Klingon Laser Bank Task Lab 2 for 21st International Summer School in Cognitive
cience
rank E. Ritter, 22 June 2014

Instructions for Experimenters and Subjects

1. Take your data file from Lab 3 and insert the times and the answers into diag-task-times-ist331v3.xls.
2. See how well the model matches your behavior.
3. If not, what do you think happened?