Overview

The R5 experiment is part of a series of experiments on the spatial extent of selective attention. The goal of the series is to measure accuracy as a function of the distance between a relevant and an irrelevant stimulus. General instructions for setting up the room, computer and, if need be, the EyeLink device can be found separately in the "EyeLink Device Instructions". The experimental program is named: "select15". And the analysis programs are "sann8" and "sann8full".

Stimuli

The required judgment is to detect a small disk of light and report its position to the left or right of fixation. This target disk is presented at a fixed eccentricity on opposite sides of a fixation cross. The disk appears in a display marked by a tone. Your task is discriminate whether the target disk appeared on the left or right side of fixation. Specifically, the disk appears in either the upper left or the lower right. An illustration of these locations using high-contrast disks appears at the beginning of each block.

Display Sequence and Responses

The experiment consists of blocks of trials with breaks between blocks. At the beginning of each block of trials, a fixation pattern appears with white peripheral disk that marks the location of the relevant stimuli. Each trial consists of the following events:

1. **Fixation and cue.** A trial begins with a central fixation cross and central location cues for 0.5 seconds. Be sure to fixate the central cross and maintain that fixation throughout the trial. If you do not accurately fixate, we will not be able to use the data. The cues are two line segments that point toward the relevant locations.

2. **Fixation alone.** The cue is removed and the fixation cross remains alone for 0.5 seconds.
3. **Stimulus display.** Next the critical stimulus display is presented in one display interval. The interval is marked by a tone. The interval is very short (0.1 seconds).

4. **Prompt.** After the display, a question mark prompt appears below fixation. Your task is to decide whether the target disk occurred to the right or left of fixation. Respond using the numeric keypad. If the disk is to the left, press the "0" key; if it is to the right, press the "period" key. Take you time to respond. For the most difficult displays, your judgment may be only an educated guess.

5. **Feedback.** After the display, no tone indicates the correct response and a low tone indicates an error. A series of five beeps indicates that the EyeLink detected a deviation from fixation.

6. **Intertrial interval.** There is 1 second between trials. Blink your eyes as needed between trials.

**Number of Trials and Blocks**

There are 20 trials per block and 12 blocks in a single session of this experiment. The program will pause between blocks. Please rest during these pauses! Close your eyes and relax. Do not try and rush through the experiment. Two kinds of blocks occur during this experiment. They are labeled control and attention blocks. In addition, the relevant location alternates between two possibilities from block to block. The cue and the display at the beginning of the block always provide 100% reliable information about the location of the relevant stimulus.

**Control blocks.** In these blocks, a single stimulus is always presented at one of the relevant locations. This condition provides a measure of the contrast detection threshold with minimal spatial uncertainty.

**Attention blocks.** In these blocks, two stimuli are always presented. The target stimulus is always at one of the relevant locations and a second foil stimulus is at an irrelevant location. Your task is to judge the presence of the target at the relevant location and ignore the foil at the irrelevant location. The irrelevant stimulus is presented independently of the presence of the stimulus at the relevant location. The two stimuli vary in contrast. Although both stimuli are always presented, sometimes you may only see a single stimulus and
not be sure which one it is. Under these conditions, assume it is the relevant target and respond accordingly.

Remember: **When in doubt, assume it is the target.**

**Breaks and Aborts**

If you need an additional pause during a block, hold down the spacebar at the beginning or end of a trial. Pressing any key will resume the experiment.

To abort the experiment, the preferred choice is to hold down the "a" key. It may take a moment, but the program will abort when it checks for keyboard responses. Using this method makes a clean exit from the program. Alternatively, one can use the universal mac abort by pressing CMD-<period>. Then, to restore the display, you must press CMD-<zero>, followed by carefully typing "clear screen" (you will not be able to see what you type). This sequence will put you back in MatLab.

**Analysis**

Run the program "sann8". There is also an alternative version "sann8full" with three parameters for each psychometric function instead of one. Both of these programs prompt for the number of files and the filenames. After running one of these programs, print out the text output file and the graph as desired. These programs also display the results to the MatLab command screen for your convenience.

Thank you for participating in these experiments!

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