# Visual Search Experiment

# Lab in Psychology

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**Github Link:** [**https://github.com/Kareena520/PSY310/tree/main/Visual%20Search%20Experiment**](https://github.com/Kareena520/PSY310/tree/main/Visual%20Search%20Experiment)

**Introduction**

The main idea behind visual search is how we concentrate to locate a particular object among an abundance of distractions. When you're attempting to find a friend in a crowded environment, your brain must block out all the activity and sounds in order to focus on them. Participants in these tasks must focus on the important things and dismiss unimportant stimuli.

Here, it's important to pay attention. By increasing our reactions to things we're focusing on and decreasing our reactions to things we're not, it can improve our capacity to identify targets. In essence, our ability to focus effectively has a direct impact on howfast and precisely we can locate what we're seeking for.

**Method**

The experiment was performed with 4 participants. Each participant conducted 200 trials of the experiments.

Participant 1 - “PT 1”, 21 years,

Participant 2 - “PT 2”, 20 years,

Participant 3 - “PT 3”, 19 years,

Participant 4 - “PT 4”, 20 years,

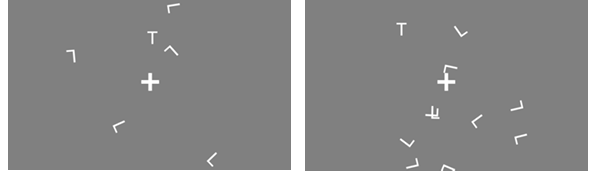
The experiment was conducted before taking consent from all the participants by informing and making them understand their contribution in the experiment.

The experimental setup utilized PsychoPy v2024.1.5 (Peirce et al., 2019), a tool

for conducting psychophysics experiments using Python. The experiment was displayed on a

15.5” monitor with a resolution of 1100 x 600 pixels.

The task consists of the participant identifying the letter “T” which may be at a random position, amongst a lot of distractors, being the letter “L” at random orientations and positions for the visual search experiment. The participants needed to click the target or anywhere else on the screen to proceed further with a fixation point at the centre of the screen. The 2 conditions were related to the number of distractors, either 5 distractors or 10 distractors (Figure 1) along with the target present. The assumption for the same states that more distractors will lead to an increased reaction time as it may take longer to identify the target amongst a higher number of distractors compared to lower number of distractors.



*Figure 1: The target (T) along with 5 and 10 distractors i.e., (L).*

**Results**

Only accurate trials were considered for the analysis, for both the set size 5 and 10.

For **Participant 1(PT1),** the average reaction time for a set size of 5 is 2.1533, while for a set size of 10, it is 2.5565. This data was used to plot the graph 1 shown below. The slope of the reaction times is 0.0806, indicating that as the set size increased, participants' reaction time also increased. Specifically, the reaction time for set size 10 was higher compared to set size 5.

For **Participant 2(PT2),** the average reaction time for a set size of 5 is 2.3646, while for a set size of 10, it is 2.6467. This data was used to plot the graph 1 shown below. The slope of the reaction times is 0.0564, indicating that as the set size increased, participants' reaction time also increased. Specifically, the reaction time for set size 10 was higher compared to set size 5.

For **Participant 3 (PT3),** the average reaction time for a set size of 5 is 2.3737, while for a set size of 10, it is 2.8017. This data was used to plot the graph 1 shown below. The slope of the reaction times is 0.0855, indicating that as the set size increased, participants' reaction time also increased. Specifically, the reaction time for set size 10 was higher compared to set size 5.

For **Participant 4 (PT4)**, the average reaction time for a set size of 5 is 1.9806, while for a set size of 10, it is 2.3391. This data was used to plot the graph 1 shown below. The slope of the reaction times is 0.0717, indicating that as the set size increased, participants' reaction time also increased. Specifically, the reaction time for set size 10 was higher compared to set size 5.

Respectively, the average Reaction Time for set size 5 and set size 10 calculated for all the participants show that as the set size increases, so does the reaction time for the same. With the mean RT set size 5 is 2.2180 and the mean RT for set size 10 is 2.5860. The slope for the same is 0.0735, and value being 73.58 ms/item when it comes to law of search.

**Discussion**

In this case, changes in reaction time are determined by the number of distractions or by the set size. Set size 15 causes a rise in reaction time, indicating that participants may have to spend more time or effort locating the target while trying to find the goal. Each person's sensitivity is displayed by the graphs' slopes. This further suggests that focus lowers reaction times, precision increases with concentration, and a smaller set size makes it possible.

**References**

Myers, D. G., DeWall, C. N., Nakayama, K., Silverman, G. H., Treisman, A. M., & Gelade, G. (2021). Background information for the visual Search experiment [Book]. In Cognitive Psychology & Wikipedia, *Psychology: Thirteenth edition in modules*. Worth Publishers. <https://facultypsy.hope.edu/psychlabs/exp/visualsearch/docs/VisualSearch_Background.pdf>