Visual Search Experiment

PSY 310 : Lab in Psychology

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Introduction

Covert attention is the ability to to select part of visual scene for processing irrespective of the point of fixation. Visual Search helps understand attention by manipulating number of distractors and measuring reaction time or accuracy. It explores whether attention operates serially (one item at a time) or in parallel (all items simultaneously). (Eckstein, 2011)

Visual search efficiency reveals how attention is deployed. Perfectly efficient search (consistent performance as set size increases) suggests parallel processing and inefficient search (decreasing performance as set size increases) suggests serial processing. (Chan & Hayward, 2013)

Method

To investigate how individuals identify and locate specific targets within a visual display and to understand how different set sizes impact attention, perception and search efficiency, a visual search experiment was conducted.

In the task, the screen would display distractors (denoted by letter L) and a target (denoted by letter T). The number of distractors or the set size is assigned randomly to be either 5 or 10. The location of the distractors and the target is randomly assigned within the visual window. The search efficiency of the participants would be recorded as the time taken for the participant to click the target.

The manipulation of set size is useful to understand how the search efficiency changes with set size.

Results

Each participant goes through 200 trials and the results are calculated using the data cumulated by 5 participants.

The mean reaction time for accurate trials is **2.046648974.**

When plotting the difference in mean reaction time between set sizes of 5 and 10, the slope is **0.050650889**.
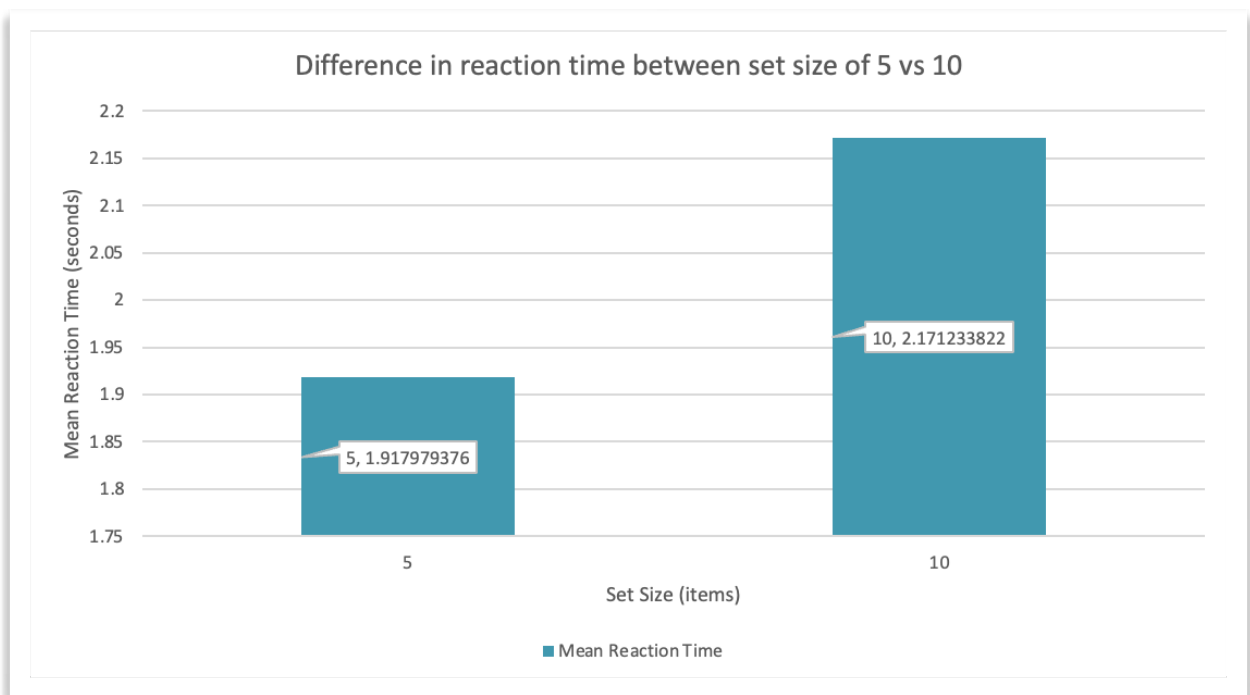
Discussion

The slope of a line represents the rate of change of one variable, with respect to another, which here would be rate of change of reaction time with respect to the set size. In simpler words, the slope is the value by which the reaction time will change when there is a change in set size. So, if the slope is 0.05, this means that when the set size is increased by one, the reaction time would increase by 0.05.

The linear increase in reaction time as the function of set size shows that the visual search is inefficient and attention is being deployed as serial processing where focal attention is needed on each item for identifying feature conjunctions to distinguish between the target and the distractors. (Chan & Hayward, 2013).

References

Chan, L. K. H., & Hayward, W. G. (2013). Visual search. *Wiley Interdisciplinary Reviews: Cognitive Science*, *4*(4), 415–429. https://doi.org/10.1002/wcs.1235

Miguel P. Eckstein; Visual search: A retrospective. Journal of Vision 2011;11(5):14. https://doi.org/10.1167/11.5.14.