PSYC 5316 – Week 5

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Results

Compute and report descriptives for demographic data, specifically mean and SD for age and frequency counts for genders.

Results

Import the performance data for the 28 participants. If you're looking along with your notes from our last class meeting, be sure to update your loop index to 28 instead of 25. How many trials were collected overall?

Results

Filter out the "practice" trials using the method of Heitz and Engle (2007). How many trials were removed? How many trials remain?

Results

Construct a plot that shows separate densities (or histograms..your choice) for congruent and incongruent trials. Export this plot as a JPEG with resolution 600 x 400 and attach to this question.

Results

Construct a table that shows mean RT, SD, and percentage correct for congruent and incongruent trials.

Results

Filter out incorrect trials and collapse the data down to two measurements for each subject - mean RT for congruent trials, and mean RT for incongruent trials. Then, perform and report a paired samples t-test on these mean RTs. Be sure to report the following:

- the results of the test (e.g., $t(27) = X.XX$, $p = 0.xxx$)
- the 95% confidence interval for the size of the effect in milliseconds, and also a standardized effect size (e.g., Cohen's d).

Results

Perform and report a Bayesian t-test for the same data. If the Bayes factor is very large (i.e., larger than 1000, use scientific notation to report it). Note - examples of writeups for both the traditional t-test as well as the Bayesian t-test can be found on pages 7-10 of the paper posted here: `https://git.io/fA6Ex`

Results

Construct a plot of the conditional accuracy function (CAF) for the complete dataset (including errors, of course!). Export the plot as a JPEG with resolution 600 x 400 and attach. What does this plot show us?

The final manuscript

- must be typed (neatness, spelling, and grammar are absolutely important)
- must follow APA format
- must be brief and concise (at most 10-12 double-spaced pages, inclusive of title page, references, and figures).
- placement of headings, titles, paragraph indentations, content of sections, etc. must follow the recommendations defined by the APA Publication Manual, 6th edition.

Title page

- The APA manual tells you what to do, so do that.
- for the author note, you can put something like "This manuscript was submitted as a course requirement for PSYC 5316: Advanced Quantitative Methods and Experimental Design in Fall 2018." Make sure your contact information at the bottom is correctly formatted.

Abstract

- this is probably the section you will write last.
- should only be about half of a page (double-spaced, of course).
- a "formula":
  - what is the study about?
  - what did you do?
  - what did you find?
  - what does it all mean?
- don't forget a few keywords at the end..see the APA manual for guidelines on this.

Introduction

- one paragraph to give background on flanker task
- one paragraph to give background on conditional accuracy functions
- one paragraph to state clear reasons for doing the experiment and give predictions (e.g., testing the Attentional Spotlight model)

Method: Participants

- Be sure to state how many total participants were tested, as well as descriptive statistics about the ages and genders.

Method: Materials and Design

- describe stimuli
- describe experimental manipulation

Procedure

- describe what people saw when participating in the experiment
- you built it, so describe it!

Results

- descriptives in APA-formatted table
- inference about RTs on correct trials
  - orthodox t-test
  - 95% confidence interval on difference
  - effect size (Cohen's d)
  - Bayesian t-test
- conditional accuracy function (CAF), included as a figure and described in the text

Discussion

- briefly restate the purpose of your study
- briefly describe your results
- discuss your results in light of the hypotheses.
- explain what the CAF tells us about about the Attentional Spotlight model
- describe a follow-up study that you could do

References

Should include at least the following:

- Eriksen & Eriksen (1974)
- Gratton et al. (1992)
- Heitz & Engle (2007)
- one more reference related to the flanker effect

Next week

- Next week, we will begin a replication of a classic experiment of Sternberg (1966)

- Sternberg was trying to understand the mechanisms underlying *short term memory (STM)*

- Two aims:
  - determine whether we search STM in a *serial* or *parallel* fashion
  - determine whether the search stops when the desired item is located (*self-terminating* search), or whether it continues to check all available items (*exhaustive* search)

Sternberg task

Basic procedure:

- The participant is given a list of from one to six digits.
  - these digits are called the *memory set*
  - the participant is allowed to rehearse this list
- A few seconds later, the participant sees a single digit
  - this number is called the *probe*
- The participant must indicate whether the probe digit is or is not a member of the memory set

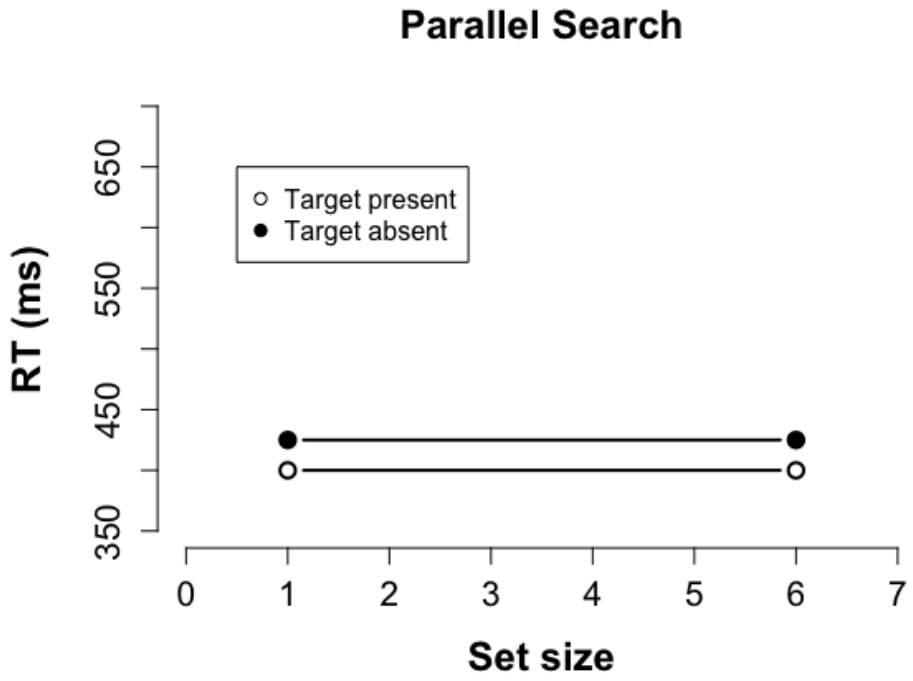
Serial versus parallel search

- if you search item at a time (serial), then the more items there are to search, the longer it should take.
  - RT should increase as the memory set size increases.
- if you can search all the items at once (parallel), it should not matter how many there are
  - RT should be the same for any memory set size (up to the capacity of STM).
- The main question: Does RT increase with memory set size or not?

Exhaustive versus self-terminating

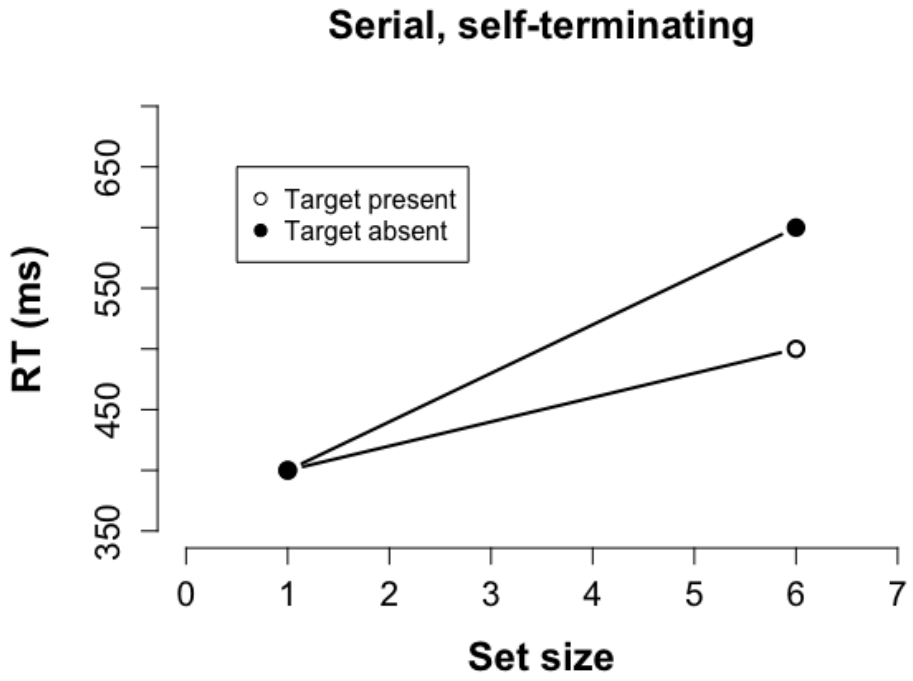
- if the search is serial then we can also investigate whether it is self-terminating or exhaustive
- negative probe trials require an exhaustive search always; the participant has to check every item to confirm that the target was absent
- on positive probe trials, we might also search the set exhaustively, in which case the + and - probe trials will have *equal RTs*
- or the search could *self-terminate*, in which case RTs will be less for the conditions where the probe was actually present

Predictions



Signature: all trials equally fast, regardless of set size

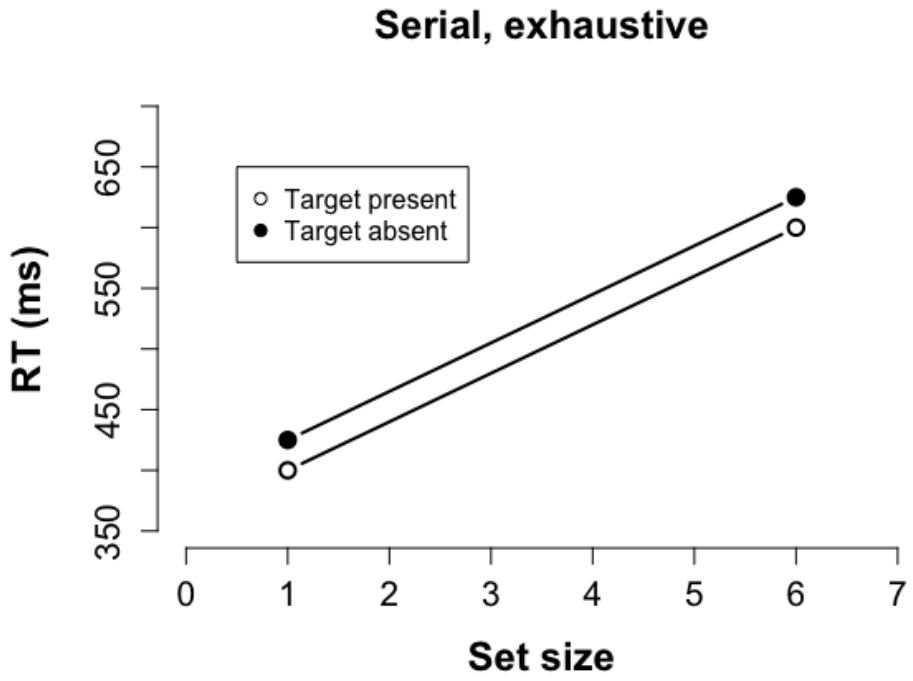
Predictions



Signatures:

- RT increases with set size
- decision should be quicker if target is present, because Ss stop searching

Predictions



Signatures:

- RTs increase with set size
- same rate, because if Ss inspect **every** element, then it doesn't help that target is found before end of search