Cognition Lab

Lab 4: The Navon (1977) task
Seeing the forest before the trees

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Objectives of this class

In this class you will learn about;

- The general do and don't of writing a title and abstract section
- Final project formal proposal
- Navon's study (1977) of global versus local processing in perception

Title and Abstract

Lab report

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Sections of a lab report

Title
Abstract
Introduction
Method
- *Design*
- *Participants*
- *Apparatus & Materials (optional)*
- *Procedure*
- *Scoring (optional)*

Results
Discussion
References
Appendix (optional)

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In which order … ?

Title

Abstract 6.

Introduction 4.

Method 1.

- *Design*
- *Participants*
- *Apparatus & Materials (optional)*
- *Procedure*
- *Scoring (optional)*

Results 2.

Discussion 5.

References automatic

Appendix (optional) 3.

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Title

This is the first thing someone reads and so should summarise the content of the report using no more than 20 words

Gives some indication of the overall theme of the work that is to be reported

Catchy titles should generally be avoided, as should titles using superfluous words



- An Empirical Investigation into Obsessive Compulsive Disorder in Children with High Socioeconomic Status Parents.



- Obsessive Compulsive Disorder in Children with High Socioeconomic Status Parents.

NB: Capitalize major words & centre the title at the top of the page

Title

- Don’t be too vague
  - The ‘Beer-Goggles’ Effect.
- Don’t be too specific
  - An Investigation Into the Effects of Drinking 6 Pints of Guinness in a Nightclub in Brighton at 11:30, While Listening to Drum and Bass Played at 100 db Through a Good Sound System, on 12 Men’s and 15 Women’s Ability to Accurately Judge the Attractiveness of Members of the Opposite Sex.

Title



About right

- The ‘Beer-Goggles Effect’: The Effects of Alcohol on Attractiveness Ratings of the Opposite Gender.

Sometimes it is useful to refer to the things you are manipulating (the IV) & what you are measuring (DV) within the title

The example above does just this

- IV = Alcohol (as levels are manipulated in this study)
- DV = Ratings of attractiveness

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Abstract

The abstract is a short précis (about 100-150 words) of the study that is about to be presented below it

It is often what a reader will use to determine whether to bother to read the rest of the study

- E.g. A literature search online will often provide the abstract of the paper

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Abstract



It should ideally contain

- a brief statement of the problem being investigated & motivation for the study
- the participants investigated
- the experimental method of study
- the principal findings/results obtained
- the main conclusions drawn



Try not to finish with empty statements such as *'The findings were discussed'.*



It is normally easier to write the abstract *last,* once you know what key points of the study should be summarised.

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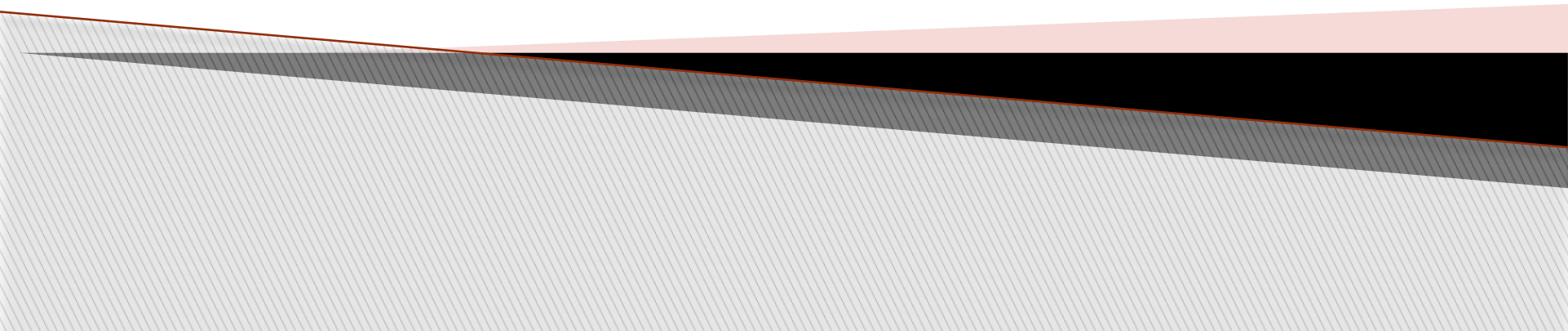
Beer-Goggles example abstract

Ugly (1993) has shown that the propensity to misclassify members of the opposite sex as attractive is increased in nightclub settings. This study was designed to ascertain whether this effect is due to the dim lighting employed in these venues, or the consumption of alcohol in this setting. Ratings of the attractiveness of a set of stooge participants were taken in both a well-lit and dimly-lit nightclub by both sober and drunk participants. A 2 way ANOVA revealed a significant effect of alcohol consumption, but not of the lighting used. The results suggest that, contrary to Ugly's hypothesis, dim lighting does not contribute to the inflated attractiveness of opposite--gender mates; instead these ratings are influenced solely by alcohol intake.

You can see that this abstract is short, but summarises what was done and why, and finishes with what was found from the results and how this fits with previous studies/theories.

Final Project

Proposal + Implementation



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Data Collection Timeline

Think about an idea for the project (you can team up!)

If you haven't done so, email me to get my feedback by Sunday evening

Wednesday 3/4 : email project idea – if your idea entails building a new experiment, you should try building the stimulus

Wednesday 3/11 : submit formal proposal + have experiment ready

Wednesday 3/25 : submit instructions/debriefing

Friday 3/27: IN CLASS: run experiment

Wednesday 4/1 : submit raw data and data analysis

Formal Proposal - 1

- Hypothesis to be tested
- Rationale and background (theoretical basis for hypothesis)

Formal Proposal - 2

Method:

- Brief description of task, conditions and procedure
- What data will you collect? (e.g. difference threshold, mean pointing error, reaction times etc.)
- What kind of analysis will you carry out? (if applicable: t-test, regression, ANOVA etc.)
- How will data be presented? (e.g. Graph of mean RT error as a function of target velocity)

Formal Proposal - 3

- Possible outcomes and interpretation of each
- Why are you interested in this question?

Build experiment

- If you haven't already, send informal proposal
- Feedback today
- Finalize experiment structure
- Build Experiment
- (Come to see me on Monday or Tuesday - College Ave)

Navon's study of Global vs Local Perceptual processing

Global and local perception



Buddhism

Cognitive Categorization is an illusion

Global perceptual processes are illusions

The self is an illusion

Meditation

Forest Before Trees: The Precedence of Global Features in Visual Perception

In a series of experiments David Navon (1977) explored the **relationship between global and local perception**.

Theoretical claim: "…Perceptual processes are temporally organised so that they proceed from global structuring toward more and more fine grained analysis".

This is known as ***Global Precedence***

Navon's method (Exp. #3)

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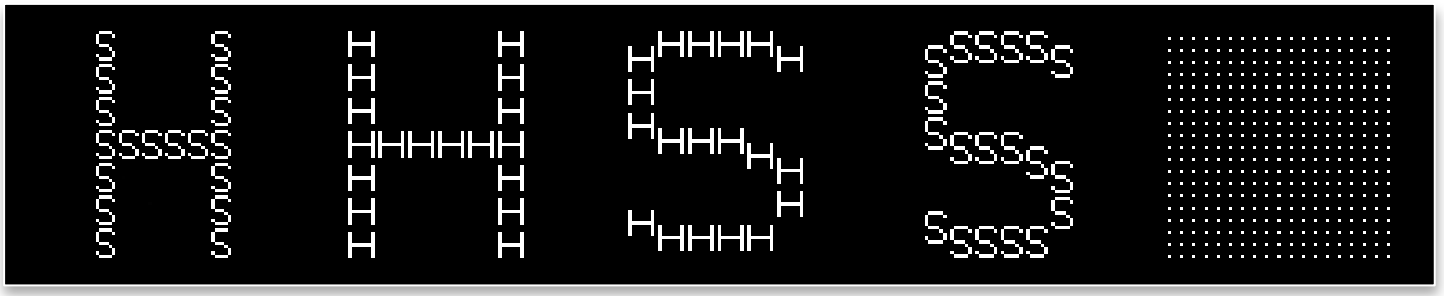
Required participants to respond to either the local or global level of the stimuli.

Location of presentation varied to prevent participants from using strategies.

2 conditions: Local-directed & Global-directed

Independent variable: Consistency

Dependent variable: Reaction time in milliseconds



Results

Table 1. The means and standard deviations for the Global and Local directed conditions for both congruent and incongruent trials

	Global Directed		Local Directed	
	Mean (ms)	Std Dev (ms)	Mean (ms)	Std Dev (ms)
Consistent	462	39	573	43
Conflicting	477	40	664	52

In the local-directed condition the mean reaction time was significantly greater in the conflicting than in the consistent condition ($p<0.01$)

Conclusions

"The results of this experiment suggests that the global pattern is responded to faster than the local components. Moreover, whereas people can voluntarily attend to the global pattern without being affected by the local features, they are not able to process the local features without being aware of the whole"(pg. 371, Cognitive Psychology, 9, 1977)

Navon argues that the finding that attention cannot be efficiently diverted from the whole may be interpreted as support to the notion that global processing is a necessary stage of perception prior to more fine-grained analysis.

Your experiment

Aims to replicate Navon's findings for the Local Directed condition ONLY.

	Global Directed		Local Directed	
	Mean (ms)	Std Dev (ms)	Mean (ms)	Std Dev (ms)
Consistent	462	39	573	43
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Same stimuli as Navon used

Varies the location that stimuli are presented on screen (top left, top right, bottom left, bottom right) making the task harder

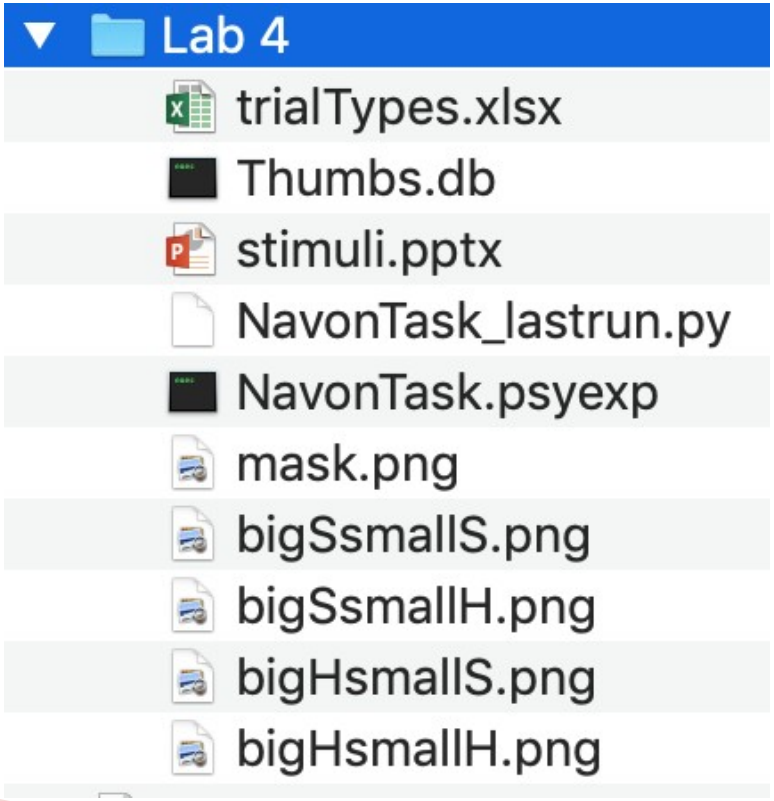
I.V. – Congruence of small/large letters

D.V. – Reaction time (seconds)

What you will need

You need *all* these files to run the study!

Please make sure they are all present in your folder

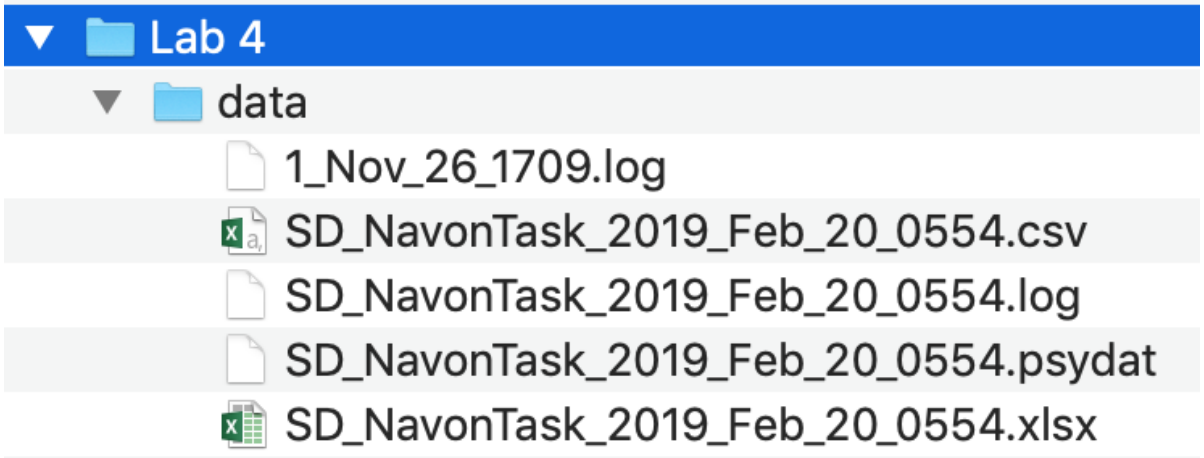


Navon

Data analysis

Your Data

Your data is in the Data folder (newly created by PsycoPy), as usual:

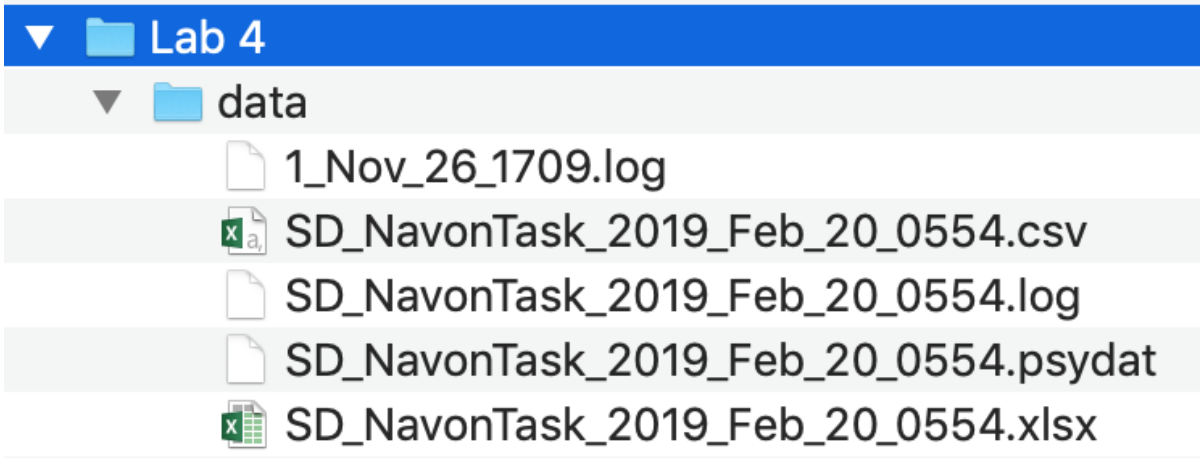


Raw data

Summary data

Your Data

Your data is in the Data folder (newly created by PsycoPy), as usual:



Raw data

Summary data

As with the previous lab…

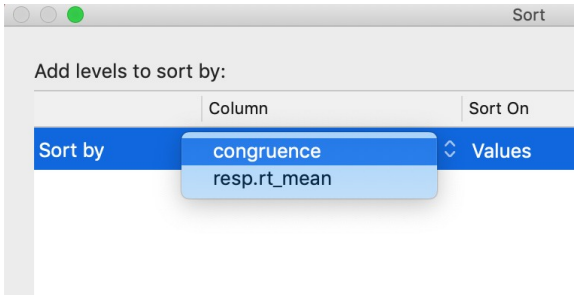
Data analysis's steps:

1) **Make a copy of your Excel data file!** Conduct the analysis on the copy and keep the original.
2) Open it in Excel and get the **mean RT** and **SD** for consistent and conflicting conditions (see the following slides):
   I. Copy the *congruence* column and the *resp.rt_mean* column to sit next to each other
   II. Calculate the average of the two conditions (easier if you sort the new block of data by congruence)

Sort by “congruence”?

Copy/paste the “congruence” column (D1-D17) and the “resp.rt_mean” column (L1-L17) next to each other. Select the two columns and sort by congruence (if you need, look last week’s slides for the details on how to sort) etc.:

congruence	resp.rt_mean
consistent	0.734289
conflicting	0.500101
consistent	0.899687
conflicting	0.401564
consistent	1.868348
conflicting	0.917713
consistent	1.848166
conflicting	0.835839
consistent	0.632464
conflicting	1.900312
consistent	1.433451
conflicting	1.964955
consistent	1.316153
conflicting	0.901957
consistent	1.317344
conflicting	0.733761



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conflicting	0.901957
conflicting	0.733761
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consistent	0.899687
consistent	1.868348
consistent	1.848166
consistent	0.632464
consistent	1.433451
consistent	1.316153
consistent	1.317344

Build your table

Build your table and calculate means and SDs. (Again please look at slides from last week for details on how to use the Function Bar etc.)

The function that you will use are **AVERAGE** for the mean and **STDEV** for the SD

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	Local Directed	
	Mean (ms)	SD (ms)
conflicting	1.019525	0.592921
consistent	1.256238	0.470932

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Run a t-test

Run a t-test to see if there is a significant difference between the reaction times.

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Keystroke instructions for creating a *t*-test

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Choose any empty cell and type in "**=TTEST(**"

Now select the first array.

Type a comma

Select the second array

Type "**, X, Y)**", and hit enter –

Syntax

TTEST(**array1,array2,tails,type**)

- **Array1**: is the first data set.
- **Array2**: is the second data set.

where X=1 for one tail (test whether smaller or greater), X=2 for two tails (test general difference),

And Y is the type: Y=1 for Paired, Y=2 for Two-sample equal variance (homoscedastic), Y=3 for Two-sample unequal variance (heteroscedastic)

And you've done a *t*-test!

Run a t-test

Run a t-test to see if there is a significant difference between the reaction times.

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