

“How to Science”

Stuff to think about before you even start



Hannah Little



Post-it system



I'm swimming



I'M CRASHING AND BURNING


Open Science Framework

A scholarly commons to connect the entire research cycle



Collaborative Science

This summer school is **VERY** collaborative!



Structured projects

Keep all your files, data, and protocols in **one centralized location**. No more trawling emails to find files or scrambling to recover from lost data. [SECURE CLOUD](#)



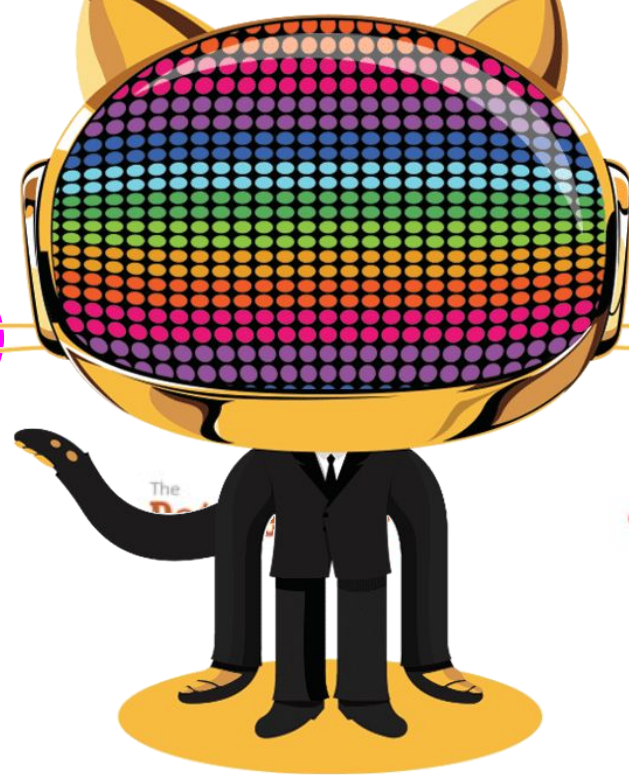
Control access

You control which parts of your project are public or private making it easy to collaborate with the worldwide community or just your team. [PROJECT-LEVEL PERMISSIONS](#)

Collaborative Science



Collaborative Science



What is preregistration?

Establishing and SHARING plans for data collection, analysis, and rules for excluding or missing data.



Why preregister?

You are a biased being.

To overcome this you need to make important decisions that affect your workflow before you're biased by seeing the data.

Why preregister?

Makes your study reproducible

Higher incidence of acceptance of your papers

Journals that guarantee publication of preregistered studies.

FREE MONEY: OSF have \$1 are giving away \$1,000 to 1,000 researchers who preregister their projects.



Thinking about things first stops you getting into a pickle later!

Types of preregistration

Registration prior to creation of data

Registration prior to any human observation of the data

Registration prior to accessing the data

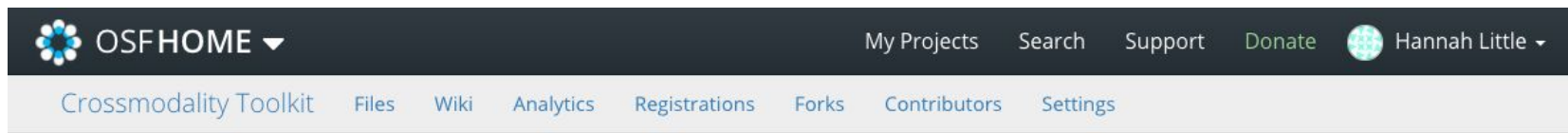
Registration prior to analysis of the data

Registration following analysis of the data



How to preregister?

On osf.io (other places available, but I focus on this here)



Edit draft registration

Study Information

Sampling Plan

Variables

Design Plan

Analysis Plan

Scripts

Other

Title (required)

Provide the working title of your study. It is helpful if this is the same title that you submit for publication of your final manuscript, but it is not a requirement.

[Show Example](#)

Crossmodality Toolkit

Why am I bringing up preregistration before anything else?

Sure you need to design your study before you can preregister!

You're right!

HOWEVER, The OSF preregistration form basically walks you through what you need to think about before you go ahead and do that study.



1. Research Questions



Every study starts with a research question...

Is there a gap in the literature?

What is leading you to ask the question?

Try not to be vague!

****EXERCISE****

Try writing a research question for your own work...

Control or Validity?



2. Hypotheses

****EXERCISE****

For each of the research questions:

provide one or multiple specific and testable hypotheses.

State if the hypotheses are directional or non-directional.

If directional, state the direction. What's the predicted effect?

Why should we care? Who would care?



3. Data collection procedures



Describe the process by which you will collect your data.

Population from which you obtain subjects

How subjects will be selected for eligibility from the initial pool
(e.g. inclusion and exclusion rules)

Payment for participation

4. Variables

What are your manipulated variables?

What are your measured variables?

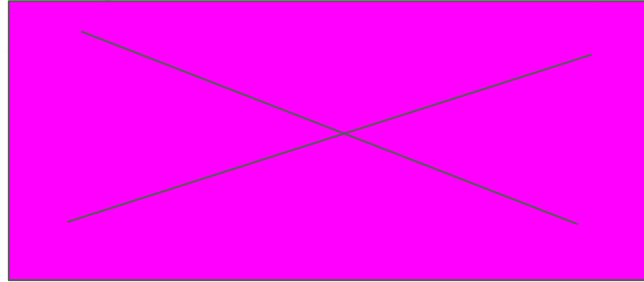
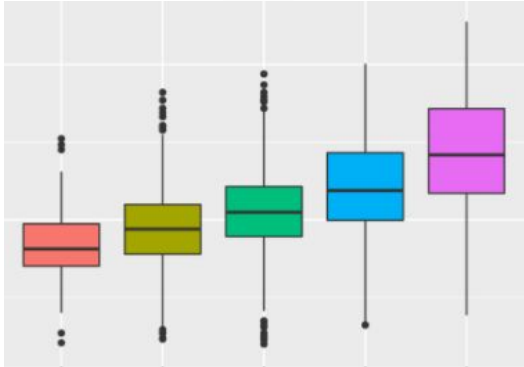
How will you aggregate the data?

What is your control?

What are you expecting to find?

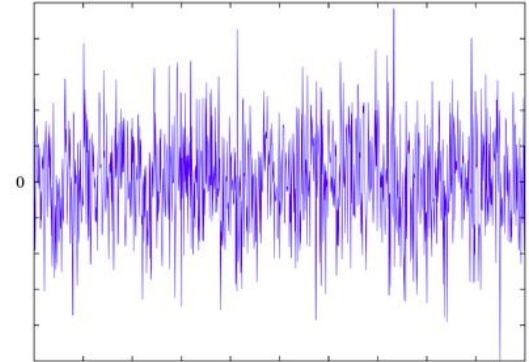
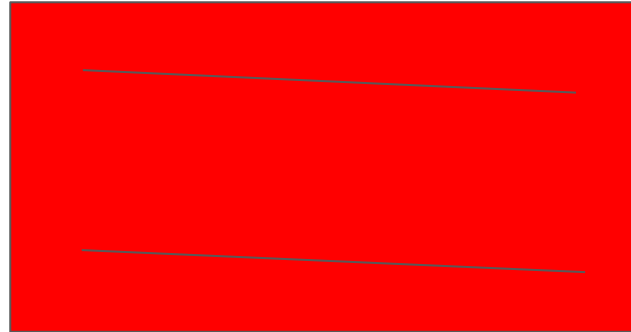
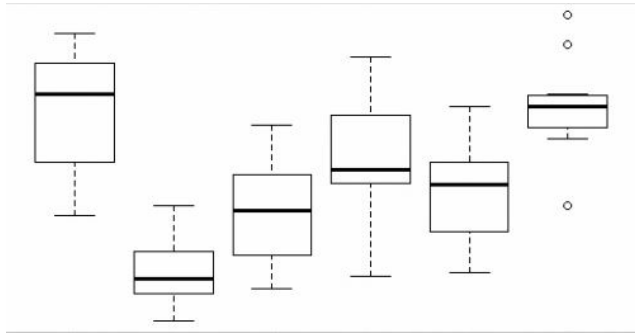


****EXERCISE****



****EXERCISE****

Your graph from hell



***** Journals that guarantee publication of preregistered studies*****

Sample Size and RATIONALE

Sample size rationale - especially relevant for these massive online studies

Bigger sample = bigger effect sizes, more accuracy

Bigger sample = \$\$\$\$

Things needed to calculating sample sizes:

confidence level (z-score), confidence intervals, Expected SD

(Alan will talk a bit more about this later)



Data Exclusion Policy



What will cause you to throw out a participant's data?

Does a participant click the same button every time?

RTs being too fast?

Taking too long?

Failing attention checks?

Bad at the task?

Other stuff you need to think about

Study design, Randomisation, etc., Statistical models,
Transformations, Follow-up analyses, Inference criteria,
Data exclusion, Exploratory analysis

analysis script with clear comments



And now... back to Alan

I love crossmodal
correspondences

