

# My experience of pre-registering during PhD

**Elizabeth Byrne**

**Open Science Day – 22<sup>nd</sup> Nov 2016**

MRC Cognition and Brain Sciences Unit

# Overview

---

- Why I chose to pre-register a study
  - Results of study 1
  - Options for pre-registering
- How I did the pre-registration
  - OSF
  - Process
- Pros & cons

# Why I chose to pre-register a study

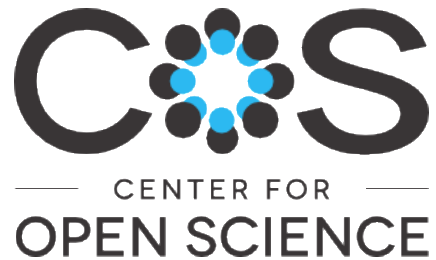
---

- Study 1: Working memory training and brain stimulation
  - Does stimulation enhance the effects of working memory training?
  - Null results
- Data exploration – easy to pull out effects
- Publication bias, p-hacking, post-hoc hypothesising etc within the fields of working memory training and brain stimulation
- Motivation to pre-register study 2
  - Working memory training and brain stimulation 2.0
  - Does stimulation during working memory training enhance cross-paradigm transfer effects?

# Where to pre-register?

---

- Two main options:
  1. with a specific journal
  2. with Open Science Framework (OSF)



# How I did it

# Open Science Framework

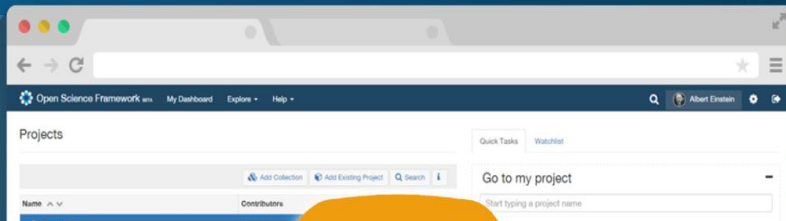
A scholarly commons to connect the entire research cycle



FREE AND OPEN SOURCE. START NOW.

Full Name

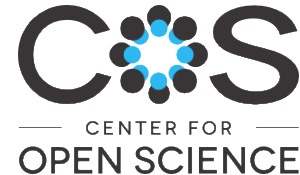
Contact Email



# OSF Checklist

---

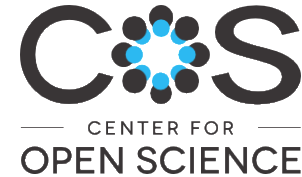
- Some examples...
- Research questions and hypotheses (and predictions)
- Method
  - Data collection procedure
  - Sample size and rationale – stopping rule
  - Variables: Manipulated and measured
  - Indices
  - Study design, blinding, randomization
- Analysis plan
  - Directly address each research question and test each hypothesis
  - Statistical tests/models
  - Inference criteria ... Correcting for multiple comparisons?
  - E.g. I have 5 measures so will correct to  $p < .01$  using Bonferroni
  - Data exclusion – Excluding outliers? What is the threshold?



# The end result

## Does transcranial electrical stimulation during working memory training enhance cross-paradigm transfer effects?

Contributors: Elizabeth Mary Byrne, Michael Ewbank, Joni Holmes  
Date created: 2016-02-06 10:10 PM | Last Updated: 2016-03-07 02:00 PM  
Category: Project  
Description: No description  
License: No license



Wiki [↗](#)

No wiki content

Files [↗](#)

Click on a storage provider or drag and drop to upload

Filter ⓘ

Name ^ v	Modified ^ v
Does transcranial electrical stimulation during working memory train...	
OSF Storage	
OSF_PreRegistration.pdf	2016-03-04 04:41 PM

Citation [osf.io/f26ea](#) v

Components [Add Component](#) [Add Links](#)

No components have been added to this project.

Tags

add a tag

# Pros & Cons

---

- Pros:

- Encouraged me to formulate precise research questions & fine-tune my design
- OSF criteria
- Earn a badge



- Cons:

- OSF (No peer review, doesn't guarantee publication of null results)
- Undervaluing exploratory research?
- Time consuming?



---

Thanks for listening!

---

# Extra slides

# The \$1,000,000 Preregistration Challenge

## The Big Picture

[The Challenge](#)[How to Earn the Prize](#)[Eligibility Criteria](#)[FAQ](#)[Eligible Journals](#)[Review Process](#)[Begin a Preregistration](#)

Preregistration increases the credibility of hypothesis testing by confirming in advance what will be analyzed and reported. For the Preregistration Challenge, one thousand researchers will win \$1,000 each for publishing results of preregistered research. All it takes is a single experiment and its analysis to be eligible.

Share [this handout](#) for a brief overview and links to more information, and [begin your preregistration today!](#)



- 
- Not because of personal reward but for professional survival (Kerr, 1998)

*Without systemic, structural changes, individual, principled choices not to HARK may be futile and professionally destructive. Thus, most of the suggestions that follow propose structural solutions that must be implemented by scientific communities or their leaders and not by isolated, individual scientists.*

Kerr (1998); Pg. 213-214

# Study 1

