My experience of pre-registering during PhD

Elizabeth Byrne

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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
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?
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

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