

Preregistration



WHAT, WHY, WHEN, HOW?

Lewend Mayiwar | LOB Friday Seminar | 4 Feb 2022



What is a preregistration? 😐

A time-stamped record that outlines hypotheses, method, and analytical plan,
before data collection.

Preregistration ≠ Registered Report

A journal article that involves peer-review before data collection.
Acceptance/rejection not based on results.



<https://www.cos.io/initiatives/registered-reports>

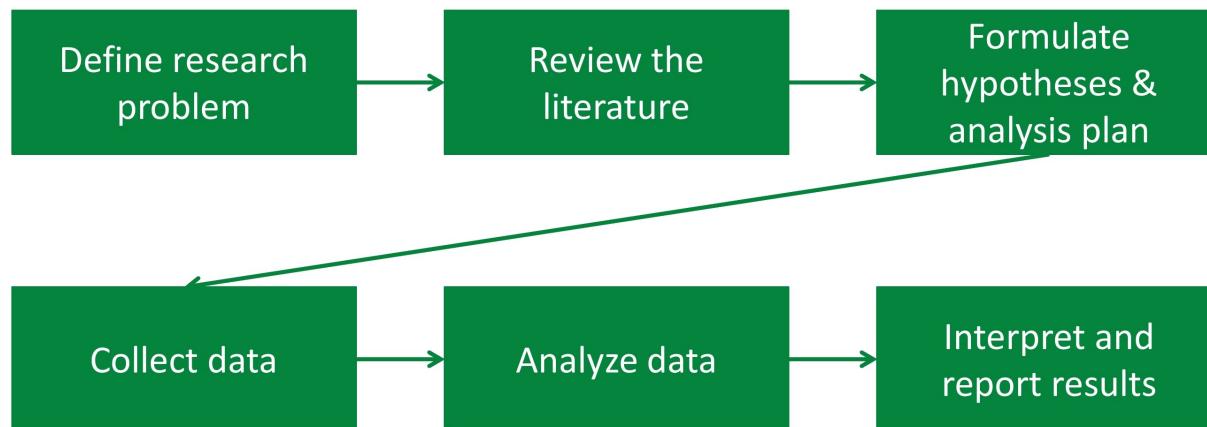
Benefits of preregistration vs. registered report

(Source <https://doi.org/10.31222/osf.io/x7aqr>)

Benefits	Registered Reports	Preregistration	Standard article
For the research community:			
- Reduces researcher bias: p-hacking & <u>HARKing</u>	✓	✓	✗
- Eliminates reporting bias: publication bias & outcome bias	✓	✗	✗
- Incentivises novel, resource-intensive projects (where publication would normally be contingent on results)	✓	✗	✗
- Encourages formulation of precise research question and plans a priori	✓	✓	✗
For researchers:			
- Peer review when it's most helpful	✓	✗	✗
- Guaranteed publication	✓	✗	✗
- IPA on your CV	✓	✗	✗
- Reduces stress (publication is not contingent on novel results, significant results, or supported hypotheses)	✓	✗	✗

Why preregister? 🤔

1 Clear distinction between "confirmatory" and exploratory research.

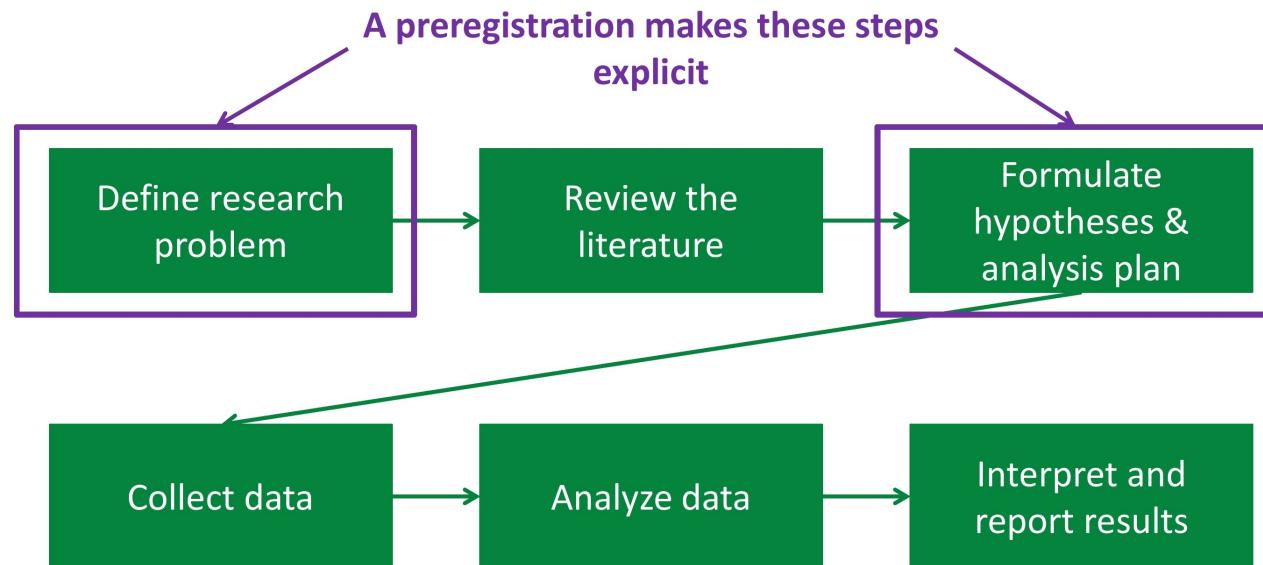


Kothari (2004)

Source:<https://osf.io/zjrhu/>

Why preregister?

1 Clear distinction between "confirmatory" and exploratory research.



Kothari (2004)

Source: <https://osf.io/zjrhu/>

Why preregister?

2

Get your head around your research.

Before you conduct the study...



"This is gonna be rocket science!"

When you look at your data...



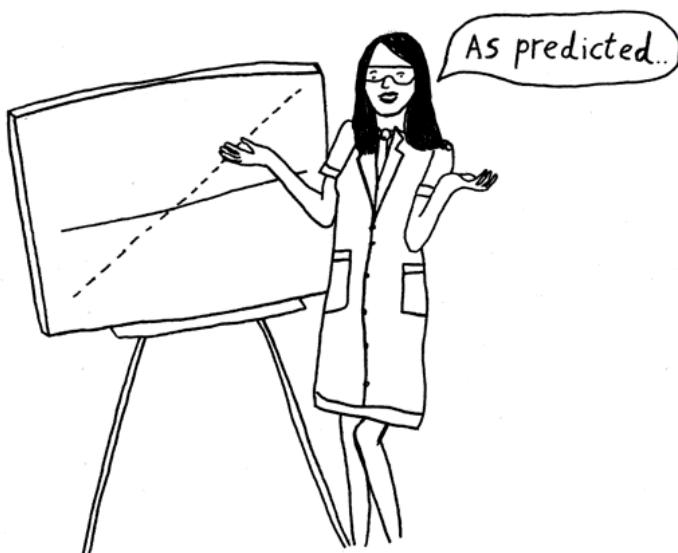
"How should I ever analyze this mess?"

Images from pixabay.com, icon from flaticon.com by monkik

Source:<https://osf.io/zjrhu/>

Why preregister?

3 Take credit for your ideas.



Source: <https://osf.io/zjrhu/>

Why preregister?

4

Build your reputation.



- Not afraid of falsification
- Transparent scientist
- Shields him/herself from bias

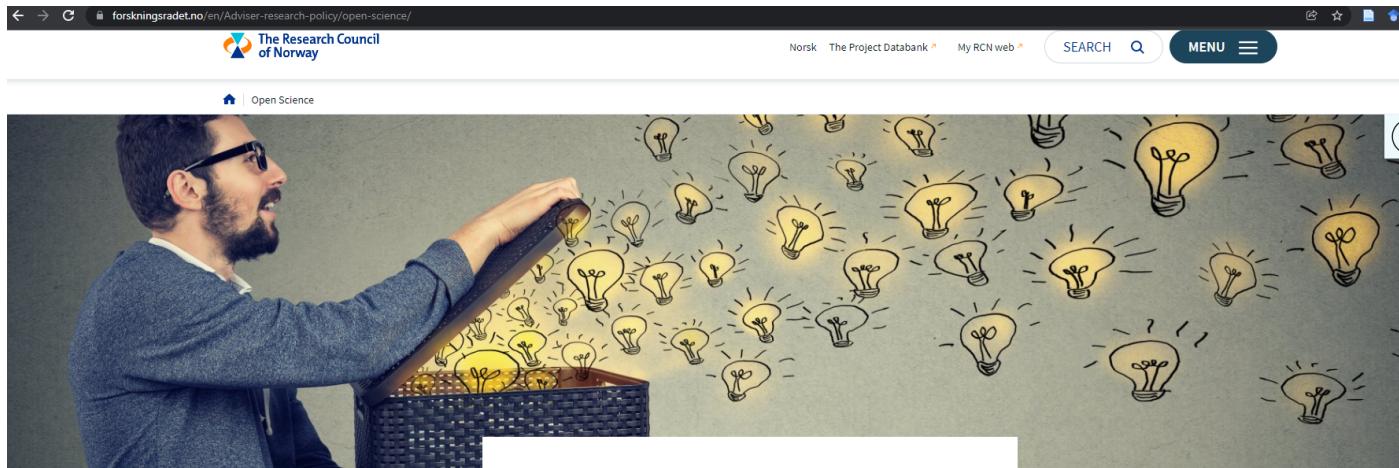
Wagenmakers & Dutilh (2016)

Source:<https://osf.io/zjrhu/>

Why preregister?

5

Comply with new regulations and standards.



The screenshot shows the homepage of the Research Council of Norway's Open Science page. At the top, there is a navigation bar with links for 'Norsk', 'The Project Databank', 'My RCN web', 'SEARCH', and 'MENU'. Below the navigation is a large image of a man with glasses and a beard, wearing a blue sweater, reaching into a woven basket. From the basket, numerous lightbulbs are spilling out onto a wall, symbolizing ideas and innovation. Below the image, the word 'Open Science' is written in a bold, sans-serif font. A subtitle below the image reads: 'The Research Council seeks to lead the way in making research as open as possible and as closed as necessary.' Three main policy areas are listed in boxes: 'Policy on Open Science', 'Plan S - open access to publications', and 'Open access to research data'. Each box contains a brief description of the policy's purpose and scope.

Open Science

The Research Council seeks to lead the way in making research as open as possible and as closed as necessary.

> Policy on Open Science

The Research Council is drawing up a policy for open science that emphasises open research processes, open innovation, participation and citizen science.

> Plan S - open access to publications

The Research Council is taking steps to ensure that the results of publicly funded research are made as openly accessible as possible for all interested users. Calls for proposals in 2020 will stipulate that articles based

> Open access to research data

The Research Council's Policy on Open Access to Research Data aims to ensure that research data are accessible to relevant users, on equal terms, and at the lowest possible cost. Projects that receive funding from the

A preregistration does not...

Stifle creativity.

Does not automatically make a study better than a non-preregistered study.

Solve p-hacking.

Solve the file-drawer problem.

What preregistration **actually** does 😐

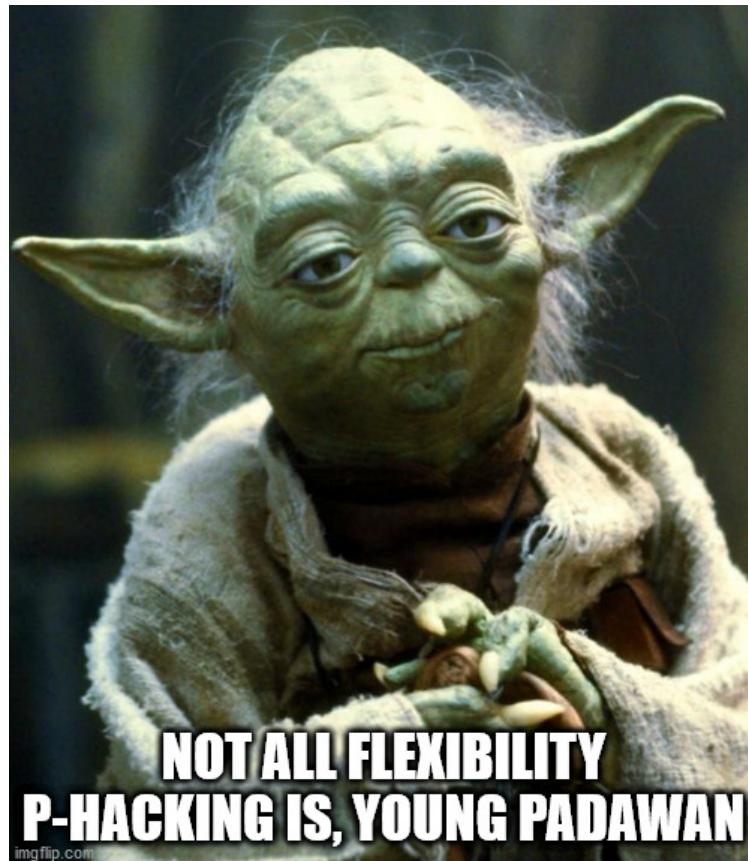
Allows others to transparently determine the severity of a test.

Distinguishes between hypothesis-testing and exploratory research.

Saves time and helps your future self.

Helps you to identify problems early on.

Deviations are often necessary



<http://daniellakens.blogspot.com/2021/10/not-all-flexibility-p-hacking-is-young.html>

Sometimes, you're not ready for hypothesis-testing



Why Hypothesis Testers Should Spend Less Time Testing Hypotheses

Anne M. Scheel, Leonid Tiokhin, Peder M. Isager, and Daniël Lakens

Human-Technology Interaction Group, Eindhoven University of Technology

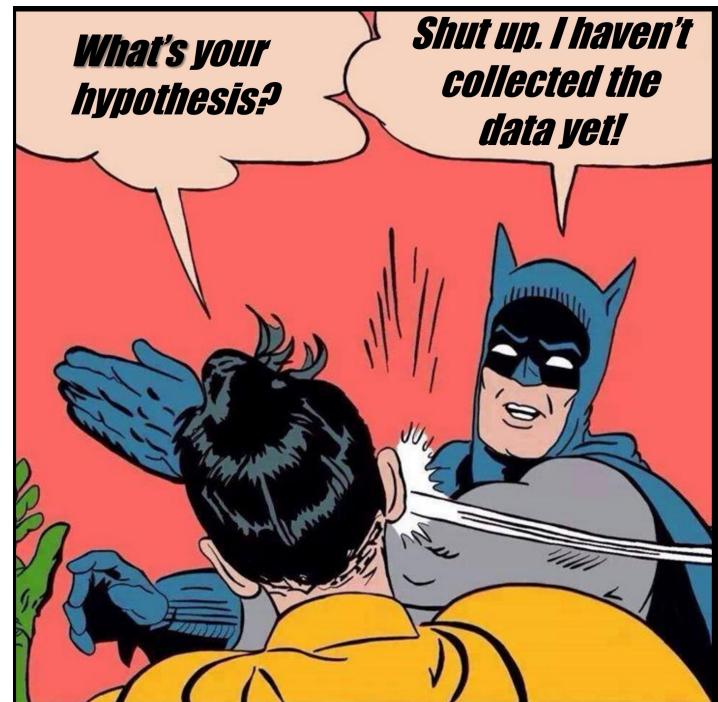
Abstract

For almost half a century, Paul Meehl educated psychologists about how the mindless use of null-hypothesis significance tests made research on theories in the social sciences basically uninterpretable. In response to the replication crisis, reforms in psychology have focused on formalizing procedures for testing hypotheses. These reforms were necessary and influential. However, as an unexpected consequence, psychological scientists have begun to realize that they may not be ready to test hypotheses. Forcing researchers to prematurely test hypotheses before they have established a sound "derivation chain" between test and theory is counterproductive. Instead, various nonconfirmatory research activities should be used to obtain the inputs necessary to make hypothesis tests informative. Before testing hypotheses, researchers should spend more time forming concepts, developing valid measures, establishing the causal relationships between concepts and the functional form of those relationships, and identifying boundary conditions and auxiliary assumptions. Providing these inputs should be recognized and incentivized as a crucial goal in itself. In this article, we discuss how shifting the focus to nonconfirmatory research can tie together many loose ends of psychology's reform movement and help us to develop strong, testable theories, as Paul Meehl urged.

Keywords

exploratory research, hypothesis testing, replication crisis

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DOI: 10.1177/1745691620966795
www.psychologicalscience.org/PPS



Preregistration on the Open Science Framework

The screenshot shows a web page from the OSF REGISTRIES platform. At the top, there's a navigation bar with links for 'Add New', 'My Registrations', 'Help', 'Donate', and a user profile icon. Below the header, a message says 'Feb 3, 2022 3:00 AM and Feb 3, 2022 4:00 AM (+0100 UTC). Thank you for your patience.' The main title of the study is 'Incidental Emotions and Risk Framing / Study 1'. On the left, there's a sidebar with options like 'Public registration', 'Updates', 'Overview' (which is selected), 'Files', 'Wiki', 'Components' (0), 'Links', 'Analytics', and 'Comments' (0). The main content area contains sections for 'Preregistration Template from AsPredicted.org', 'Data collection', 'Hypothesis', 'Dependent variable', and 'Category'. The 'Category' section indicates it's a 'Project'. There are also sections for 'Contributors' (Lewend Mayiwar and Erik Løhre), 'Description' (aim of the study), 'Registration type' (Preregistration Template from AsPredicted.org), 'Date registered' (March 24, 2021), 'Date created' (March 24, 2021), 'Registered from' (osf.io/3e98a), 'Internet Archive link' (https://archive.org/details/osf-registrations-egj7p-v1), and 'Registration DOI' (10.17605/OSF.IO/EGJ7P).

Feb 3, 2022 3:00 AM and Feb 3, 2022 4:00 AM (+0100 UTC). Thank you for your patience.

Incidental Emotions and Risk Framing / Study 1

Public registration ▾ Updates ▾

Overview

Preregistration Template from AsPredicted.org

Data collection

Have any data been collected for this study already? Note: 'Yes' is a discouraged answer for this preregistration form.

No, no data have been collected for this study yet.

Hypothesis

Hypothesis 1a: Incidental fear will increase preference for the negative (loss) frame.

Hypothesis 1b: Incidental fear will increase preference for the safe option.

Hypothesis 2a: Incidental anger will increase preference for the positive (gain) frame.

Hypothesis 2b: Incidental anger will increase preference for the risky option.

Dependent variable

Risk framing will be measured with a frame selection task that is modeled on the Plant Problem by Bazerman (1984). The complete task is as follows:

A large hi-tech company is experiencing serious economic troubles and it looks like they need to lay off 6000 employees. The top management team has been exploring alternative ways to avoid this crisis and are now considering two different options. One of the options (Option A) will ensure that some employees keep their jobs but will also lead to many losing their jobs. The other option (Option B) gives a chance of saving all the jobs but also involves the risk of losing all the jobs.

As an employee in the HR Office at this high-tech firm, you are responsible for

Contributors
Lewend Mayiwar and Erik Løhre

Description
The aim of this study is to examine the influence of incidental fear and anger on risky frame selection.

Registration type
Preregistration Template from AsPredicted.org

Date registered
March 24, 2021

Date created
March 24, 2021

Registered from
osf.io/3e98a

Internet Archive link
https://archive.org/details/osf-registrations-egj7p-v1

Category
Project

Registration DOI
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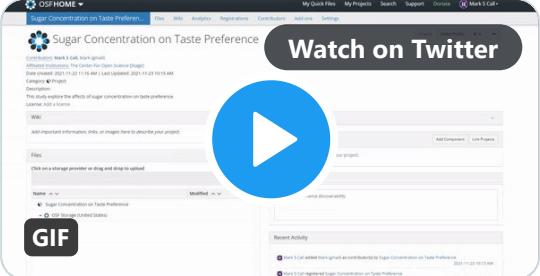
Possible to update preregistration (new feature)



Brian Nosek
@BrianNosek

Even the best laid plans sometimes don't go as expected in reality. In a major OSF update released today, you can now transparently report changes in your preregistrations to help others understand what changed and why.

The interface makes it easy for readers to see what changed



5:59 PM · Dec 3, 2021

[Read the full conversation on Twitter](#)

 595  Reply  Copy link

[Read 6 replies](#)

Latest ▾

This is an update to the original registration

This update was made on Dec 03, 2021

Reason for update:
I'm gonna make a sneaky change

OSF-Standard Pre-Data Collection Registration

Data collection status Updated

Has data collection begun for this project?

No, data collection has not begun

Data access status Updated

No

Other Comments

Original preregistration

Contributors

Not Steve

Description

A test of how easy i in a preregistration

Registration type

OSF-Standard Pre-Data Collection Registration

Date registered

December 3, 2021

Date created

December 3, 2021

Registered from

test.osf.io/bkdsf

Category

Uncategorized

Registration DOI

10.70102/FK2OSF.IK

Publication DOI

No publication DOI

Interested in open science? Join our ReproducibiliTea meetings/workshops!



An Open Science Journal Club
Organized by: Lewend Mayiwar and Yoeun Jeong
(Department of Leadership and Organizational Behavior)

Date	Room	Article/Reading	Theme	Link to Article
Week 39 30.09.2021 12:00-13:30	D3-019	- Fallibility in Science: Responding to Errors... - Evidence of Fraud in an Influential Field Experiment About Dishonesty - Podcast: Two Psychologists 4 Beers	10 years after the replication crisis. How far have we come?	https://journals.sagepub.com/doi/full/10.1177/2515245918776632 https://datacolada.org/98 https://www.fourbeers.com/66
Week 43 29.10.2021	A2-090	The preregistration revolution	Preregistration workshop	https://www.pnas.org/content/115/11/2600.short
Week 47 25.11.2021	A2-090	Why hypothesis testers should spend less time testing hypotheses	The need for exploratory research	https://journals.sagepub.com/doi/full/10.1177/1745691620966795
Week 49 09.12.2021	A2-090	—	Wrap up the year with ReproSpill/theTea	Info

Thursdays at 12:00-12:45 at BI Norwegian Business School (Oslo), unless otherwise stated.

Read the paper and come along for discussion! Food is on the house 😊

Tips

Don't have clear hypotheses? Consider exploratory study to derive hypotheses.

Try to estimate your effect size (e.g., meta-analysis).

Run power analysis to calculate required N to detect effect size.

Ask colleagues to review your preregistration.

Find a preregistration that fits your planned study, use as template.

The more detailed the prereg, the better. But start with small steps.

Increase power by preregistering one-tailed tests
(<http://daniellakens.blogspot.com/2016/03/one-sided-tests-efficient-and-underused.html>).

Preregistration anxiety is real, in the beginning. But don't let that kill your research joy!

Exploration and deviation should be expected. Preregistration simply makes this clear.



Joy and rigor in behavioral science ☆

Hanne K. Collins, Ashley V. Whillans, Leslie K. John  

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<https://doi.org/10.1016/j.obhdp.2021.03.002>

Get rights and content

Highlights

- Little is known about the effect of reforms on researchers' subjective experiences.
- Engaging in a pre-registration task reduced researchers' propensity to explore.
- Researchers experience exploration more positively than confirmation.
- Over 30% of researchers that we surveyed experience "prediction preoccupation"—heightened anxiety during confirmation.
- More work is needed to ensure that joy and rigor can coexist.

Tools



"The preregistration revolution" Nosek et al. (2018;
<https://doi.org/10.1073/pnas.1708274114>)

Preregistration template for **qualitative** research: <https://osf.io/6z2hr>

Preregistration template for **systematic reviews**: <https://osf.io/by27q/>

Preregistration template for **secondary data**: <https://psyarxiv.com/hvfmr/>

Free power analysis software (although limited functionality):<https://www.psychologie.hhu.de/arbeitsgruppen/allgemeine-psychologie-und-arbeitspsychologie/gpower>

pwr (power analysis) package in R:<https://cran.r-project.org/web/packages/pwr/pwr.pdf>

Power analysis for **mediation analysis**:http://marlab.org/power_mediation/

Sample size justification

app:https://shiny.ieis.tue.nl/sample_size_justification/

More tools here: https://wiki.mgto.org/doku.php/r_shiny_apps (Gilad Feldman)

Let's preregister a study

