

Do I really need to preregister?

An introduction to preregistration

Johanna Hein

Most of these slides are taken from

SIRRO Preregistration Workshop by Caro Hautekiet and Evie Vergauwe: <https://osf.io/g45nt/>



The slides were created with the help of

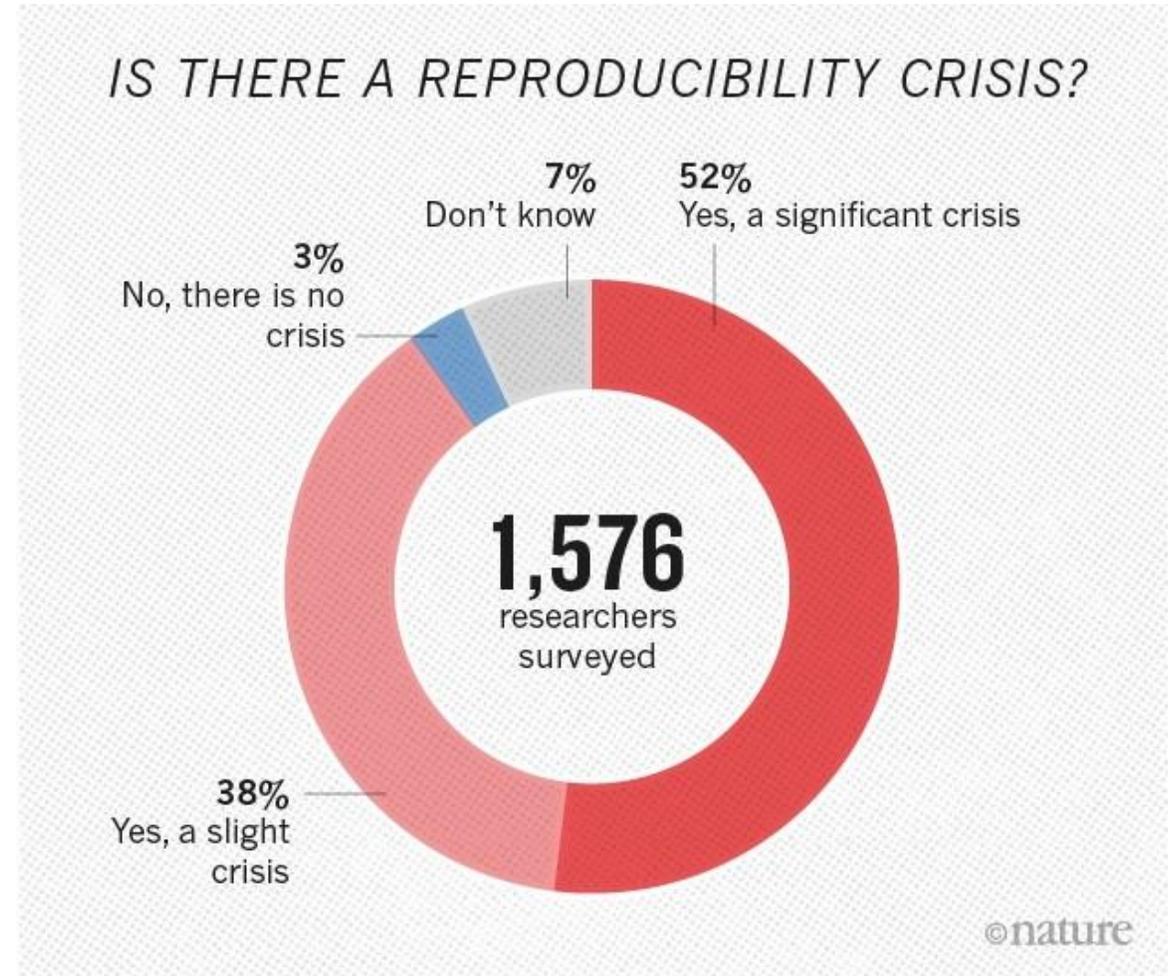
- Slides Talk “Preregistration in Psychological Science: Savior, Vaporware, or straight jacket by Malte Elson, UNIGE Reproducibility Day 2025
- 2023 CUSO Open Science Workshop by Dominique Roche: <https://osf.io/4g8tk/>
- Lecture Slides “Best Practice in Pedagogy” by William Chopik and colleagues <https://osf.io/mh9pe/>
- “Easing Into Open Science: A Guide for Graduate Students and Their Advisors” (Kathawalla et al., 2021)
- “Seven Easy Steps to Open Science” (Crüwell et al., 2019)

Your
experience
with and
worries about
preregistration



<https://www.menti.com/al27md43gqzn>

Science in Crisis?



REPLICATION



MERRY CRISIS

Why do we have a
crisis?



Publish or Perish



Giphy.com

Poor practices

- Publication bias
- Confirmation bias
- Outright fraud
- **HARKing**
- **Under-reporting**
- **Selective reporting**
- **P-hacking**

HARKing

= Hypothesizing after results are known



"I knew it all along!"

<https://nesslabs.com/hindsight-bias>

Selective reporting & under-reporting

Reporting only a **subset** of hypotheses tested

→ Increase in **false positives**



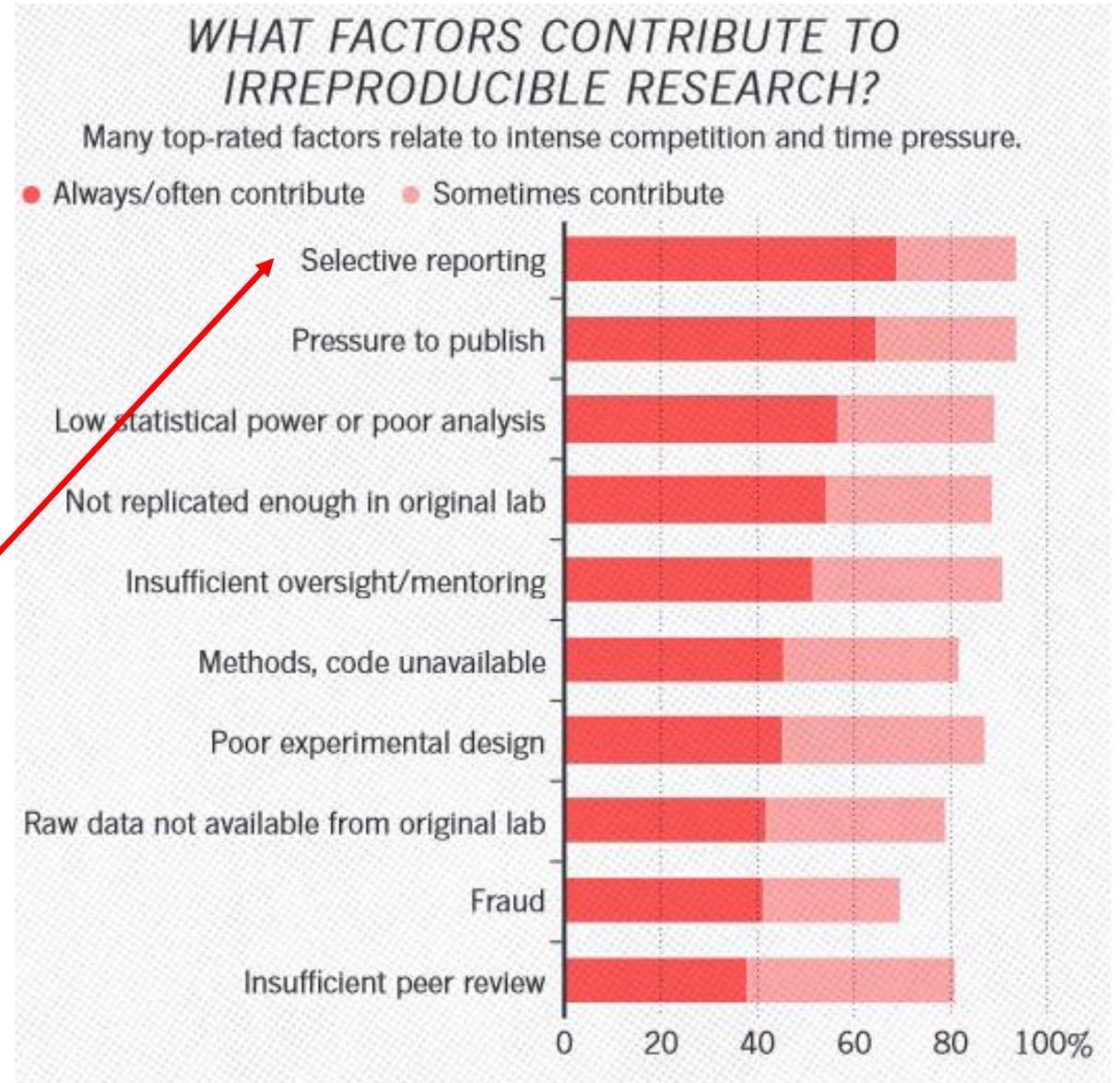
Credit: Aaron Watson Photography

Selective reporting & under-reporting

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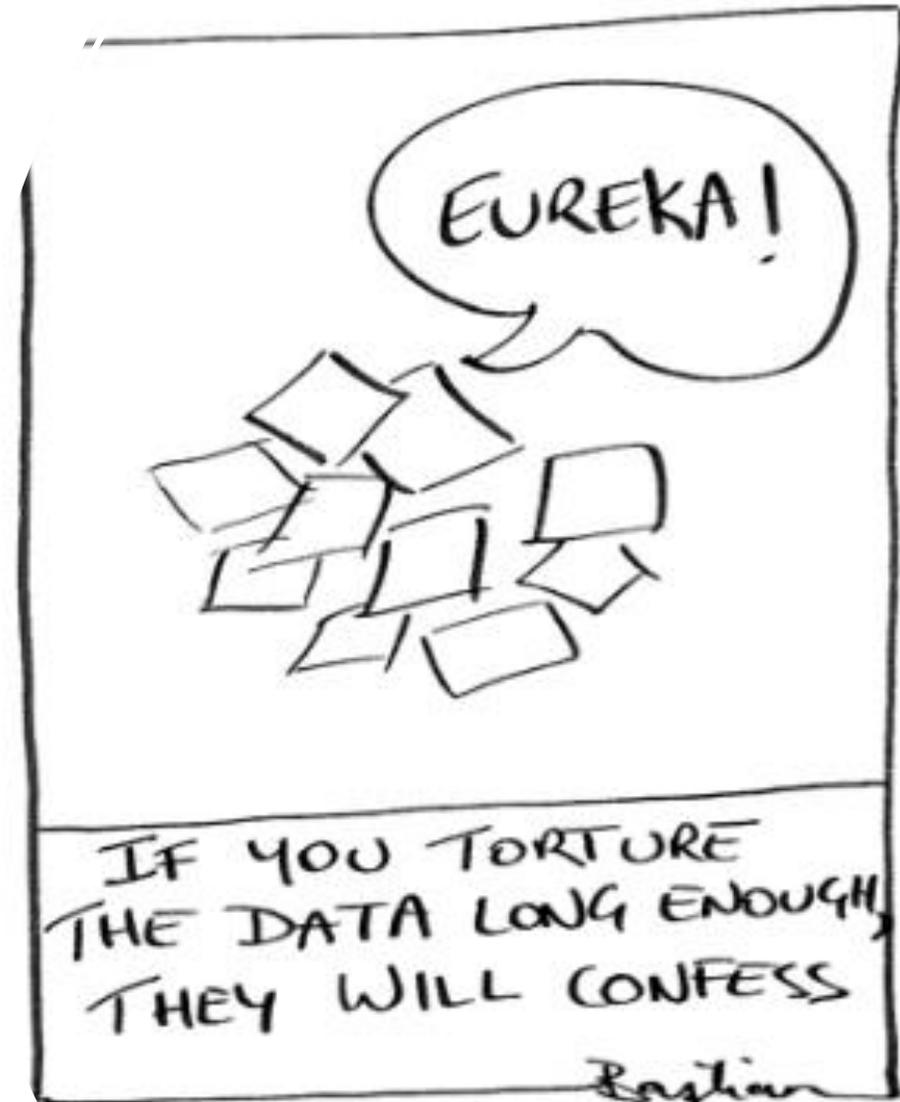
e.g., leaving out conditions, variables, analyses that did not « work », omitting null results



P-Hacking

A variety of practices that **increase the odds of finding a statistically significant results** by, for instance, conducting multiple versions of an analysis with different covariates or subsets of the data

→ Increase in **irreproducible results**

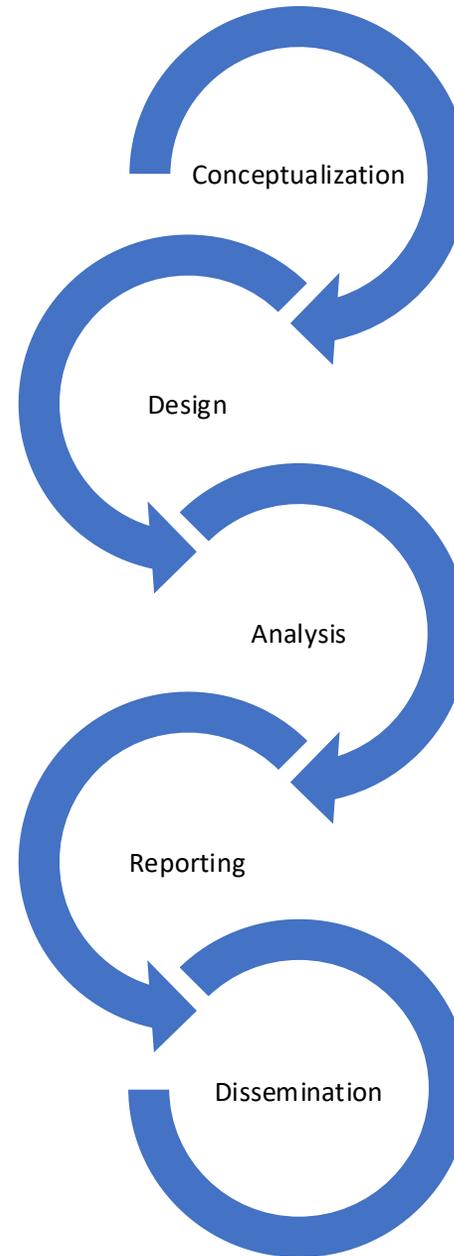


Behaviors to implement

See article by Kathawalla et al. (2021)

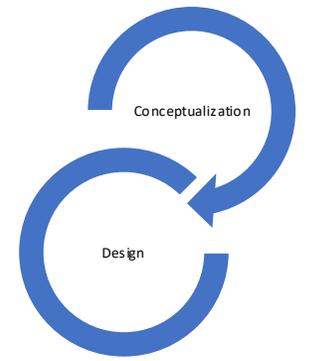


Open Science Practices



- Project Workflow
- Journal Clubs
- **Preregistration**
- **Registered Reports**
- Data sharing planning
- Reproducible Code
- Transparent Writing
- Preprints
- Open Data, Materials & Code

Design Preregistration



Confirmatory vs. exploratory research

- Verifying a hypothesis vs. looking for a hypothesis
- Hypothesis-testing vs. hypothesis generation
- Both are valid and important BUT
 - 1) One should not be presented as the other
 - 2) The same data cannot be used to generate *and* test a hypothesis, which can happen unintentionally and reduce the credibility of your results



Preregistration

*The practice of publishing the plan for a study, including research questions/hypotheses, research design, data and analysis **before the data has been collected or examined.***

*Parsons, S., Azevedo, F., Elsherif, M. M., Guay, S., Shahim, O. N., Govaart, G. H., ... & Aczel, B. (2022). A community sourced glossary of open scholarship terms. *Nature human behaviour*, 6(3), 312-318.*

Preregistration

Principle: A timestamped, non-modifiable, online document presenting the research, its methods and goals

When: Before collecting/accessing/inspecting/analyzing research data

Content: Hypothesis, methods, participants (including sample size, inclusion or exclusion criteria), analysis, main outcome

Sharing: Generally on a dedicated server, allowing for a unique and permanent identifier

Preregistration in the Research Workflow



Preregistration in the Research Workflow



Tools & Implementation

General

 OSF  ASPREDICTED

 Research Registry

For specific research types

 U.S. National Library of Medicine
ClinicalTrials.gov

 PROSPERO
International prospective register of systematic reviews

For specific fields

 egap EVIDENCE IN GOVERNANCE AND POLITICS

 SREE

 RIDIE
Registry for International Development Impact Evaluations

Creating a Preregistration with OSF



Improve your research with [preregistration](#). By writing out specific details such as data collection methods, analysis plans, and rules for data exclusion, you can make important decisions early on and have a clear record of these choices. This can help reduce biases that occur once the data are in front of you.

Use [OSF Registries](#) to discover previously registered work.

Start a new preregistration

Preregister a project you already have on OSF

Creating a Preregistration with OSF or AsPredicted

- ***Time stamped*** preregistration
- Possible to preregister ***before data collection, before first inspection of data, before data analysis***
- Possible to ***embargo*** registration: not public immediately

OSF Templates

Register

Registration creates a frozen version of the project. Your original project remains editable and will have the registration linked. Things to know about registration:

- Registrations cannot be edited or deleted.
- Withdrawing a registration removes its contents, but leaves behind basic metadata: title, contributors, date registered, date withdrawn, and justification (if provided).
- Registrations can be public or embargoed for up to four years. Embargoed registrations will be made public automatically when the embargo expires.
- Registrations are archived on Internet Archive and a link to the archived copy will be added to the registration metadata.

Continue your registration by selecting a registration form:

- OSF Preregistration** ⓘ
- Open-Ended Registration** ⓘ
- Qualitative Preregistration** ⓘ
- Secondary Data Preregistration** ⓘ
- Registered Report Protocol Preregistration** ⓘ
- OSF-Standard Pre-Data Collection Registration** ⓘ
- Preregistration Template from AsPredicted.org** ⓘ
- Replication Recipe (Brandt et al., 2013): Post-Completion** ⓘ
- Replication Recipe (Brandt et al., 2013): Pre-Registration** ⓘ
- Pre-Registration in Social Psychology (van 't Veer & Giner-Sorolla, 2016): Pre-Registration** ⓘ

Cancel

Create draft

OSF Example

<https://osf.io/wekmb/overview>



ASPREDICTED



HOME

Create a new pre-registration

CREATE

Just trying it out; make this pre-registration self-destroy in 24 hours. 🗑️

See your pre-registrations

(e.g., to share with reviewers or make public)

email address you have used in AsPredicted

SIGN IN

[I cannot access my AsPredicted email account anymore](#)

Look up an AsPredicted

(if a paper shows the AsPredicted # instead of link)

LOOK UP

WHAT IS ASPREDICTED?

AsPredicted is a platform that makes it easy for researchers to pre-register their studies, and easy for others to read and evaluate those pre-registrations. To pre-register a study on AsPredicted, a researcher answers nine simple questions about their research design and analyses. The platform then generates a time-stamped, single page .pdf document that includes a unique URL for verification.

HOW DOES IT WORK?

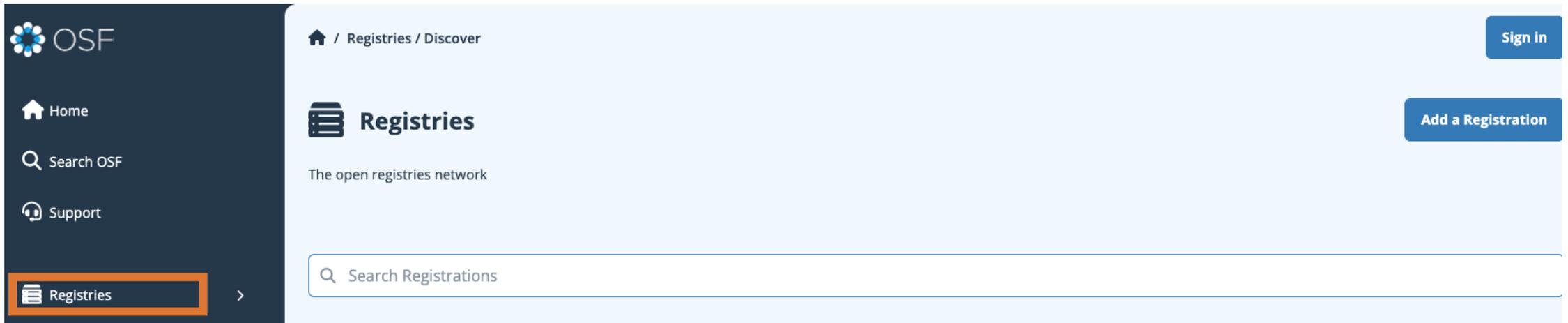
- One author creates the pre-registration.
- Participating authors are emailed, requesting approval.
- If all approve, it is saved but remains private until an author makes it public; or remains private forever.[\(Why?\)](#)
- Authors may share an anonymous version of the pre-registration with reviewers.
- If made public, the final .pdf ([sample](#)) is automatically stored in the [web-archive](#).

WHAT IF THINGS DON'T GO 'AS PREDICTED'?

You can just say so in the paper:

- 'Contrary to expectations, we found that...'
- 'Unexpectedly, we also found that...'
- 'In addition to the analyses we pre-registered we also ran...'
- 'We encountered an unexpected situation, and followed our Standard Operating Procedure' ([.pdf](#))

Looking for preregistrations



→ Search engine for preregistrations across registration platforms

→ <https://osf.io/registries>

Looking for preregistrations

The screenshot displays the OSF (Open Science Framework) search interface. On the left is a dark sidebar with navigation options: Home, Search OSF, Support, Registries, Preprints, Meetings, Institutions, Donate, and Sign in. The main content area shows a search bar with the query 'journal clubs' and a 'Sign in' button in the top right. Below the search bar are tabs for 'All', 'Projects', 'Registrations', 'Preprints', 'Files', and 'Users', with 'Registrations' selected. The results are sorted by 'Relevance' and show 11 results. Two registration entries are visible:

- Registration**
Journal Clubs In Palliative Care: The Evaluation Of A Toolkit To Support The Implementation Of A Hospice Multidisciplinary Journal Club
Amara Nwosu
Date registered: March 6, 2023 | Date modified: March 6, 2023
Context: Title: *Journal clubs* in palliative care: the evaluation of a Toolkit to support the implementation of a hospice; Description: These challenges include a lack of knowledge of the benefits of *journal clubs*, organisational difficulties; Description: Several challenges prevent hospices from experiencing the benefits of *journal clubs*.; Description: A *journal club* is an educational event where staff can discuss research, to learn how this can support; Description: Evidence shows that *journal clubs* are useful tools to support staff development and can help to improve; Description: by determining the feasibility of using of a Toolkit to support implementation of a palliative care *journal*; Title: multidisciplinary *journal club*
Data Analytic Code Materials Papers Supplements
- Registration**
The Role Of Virtual Journal Clubs In Promoting Evidence-Based Practice Among Nurses **Withdrawn**
Andi Fajrin Permana, Siobhán O'Connor, Dilla Davis
Date registered: August 8, 2025 | Date modified: August 8, 2025
Context: Description: This phase aims to map the literature on how virtual *journal clubs* (VJCs) are used to support evidence-based; Title: The Role of Virtual *Journal Clubs* in Promoting Evidence-Based Practice among Nurses; Tag: Virtual *Journal Club*

Some examples...

Vignette A

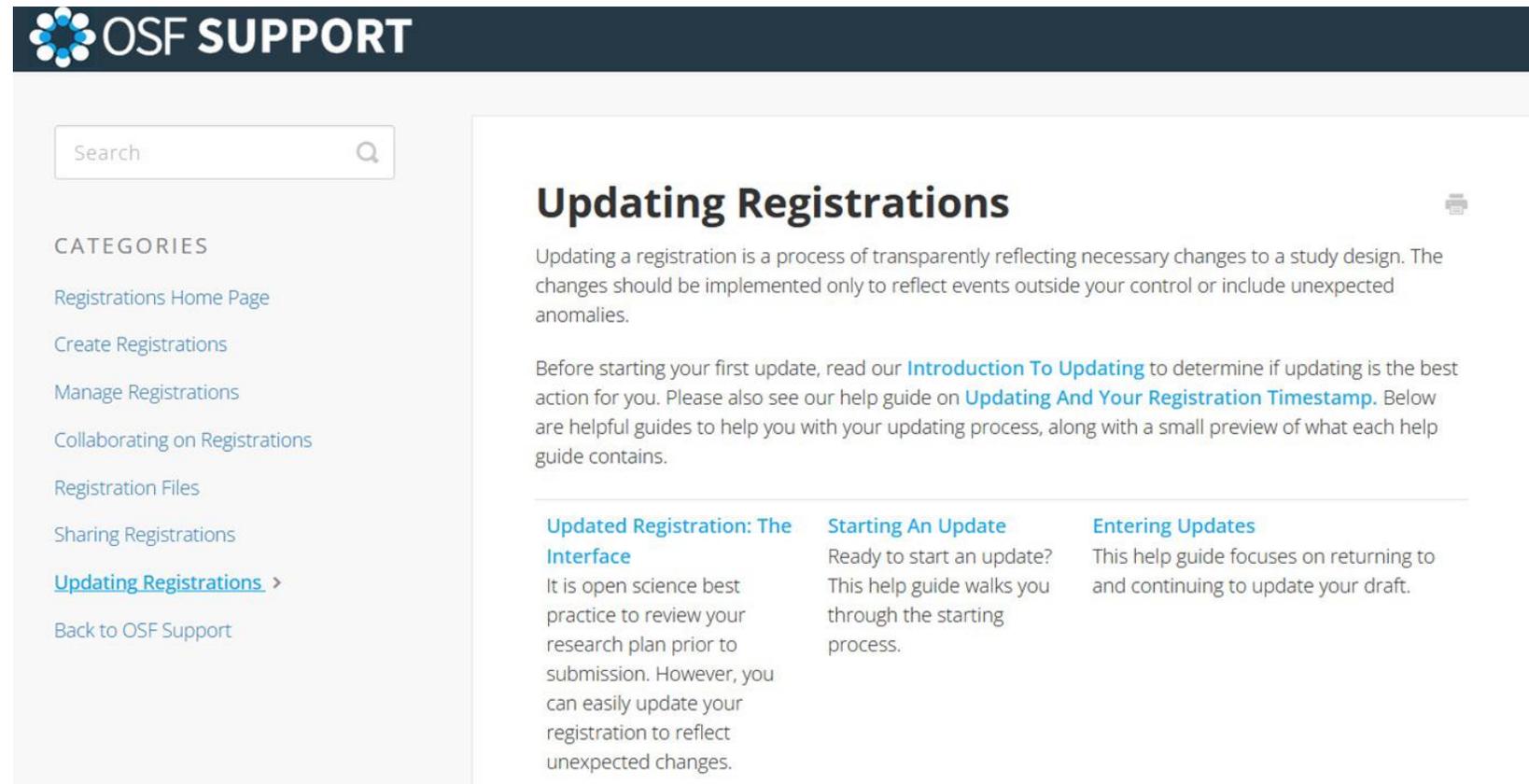
Sean and Maia are two post-docs working on a project together. They preregistered the design, analysis, and exclusion criteria before executing the study.

All the data are now collected, and Sean and Maia want to run the planned analysis. In doing so, Sean notices that their planned analysis didn't take into account the possibility that some participants would have extremely long response times. Sean tells Maia that they forgot this in the preregistration and that, even though they would typically exclude these responses, they now have to perform the analysis including these long response times since that is what they preregistered. Maia, however, does not agree with Sean and says that they can deviate from the preregistration. Do you agree with Sean or Maia? Why? And what should they do?

Vignette A

Preregistration is NOT a prison

One can deviate, as long as this is clearly explained in the manuscript



The screenshot shows the OSF Support website. At the top is a dark blue header with the OSF logo and the text 'OSF SUPPORT'. Below the header is a search bar with the placeholder text 'Search' and a magnifying glass icon. To the left of the main content area is a sidebar with the heading 'CATEGORIES' and a list of links: 'Registrations Home Page', 'Create Registrations', 'Manage Registrations', 'Collaborating on Registrations', 'Registration Files', 'Sharing Registrations', '[Updating Registrations](#) >', and 'Back to OSF Support'. The main content area features the title 'Updating Registrations' with a printer icon to its right. Below the title is a paragraph of text: 'Updating a registration is a process of transparently reflecting necessary changes to a study design. The changes should be implemented only to reflect events outside your control or include unexpected anomalies.' This is followed by another paragraph: 'Before starting your first update, read our [Introduction To Updating](#) to determine if updating is the best action for you. Please also see our help guide on [Updating And Your Registration Timestamp](#). Below are helpful guides to help you with your updating process, along with a small preview of what each help guide contains.' At the bottom of the main content area, there are three columns of links, each with a small preview of text: 1. '[Updated Registration: The Interface](#)' with the preview 'It is open science best practice to review your research plan prior to submission. However, you can easily update your registration to reflect unexpected changes.' 2. '[Starting An Update](#)' with the preview 'Ready to start an update? This help guide walks you through the starting process.' 3. '[Entering Updates](#)' with the preview 'This help guide focuses on returning to and continuing to update your draft.'

Deviations

Willroth EC, Atherton OE. Best Laid Plans: A Guide to Reporting Preregistration Deviations. *Advances in Methods and Practices in Psychological Science*. 2024;7(1). doi:[10.1177/25152459231213802](https://doi.org/10.1177/25152459231213802)

Template:

<https://docs.google.com/document/d/1m7k53z38w18AJe56ucftunnHuFM7wDIMFjpoGenwN6k/edit?tab=t.0>

Table S1

Preregistration Deviations Table Template

Deviations					
#	Details		Original Wording	Deviation Description	Reader Impact
1	Type	Select One ▾	<i>Provide the wording from the original preregistration, or a description of what the original preregistration plan was.</i>	<i>Provide a narrative description and justification for the deviation.</i>	<i>Provide a narrative description of whether and how the deviation should affect the readers' interpretation of the study and/or results.</i>
	Reason	Select One ▾			
	Timing	Select One ▾			
2	Type	Select One ▾			
	Reason	Select One ▾			
	Timing	Select One ▾			
3	Type	Select One ▾			
	Reason	Select One ▾			
	Timing	Select One ▾			

Unregistered Steps					
#	Details		Original Wording	Unregistered Step Description	Reader Impact
1	Type	Select One ▾	<i>If applicable, provide the wording from the original preregistration that was unregistered or not specific enough. If the issue was not addressed in the preregistration at all, please note that here as well.</i>	<i>Provide a narrative description of how the unregistered step was handled, and a justification for that approach.</i>	<i>Provide a narrative description of whether and how the unregistered step should affect the readers' interpretation of the study and/or results.</i>
	Timing	Select One ▾			

Vignette B

Tina, a second year PhD student, is following up on an existing study from a famous professor. The professor knows about her research because she presented a first study of this project at a conference where they both were. At this conference, it already became clear that the professor was not too happy about Tina's research as the results contradicted his original findings. At some point, the professor reached out to Tina to ask about her progress. Tina gave the professor an update but remained vague about her future plans. Until now, Tina has always preregistered her studies but after the email, she got scared of being scooped.

She talks to her supervisor about the situation. Her supervisor says she should not preregister as the risk of being scooped is way too high. Tina still thinks it would be better to preregister the study.

Do you agree with Tina or her supervisor? Why?

Vignette B

Preregistration can associate your name to the experiment, with a time stamp → guarantees maternity/paternity

Also, preregistrations can be embargoed on some platforms (with an anonymous view-only link for the reviewers)

An embargo keeps a registration private until a specified date.

Worries vs. experiences

Table 2. Comparison of worries and actual problems regarding preregistration.

“What worries do you have with respect to preregistering your studies?”	Percentage (Frequency) N = 94	“Did you encounter specific problems when preregistering a study? If yes, which ones?”	Percentage (Frequency) N = 190
High time costs	61.7 (58)	It took very long to do the preregistration	45.26 (86)
Low flexibility	54.26 (51)	I found it problematic to not have flexibility during my analyses	15.26 (29)
Maybe the study design would need to be changed because details do not work, but this would not be possible	46.81 (44)	Study design would have needed to be changed because details did not work, but this was not possible	13.68 (26)
If deviations were necessary, my study would lose credibility	44.68 (42)	Deviations were necessary and my study lost credibility	17.37 (33)
Scooping (i.e., someone taking my idea and publishing it before me)	37.23 (35)	I got scooped (i.e., someone took my idea and published it before me)	4.74 (9)
I would be insecure about what needs to be included in the preregistration	29.79 (28)	I was insecure about what needs to be included in the preregistration	41.05 (78)
Errors in the preregistration cannot be changed afterwards	26.6 (25)	Errors in the preregistration could not be changed afterwards	25.26 (48)
My supervisor/co-author(s) would object	14.89 (14)	Conflict with supervisor/co-author	9.47 (18)
Other	5.32 (5)	Other	12.11 (23)
None	3.19 (3)	None	13.68 (26)

“Worries” item was shown to participants without preregistration experience, and “problems” item was shown to participants with preregistration experience. Multiple options could be selected.

So, why preregister?

For Science:

- Prevent selective reporting
- Prevent p-hacking
- Prevent hindsight bias
- Explicit distinction between confirmatory and exploratory research

→ ***Increase reproducibility and replicability***

For yourself:

- Allows you to take credit for your predictions
- Your research results are more trustworthy
- You increase the credibility of your publications

So, all good and easy?

Marie is reading an article that is very relevant for an ongoing study she is doing with Bert. She shows him the article and Bert reads through it. After reading it, Bert says that the effect doesn't seem very convincing in the figures and the descriptive results.

Marie is surprised by his reaction and responds that the results surely must be robust and reliable because the authors preregistered the study before executing it. In turn, Bert says that preregistering a study does not guarantee its robustness or reliability.

Do you agree with Marie or Bert? Why?

So, all good and easy?

- Preregistration is not sufficient for robust and reliable research
- Preregistration does not mean good science
- If the preregistered design and/or analyses are of poor quality, their preregistered status won't save them
- Preregistration does not solve all issues
- Also, preregistration is not necessary for robust and reliable research (even though preliminary evidence that preregistration reduces the proportion of 'positive' results; ~66% compared to 96% in standard papers; Akker, 2021)

So, all good and easy?

Preregistration Is Hard, And Worthwhile

Brian A. Nosek,^{1,*}
Emorie D. Beck,²
Lorne Campbell,³
Jessica K. Flake,⁴
Tom E. Hardwicke,⁵
David T. Mellor,¹
Anna E. van 't Veer,⁶ and
Simine Vazire⁷



Letter

Is Preregistration Worthwhile?

Aba Szollosi,^{1,*}
David Kellen,²
Danielle J. Navarro,¹
Richard Shiffrin,³ Iris van Rooij,⁴
Trisha Van Zandt,⁵ and
Chris Donkin¹



Perspective | Published: 26 January 2023

Reducing bias, increasing transparency and calibrating confidence with preregistration

[Tom E. Hardwicke](#) & [Eric-Jan Wagenmakers](#)

Research Dialogue | [Full Access](#)

Preregistration Is Neither Sufficient nor Necessary for Good Science

[Michel Tuan Pham](#) & [Travis Tae Oh](#)

The benefits of preregistration and Registered Reports

Daniël Lakens, Cristian Mesquida, Sajedah Rasti & Massimiliano Ditroilo

Well...



To be considered, as well

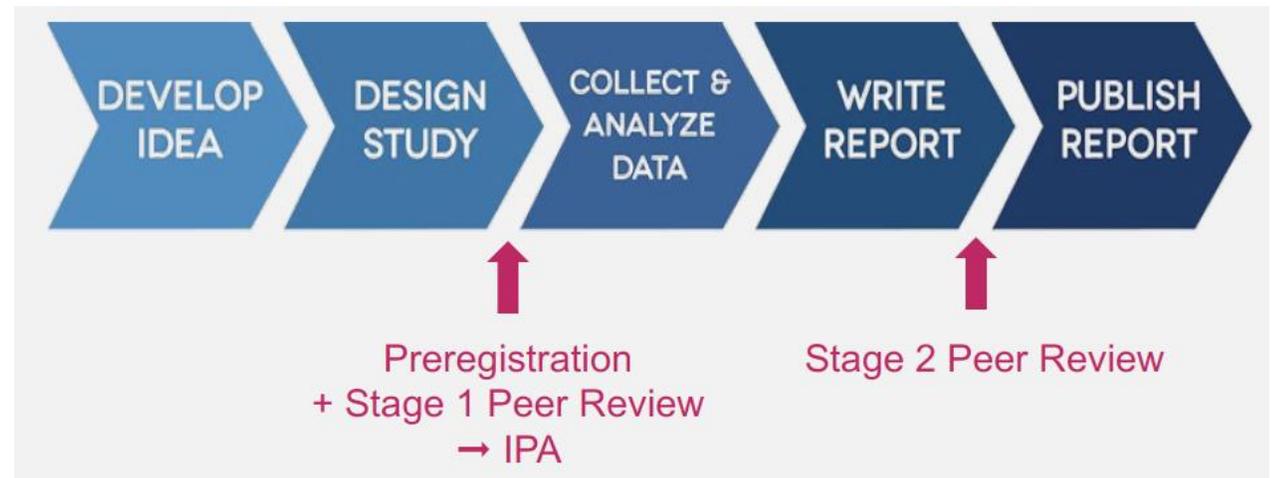
- Percentage of agreement on the number of hypotheses in a preregistration around 14 % (Bakker et al., 2020)
- Preregistrations often very vague und underspecified (Bakker et al., 2020; Claesen et al., 2021)
- Many reviewers do not read the preregistration
- No real “rules” on how to do a good preregistration
- Risk of people “preregistering to preregister”



How to prevent deviations?

Registered Reports

- Study proposal is reviewed before research is undertaken
- **In-principle-acceptance (IPA):** acceptance before results are known, independent of results → reduces publication bias
- Explicit check of reported analyses vs. preregistration during peer review 2



Theoretical Benefits

Registered Reports

Preregistration

Standard article

For the research community:

- Reduces researcher bias: p-hacking & [HARKing](#)

✓

✓

✗

- 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)

✓

✗

✗

Registered Reports

- Scheel et al. (2021): compared 152 standard reports with 71 RRs
- Standard reports: 95% found support for their hypothesis
- RRs: only 45%

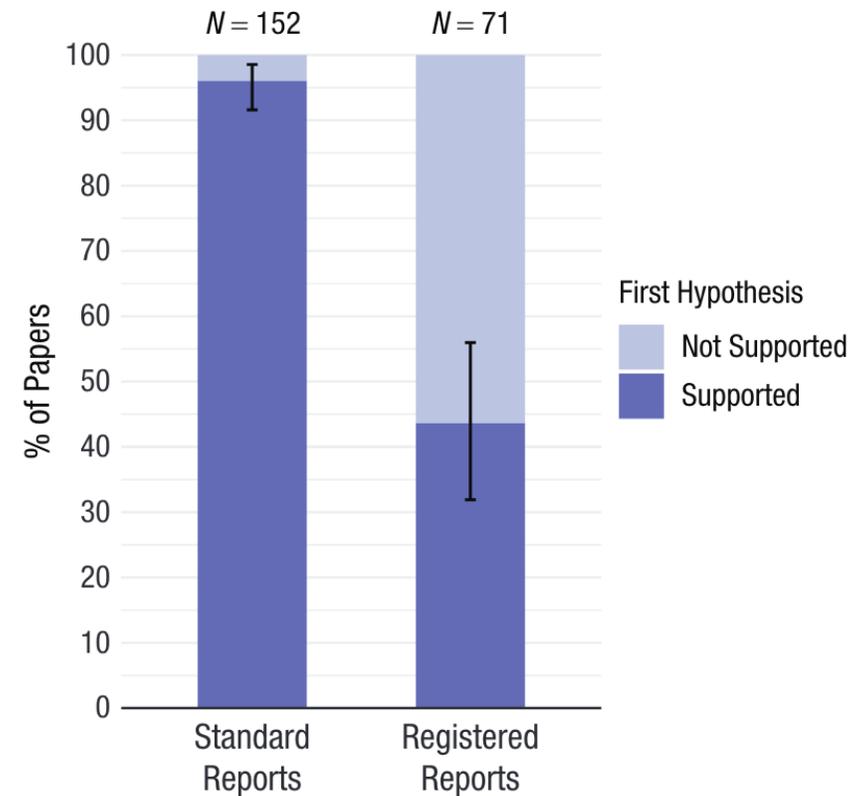
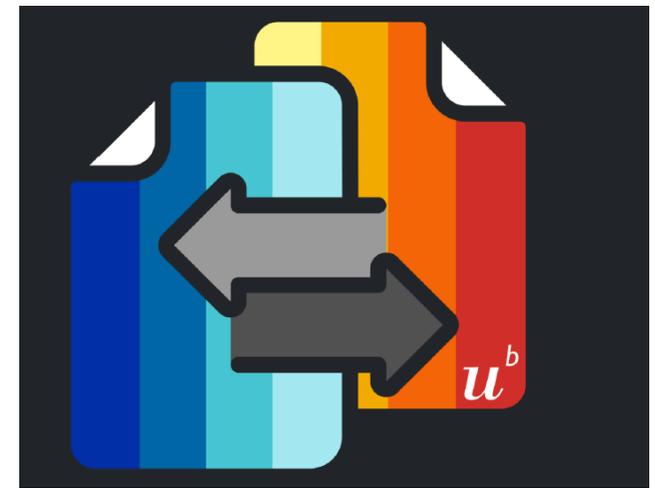


Fig. 2. Positive result rates for standard reports and Registered Reports. Error bars indicate 95% confidence intervals around the observed positive result rate.

Registered Reports

- Different approach: Prepare everything before data collection
- But: Takes time before acceptance → important to plan for this

Regcheck App



- Automatically compares preregistration and full paper for coherence
- Reports matches and deviations in a Deviations Table
- Directs reviewer to relevant page numbers

<https://regcheck.app/>

Do I *really* need to preregister?

Do I *really* need to preregister?

- ***Preregistration CAN be a great way to improve your scientific practice:***
 - For science: reduce HARKing, selective reporting, clearer distinction between explorative and confirmatory research
 - For yourself: Planning ahead may facilitate the research process later, you can timestamp your idea
- BUT: Preregistration should not be just a sticker on your paper → needs to be done with care and the right intentions!
- This does not mean you cannot deviate → you just need to be clear and transparent about it!
- Registered Reports as a more bulletproof, but also more time-consuming option

Interested? Come to our Journal Club

- Open to all researchers → no knowledge needed!
- We meet 3x per semester
- Paper discussions, Boardgames, Talks by colleagues, fun!



References

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