

An applied introduction to good practices in preregistration



Antonio Schettino, Ph.D.
Senior Advisor Open Science
Erasmus Research Services
schettino@eur.nl



Caspar van Lissa, Ph.D.
Associate Professor Social Data Science
Open Science Community chair
Tilburg University
c.j.vanlissa@tilburguniversity.edu



OUTLINE (WORKSHOP)

- What is preregistration?
- How to preregister on the OSF?
- Preregistration As Code (PAC)

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OUTLINE (FIRST PART)

- What is preregistration?
- Why preregistration?
- OSF: Hands-on session
 - Create a preregistration
 - Browse examples of public preregistrations

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OUTLINE (SECOND PART)

- What is Preregistration-As-Code (PAC)?
- An applied example of PAC from ManyAnalysts
- An ideal example you can build on for your work

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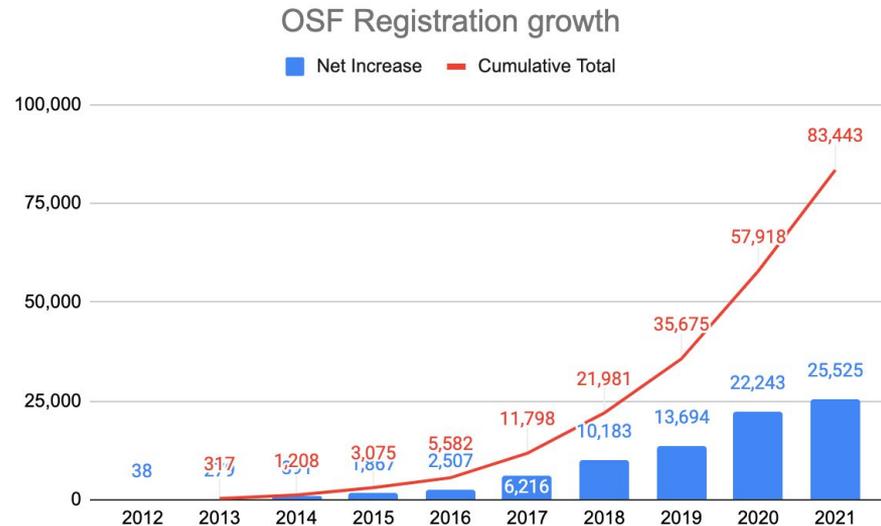




What Is Preregistration?

A document that:

- specifies research design and analysis plan *before* the project starts
- is uploaded on dedicated repositories
- is made public, either immediately or after an embargo period



Registration as resource type in Datacite schema (OSF, 2022)



Types of preregistration

Common elements

- research question
- methods
- planned analysis

Unreviewed

- upload on public repository
- collect & analyze data
- write paper
- publish (?)

Reviewed (Registered Report)

- submit to participating journal (*list*)
- protocol is peer-reviewed
- in-principle acceptance (IPA)
- collect & analyze data
- update protocol with results & discussion
- publish (!)

Tzavella



Is preregistration *necessary*?

NO, if the goal is:

- to test vague theories
 - Good theories are **hard to vary**. They:
 - explain what they are supposed to explain
 - are consistent with other good theories
 - cannot easily be adapted to explain anything
- Vague theories can be adapted **regardless of preregistration**
 - Example: professor-priming effect (*Dijksterhuis & van Knippenberg, 1998*)
 - Registered Replication Report (*O'Donnell et al., 2018*) does not confirm original findings
 - Flexible theory → new moderators (e.g., sex differences, awareness; *Dijksterhuis, 2018*)



Is preregistration *necessary*?

NO, if the goal is:

- to distinguish between **confirmatory** and **exploratory** analyses
 - this distinction is unclear and/or irrelevant. Example:
 - Researchers preregister study hypothesizing that $A \rightarrow B$
 - During data analysis, they discover a paper in the literature claiming that $A \rightarrow C$
 - Does the analysis $A \rightarrow C$ qualify as confirmatory or exploratory?
 - exploratory research is not bad!
 - *“Exploratory research [...] is not synonymous with serendipity but [...] a deliberate and systematic attempt at discovering generalizations that help us describe and understand an area about which we have little or no knowledge [...] it is analogous to topographically mapping an unknown geographical region.” (Devezer et al., 2021, p.19)*



Is preregistration *necessary*?

NO, if the goal is:

- to prevent *HARKing* (**H**ypothesizing **A**fter the **R**esults are **K**nown)
 - circular reasoning can be spotted without knowing *when* hypotheses were generated
 - Three types of HARKing:
 - *CHARKing* (**C**onstructing **H**ypotheses **A**fter the **R**esults are **K**nown): no independence from observed evidence (overfitting), should always be disclosed
 - *RHARKing* (**R**etrieving **H**ypotheses **A**fter the **R**esults are **K**nown): independent from observed evidence, can predict and be falsified by observed evidence (ethical to disclose original source)
 - *SHARKing* (**S**uppressing **H**ypotheses **A**fter the **R**esults are **K**nown): can artificially inflate the perceived veracity of published conclusions, should always be disclosed unless suppressed hypotheses are unrelated to final conclusions or based on non-severe tests



Is preregistration *necessary*?

NO, if the goal is:

- to prevent p -hacking: run many statistical tests, report only significant ones (*Simmons et al., 2011*)
 - full disclosure of data collection stopping rule, data exclusions, measures, and manipulations
 - logical and principled justifications for non-standard data exclusions and analytical approaches
 - public access to data analysis procedures
 - public access to research materials, data, and coding information
 - report results of robustness analyses



Is preregistration *necessary*?

NO, if the goal is:

- to reduce *researcher degrees of freedom, rDF* ([Wicherts et al., 2016](#))
 - Arbitrary choices in study design, data collection, analysis, and reporting
 - Can be (ab)used, e.g., for *p*-hacking
 - Also occur naturally, even in preregistered studies
 - See Many Analysts project about religiosity and well-being (MARP: [Hoogeveen et al., 2022](#))
 - Preregistration-As-Code to mitigate rDF ([Van Lissa, 2022](#))
 - Effect of rDF can be studied using multiverse analysis (e.g., [Young et al., 2022](#))



Is preregistration *necessary*?

NO, if:

- Researchers are testing **hard-to-vary theories**, producing **falsifiable hypotheses**
- Researchers are transparently reporting everything they do
- (Public) Availability of **data**, **code**, and **materials**
- Researcher degrees of freedom are mitigated

Are these assumptions plausible in your research field?

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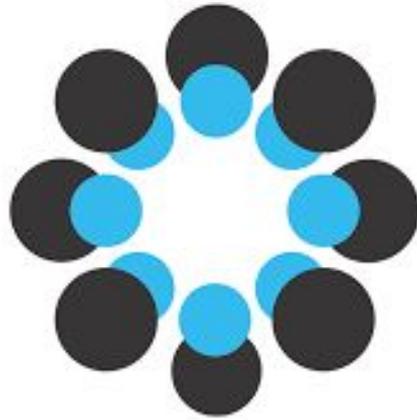




Is preregistration *useful*?

YES:

- **Calibrate** confidence on reported results and interpretations
 - especially in absence of other open research practices (e.g., open data, open code, ...)
- **Transparent** communication to (possibly) highlight cognitive biases, e.g.:
 - *Confirmation bias*: prefer information that supports our beliefs
 - *Hindsight bias*: “I knew it all along”
- **Improve** study design
 - think more carefully about research plan
 - solicit and incorporate peers’ feedback when most valuable (i.e., before starting!)



HANDS-ON SESSION

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<https://osf.io/>



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There's a better way to manage your research

OSF is a free, open platform to support your research and enable collaboration.

[Get started](#)

Discover public research

Discover projects, data, materials, and collaborators on OSF that might be helpful to your own research.

The Erasmus logo, featuring the word "Erasmus" in a stylized, cursive script.



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Log In

<https://orcid.org/>

OSF HOME Sign up

OSF

Sign in with your OSF account to continue

OR

Email
schettino@eur.nl

Password
.....

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OSF Dashboard

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OSFPREPRINTS
OSFREGISTRIES
OSFMEETINGS
OSFINSTITUTIONS

Dashboard [Create new project](#)

Search your projects

Go to [My Projects](#) to organize your work or [search OSF](#)

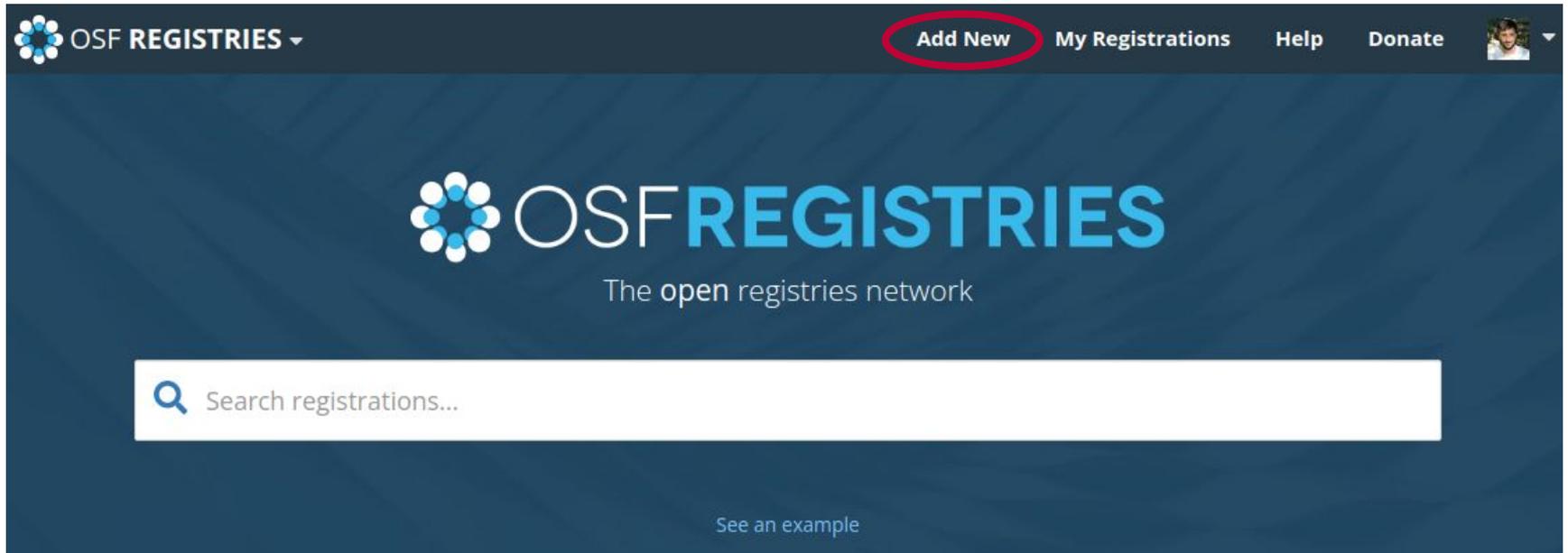
Title ^ ▾	Contributors	Modified ^ ▾
International Network of Open Science & Scholarship Communities (INOSC)	Eerland, Brinkman, Schettino, and 24 more	2022-02-03 10:04 AM
Academic job offers that mentioned open science	Schönbrodt, Mellor, Bergmann, and 11 more	2022-02-03 12:36 AM



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OSF Registries



The screenshot shows the OSF Registries website interface. At the top left is the OSF logo and the text "OSF REGISTRIES" with a dropdown arrow. To the right are navigation links: "Add New" (circled in red with a red arrow pointing to it), "My Registrations", "Help", and "Donate". A user profile picture is visible on the far right. The main content area features the OSF logo and the text "OSF REGISTRIES" in large blue letters, followed by "The open registries network". Below this is a search bar with a magnifying glass icon and the placeholder text "Search registrations...". At the bottom center, there is a link that says "See an example".

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Create First Draft

OSF REGISTRIES ▾ Add New My Registrations Help Donate 

Add New Registration

You are submitting to OSF Registries. [Click here](#) to learn more about other hosted registries.

STEP 1

Do you have content for registration in an existing OSF project?

YES NO

STEP 2

Which type of registration would you like to create? *

OSF Preregistration ▾

Create draft

- OSF Preregistration ⓘ
- Open-Ended Registration ⓘ
- Qualitative 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 ⓘ



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Metadata

New registration

● Metadata

○ Study Information

○ Design Plan

○ Sampling Plan

○ Variables

○ Analysis Plan

○ Other

○ Review



Registration Metadata

This metadata applies only to the registration you are creating, and will not be applied to your project.

Title *

Description *

Contributors



add collaborators

Name	Permission	Citation
 Antonio Schettino	Administrator	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

Category

Affiliated institutions

- Institute for Globally Distributed Open Research and Education (IGDORE)
- Universiteit Gent

Next →

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Delete Draft

Caution

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Metadata (cont.)

Metadata

Study Information

Design Plan

Sampling Plan

Variables

Analysis Plan

Other

Review



License *

A license tells others how they can use your work in the future and only applies to the information and files submitted with the registration. For more information, see this article on licenses.

CC-BY Attribution 4.0 International

License FAQ

Subjects *

Your selections will appear here

Browse all subjects Search subjects

- Architecture
- Arts and Humanities
- Business
- Education
- Engineering
- Law
- Life Sciences
- Medicine and Health Sciences
- Physical Sciences and Mathematics
- Social and Behavioral Sciences

Tags

Add a tag to enhance discoverability

see also
<https://choosealicense.com>



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Study Information

! Metadata

● Study Information

○ Design Plan

○ Sampling Plan

○ Variables

○ Analysis Plan

○ Other

○ Review



Study Information

Hypotheses *

List **specific, concise, and testable hypotheses.** Please state if the hypotheses are directional or non-directional. If directional, state the direction. A predicted effect is also appropriate here. If a specific interaction or moderation is important to your research, you can list that as a separate hypothesis.

Hide example

If taste affects preference, then mean preference indices will be higher with higher concentrations of sugar.

This field can't be blank.

Next →

← Metadata

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Design Plan

! Metadata

! Study Information

● Design Plan

● Sampling Plan

● Variables

● Analysis Plan

● Other

● Review



Design Plan

Study type *

Please check one of the following statements

- Experiment - A researcher randomly assigns treatments to study subjects, this includes field or lab experiments. This is also known as an intervention experiment and includes randomized controlled trials.
- Observational Study - Data is collected from study subjects that are not randomly assigned to a treatment. This includes surveys, "natural experiments," and regression discontinuity designs.
- Meta-Analysis - A systematic review of published studies.
- Other

Blinding *

Blinding describes who is aware of the experimental manipulations within a study. Mark all that apply.

- No blinding is involved in this study.
- For studies that involve human subjects, they will not know the treatment group to which they have been assigned.
- Personnel who interact directly with the study subjects (either human or non-human subjects) will not be aware of the assigned treatments. (Commonly known as "double blind")
- Personnel who analyze the data collected from the study are not aware of the treatment applied to any given group.

Is there any additional blinding in this study?

Blinding (Other)

Next →

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Design Plan (cont.)

Metadata

Study Information

Design Plan

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Other

Review

Study design *

Describe your study design. The key is to be as detailed as is necessary given the specific parameters of the design. There may be some overlap between this question and the following questions. That is OK, as long as sufficient detail is given in one of the areas to provide all of the requested information. Examples include two-group, factorial, randomized block, and repeated measures. Is it a between (unpaired), within-subject (paired), or mixed design? Describe any counterbalancing required.

Show example

You may attach up to 5 file(s) to this question. Files cannot total over 5GB in size.

Uploaded files will automatically be archived in this registration. They will also be added to a related project that will be created for this registration.

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File Upload Interface:

Name ^v	Last modified ^v
 Drag and drop files here to upload files to this folder	

Randomization

If you are doing a randomized study, state how you will randomize, and at what level. Typical randomization techniques include: simple, block, stratified, and adaptive covariate randomization. If randomization is required for the study, the method should be specified here, not simply the source of random numbers.

Show example

possibility to upload additional materials (e.g., scripts, interview protocols, questionnaires, ...)

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Sampling Plan

- ! Metadata
 - ! Study Information
 - ! Design Plan
 - Sampling Plan**
 - Variables
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 - Review
- <

Sampling Plan

Existing Data *

Preregistration is designed to make clear the distinction between confirmatory tests, specified prior to seeing the data, and exploratory analyses conducted after observing the data. Therefore, creating a research plan in which existing data will be used presents unique challenges. Please select the description that best describes your situation. See <https://cos.io/prereg> for more information.

- 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

*better use
preregistration
template for
secondary analysis*

not recommended

Explanation of existing data

If you indicate that you will be using some data that already exist in this study, please describe the steps you have taken to assure that you are unaware of any patterns or summary statistics in the data. This may include an explanation of how access to the data has been limited, who has observed the data, or how you have avoided observing any analysis of the specific data you will use in your study.

Next →

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Sampling Plan (cont.)

- ! Metadata
 - ! Study Information
 - ! Design Plan
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- <

Data collection procedures *

Please describe the process by which you will collect your data and your **inclusion and exclusion criteria**. If you are using human subjects, this should include the population from which you obtain subjects, recruitment efforts, payment for participation, how subjects will be selected for eligibility from the initial pool, and your study timeline. For studies that don't include human subjects, include information about how you will collect samples, duration of data gathering efforts, source or location of samples, or batch numbers you will use.

[Show example](#)

You may attach up to 5 file(s) to this question. Files cannot total over 5GB in size.

Uploaded files will automatically be archived in this registration. They will also be added to a related project that will be created for this registration.

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possibility to upload additional materials

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Sampling Plan (cont.)

Sample size *

Describe the sample size of your study. **How many units** will be analyzed in the study? This could be the number of people, birds, classrooms, plots, or countries included. If the units are not individuals, then describe the size requirements for each unit. **If you are using a clustered or multilevel design, describe how many units are you collecting at each level of the analysis.** This might be the number of samples or a range, minimum, or maximum.

Show example

Sample size rationale

This could include a **power analysis** or an **arbitrary constraint** such as time, money, or personnel.

Show example

Stopping rule

If your data collection procedures do not give you full control over your exact sample size, specify how you will decide **when to terminate your data collection.** **If you are using sequential analysis, include your pre-specified thresholds.**

Show example

while *not all justifications have equal value*, the most important thing is **transparency**



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Variables

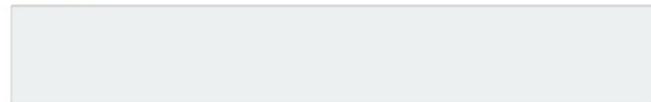
- ! Metadata
- ! Study Information
- ! Design Plan
- ! Sampling Plan
- Variables**
- Analysis Plan
- Other
- Review

Variables

Manipulated variables

Precisely define all variables you plan to manipulate and the levels or treatment arms of each variable. This is **not applicable to any observational study.**

Show example



You may attach up to 5 file(s) to this question. Files cannot total over 5GB in size.

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Variables (cont.)

- ! Metadata
- ! Study Information
- ! Design Plan
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- Variables
- Analysis Plan
- Other
- Review

Measured variables *

Precisely define each variable that you will measure. This will include outcome measures, as well as any measured predictors or covariates.

[Show example](#)

You may attach up to 5 file(s) to this question. Files cannot total over 5GB in size.

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are all variables
linked to testable
hypotheses?



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Variables (cont.)

Indices

If applicable, please **define how measures will be combined into an index** (or even a mean) and what measures will be used. Include either a formula or a precise description of the method. If you are using a more complicated statistical method to combine measures (e.g. a factor analysis), please note that here but describe the exact method in the analysis plan section.

Show example

You may attach up to 5 file(s) to this question. Files cannot total over 5GB in size.

Uploaded files will automatically be archived in this registration. They will also be added to a related project that will be created for this registration.

+

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 Drag and drop files here to upload files to this folder	

possibility to upload additional materials (e.g., code for transformations)

The Erasmus logo, featuring the word "Erasmus" in a stylized, cursive script.





Analysis Plan

- ! Metadata
- ! Study Information
- ! Design Plan
- ! Sampling Plan
- ! Variables
- Analysis Plan
- Other
- Review

Analysis Plan

Statistical models *

What statistical model will you use to test each hypothesis? Please include the type of model (e.g. ANOVA, RMANOVA, MANOVA, multiple regression, SEM, etc) and the specification of the model. This includes each variable that will be included, all interactions, subgroup analyses, pairwise or complex contrasts, and any follow-up tests from omnibus tests. If you plan on using any positive controls, negative controls, or manipulation checks you may mention that here. Provide enough detail so that another person could run the same analysis with the information provided. Remember that in your final article any test not included here must be noted as exploratory and that you must report the results of all tests.

Show example

You may attach up to 5 file(s) to this question. Files cannot total over 5GB in size.

Uploaded files will automatically be archived in this registration. They will also be added to a related project that will be created for this registration.

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possibility to upload additional materials (e.g., analysis scripts tested on simulated or pilot data)



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Analysis Plan (cont.)

- ! Metadata
 - ! Study Information
 - ! Design Plan
 - ! Sampling Plan
 - ! Variables
 - Analysis Plan**
 - Other
 - Review
- <

Transformations

If you plan on **transforming, centering, recoding the data**, or requiring a coding scheme for categorical variables, please describe that process.

Show example

Inference criteria

What criteria will you use to make inferences? Please describe the information you'll use (e.g. specify the **p-values, Bayes factors, specific model fit indices**), as well as **cut-off criterion**, where appropriate. Will you be using one or two tailed tests for each of your analyses? If you are comparing multiple conditions or testing multiple hypotheses, will you account for this?

Show example

Data exclusion

How will you determine which data points or samples if any to exclude from your analyses? How will **outliers** be handled? Will you use any **awareness check?**

Show example

Missing data

How will you deal with **incomplete or missing data?**

Show example

Exploratory analysis

If you plan to explore your data to look for unspecified differences or relationships, you may include those plans here. If you list an exploratory test here, you are not obligated to report its results. But if you do report it you are obligated to describe it as an exploratory result.

Show example

Next →

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if you already *plan* to explore some variables, perhaps you assume effects... so why not have testable hypotheses?



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Other

- ! Metadata
- ! Study Information
- ! Design Plan
- ! Sampling Plan
- ! Variables
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- Other**
- Review



Other

Other

If there is any additional information that you feel needs to be included in your preregistration, please enter it here. Literature cited, disclosures of any related work such as replications or work that uses the same data, or other helpful context would be appropriate here.

often used for bibliography

Review

[← Back](#)

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A stylized, handwritten-style logo for Erasmus.





Review

- ! Metadata
- ! Study Information
- ! Design Plan
- ! Sampling Plan
- ! Variables
- ! Analysis Plan
- ✓ Other
- Review



Metadata

Title

TITLE

Description

DESCRIPTION

Contributors

Antonio Schettino

Category

Project

Affiliated institutions

No affiliated institutions

License

CC-BY Attribution 4.0 International

Subjects

No subjects

You must select at least one subject.



Register

Please address invalid or missing entries to complete registration.

[← Back](#)

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Register

Almost done...

Please keep in mind that:

- Registrations cannot be modified or deleted once completed.
- The content and version history of Wiki and OSF Storage will be copied to the registration.
- This project contains links to other projects. These links will be copied into your registration, but the projects that they link to will not be registered. If you wish to register the linked projects, they must be registered separately. [Learn more about links.](#)

- Make registration public immediately** **Create DOI**
- Enter registration into embargo**

Submit

Back

Contributors have **48 hours** to approve/cancel the submission

Preregistration is published (either immediately or embargoed) if:

- all admin contributors have approved the submission

OR

- 48 hours have passed



Example 1: OSF Prereg Template

Effects of perceptual expectations on early visual processing

Public registration ▾

Updates ▾



- Overview
- Files
- Wiki
- Components 0
- Links 0
- Analytics
- Comments 0



Study Information

Hypotheses

1. Directional hypothesis: Predicted vs unpredicted condition. Based on the predictive processing hypothesis described in the Description section, it is expected that the amplitude of the C1 response to the 5th stimulus in the unpredicted sequence will be increased in comparison to stimuli in the same position in the predicted sequence. The 5th stimulus in the rare unpredicted sequence entails a violation of statistical regularity and an increase in prediction error (surprise) signal.
2. Directional hypotheses: Unpredicted vs unpredictable condition. Previous studies have distinguished two types of surprise or mismatch responses (Stefanics et al., 2014). A classic mismatch response, in the current paradigm consistent with the contrast between unpredicted vs. predicted condition, combines effects of surprise with effects of perceptual adaptation to a repeating stimulus. A genuine mismatch response, in the current paradigm reflected in the contrast between unpredicted and unpredictable condition, has been consistently observed at later latencies than the classic mismatch response. Therefore, if the effect of perceptual expectations on the earliest stages of visual processing reflects mainly effects of perceptual adaptation, C1 amplitudes in the unpredicted and unpredictable condition may be statistically indistinguishable. However, if the effect entails the so-called 'genuine' surprise effect, C1 amplitude in response to the 5th stimulus in the unpredicted sequence will be larger than in the unpredictable sequence.
3. Non-directional hypothesis: Predicted vs unpredictable condition. There are two competing hypotheses regarding this contrast. First, the C1 response may be dampened in the predicted condition compared to the unpredictable condition, as prediction error signals should be decreased for predicted and repeated stimuli, showing effects of perceptual adaptation. On the other hand, as it is possible that sequence regularity will result in up-weighting of prediction errors and therefore an increased gain in the predicted sequence (Barascud et al., 2016; Marzecová et al., 2018; Schröger et al., 2015), the C1 response may be larger in the predicted compared to the unpredictable condition.

Design Plan

Study type

Experiment - A researcher randomly assigns treatments to study subjects, this includes field or lab experiments. This is also known as an intervention experiment and includes randomized controlled trials.

Contributors

Anna Marzecová, Antonio Schettino, Valentina Rossi, Nan Qin, and Gilles Pourtois

Description

The current study aims to investigate whether perceptual expectations based on statistical regularity influence the earliest stages of visual processing, indexed by the C1 visual evoked potential originating from the primary visual cortex. Electrophysiological data will be collected while participants are engaged in a target detection task at the center of the screen and those

[Show more ▾](#)

Registration type

OSF Preregistration

Date registered

October 19, 2020

Date created

October 19, 2020

Registered from

osf.io/bn7kw

Internet Archive link

<https://archive.org/details/osf-registrations-df5w8-v1>

Category

Project

Registration DOI

10.17605/OSF.IO/DF5W8

<https://doi.org/10.17605/OSF.IO/DF5W8>



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Example 2: Qualitative Prereg Template

Reviewing the Supporting Evidence in Investigator Brochures (REVISE)

Public registration ▾ Updates ▾

- Overview
- Files
- Wiki
- Components 0
- Links 0
- Analytics
- Comments 0

Study Information

Research Aims

Research Aims

To determine and better understand the views of relevant stakeholders on the relevance of robustness and completeness of preclinical evidence for efficacy presented in IBs and discuss the strengths, weaknesses, opportunities, and threats (SWOT) of measures to improve robustness and completeness

To collect practical suggestions to further improve the trustworthiness of supporting evidence in IBs and to learn who should be enforcing these suggestions

If helpful, please select the type of aim (non-exhaustive list):

Understanding

Research question(s)

What are participants' views on the relevance of robustness and completeness of preclinical evidence for efficacy presented in IBs?

What are the strengths, weaknesses, opportunities, and threats (SWOT) of more reporting in IBs on measures to improve robustness (e.g. randomization) and completeness (e.g. whether a systematic review was conducted)?

Which practical suggestions exist to further improve the trustworthiness of supporting evidence in IBs and to learn who should be enforcing these suggestions ?

Anticipated Duration

We anticipate conducting interviews between March and May 2021, and plan to finish the analysis of results until June 2021.

Design Plan

Study design

Semi-structured stakeholder interviews

Sampling and case selection strategy

We will use purposive sampling and based the number of participants on the assumption that 5 interviews from 4 main stakeholder groups (IRB, regulatory, industry,

Contributors

Martin Haslberger, Tamarinde Haven, Susanne Gabriele Schorr, and Daniel Strech

Description

Background: To make a clinical trial ethical, regulatory agencies and institutional review boards have to judge whether the trial-related benefits outweigh the trial-inherent risks. For early-phase human research, these risk-benefit assessments are often based on evidence from preclinical studies reported in so-called "investigator brochures" (IBs). These IBs

Show more ▾

Registration type

Qualitative Preregistration

Date registered

March 1, 2021

Date created

March 1, 2021

Associated project

ost.io/mvzwy

Internet Archive link

<https://archive.org/details/osf-registrations-hsn2d-v1>

Category

Project

Registration DOI

10.17605/OSF.IO/HSN2D

<https://doi.org/10.17605/OSF.IO/HSN2D>



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Example 3: Open-Ended Prereg Template

Evaluation of the Behavioural Insights Group Rotterdam

Public registration ▾

Updates ▾



Overview

Files

Wiki

Components 0

Links 0

Analytics

Comments 0



Summary

Provide a narrative summary of what is contained in this registration or how it differs from prior registrations. If this project contains documents for a preregistration, please note that here.

This preregistration contains:

1. Preregistration form

Supplementary material:

2. Evaluation questions

A. Representative sample survey

B. Case study survey - proposers

C. Case study survey - BIG'R members

D. Document analysis checklist

E. Capacity building survey - attendees follow-up

F. Capacity building survey - presenters

G. BIG'R member survey

H. Interview guide

I. Capacity building survey - attendees

J. Capacity building form

K. Author logbook

Add supplemental files or additional information

- 1. Preregistration form.docx
- 2. Evaluation questions.docx
- A. Representative sample survey.docx
- B. Case study survey - proposers.docx
- C. Case study survey - BIG'R members.docx
- D. Document analysis checklist.xlsx
- E. Capacity building survey - attendees follow-up.docx
- F. Capacity building survey - presenters.docx
- G. BIG'R member survey.docx
- H. Interview guide.docx
- I. Capacity building survey - attendees.docx
- J. Capacity building form.docx
- K. Author logbook.xlsx

Contributors

Malte Dewies

Description

This registration prior to data collection concerns the evaluation of the Behavioural Insights Group Rotterdam (BIG'R; www.bigrotterdam.nl). BIG'R combines behavioural and policy expertise at the municipality of Rotterdam to improve public policy.

Registration type

Open-Ended Registration

Date registered

April 24, 2020

Date created

April 24, 2020

Registered from

osf.io/evzta

Internet Archive link

<https://archive.org/details/osf-registrations-f3av9-v1>

Category

Project

Registration DOI

[10.17605/OSF.IO/F3AV9](https://doi.org/10.17605/OSF.IO/F3AV9)

Subjects

Psychology

<https://doi.org/10.17605/OSF.IO/F3AV9>





Additional Information

- *Update* a preregistration
- Create *view-only (anonymized) link* to a preregistration
- *End an embargo* earlier than planned
- *Withdraw* a preregistration

Erasmus





Useful Resources

Literature

- *Preregistration: A pragmatic tool to increase transparency, reduce bias, and calibrate confidence in scientific research* ([Hardwicke & Wagenmakers, 2021](#))
- *What should a preregistration contain?* ([McPhetres, 2020](#))

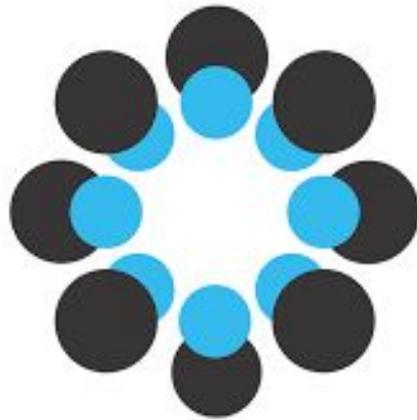
Templates

- *Preregistration [Templates](#)*
- *[Checklist](#) for comprehensive report of results*
- *Transparent Changes [Template Document](#)*

OSF

- *[OSF Guides](#) on registration*
- *[YouTube](#) tutorials*





HAPPY PREREGISTRATION!

Erasmus



Antonio Schettino

Eliminating researcher degrees of freedom through Preregistration As Code (PAC)

Caspar J. Van Lissa¹, Aaron Peikert², Andreas M. Brandmaier²

¹: Utrecht University, dept. Methodology & Statistics

²: Center for Lifespan Psychology, Max Planck Institute for Human Development

Defining preregistration

Specifying your research plan in advance of your study and submitting it to a registry.

Goal: Separating hypothesis-generating (exploratory) from hypothesis-testing (confirmatory) research.

Subgoals:

- Planning tool
- Improve quality and transparency
- Clearly report your study
- Set boundaries for agreed-upon work (PhD student, statistical collaborator)

Working reproducibly

WORCS: A Workflow for Open Reproducible Code in Science
www.developmentaldata.org/worcs

1. Dynamic document generation

- Rmarkdown paper includes prose and analysis code
- Paper can be reproduced / results updated with one click

2. Version control

- Git tracks all changes since start of project
- Project can be public on GitHub
- Tag “release”: Time capsule at specific stage of project, e.g. “pre-registration”

3. Dependency management

- Record or container with all software needed to reproduce

Preregistration in WORCS

1. Complete a prereg template in Rmarkdown format `prereg.Rmd`
2. Commit and push to GitHub
3. Tag the release as `preregistration`
4. Optional: Render Rmarkdown to PDF and upload to OSF.io / aspredicted.org
5. Collect data
6. Write `manuscript.Rmd` with planned analyses

Shortcomings of preregistrations

- Extra work
- Residual ambiguity
 - Unintentional
 - Strategic
- Straight-jacket: Can “force” researcher to stick with bad plans
- Researchers often not trained in preregistration
 - In neither writing nor reviewing thereof
- Not all preregistration templates are relevant for all research (e.g., secondary analysis)
- Difficult to compare with final manuscript, because they are in different formats

Solution: PAC

1. Preregister Rmarkdown with draft of manuscript
2. Include code for planned analyses
3. Use fake* data to obtain mock results
4. Draft report based on mock results

After collecting real data

1. Re-compile Rmarkdown and see final results
2. Write Results and Discussion

* = Simulated, or synthetic, or from prior study, or shuffle some real data!

Advantages

- Less work
 - You're not writing a separate document, but an early version of the final manuscript
 - You need to write code to analyze the data anyway
- unambiguous
 - Unintentional ambiguity ↓: You become aware of ambiguity in your planned analysis when you start actually running it
 - Strategic ambiguity ↓: there's a straightforward game plan
- No Straight-jacket: Can't "force" researcher to stick with bad plans
 - You can deviate from planned analyses; create a Git commit with the changes

Advantages 2

- Researchers are trained in writing papers, not preregistrations! Sticking with that format is easier to write and review
- Writing a preregistration as draft manuscript ensures all sections are directly relevant
- You can literally compare the two versions (using Git diff) to see how the planned analyses were executed

Example

cjvanlissa / **manyanalysts_religion** Public

<> Code Issues Pull requests Actions Projects Wiki Security Insights Settings

Comparing changes

This is a direct comparison between two commits made in this repository or its related repositories. View the default comparison for this range [here](#).

↻ base: 1f2a6bd ↔ compare: e38391d

Showing 76 changed files with 35,251 additions and 64 deletions.

7 changes.txt

```
@@ -0,0 +1,7 @@
1 + * Misinterpreted comment about missing values in data documentation
2 + * Accidentally put both the original variable ethnicity and the derived variable "majority" in the analysis; removed these
3 + * Tried using ESTIMATOR = BAYES for main models because integration did not converge
4 + * Removed categorical items, because no DIC is available for cat outcomes http://www.statmodel.com/discussion/messages/9/625
5 + * DIC is not available for latent variable interactions, thus it is not possible to determine best fitting model according to
6 + * Decided to conduct path analysis with mean score scales of the observed variables to determine best fitting model, then re
  final model
7 + * Final model does not converge with Bayes; decided to use path analysis with mean scores for all analyses
```

6 .worcs

Limitations

- Can't cover all contingencies; deviations will be necessary
 - Version control makes clear what has changed
- Simulating data is difficult/requires much effort
 - But super useful, e.g. power analysis
 - Statistical co-author
 - Collect data first, shuffle dependent variable
- Requires reproducible/reusable workflow
 - But this ensures correctness/reliability/reusability of your work
- Preregistration forms may be more detailed / complement information in manuscript
 - What can we learn from prereg forms to improve our manuscripts? # Problem 2 — Writing a Preregistration

Conclusion

Preregistration As Code may have advantages

- Same format as paper
- Unambiguous
- Easy to compare prereg VS final version
- Power analysis etc

But... they require training in reproducibility and statistical programming that is not yet commonplace

So: A vision of the future of preregistration?