

Preregistration Essentials: What It Is, Why It Matters, and How to Do It



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Definition

A preregistration is a time stamped, read-only* declaration that a study is going to occur, posted in a public** registry.



Similar terms: registration, prospective registration, pre-analysis plans.

*Most registries allow for updates to plans, with notes about when and how they were changed.

**Some registries allow for a private embargo period.

Overview of preregistration

Pre-2000s problem: The government funds thousands of medical studies, but no central registry exists to connect patients with cutting edge treatments.

In addition to helping to open the file drawer, prereg in basic research can increase transparency and distinguish planned from unplanned work.



How prereg fits into open research

- Ideal: One preregistration per “study.” If a paper has multiple studies, multiple preregs is OK.
- Reality: One preregistration per data-collection effort.
- Complex Reality: Create a preregistration before data collection (or accessing a dataset) and if multiple papers result from it easy for the reader to trace the history of the project.

Preregistration Templates

- There are currently 11 templates on the OSF.
- A template helps make sure you have included sufficient information for the purpose of the preregistration.
- They vary from barebones to very thorough.

Preregistration Templates

- **OSF Preregistration**
 - Default. Thorough. Designed for many research types.
- **Preregistration template from AsPredicted.org**
 - Designed to contain just enough information to meet the common standards.
- **Generalized Systematic Review**
 - For all types of systematic reviews (not just health)
- **Secondary Data**
 - When you are using an existing dataset.
- **Qualitative Preregistration**
 - Qualitative or mixed methods.

Preregistration Templates

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
- OSF Preregistration
- Generalized Systematic Review Registration
- Open-Ended Registration
- OSF-Standard Pre-Data Collection Registration
- Pre-Registration in Social Psychology (van 't Veer & Giner-Sorolla, 2016): Pre-Registration
- Preregistration Template from AsPredicted.org

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
- Generalized Systematic Review Registration
- 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., 2014): Pre-Registration
- Pre-Registration in Social Psychology (van 't Veer & Giner-Sorolla, 2016): Pre-Registration

Cancel Create draft

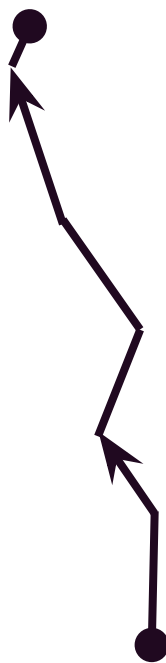
Significance in Enhancing Research



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The Research Process

A garden of forking paths

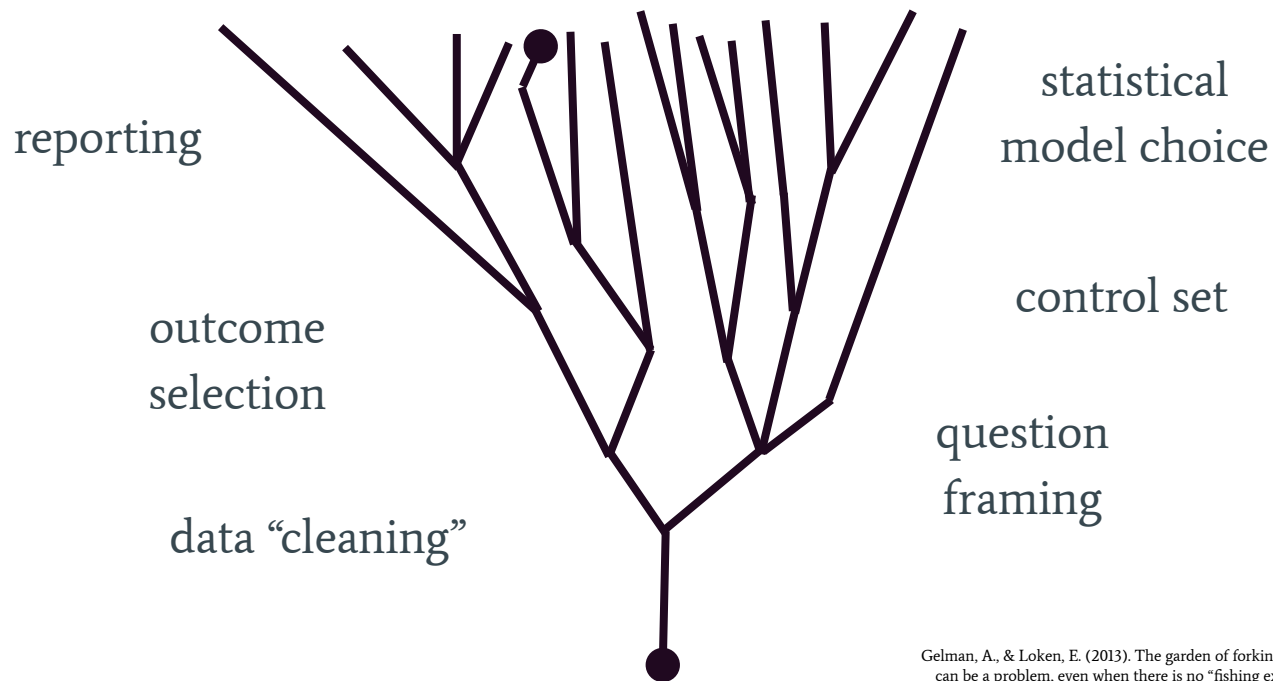


**Result: People with X
were found to be Y
times more likely to
have Z (p=.044)**

Question

The Research Process

A garden of forking paths



Gelman, A., & Loken, E. (2013). The garden of forking paths: Why multiple comparisons can be a problem, even when there is no "fishing expedition" or "p-hacking" and the research hypothesis was posited ahead of time. Department of Statistics, Columbia University. Retrieved from http://www.stat.columbia.edu/~gelman/research/unpublished/p_hacking.pdf

Exploration vs. Confirmation

| Exploration | Confirmation |
|---|---|
| <ul style="list-style-type: none">• Data-driven• Discovery oriented• Push knowledge into new areas• Find unexpected relationships• Model and theory-informing | <ul style="list-style-type: none">• Hypothesis-driven• Traditional (frequentist) hypothesis testing• Higher standards for rigorous evaluation• More direct decision impact |

Research consumer

Is what you see the whole story?

Result: People with X were found to be Y times more likely to have Z ($p=.044$)

Where did this result come from?

Was this analysis as planned, or was it changed in some way?

Was it part of a fishing exercise, p-hacked, or HARKed?

How can we use this result if we can't know where it came from?

Research producer

How preregistration can help

Enhanced planning

- Comprehensive view of study
- Prevents unforced errors discovered too late

Enhanced feedback

- Feedback when it can change the most
- Clarity on *what* is being critiqued

Credibility improvement

- ...sometimes, particularly for confirmatory tests

Research protection

- Scoop or anti-scoop?
- Record of work in case of research cancellation

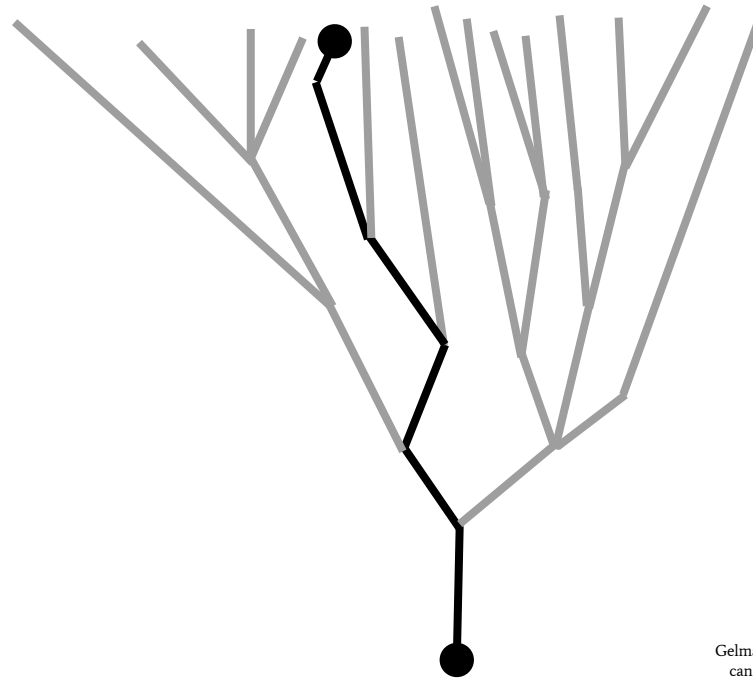
Limiting temptation for QRPs

- Default to sticking to the plan



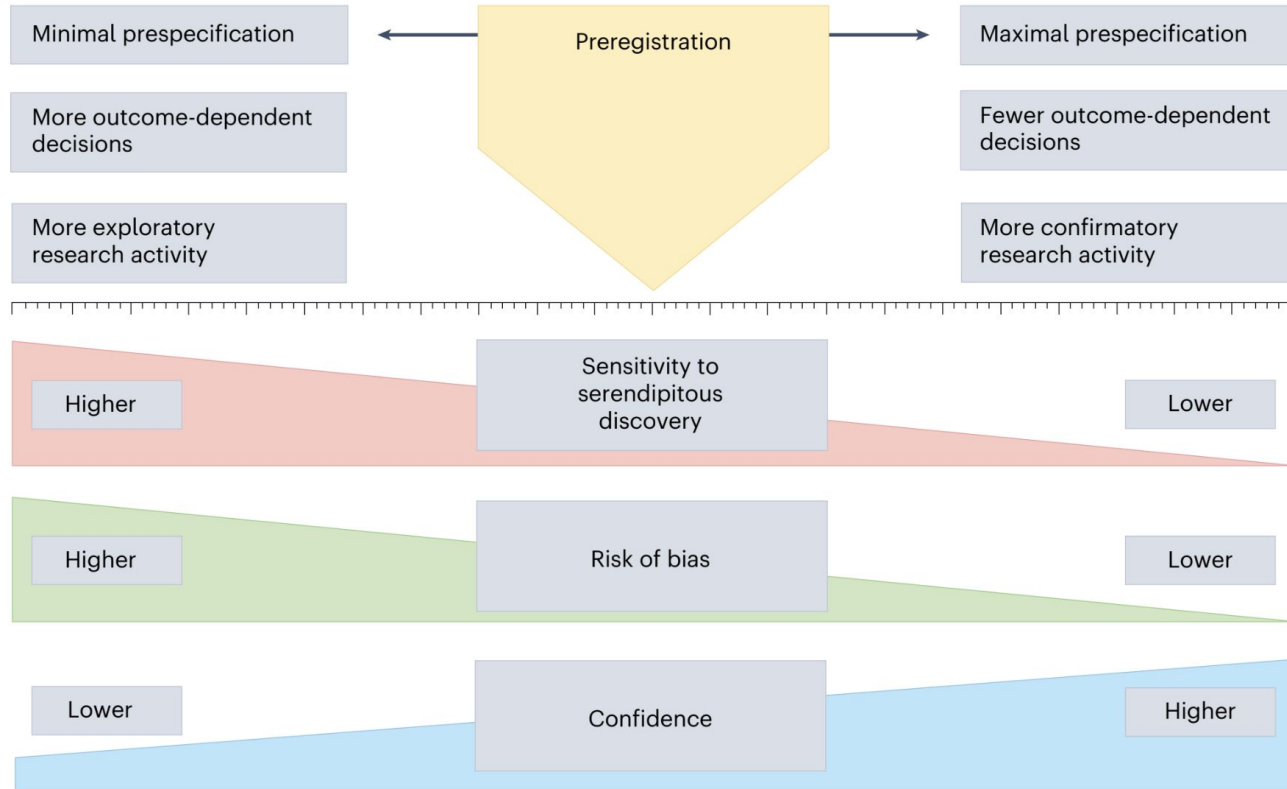
The Process

A garden of forking paths



Gelman, A., & Loken, E. (2013). The garden of forking paths: Why multiple comparisons can be a problem, even when there is no "fishing expedition" or "p-hacking" and the research hypothesis was posited ahead of time. Department of Statistics, Columbia University. Retrieved from http://www.stat.columbia.edu/~gelman/research/unpublished/p_hacking.pdf

Many ways/whys/how for preregistration



(Hardwicke, T.E., Wagenmakers, E.J. Reducing bias, increasing transparency and calibrating confidence with preregistration. *Nat Hum Behav* 7, 15–26 (2023). <https://doi.org/10.1038/s41562-022-01497-2>)

Navigating Preregistration Workflows on the OSF



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Preregistration Challenges and Solutions



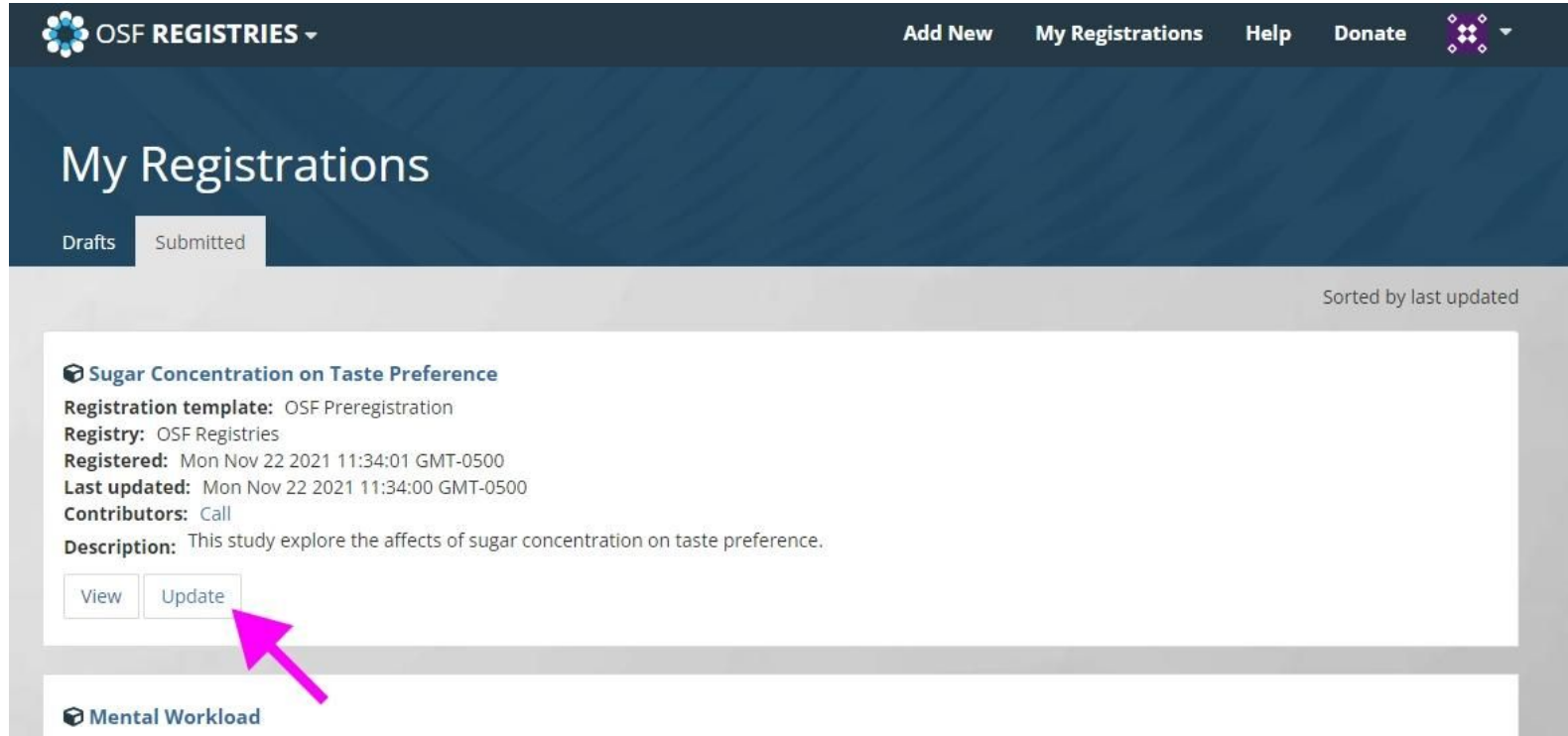
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Challenge: I need to update my preregistration!

Things could change between the time you preregister and your analyses. For example, you could:

- notice an error in your preregistration
- decide to add analyses
- learn about a more appropriate data analysis strategy
- realize you have to make adjustments to your design

Solution: Update the preregistration



OSF REGISTRIES ▾ Add New My Registrations Help Donate

My Registrations

Drafts Submitted

Sorted by last updated

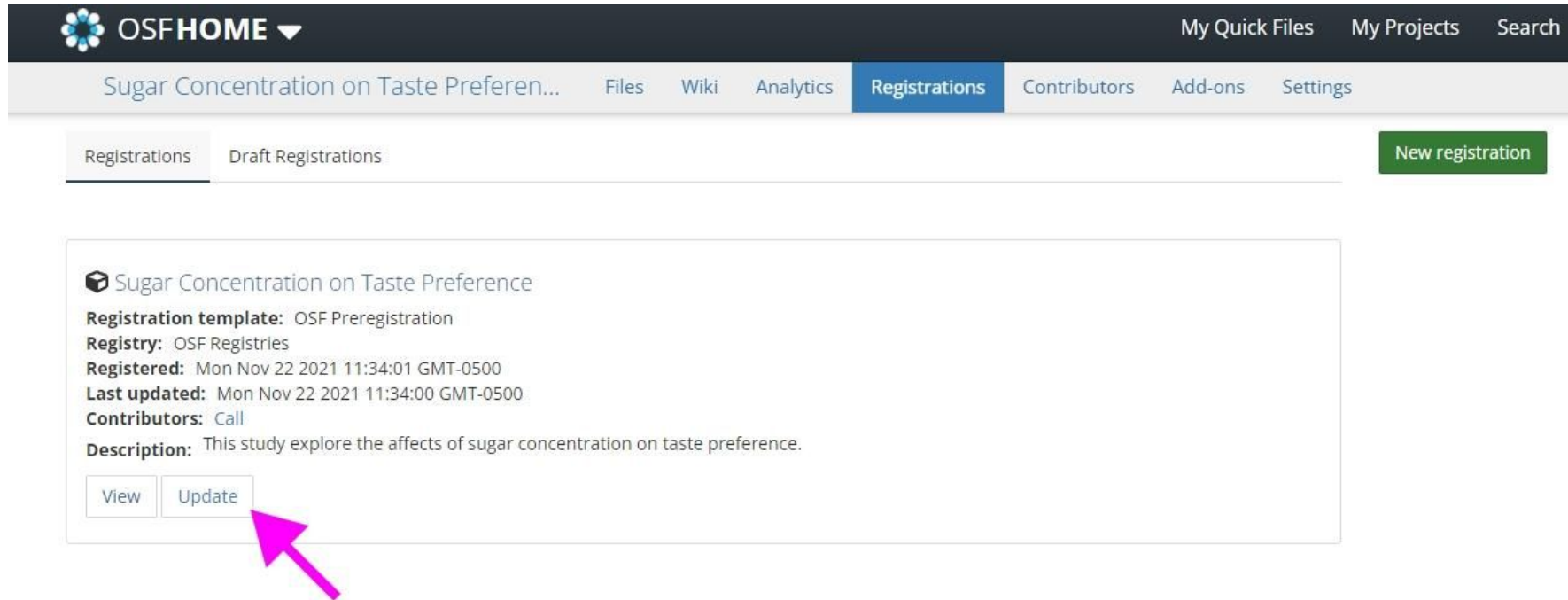
Sugar Concentration on Taste Preference
Registration template: OSF Preregistration
Registry: OSF Registries
Registered: Mon Nov 22 2021 11:34:01 GMT-0500
Last updated: Mon Nov 22 2021 11:34:00 GMT-0500
Contributors: Call
Description: This study explore the affects of sugar concentration on taste preference.

View Update

Mental Workload

Remember that any changes should be accompanied by a justification.

Solution: Update the preregistration




The screenshot shows the OSFHOME interface. At the top, there is a dark navigation bar with the OSFHOME logo and a dropdown arrow on the left, and links for 'My Quick Files', 'My Projects', and 'Search' on the right. Below this is a light gray breadcrumb-style navigation bar with 'Sugar Concentration on Taste Preferen...', 'Files', 'Wiki', 'Analytics', 'Registrations' (highlighted in blue), 'Contributors', 'Add-ons', and 'Settings'. Underneath, there are two tabs: 'Registrations' (active) and 'Draft Registrations'. A green button labeled 'New registration' is in the top right corner. The main content area displays a registration card for 'Sugar Concentration on Taste Preference'. The card includes the following details: 'Registration template: OSF Preregistration', 'Registry: OSF Registries', 'Registered: Mon Nov 22 2021 11:34:01 GMT-0500', 'Last updated: Mon Nov 22 2021 11:34:00 GMT-0500', and 'Contributors: Call'. The description reads: 'This study explore the affects of sugar concentration on taste preference.' At the bottom of the card are two buttons: 'View' and 'Update'. A pink arrow points to the 'Update' button.

OSFHOME

My Quick Files My Projects Search

Sugar Concentration on Taste Preferen... Files Wiki Analytics Registrations Contributors Add-ons Settings

Registrations Draft Registrations [New registration](#)

 Sugar Concentration on Taste Preference

Registration template: OSF Preregistration
Registry: OSF Registries
Registered: Mon Nov 22 2021 11:34:01 GMT-0500
Last updated: Mon Nov 22 2021 11:34:00 GMT-0500
Contributors: Call

Description: This study explore the affects of sugar concentration on taste preference.

[View](#) [Update](#)

Remember that any changes should be accompanied by a justification.

Solution: Update the preregistration

The screenshot displays the OSF Registries interface for a preregistration titled "Sugar Concentration on Taste Preference". The top navigation bar includes "Moderation", "Add New", "My Registrations", "Help", and "Donate". The main content area shows the registration details, including a list of updates. The "Update" button is highlighted with a pink arrow, indicating the action to be taken. The "Hypotheses" section is visible below the update list.

OSF REGISTRIES | Moderation | Add New | My Registrations | Help | Donate

Sugar Concentration on Taste Preference

Public registration | Updates

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

Latest
Update to the original registration

Update 2
Update 2 was made on Nov 22, 2021

Update 1
Update 1 update:
questions was adjusted to better gauge brownie enjoyment.

Original

Update Information

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

Contributors
Mark S Call

Description
This study explore the affects of sugar concentration on taste preference.

Registration type
OSF Preregistration

Date registered
November 22, 2021

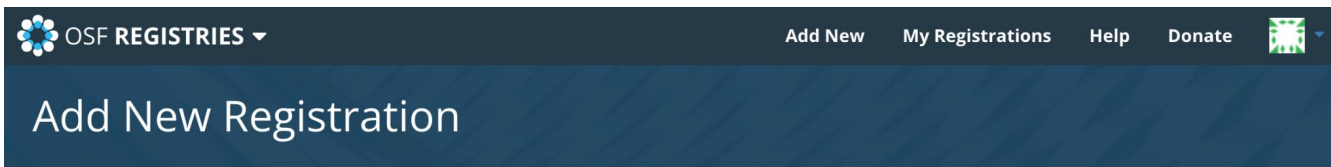
Date created

Remember that any changes should be accompanied by a justification.



Challenge: There isn't a template
for my kind of research!

Potential Solutions: Use the open ended registration template



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? *

Open-Ended Registration ▼

Create draft

Potential Solutions: Use the open ended registration template

The screenshot shows the OSF Registries interface for creating a new registration. The top navigation bar includes the OSF Registries logo, a dropdown menu, and links for 'Add New', 'My Registrations', 'Help', and 'Donate'. The main heading is 'New registration'. On the left, a sidebar shows three steps: 'Metadata' (checked), 'Summary' (active), and 'Review'. The 'Summary' section is the focus, with a text area for providing a narrative summary. Below this is a section for 'Add supplemental files or additional information', which includes instructions on file attachment and a table for listing files. A 'Review' button is visible on the right side of the page.

OSF REGISTRIES ▾ Add New My Registrations Help Donate 

New registration

- ✔ Metadata
- Summary
- Review

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](#). *

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Add supplemental files or additional information

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.



| Name ^v | Last modified ^v |
|---------|------------------|
|---------|------------------|

Review

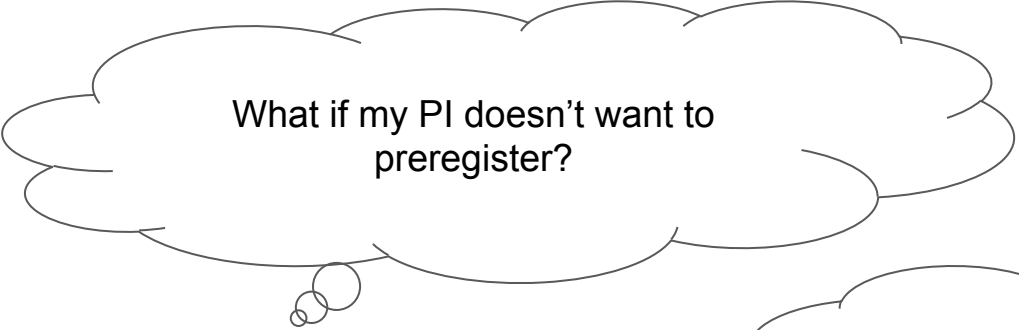
← Metadata

Auto-saved:
a few seconds ago

Delete Draft

ⓘ Caution
Only one person is able to edit a registration draft at a time. Be sure to coordinate with any other contributors.

Challenge: How do I convince collaborators/my PI?

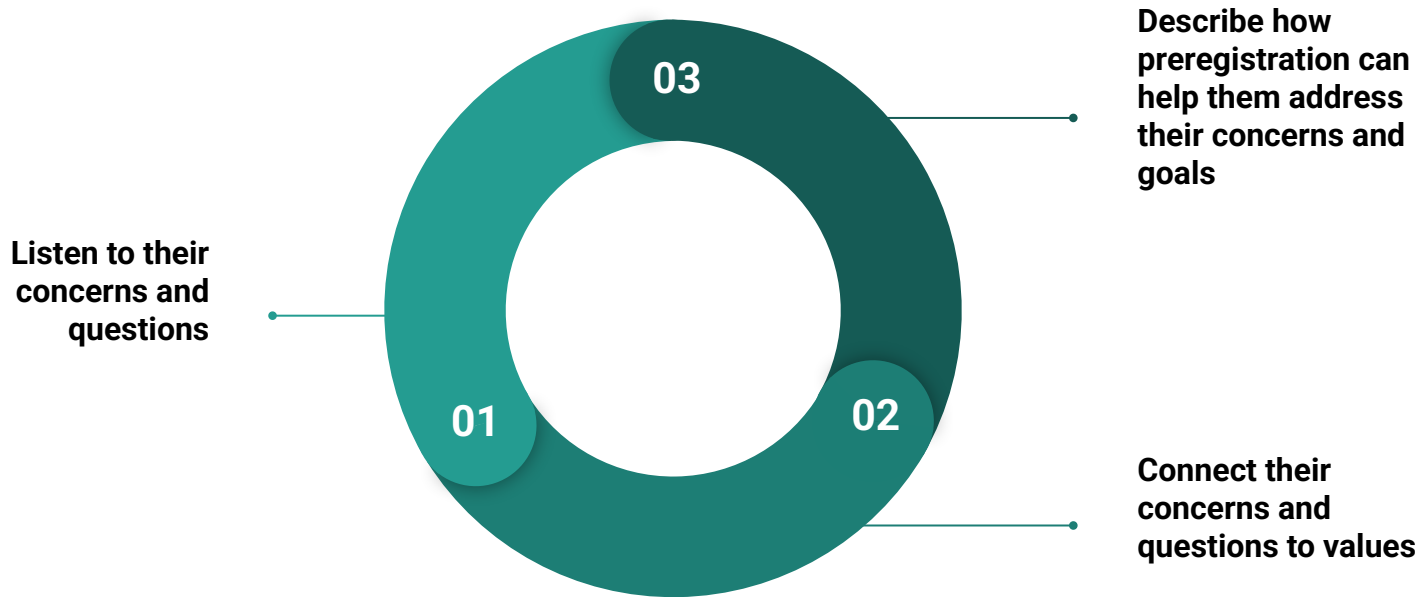
A thought bubble with a scalloped border and two small circles at the bottom left.

What if my PI doesn't want to preregister?

A thought bubble with a scalloped border and two small circles at the bottom right.

How do I get collaborators on board?

Potential Solutions: Discussions



Question: Can I preregister in a different language?

I'm more comfortable writing about research in a non-English language. Is that okay?

Potential Solutions: English metadata

Preregister in the language you feel you can be most accurate in - then include both that language and English in the metadata, especially in tags

The image shows a screenshot of a registration form. On the left is a vertical sidebar menu with a list of items: Metadata (selected with a black dot), Study Information, Design Plan, Sampling Plan, Variables, Analysis Plan, Other, and Review. The main content area is titled 'Registration Metadata' and includes a sub-header 'This metadata applies only to the registration you are creating, and will not be applied to your project.' Below this are two required fields: 'Title *' with a text input containing 'Untitled', and 'Description *' with a larger text area. At the bottom, there is a 'Contributors' label and a blue circular button with a white plus sign.


- 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 

Other considerations

- What language(s) does your funder accept?
- What language(s) does the journal you want to submit to accept?
- If you register in multiple languages, you will need to make any updates in both languages

Q&A



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