



## Reproducibility: The Cornerstone of Credible Research

At its core, reproducibility means that someone else can take your methods, data, and code—and reach the same conclusions.

It's not about repeating your work exactly, but about ensuring that others can understand, verify, and build upon it. This is how scientific knowledge becomes robust, cumulative, and trustworthy.

Yet in recent years, concerns about a reproducibility crisis have emerged across disciplines. Many researchers have struggled to replicate not only the work of others—but even their own. This isn't always due to fraud—it's often the result of vague methods, undocumented steps, or flexible analyses that weren't clearly specified in advance.

### Why does reproducibility matter?

- It helps distinguish between real effects and false positives.
- It allows others to learn from your work—whether or not they agree with your conclusions.
- It supports scientific progress by creating a transparent record of how knowledge is generated.

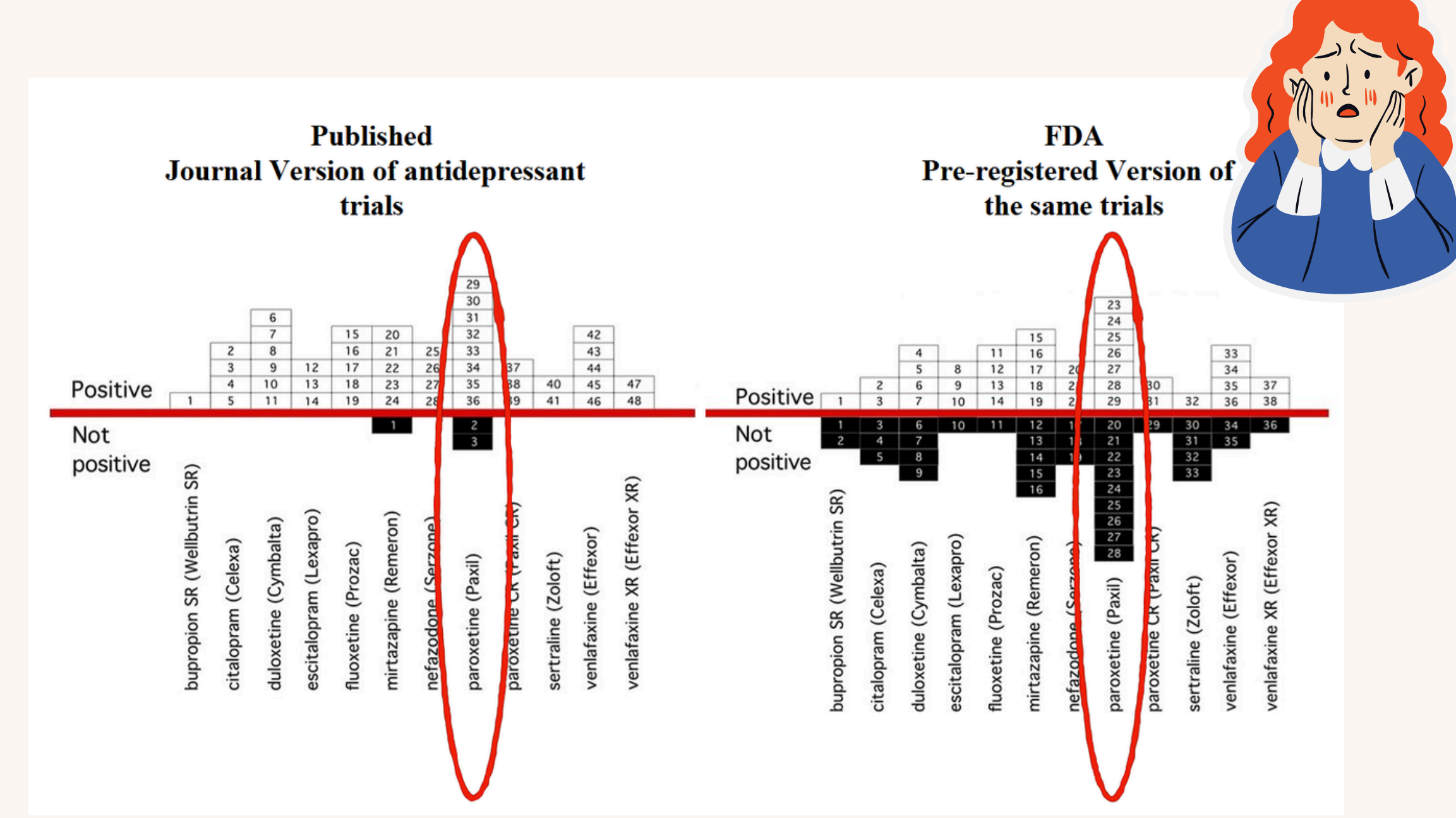
### Case Study: What Happens When Results Are Selectively Reported?

One of the clearest demonstrations of the cost of poor transparency comes from a 2008 study by Turner et al., published in The New England Journal of Medicine.

The researchers examined all FDA-registered trials on antidepressant effectiveness and compared them to what was actually published in the academic literature.

What they found was striking:

- 94% of published studies on antidepressants reported positive findings.
- But when they looked at all registered trials—positive and negative—the true rate of positive outcomes was just 51%.
- In many cases, null or negative studies were never published at all, or were written to appear more positive than they actually were.



Turner, et al., 2008. <https://www.nejm.org/doi/full/10.1056/NEJMe055779>

### Why does this matter?

This selective reporting distorted the evidence base. It made antidepressants look more effective than they truly were, influencing doctors, patients, policy, and future research.

This case underscores why preregistration, open data, and honest reporting are essential. Without them, we risk building science on a foundation of half-truths.

## Preregistration

Preregistration is a cornerstone of open research practices, situated at the design phase of the research cycle. It is the process of documenting and publicly registering your research plans—such as hypotheses, methodology, and analysis strategies—before data collection begins. This proactive approach enhances transparency, mitigates bias, and bolsters the credibility of scientific findings.

### Why Preregister Your Research?

Preregistration is one of the most powerful tools researchers have to strengthen the quality, transparency, and trustworthiness of their work. It offers a proactive way to safeguard against bias and reinforce research integrity—before any data is even collected.

Here's what preregistration can do for you and for the broader research community:

#### Reducing Bias

By preregistering hypotheses, methods, and analysis plans before seeing the data, researchers avoid the temptation to adjust their studies based on outcomes. This helps prevent selective reporting, p-hacking, and other practices that introduce bias and can lead to misleading conclusions.

#### Enhancing Transparency

Preregistration creates a clear, time-stamped record of your research plan. This transparency builds trust with editors, reviewers, and the broader scientific community, who can see exactly what you set out to do—and how you planned to do it.

#### Increasing Replicability

Having a publicly available record of your study design and analysis plan makes it easier for other researchers to replicate your work. Replication is a cornerstone of robust science, and preregistration provides the roadmap needed for others to follow.

#### Encouraging Thoughtful Study Design

The process of preregistering forces careful planning: Researchers must think through their hypotheses, measures, and analysis strategies systematically before starting their study, leading to stronger, more rigorous designs.

#### Facilitating Collaboration

Preregistrations can also open doors for collaboration. By sharing your research ideas and plans early, you increase the visibility of your work and invite feedback, partnerships, and new insights from other experts in your field.

In short, preregistration strengthens every stage of the research process. It protects your work from hidden biases, makes your findings more credible, and contributes to building a more trustworthy and cumulative scientific record.

### What You Need to Preregister a Study?

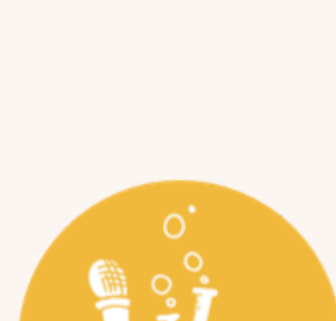
Preregistration requires you to plan key aspects of your research in advance.

Before you preregister, you should have a clear idea of:

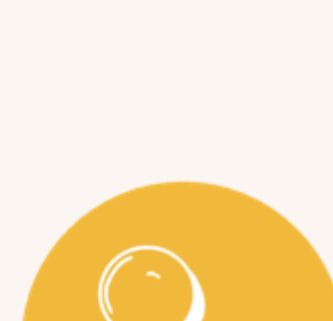
- Your Study Design: What is the structure of your study? What hypotheses are you testing?
- Your Methods: How will you collect your data? What instruments, tasks, or procedures will you use?
- Your Analysis Plan: How will you analyze the data once collected? What statistical tests, models, or qualitative approaches will you apply?



Your study design and methods



How you will collect your data



How you will analyse your data

By specifying these elements before data collection begins, you protect your research against biases and ensure that your results are a true reflection of your original scientific questions—not an artifact of post-hoc decisions.



OK, but How?

1 You should have a clear plan including all the relevant information and details

2 You then need to decide where you are going to pre-register your study

3 Different pre-registration platforms will provide templates for pre-registering your study

4 Templates are meant to serve as a guide because pre-registration may require some flexibility

Adapted from PaPOR TRail

### Where to Preregister Your Study?

Two of the most widely used platforms for preregistration are the Open Science Framework (OSF) and AsPredicted. Both are free, easy to use, and designed to make preregistration straightforward and accessible across disciplines.

#### OSF

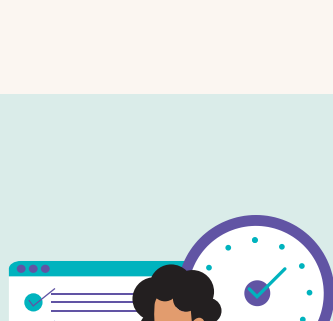
- Offers detailed templates covering hypotheses, design, methods, and analyses.
- Allows flexible, comprehensive preregistration linked to project materials.
- Option to embargo (delay public release) if needed.
- Ideal for more complex studies needing full documentation.

→ Use OSF if you want flexibility and the ability to create a comprehensive, publicly accessible record of your research process.

#### AsPredicted

- Provides a simple, fast form with standardized questions.
- Focuses on key elements: hypotheses, data plan, and analyses.
- Registrations are fixed after submission to protect against changes.
- Best for straightforward studies or when time is limited.

→ Use AsPredicted if you prefer a quick, minimal preregistration that still locks in your study plans and ensures accountability.



➤ Create your own Preregistration (general)

➤ Create your own Preregistration (Qualitative)

➤ Create your own Preregistration (Secondary Data)