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## Pre-registration: No pain, some gain

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# Pre-registration: No pain, some gain

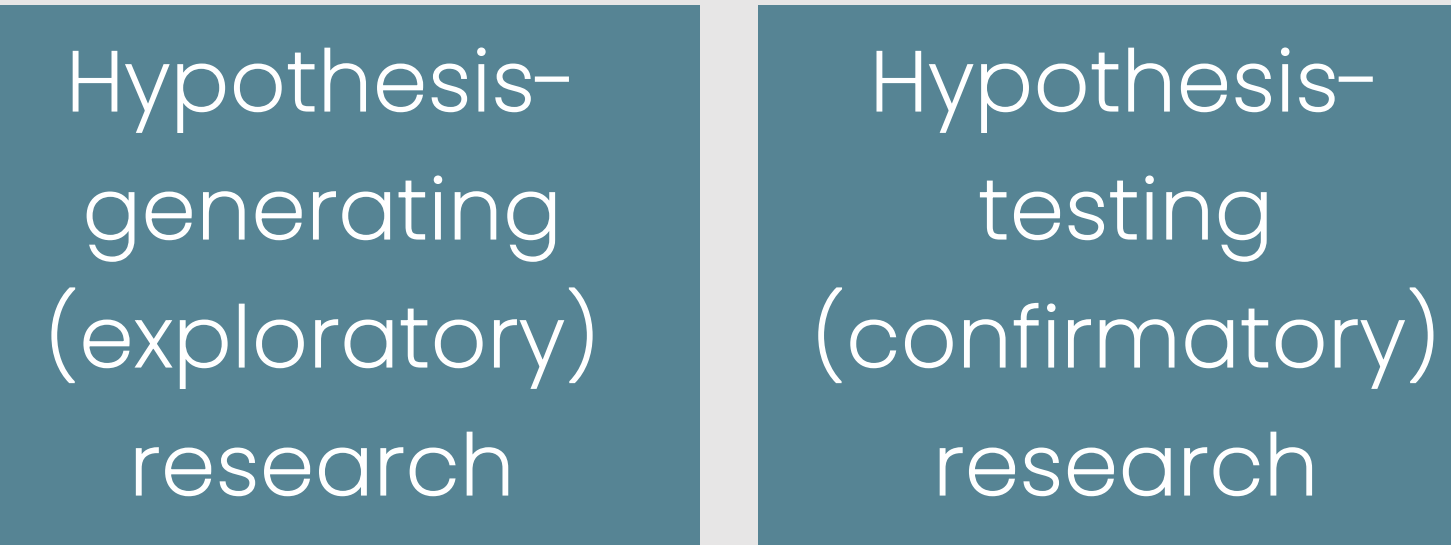
Justine Epinat-Duclos & Viet Chau Linh Nguyen  
On behalf of the Scientific Integrity Club



## What is pre-registration?

The act of specifying a research plan prior to a study and filing it with a registry. Each pre-registration has a unique URL.

**Aim:** to separate



### Research plan

Characteristics:

- Time-stamped
- Immutable or read-only
- Created before the study\*
- Submitted to a public registry\*\*

\*Some preregistrations may use preliminary data  
\*\*May be embargoed

Contents:

- Study plan*
- Hypothesis
  - Data collection procedures
  - Manipulated and measured variables
- Analysis plan*
- Statistical model
  - Inference criteria

## What are the current mindset & attitudes towards pre-registration?

Logg & Dorison (2021): survey on 248 researchers

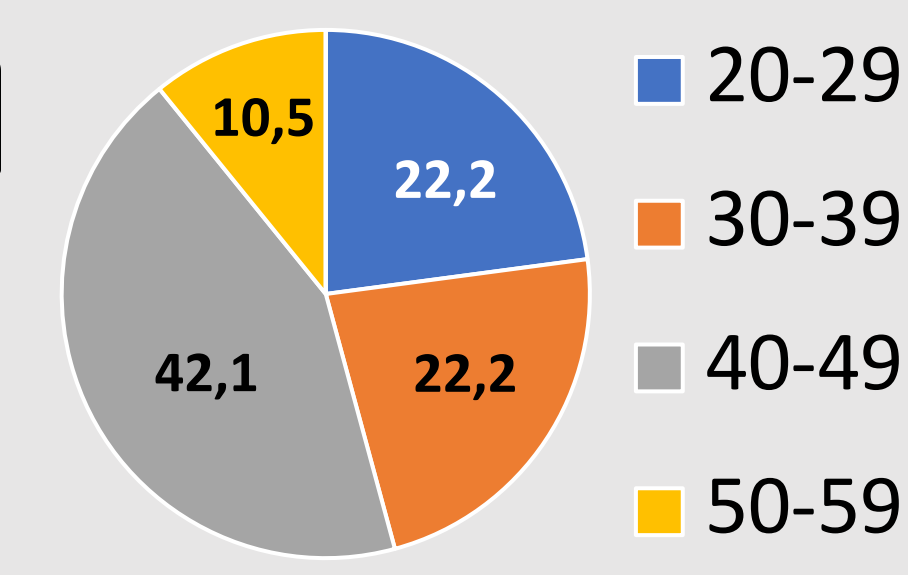
Still **not a mainstream practice:** 35% of respondents have pre-registered before.

A **generational gap:** 66% junior researchers, compared to 51% tenure track and 29% of tenure faculty adopted this practice.

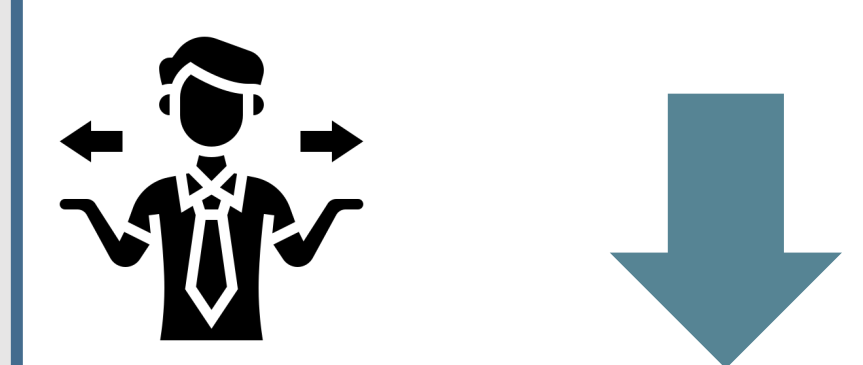
At the CRNL in 2023:

17% of respondents have pre-registered before

The distribution of pre-registration by age was:



A number of **doubts** and **misunderstandings** about pre-registration.



**Are they legitimate? Can we tackle this by debunking some of them?**

### Debunk n°1: Scooping

By making my research plan public, others can steal my ideas!

#### Why it is false?

- Pre-registration is a **proof** that it was you, and not others, who came up with the original idea and thought carefully about how to conduct the research.
- Pre-registration can be **embargoed**.

**Benefits:** increased **confidence** in your **transparency**: reassure reviewers and readers that researchers have not **p-hacked** their analyses, even unintentionally.

### Debunk n°2: Freedom to analyse

Pre-registration limits my freedom to explore data, since I need to strictly follow the plan.

#### Why it is false?

- Researchers CAN:**
- Include **exploratory research** to run non-preregistered analyses.
  - **Deviate** from the analysis plan while clarifying the reasons.

**Benefits:** preregistering which dependent variables are most interesting will strengthen trust in new results.

### Debunk n°3: Utility

Documenting the analysis plan is useless, because it's obvious to me.

#### Why it is false?

- Preregistration is useful to:**
- Anticipate issues.
  - **Avoid planning fallacy & hindsight bias** (to forget the plan and mistake outcomes for original hypotheses).

**Benefits:** improving **communication & flexibility** in task allocation.

### Debunk n°4: Cost

Pre-registration adds work to my research process, it's a cost in time and effort. For instance, I did the same work for ethics committee approval.

#### Why it is false?

- **No added tasks**, only their order modified.
- Greatly facilitates the redaction of the final manuscript.
- Preregistration content can be inspired by other pre-existing elements (e.g. the analysis plan specified in ethics committee approval).
- Less expensive revision (avoid redesigning experiments and collecting new data).
- Avoid the risk of a preregistered replication being required by reviewers.

### Debunk n°5: Peer (un)pressure

Others don't do it, why should I?

#### Why it is false?

- If you are yourself convinced by the previous points, just don't wait for others to do it!
- If it's not yet mainstream at your institution, initiating the tendency might lead to a snowball effect in the future.
- Increase your visibility.

**Benefits:** by engaging in promoting open science and scientific integrity, as well as increasing your visibility, you can **conduct** studies (hopefully pre-registered) on this topic!

## How to pre-register? Registration forms and templates (Open Science Framework)



**Open-Ended Registration:** no requirements. write a summary description of the project.

**OSF-Standard Pre-Data Collection Registration:** 2 questions:  
1. Data already collected?  
2. have you already looked at data?

**AsPredicted.org:**  
8 questions: hypothesis; dependent variables; conditions; data analysis; outliers & exclusion criteria; sample size (power analysis); type of study

**OSF Preregistration:** 25 subject areas that need to be answered.

**Registered Report:** Pre-registration is peer-reviewed via a journal and labelled with "IPA" (in-principle acceptance). If the study is carried out correctly, it is guaranteed to be published, regardless of the results. (see also <https://cos.io/rr>).

Less complete  
Easier and faster

All resources you need are HERE!



→ Participating journals for Registered Reports



→ Exemple of pre-registrations

More complete  
Longer process