



# How Can an Open Science Community facilitate open science practices?

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Partly adapted from “Study pre-registration: Benefits and considerations” (Krzysztof Gorgolewski, 2017)

**PSYCHOLOGY**

# Estimating the reproducibility of psychological science

Open Science Collaboration\*†

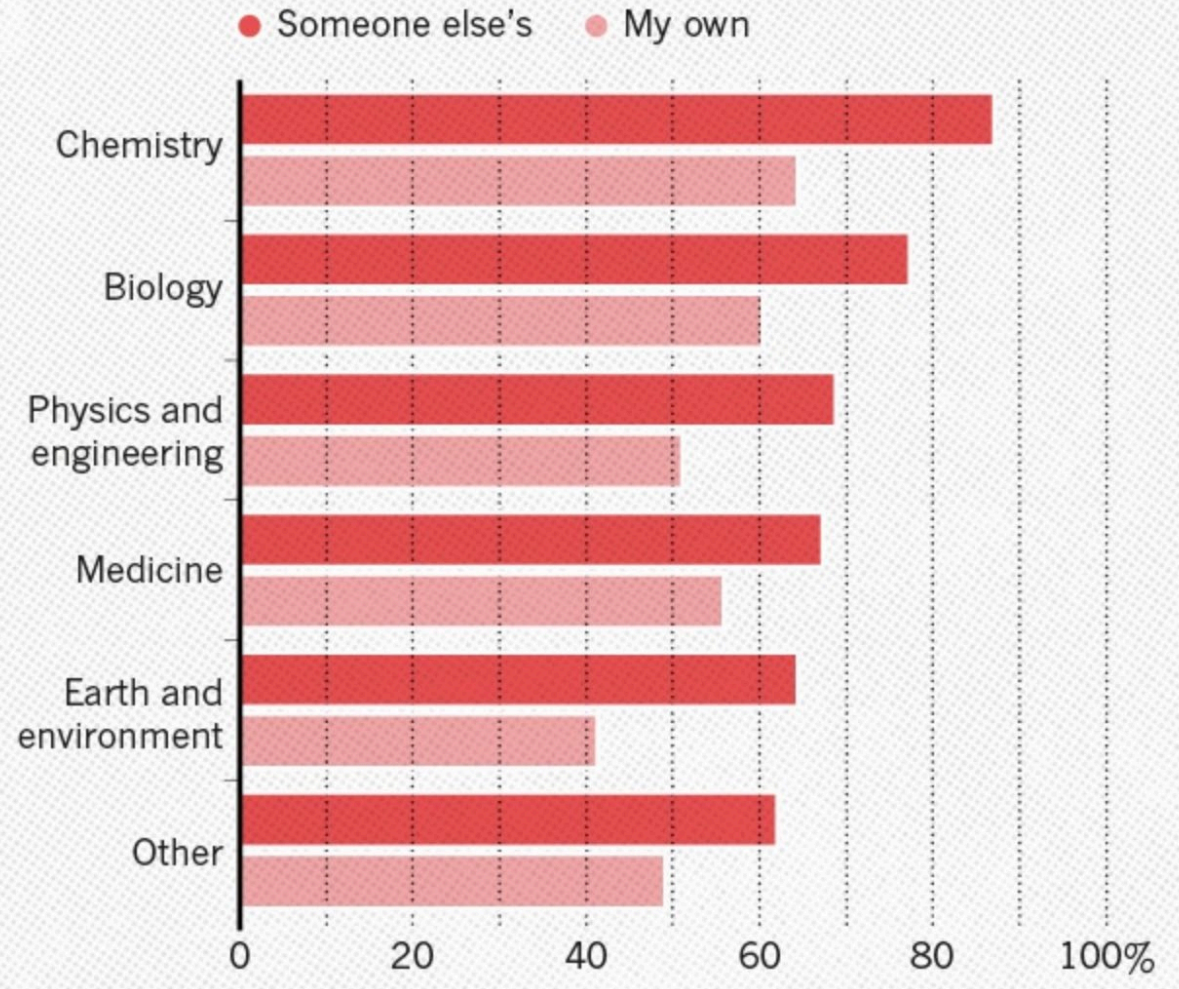
Reproducibility is a defining feature of science, but the extent of current research is unknown. We conducted replications of 10 studies published in three psychology journals using high-quality materials when available. Replication effects were half the magnitude of original effects, representing a substantial decline. Ninety-seven percent of original significant results were replicated. Thirty-six percent of replications had statistically significant effects. Ninety percent of replication effect sizes were in the 95% confidence interval of original effect sizes. Ninety percent of replication effects were subjectively rated to have replicated the original result, and if no bias in original results is assumed, combining original and replication results left 68% with statistically significant effects. Correlational tests suggest that replication success was better predicted by the strength of original evidence than by characteristics of the original and replication teams.

**Only 36%  
of studies  
replicated!**



# HAVE YOU FAILED TO REPRODUCE AN EXPERIMENT?

Most scientists have experienced failure to reproduce results.





## IS THERE A REPRODUCIBILITY CRISIS?

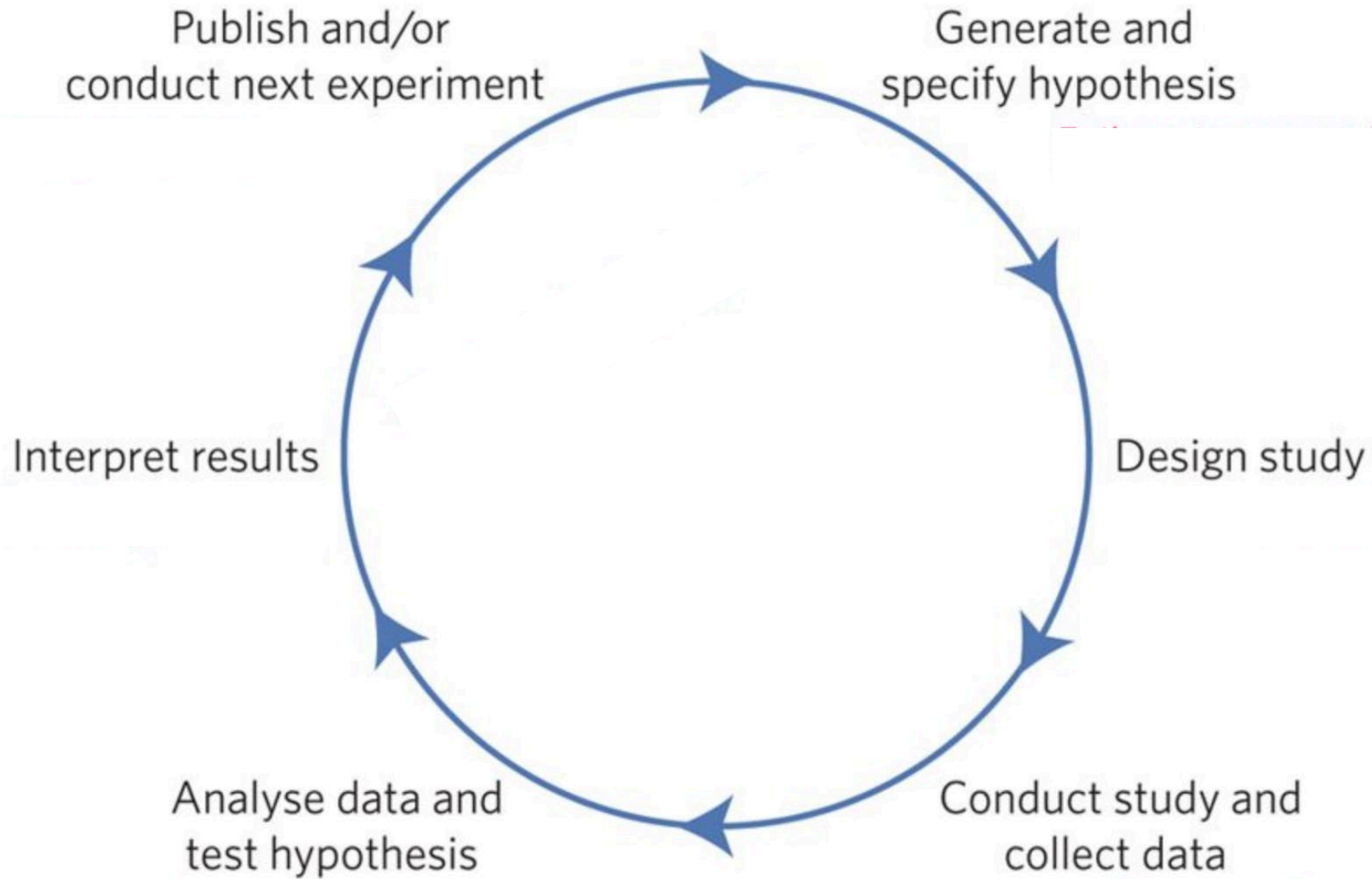


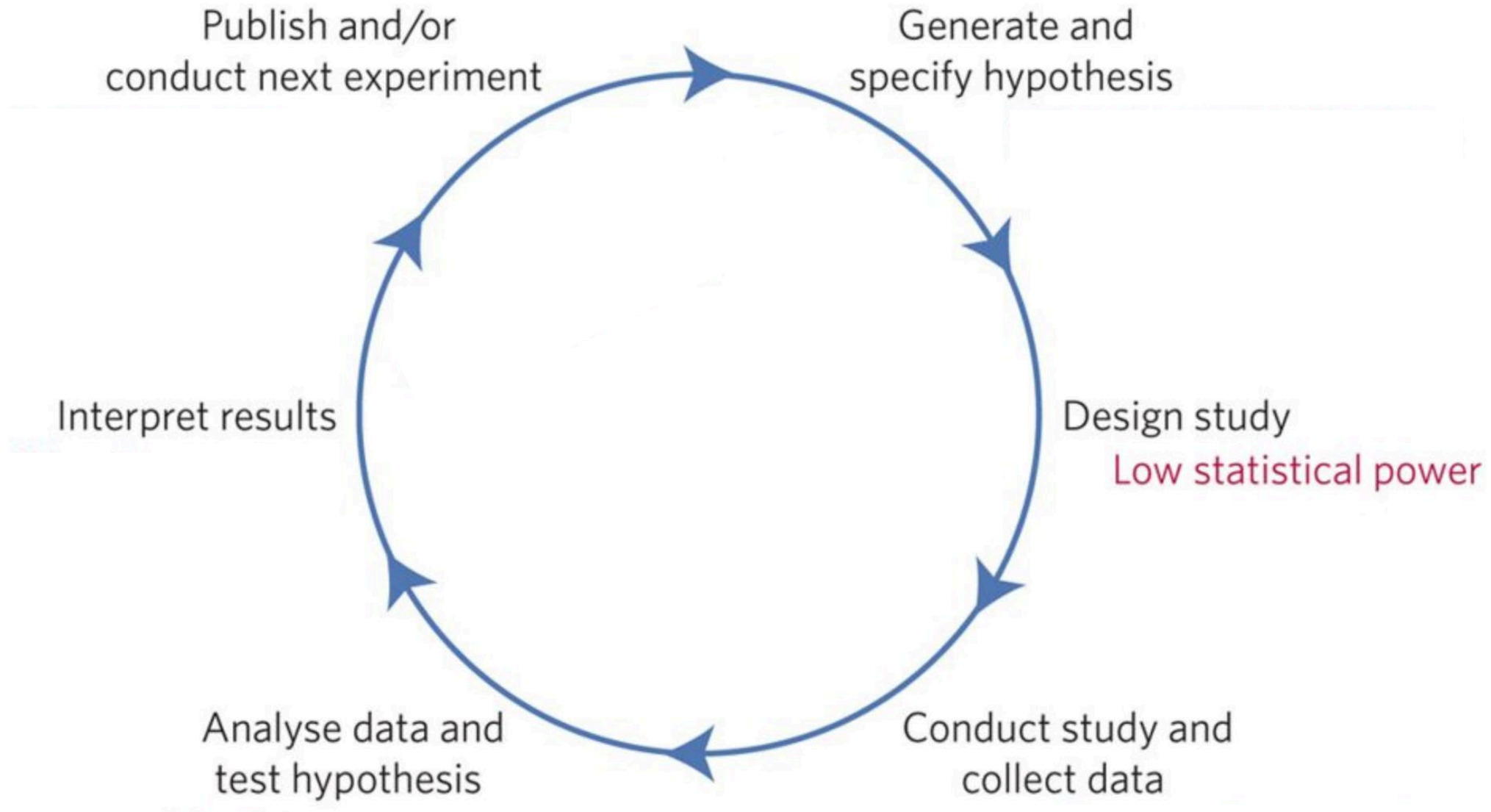
©nature

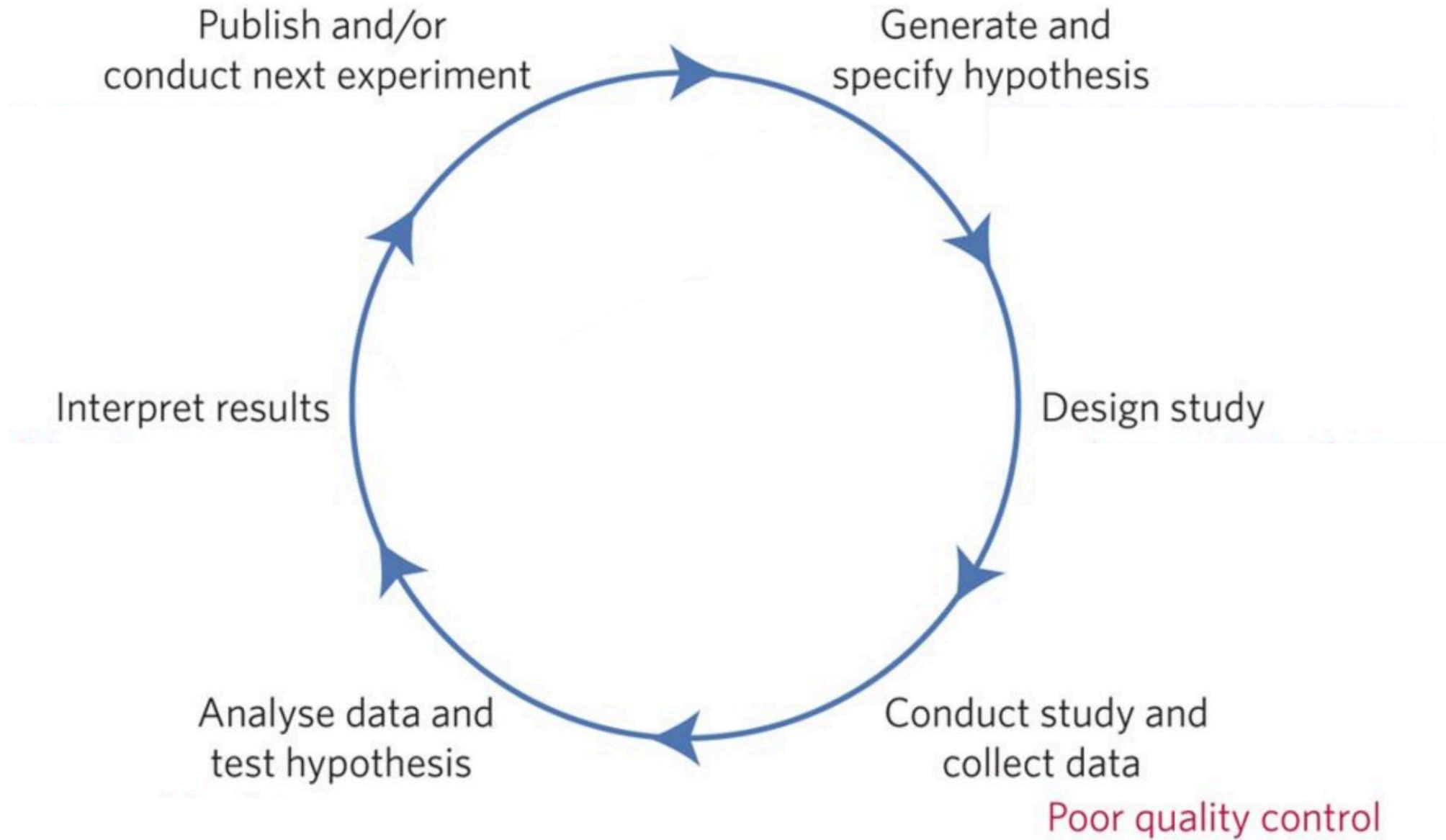


The problem: Science isn't  
perfect

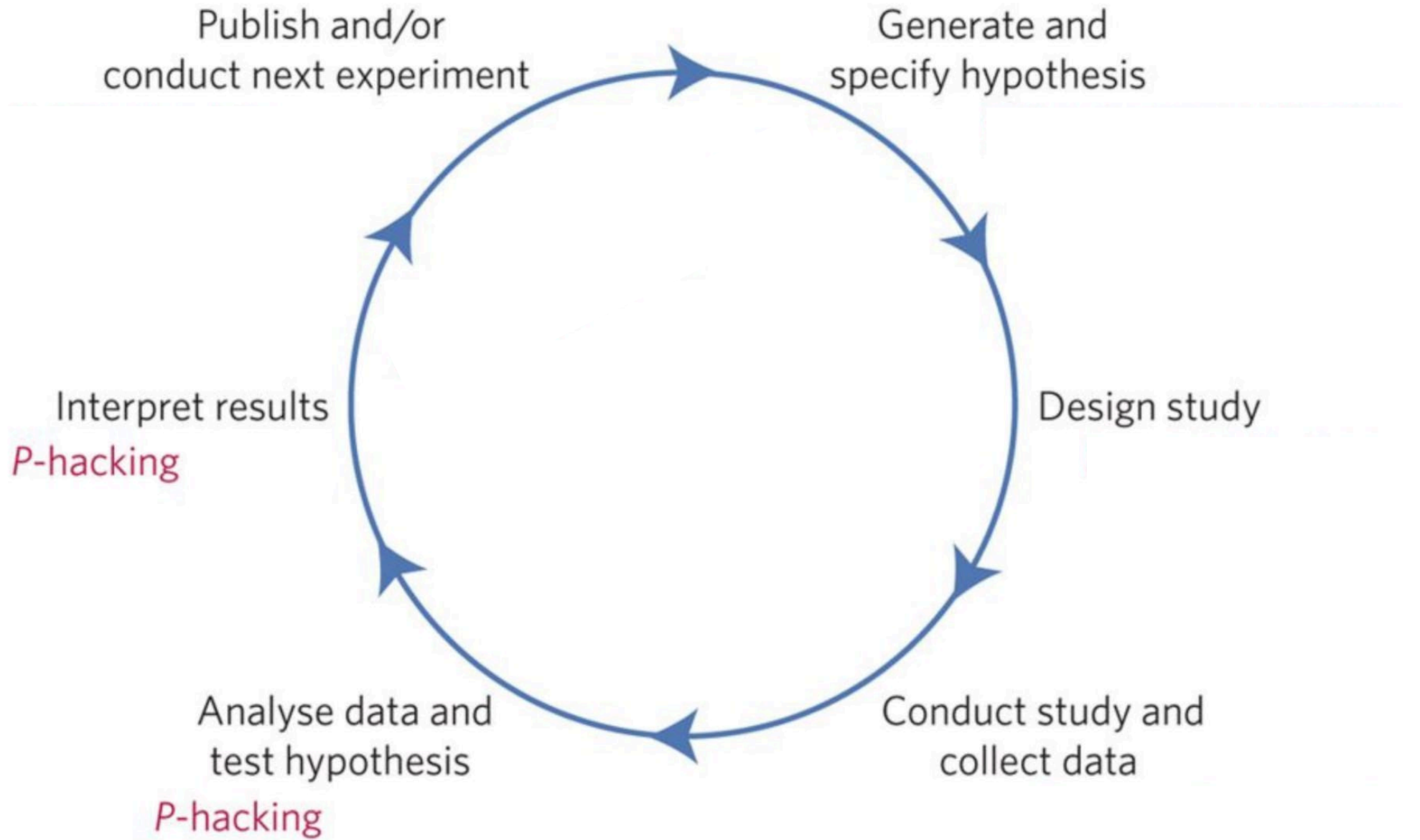








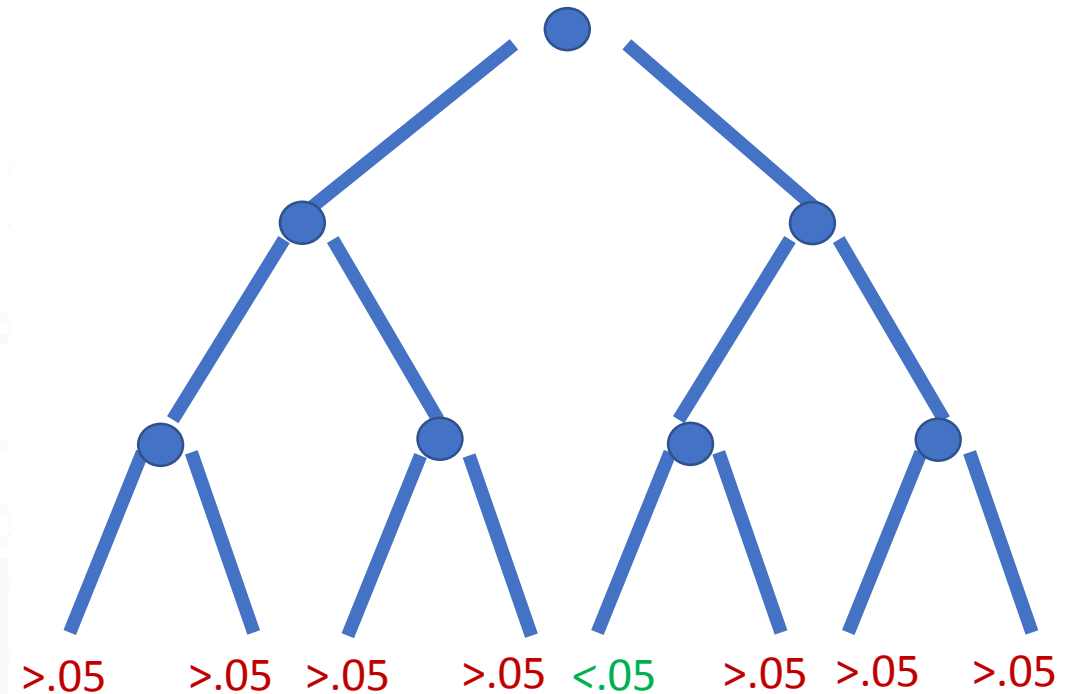


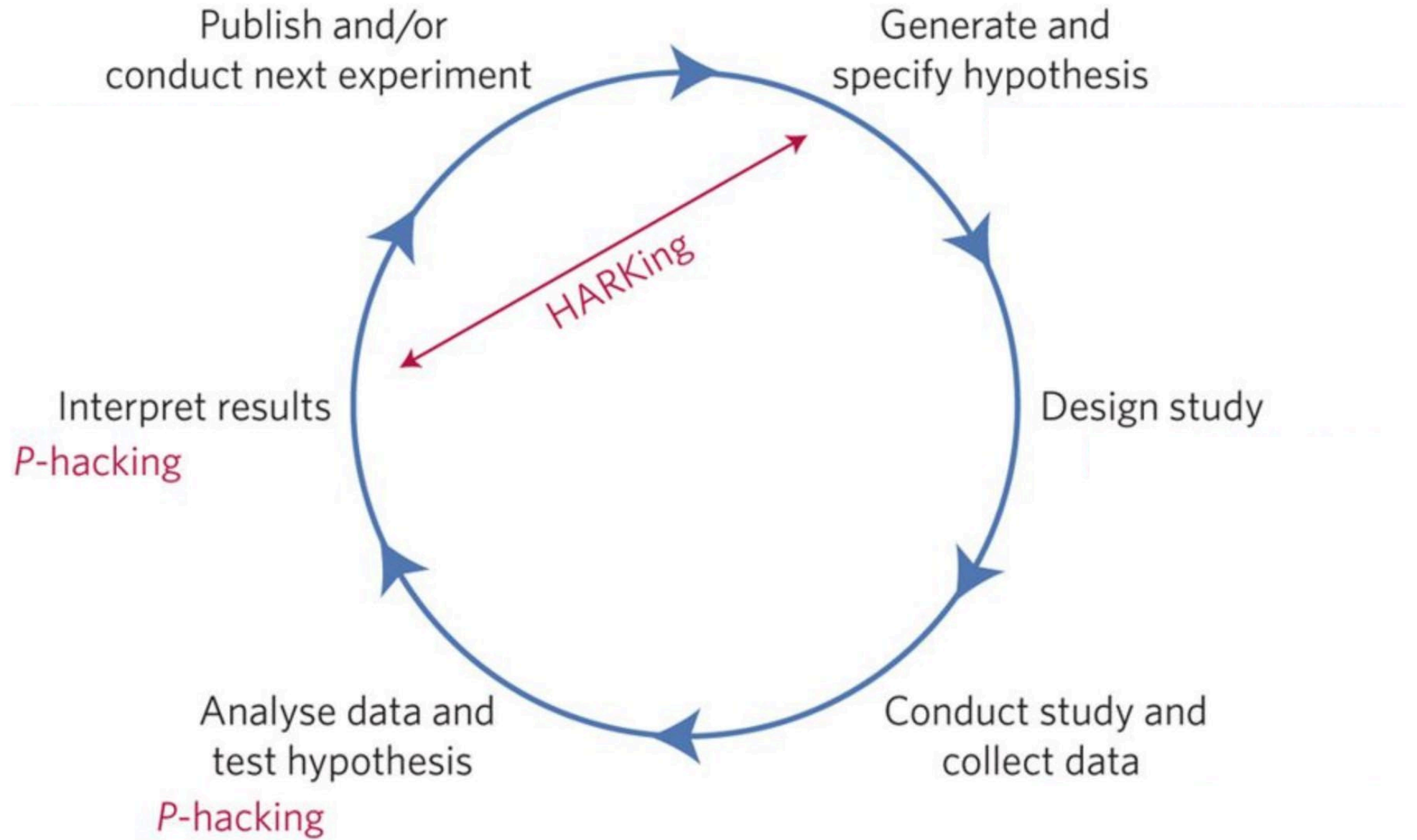




# P-hacking

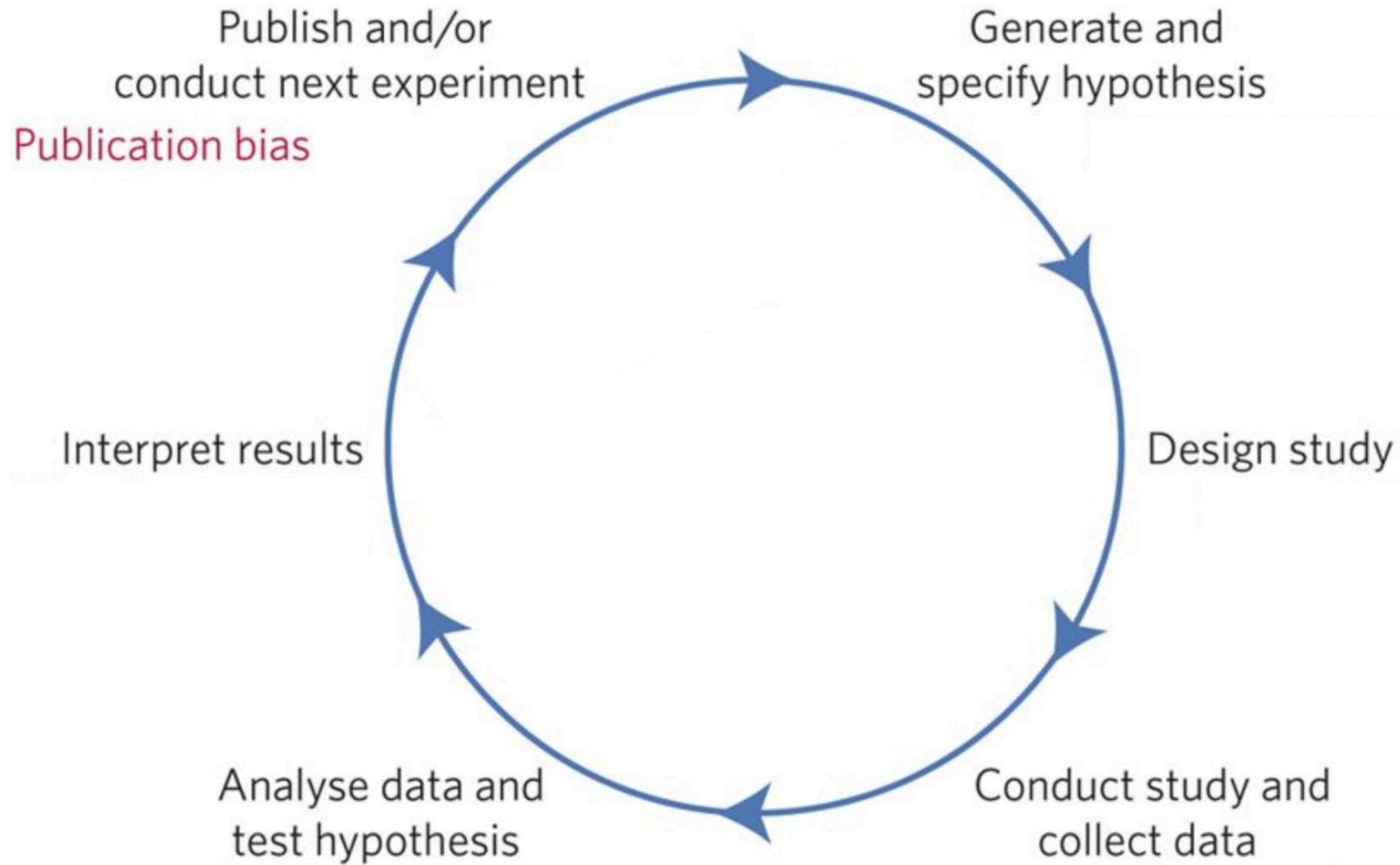
1. Stop collecting data once  $p < .05$
2. Analyze many measures, but report only those with  $p < .05$ .
3. Collect and analyze many conditions, but only report those with  $p < .05$ .
4. Use covariates to get  $p < .05$ .
5. Exclude participants to get  $p < .05$ .
6. Transform the data to get  $p < .05$ .

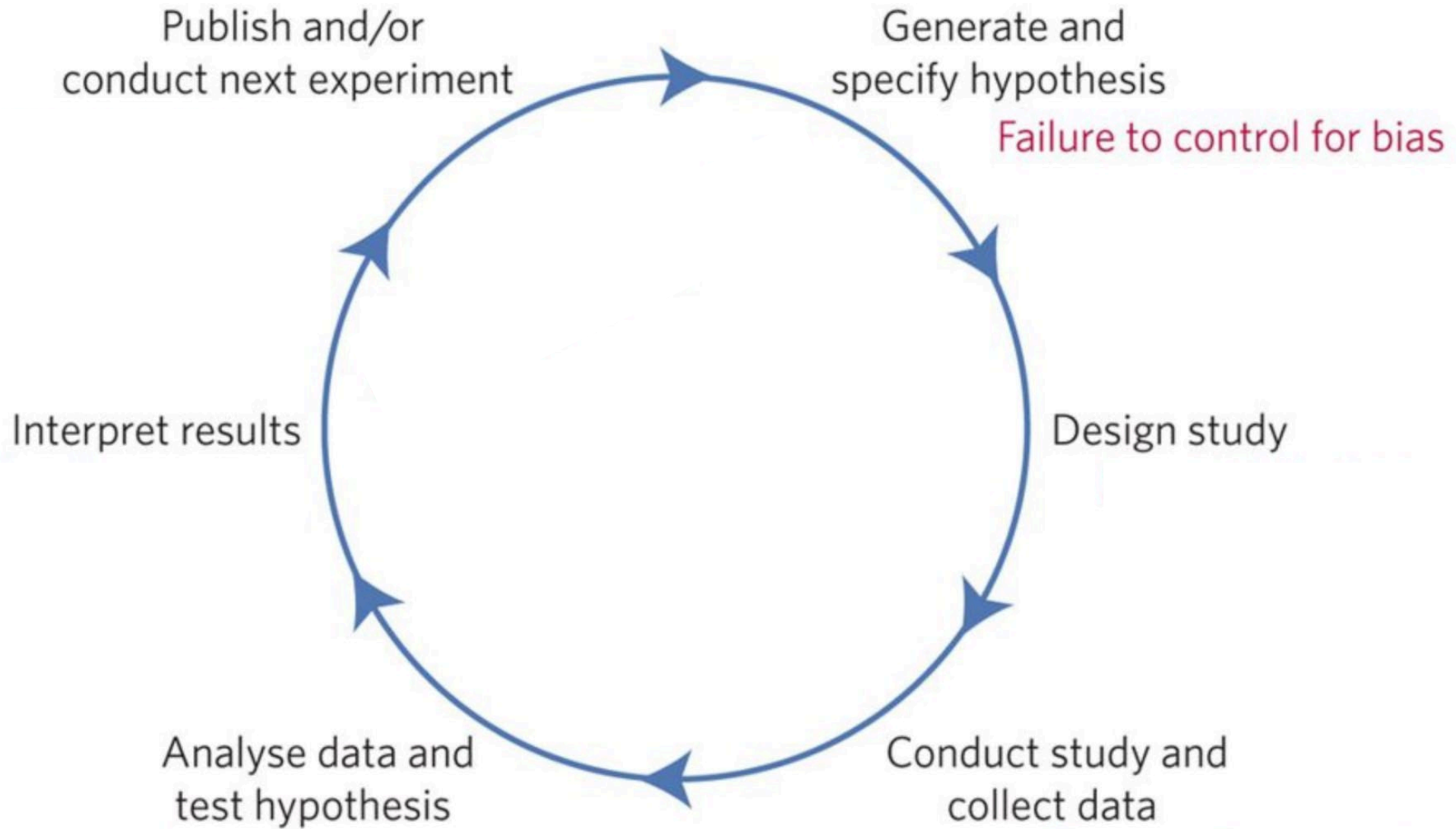






HARKing = Hypothesizing  
After the Results are Known







# Confirmatory vs. Explorative Research





The solution: Pre-  
registration





## Pre-registration

“Stating as clearly and specifically as possible what you plan to do, and how, before doing it in a manner that is verifiable by others.”



# Pre-registration

## Introduction

- Research question
- Hypothesis

## Method

- Sample(size)
- Design, variables
- Measures
- Exclusion criteria
- Analysis plan



# What to do with your pre-registration?

- 1) Post somewhere private or public (e.g.,  
Open Science Framework, As predicted)
- 2) Submit to journal for peer review  
(Registered Reports)



# Why pre-register?

- 1) Increase the reproducibility of science
- 2) Keep track of what you did and why
- 3) Publish based on idea/design, not outcome



# Common misconceptions

*Pre-registration prevents the exploration of your data/Creativity.*

No, pre-registration allows for exploratory science. It simply prevents reporting exploratory analyses as confirmatory.



Common misconceptions

# **Open Science Is Liberating and Can Foster Creativity**

**Willem E. Frankenhuis<sup>1</sup> and Daniel Nettle<sup>2</sup>**

<sup>1</sup>Behavioural Science Institute, Radboud University and <sup>2</sup>Centre for Behaviour and Evolution and Institute of Neuroscience, Newcastle University



# Common misconceptions

*Pre-registration doesn't allow for making changes and I cannot predict what will happen.*

No, you cannot predict exactly what will happen. You might make mistakes. It's fine to make (small) changes as long as you report your deviation from your pre-registered plan.



# Common misconceptions

*Pre-registration is too much work.*

Every new procedure takes time. However, it's more a shift in when a study takes up most of the time (begin vs. end). Might also actually save time once data are in.





# Common misconceptions

*Others will steal my ideas when I pre-register.*

Your pre-registration might stay private until publication.



I can help you!

How to pre-register?





# Goals Open Science Community

- 1) Make Open Science more visible and accessible
  - Promote knowledge exchange
- 2) Inspire and enable researchers to take the next small step
- 3) Identify obstacles and need for support to inform policy makers

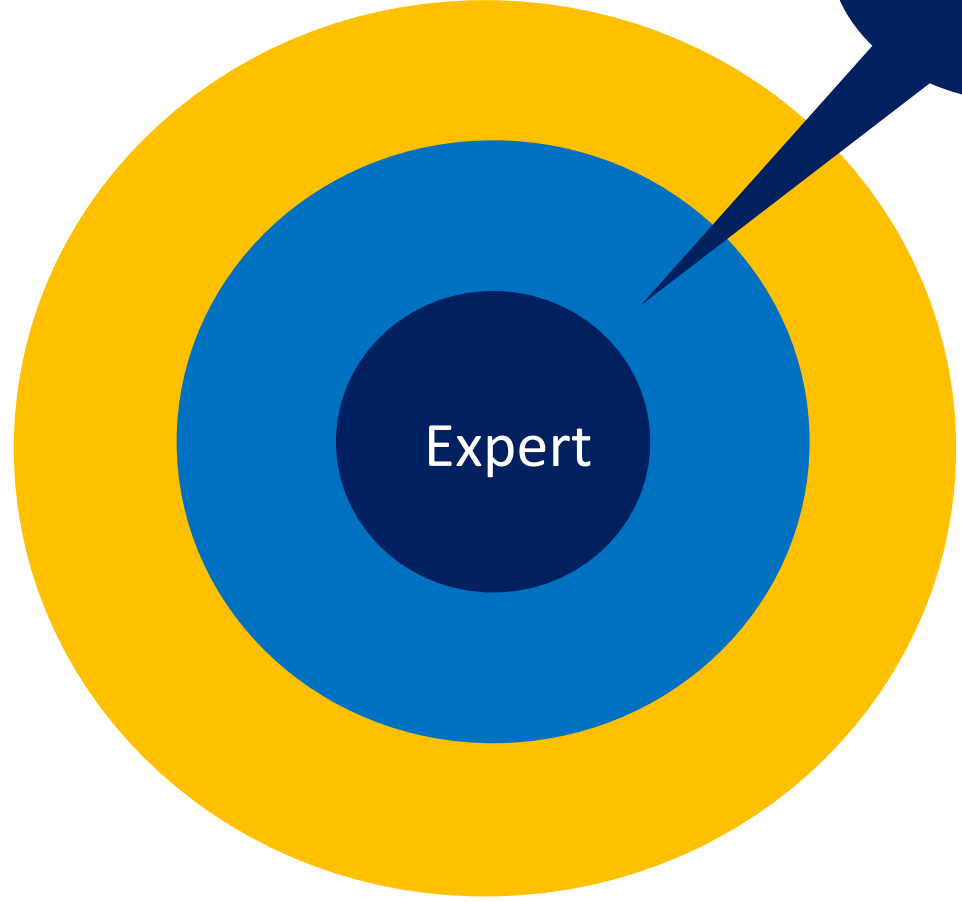
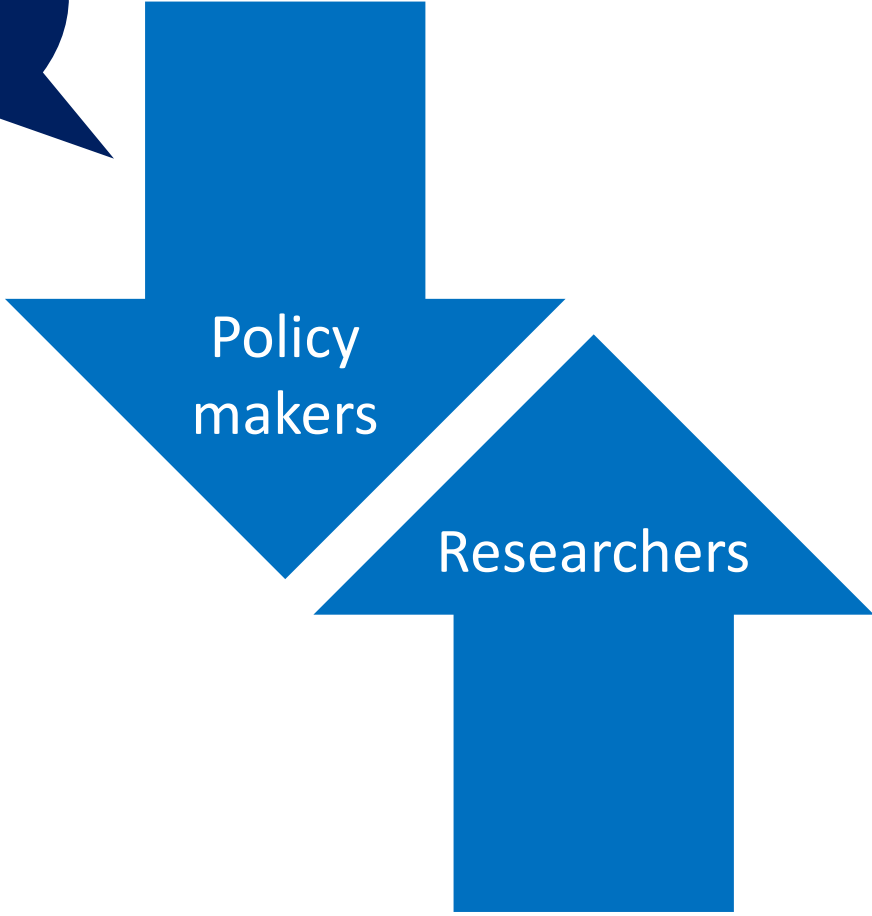
*"We should  
all adopt OS  
practices"*

Policy  
makers

Researchers



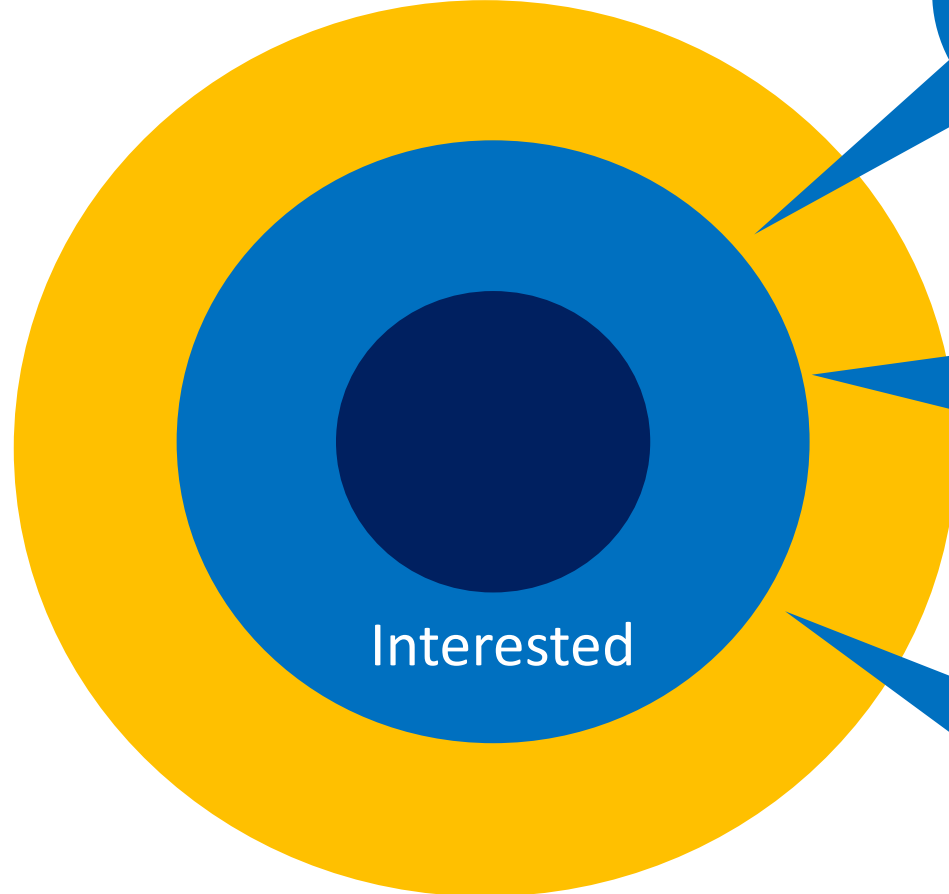
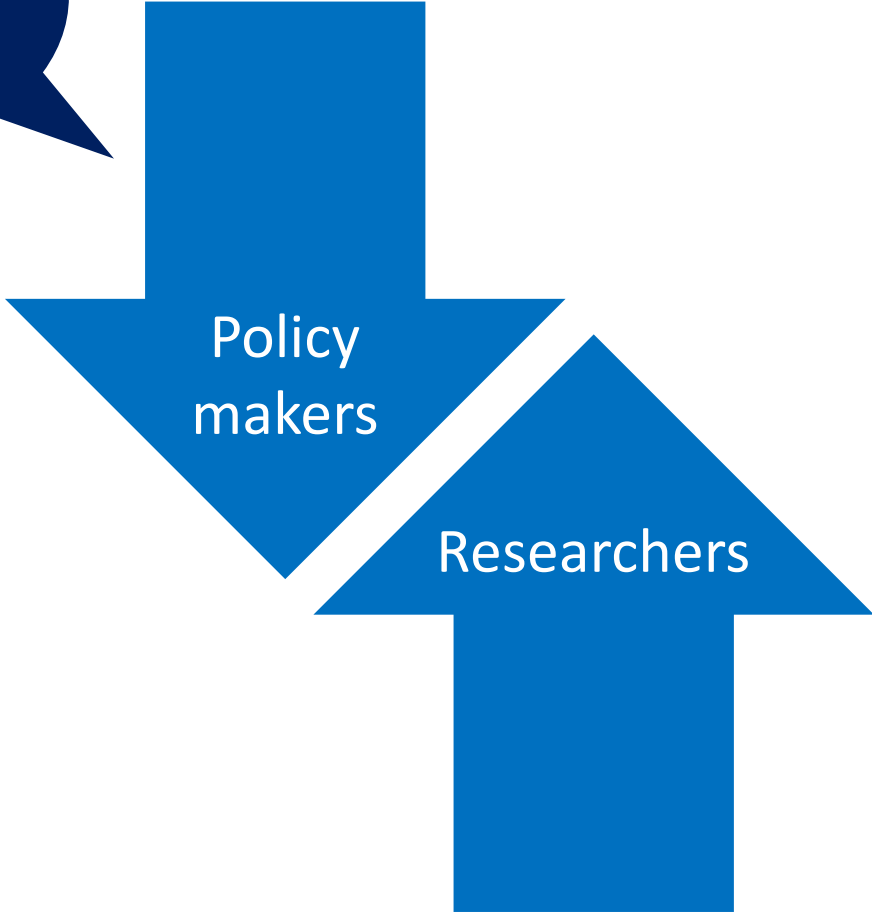
*"We should all adopt OS practices"*



*"I'm already practising OS"*



*"We should all adopt OS practices"*



*"Yes, but how?"*

*"Yes, but why?"*

*"What?"*



*"We should  
all adopt OS  
practices"*

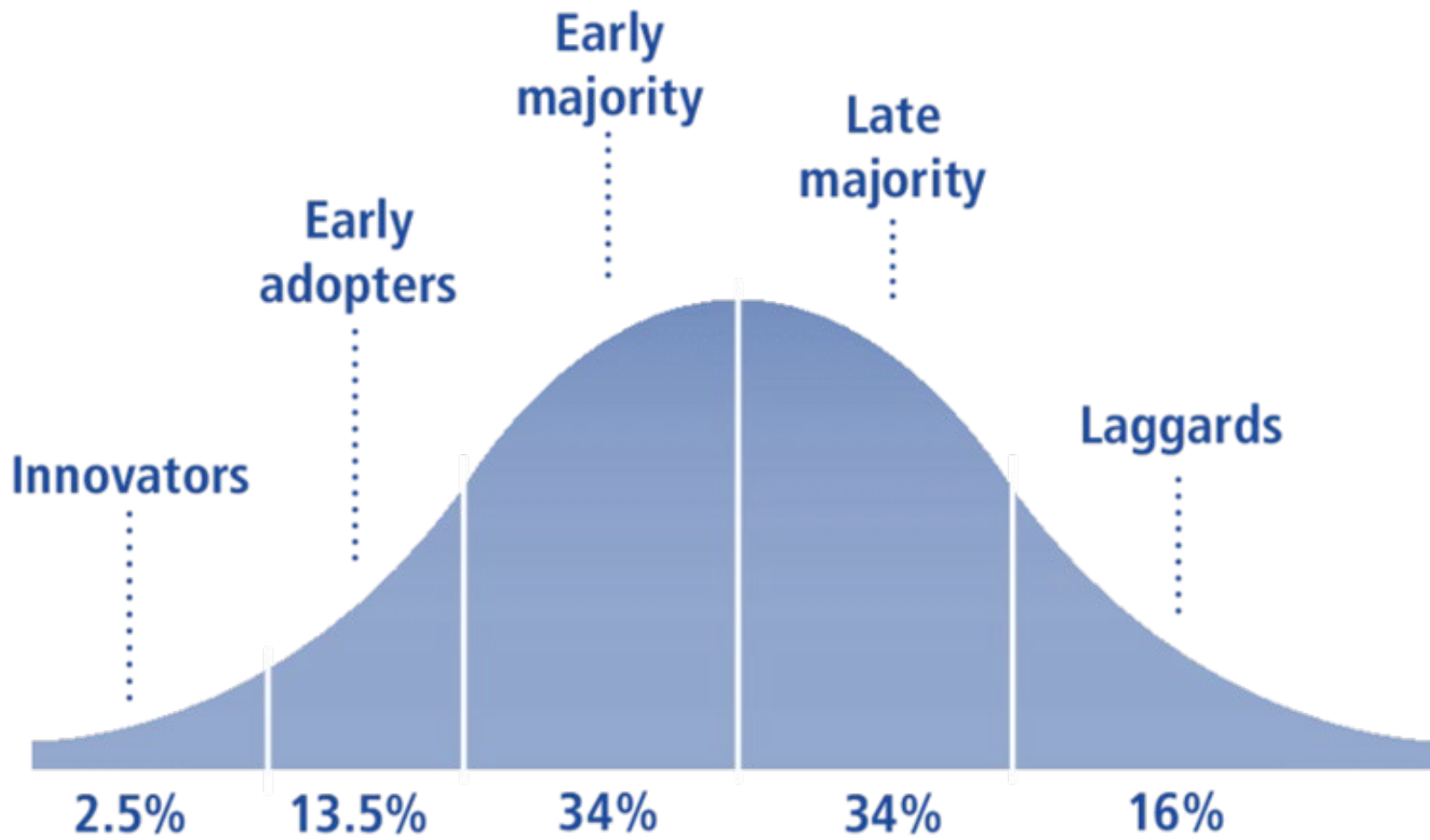
Policy  
makers

Researchers

Ignorant

.....

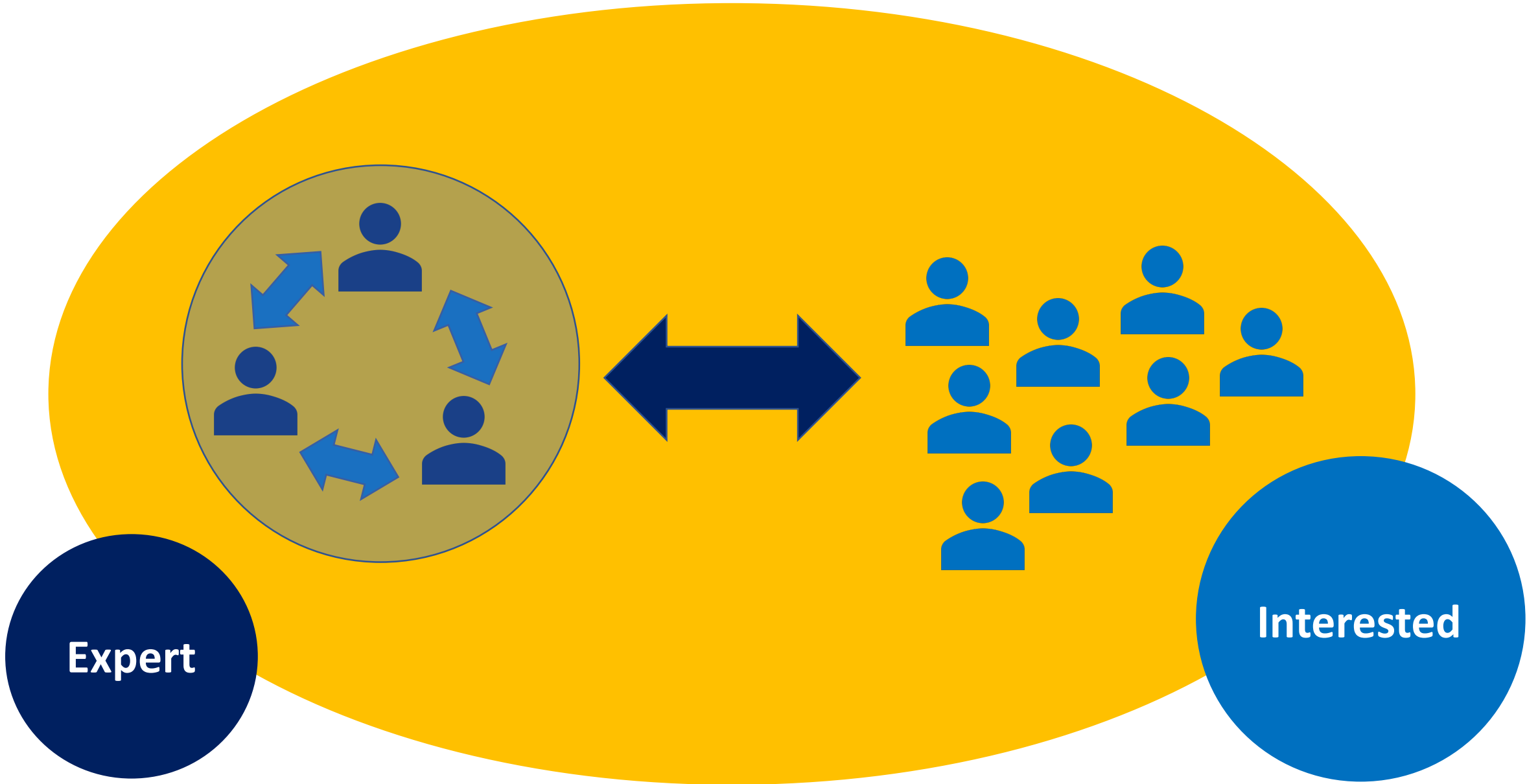




Innovation Adoption Lifecycle

*Rogers (1962)*





**Expert**

**Interested**

  
Open Science Communities the Netherlands

  
Open Science Community Amsterdam

  
Open Science Community Utrecht

  
Open Science Community Leiden

  
Open Science Community Rotterdam

  
Open Science Community Tilburg

  
Open Science Community Groningen

  
Open Science Community Nijmegen

  
Open Science Community Eindhoven

Coming soon  
OSCM





The future is open!





# Interesting links

Blog post on pre-registration by Lorne Campbell

<https://www.lornecampbell.org/?p=181>

Article Frankenhuis & Nettle (2018) on Pre-registration and creativity

<https://journals.sagepub.com/doi/10.1177/1745691618767878>

Article on pre-registration in qualitative research

<https://www.tandfonline.com/doi/full/10.1080/08989621.2019.1580147>

Common misconceptions on pre-registration and responses (Table 1 in the article)

<https://osf.io/xn35j/>

# Our formats

- [Website](#)



Home   Our story ▾   Our activities ▾   Our community ▾   Open Science Agenda   Contact   Links

## Workshops to learn & talk about open science

### **27/9 - Publishing Open Access**

with Jan de Boer & Barbara Vreede

*Tielezaal, University Library city centre*

### **1/11 - Managing your data FAIR**

with Annemiek van der Kuil

*Drakenborchzaal, University Library, Uithof*

**24/1 - Working with the Open  
Science Framework**

### **7/3 - Being Open & Successful**

with Daniel Oberski

*Event room, Langeveld building, Uithof*

### **2/5 - Shaping OS Policies**

with Frank Miedema

*Sweelinckzaal, Drift 21*

**13/6 - Pre-registering your study  
& celebrating one year of OSCU**

## News

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New member: Cedric Thieulot

25 July 2019

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New member: Daniel Cohnitz

25 July 2019

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New member: Mary Felix

19 July 2019

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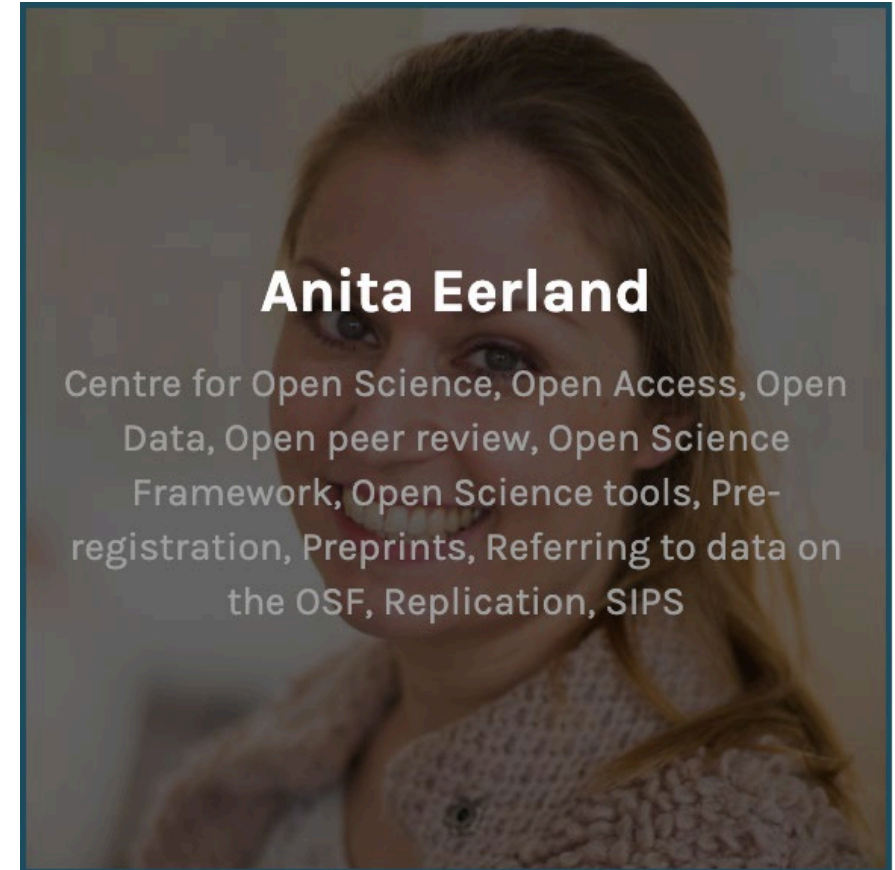
New member: Ian Smith

11 July 2019

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# Our formats

- Website
- Membership
  - >200 members from ALL faculties



**Anita Eerland**

Centre for Open Science, Open Access, Open Data, Open peer review, Open Science Framework, Open Science tools, Pre-registration, Preprints, Referring to data on the OSF, Replication, SIPS

# Our formats

- Website
- Membership
- Newsletter

## Newsletter July 2019

Thanks for being part of OSCU!

Together, we make science more  
**transparent, accessible,  
reliable, and inclusive.**

In this newsletter:

- Looking back at the **pre-registration workshop**
- **Open Science Summerschool** (August 26-30, Utrecht)
- Coming up: **7x OSCU Open Science Symposium**
- Member initiative: **Journal of Trial and Error**
- Meet the member: **Laura Dijkhuizen**



### Looking back at the workshop on pre-registration

On June 13 the last OSCU workshop of this academic year took place. Around 40(!) researchers gathered to discuss pre-registration. After a brief introduction on the topic by Anita Eerland, Reine van der Wal shared her experience with

# Our formats

- Website
- Membership
- Newsletter
- Social media



The screenshot shows the Twitter profile for Open Science Community Utrecht (@OpenSciUtrecht). The profile header includes the logo, name, and bio. The bio states: "Open Science Community Utrecht @OpenSciUtrecht Follows you" and "Joined February 2018". The profile statistics are: 397 Tweets, 109 Following, 564 Followers, 454 Likes, and 1 List. The profile is currently being followed. The main content area shows a pinned tweet from October 21, 2018, about workshops organized by @OpenSciUtrecht. The tweet text is: "This year's workshops organized by @OpenSciUtrecht. See [openscience-utrecht.com](https://openscience-utrecht.com) for more info and registration (free)!". Below the tweet is a dark blue banner with the text "Workshops to learn & talk about open science". The right sidebar shows a "Who to follow" section with two suggestions: Mathys Ltd Bettlach and Wilma van Wezenbeek.

**Open Science Community Utrecht**  
@OpenSciUtrecht Follows you  
Joined February 2018

Tweets 397 Following 109 Followers 564 Likes 454 Lists 1

Following

**Open Science Community Utrecht**  
@OpenSciUtrecht · 21 Oct 2018  
This year's workshops organized by @OpenSciUtrecht. See [openscience-utrecht.com](https://openscience-utrecht.com) for more info and registration (free)!

**Workshops to learn & talk about open science**

**Who to follow** · Refresh · View all

**Mathys Ltd Bettlach** @M...  
Follow  
Promoted

**Wilma van Wezenbeek** @...  
Follow



# Our formats

- Website
- Membership
- Newsletter
- Social media
- Workshops
- OS Cafes

## Workshops to learn & talk about open science

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with Jan de Boer & Barbara Vreede

*Tielezaal, University Library city centre*

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### **2/5 - Shaping OS Policies**

with Frank Miedema

*Sweelinckzaal, Drift 21*

### **13/6 - Pre-registering your study & celebrating one year of OSCU**

*Room E1.22, Langeveld building, Uithof*

# New formats

- Stickers
- OS symposia per faculty
- Member initiatives

