Solving the “file drawer problem”:

How researchers, institutions, publishers and funders can reduce publication bias

Munin Conference, Tromso 2025
Dr. Agata Morka, Regional Director, Publishing Development, Europe, PLOS

The file drawer problem

"Journals are filled with the 5% of the studies that show Type I errors, while the file drawers are filled with the 95% of the studies that show non significant results".

Robert Rosenthal, 1979

Rosenthal, R. (1979). The file drawer problem and tolerance for null results. *Psychological Bulletin, 86*(3), 638–641. https://doi.org/10.1037/0033-2909.86.3.638

The file drawer problem persists

Inflated efficacies in studies

Failure to publish null and negative results has inflated reported efficacy in social sciences as well as translational and clinical medicine.

Misleading effect sizes

This, in turn, leads to misleading or exaggerated effect sizes in meta-analyses.

Risk for future studies

A risk that future studies will be underpowered or based on irrelevant or insignificant findings.

Sources:
Annie Franco, A. Malhotra, N. and Simonovits G. (2014). Publication bias in the social sciences: Unlocking the file drawer. *Science* **345**,1502-1505. https://doi.org/10.1126/science.1255484
Sena ES, van der Worp HB, Bath PMW, Howells DW, Macleod MR (2010) Publication Bias in Reports of Animal Stroke Studies Leads to Major Overstatement of Efficacy. *PLoS Biol* **8**, e1000344. https://doi.org/10.1371/journal.pbio.1000344
Turner EH, Matthews AM, Linardatos E, Tell RA, Rosenthal R (2008). Selective publication of antidepressant trials and its influence on apparent efficacy. *N Engl J Med*. 17;358(3):252-60. doi: 10.1056/NEJMsa065779.

Why are researchers relegating their null and negative results to the file drawer?

Reluctance to submit

Investigators might be reluctant to submit work that they think has a higher chance of being rejected.

Reviewers' bias

There is evidence from clinical medicine that reviewers are indeed more critical of manuscripts that report null results.

Mixed interests

Funding agencies and commercial interests can introduce bias into the types of research questions that are investigated and how these results are framed.

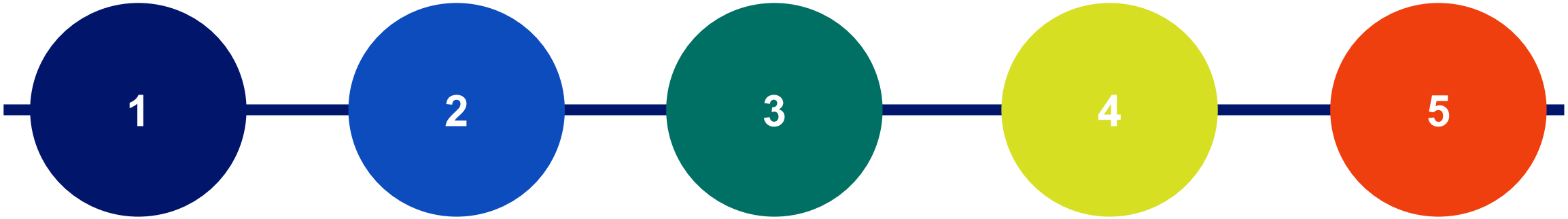
Publish or perish

The "publish or perish" culture endemic in academia has also been blamed for driving the preference for reporting positive or confirmatory results.

How to tackle the file drawer problem?

What roles and responsibilities do researchers, institutions, funders and publishers have in addressing this problem?

Roadmap for today



Intro

Invited speakers representing **researchers**, **funders and publishers** will each give a **5-minute introduction** on their perspectives around publication of null and negative results.

Role-playing excercise

Participants will join **groups representing each stakeholder**, each anchored by a speaker. Participants will assume different roles within their stakeholder group.

Group presentation

Three 5-minute presentations from each group on the key priorities for each organisation/entity.

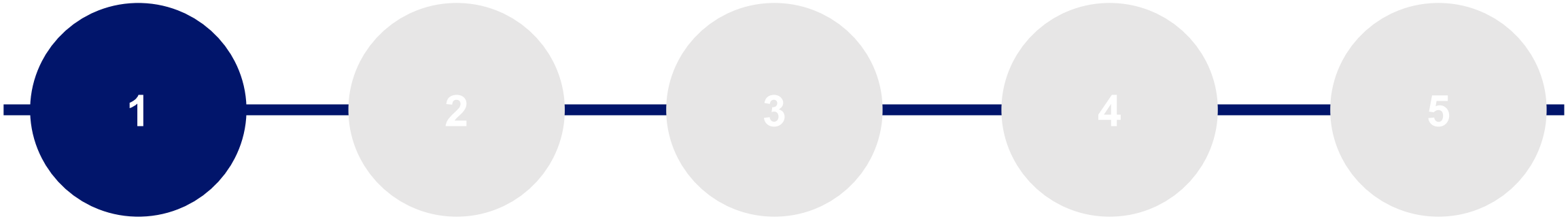
Synthesis

Moderator **synthesises** these ideas and leads a **group discussion** of the strengths and weaknesses of various approaches.

Post-workshop

Participants will receive a **follow-up handout** that summarizes the recommendations by the stakeholder group and outlines suggested next steps for promoting the importance of sharing negative and null results.

Roadmap for today



Intro

Invited speakers representing **researchers**, **funders and publishers** will each give a **5-minute introduction** on their perspectives around publication of null and negative results.

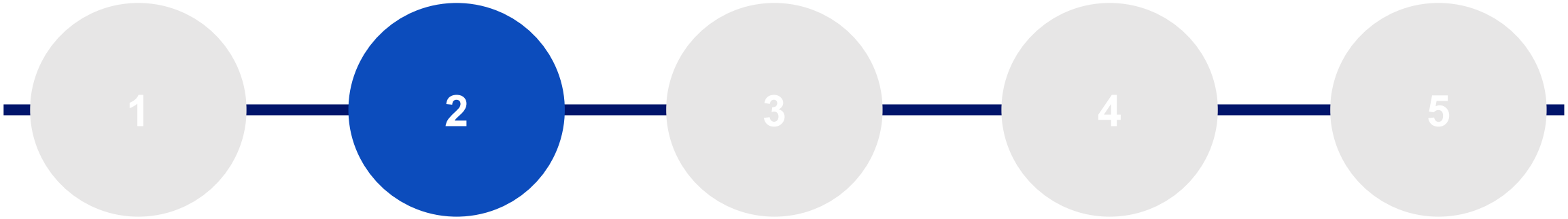
Role-playing excercise

Group presentation

Synthesis

Post-workshop

Roadmap for today



Intro

Role-playing excercise

Participants will join **groups representing each stakeholder**, each anchored by a speaker. Participants will assume different roles within their stakeholder group.

Group presentation

Synthesis

Post-workshop

Role playing.

1 Groups

Participants join one of 3 groups representing each stakeholder: **researchers, publishers, and funders.** Each anchored by a speaker.

2 Personas

Participants assume **different roles** within their stakeholder group (e.g. in the Researcher group: an enthusiastic early career researcher supporting Open Science versus a senior professor denying the importance of publishing negative and null results).

Role playing.

3 Discussion

Potential discussion points:

- What was/were the key barrier(s) highlighted by the speaker?
- What is one potential solution?
- What are the challenges to implementing this solution? E.g. cost, behavioural change, infrastructure
- What are the concrete steps that we could take towards implementing this solution?

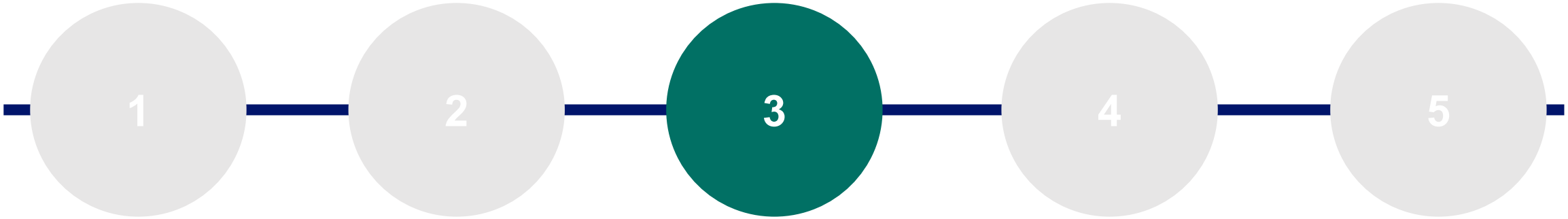
.

4 Preparation for presentation

Three **5-minute presentations** from each group on the key priorities for each organisation/entity.
The presentations **should cover**:

- The specific barrier to publishing null/negative results that is the target of this intervention
- The proposed recommendations, including potential blockers
  The next steps in implementation.

Roadmap for today



Intro

Role-playing excercise

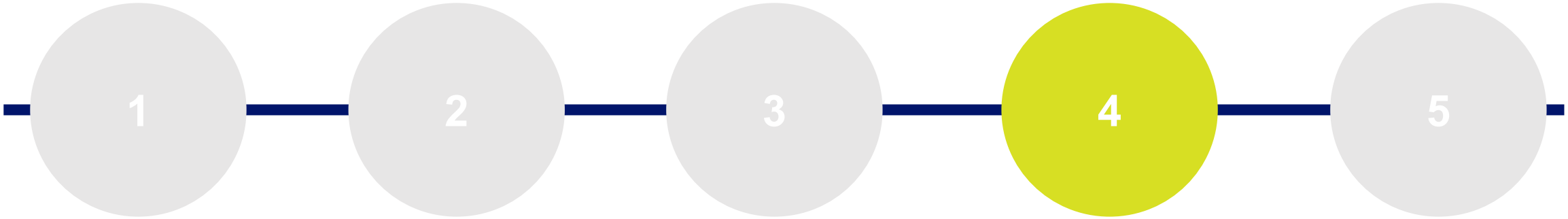
Group presentation

Three 5-minute presentations from each group on the key priorities for each organisation/entity.

Synthesis

Post-workshop

Roadmap for today



Intro

Role-playing excercise

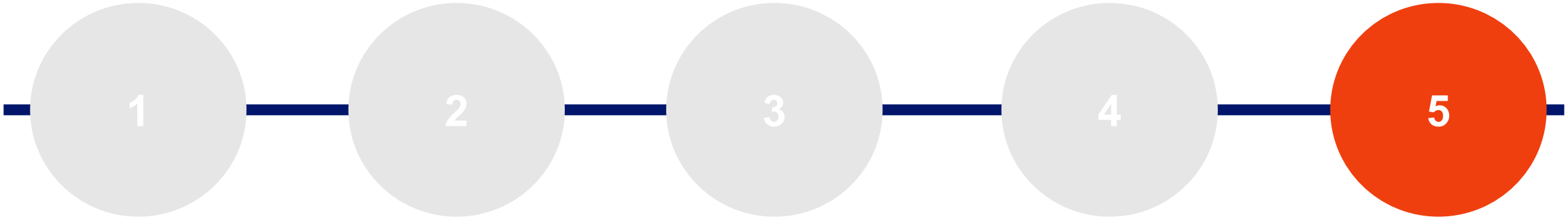
Group presentation

Synthesis

Moderator **synthesises** these ideas and leads a **group discussion** of the strengths and weaknesses of various approaches.

Post-workshop

Roadmap for today



Intro

Role-playing excercise

Group presentation

Synthesis

Post-workshop

Participants will receive a **follow-up handout** that summarizes the recommendations by the stakeholder group and outlines suggested next steps for promoting the importance of sharing negative and null results.

Negative/null is beautiful?:

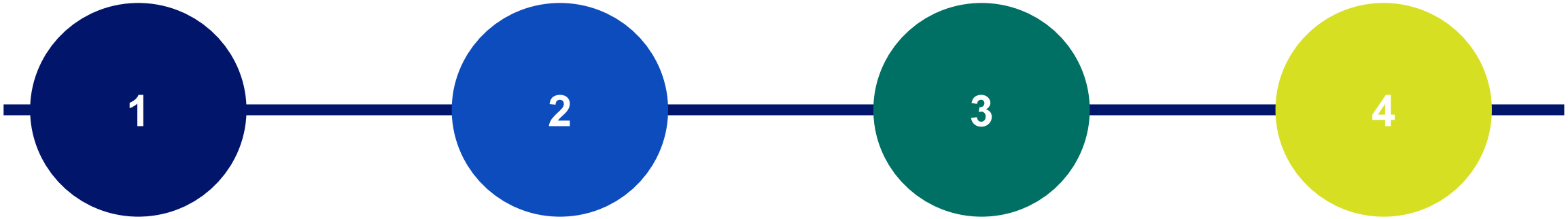
Researchers attitudes towards sharing “non-significant” results.

Munin Conference, Tromso 2025
Dr. Agata Morka, Regional Director, Publishing Development, Europe, PLOS

We won’t share!

Research shows a gap between researchers’ positive attitudes toward sharing negative and null results in theory and their actual practice of sharing them.

The prevalence and importance of null results



Occurence

53% of researchers have run **at least one project** that produced mostly or solely null results.

Importance

98% recognise the benefits of sharing null results.

Better quality

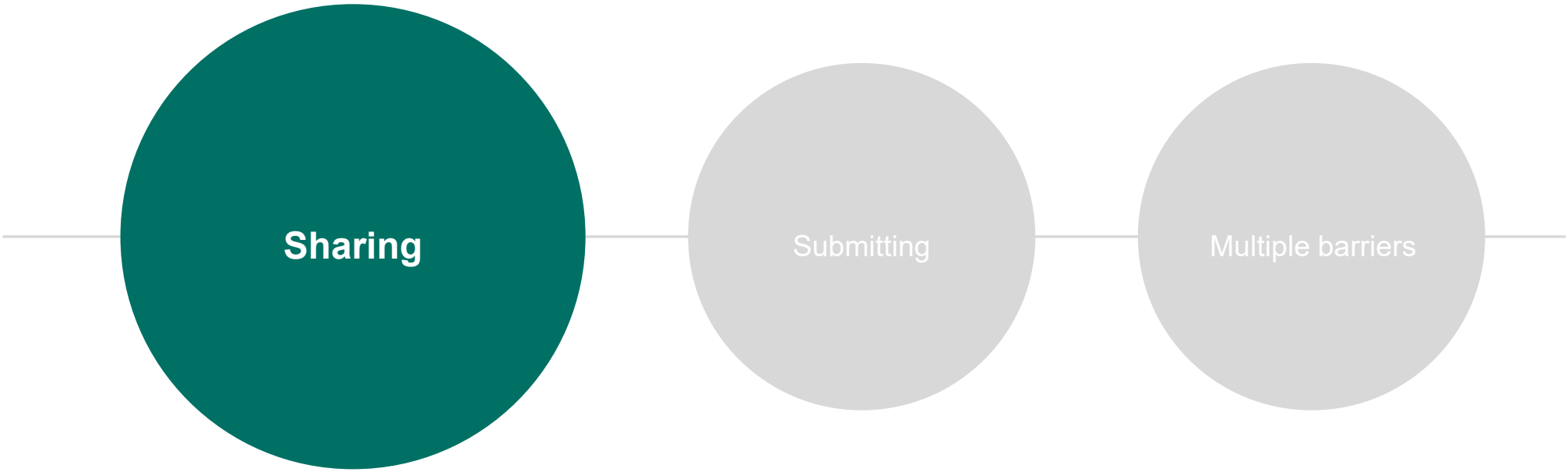
88% agree that sharing null results improves the quality of subsequent research.

Positive outcomes

72% reported positive outcomes from publishing a null result, and 68% had used null results shared by others to refine their own work. The main benefits were informing new hypotheses (39%); adapting methods (34%) and inspiring future research (33%).

Source: Springer Nature — The State of Null Results (2025), a survey of 11.000 researchers

Challenges and barriers to publishing null results

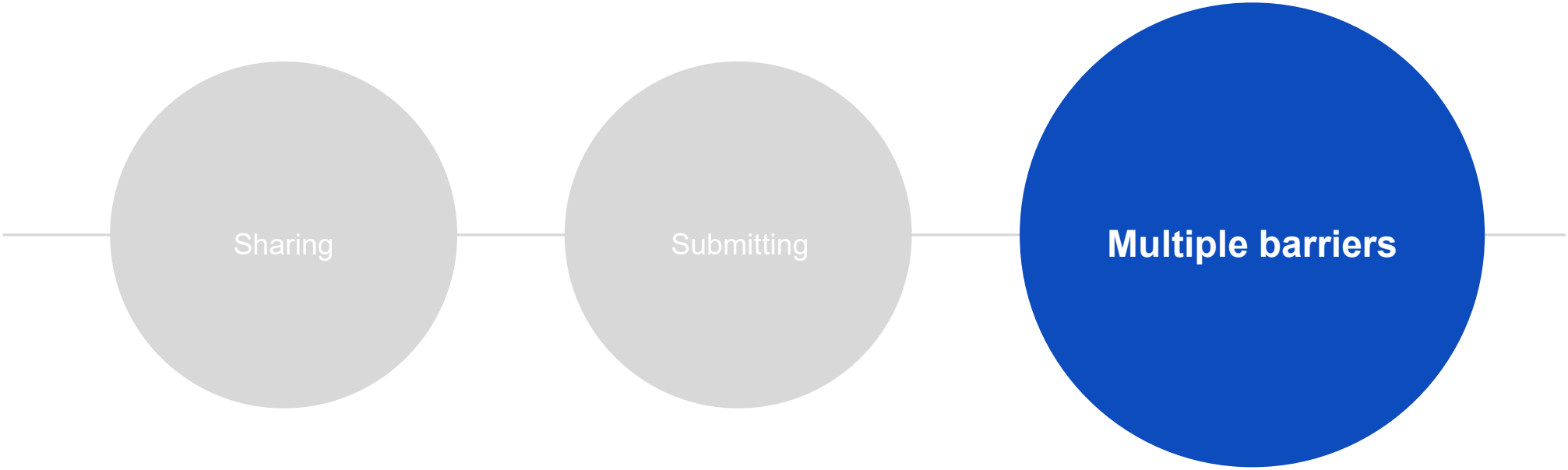


Only **68%** of those who have generated null results have shared them in some form.

Challenges and barriers to publishing null results

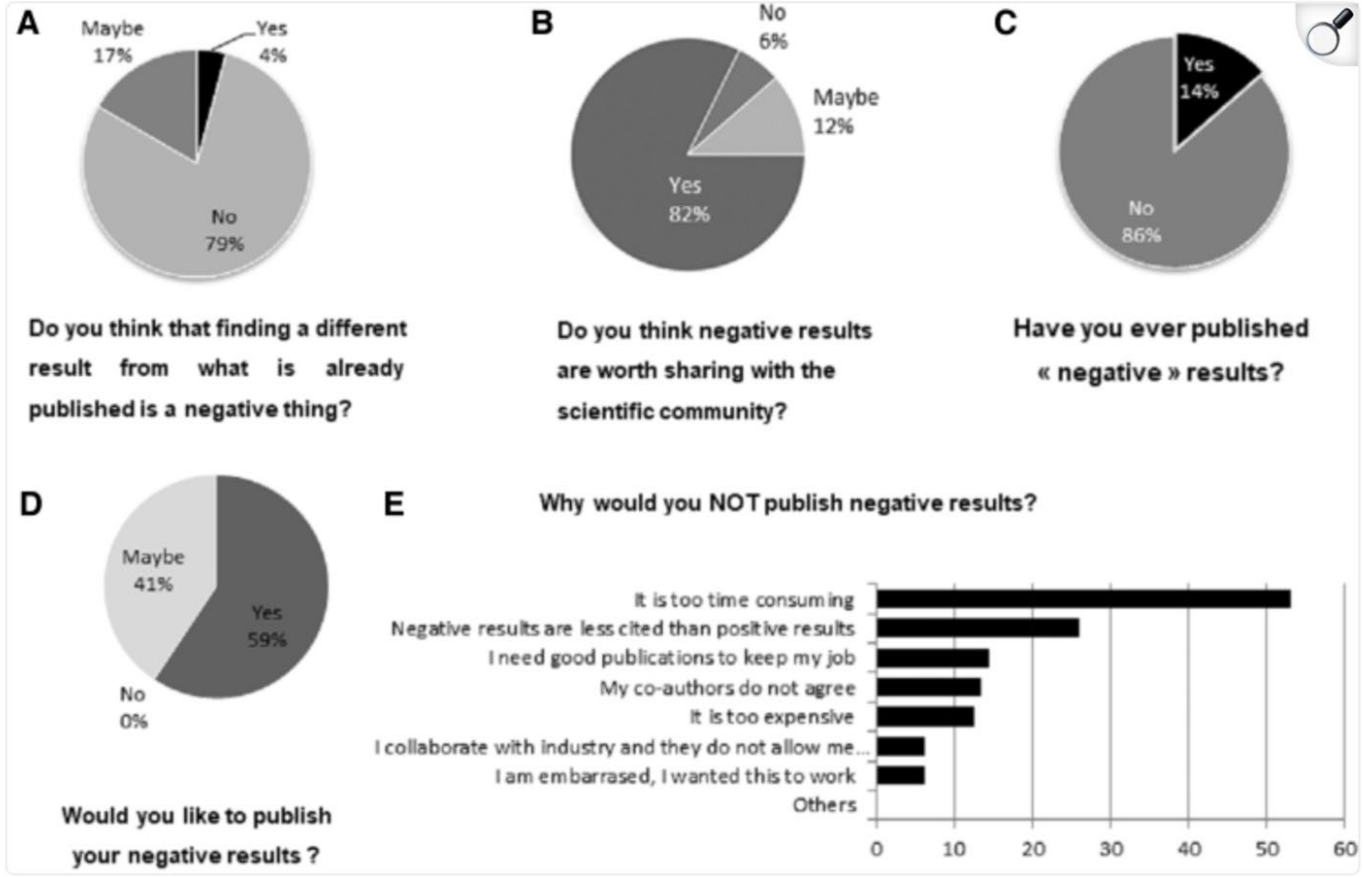
Only **30%** submitted null results to a journal.

Challenges and barriers to publishing null results



- Lack of clarity on where to publish
- Low likelihood of journal acceptance
- Lack of support

Researcher's Perceptions on Publishing “Negative” Results



96 responses, 18 European countries

Researchers: (more than 7 years after completing a PhD, 57/96), young PhD researchers (26/96), and predoctoral researchers (13/96).
Research fields: mainly biology/biomedicine disciplines (72/96). The remaining researchers (24/96) belonged to wide academic backgrounds: chemistry, clinical medicine, chemical biology, computer science and rehabilitation, drug delivery, engineering, gene and cell therapy, genetics, public health, toxicology, and veterinary.

Source: Echevarría et al., “Researcher's Perceptions on Publishing ‘Negative’ Results” (2021, PMC)

“You are not a bad researcher if you fail”

Computer Science

Ella Peltonen at the **University of Oulu in Finland:** the study of how computer systems are integrated into physical surroundings and everyday life.

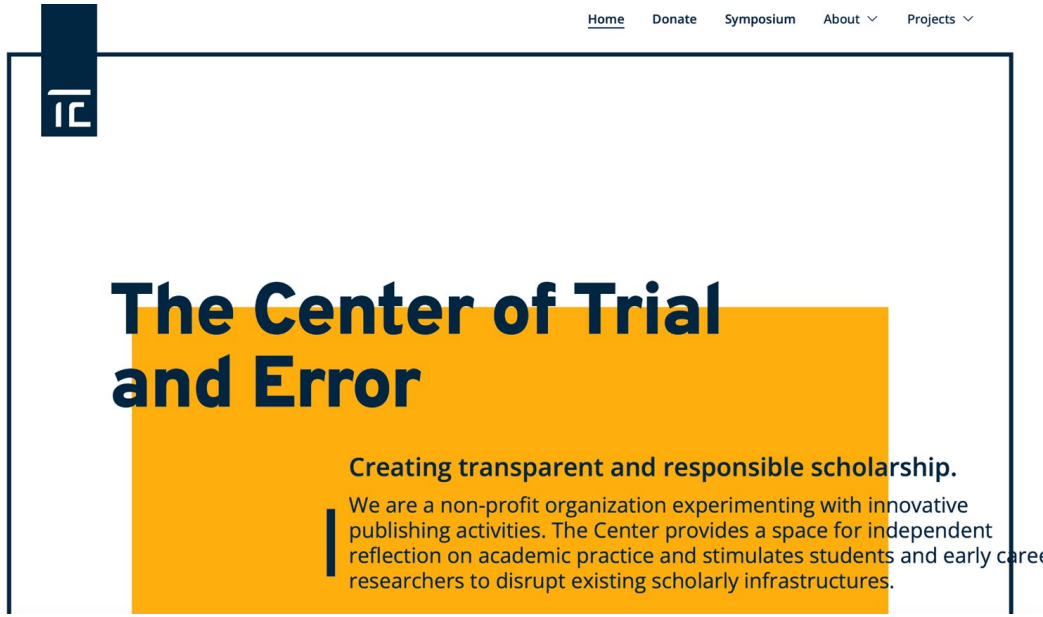
- Four years into the project researchers realized that to avoid the repetition of mistakes, there was a need to discuss the practical problems with studies and failed results that don’t get published.
- In 2022, Peltonen and her colleagues held the first virtual International Workshop on Negative Results in Pervasive Computing (PerFail), in conjunction with the field’s annual conference, the International Conference on Pervasive Computing and Communications. **PerFail** speakers first present their negative results and then have the same amount of time for discussion afterwards, during which participants tease out how failed studies can inform future work.
- Now an annual event, the organizers invite students to attend so they can see that failure is a part of research.

Source: Brazil, R, *Illuminating ‘the ugly side of science’: fresh incentives for reporting negative results*, 2024

“People are afraid that this will look negative on their CV”.

Stefan Gaillard, a science-studies PhD student at **Radboud University in Nijmegen, the Netherlands**

- Co-founded the Journal of Trial & Error after attending talks on how science can be made more open. Everyone whom they approached liked the idea of the journal, nobody wanted to submit articles at first.
- The founding editorial team embarked on a cold calls campaign and soliciting at open-science conferences.
- Most years the journal publishes one issue of about 8–14 articles, with more special issues. Focuses mainly on the life sciences and data-based social sciences.



Source: Brazil, R, *Illuminating ‘the ugly side of science’: fresh incentives for reporting negative results*, 2024

Thank you

amorka@plos.org