Universiteit Utrecht

17 april 2026

Workshop preregistration (and the Open Science movement)

ICO Graduate Spring School 2026

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Utrecht University

Workshop set-up

Part 1: Background

- What is a preregistration?
- Why preregister your research?

Part 2: Assignments

- How and where to preregister?
- Reporting about a preregistration in your paper

What is a preregistration?

But what if I want to…

- Measure additional variables that can later be selected as covariates, independent variables, mediators, or moderators
- Check whether I have already obtained a statistically significant effect after having collected part of the data
- Choose which analysis to report based on whether it resulted in a statistically significant effect or not
- Change or add one or more hypotheses in my introduction based on my results

Wicherts et al. (2016). Degrees of freedom in planning, running, analyzing, and reporting psychological studies: A checklist to avoid p-hacking. *Frontiers in Psychology*, *7*, 222767. https://doi.org/10.3389/fpsyg.2016.01832

Avoid p-hacking?

- When p-value < .05
- This 5% chance of false-positives only holds under assumption of ***planned analyses***
- **Note:** *exploratory analyses* are not necessarily problematic, but should be distinguished from *confirmatory analyses*

Table 1. Likelihood of Obtaining a False-Positive Result

	Significance level		
Researcher degrees of freedom	$p < .1$	$p < .05$	$p < .01$
Situation A: two dependent variables ($r = .50$)	17.8%	9.5%	2.2%
Situation B: addition of 10 more observations per cell	14.5%	7.7%	1.6%
Situation C: controlling for gender or interaction of gender with treatment	21.6%	11.7%	2.7%
Situation D: dropping (or not dropping) one of three conditions	23.2%	12.6%	2.8%
Combine Situations A and B	26.0%	14.4%	3.3%
Combine Situations A, B, and C	50.9%	30.9%	8.4%
Combine Situations A, B, C, and D	81.5%	60.7%	21.5%

Simmons, J. P., Nelson, L. D., & Simonsohn, U. (2011). False-positive psychology: Undisclosed flexibility in data collection and analysis allows presenting anything as significant. *Psychological Science, 22*(11), 1359-1366.

Avoid p-hacking?

Estimating the reproducibility of psychological science

Open Science Collaboration*†

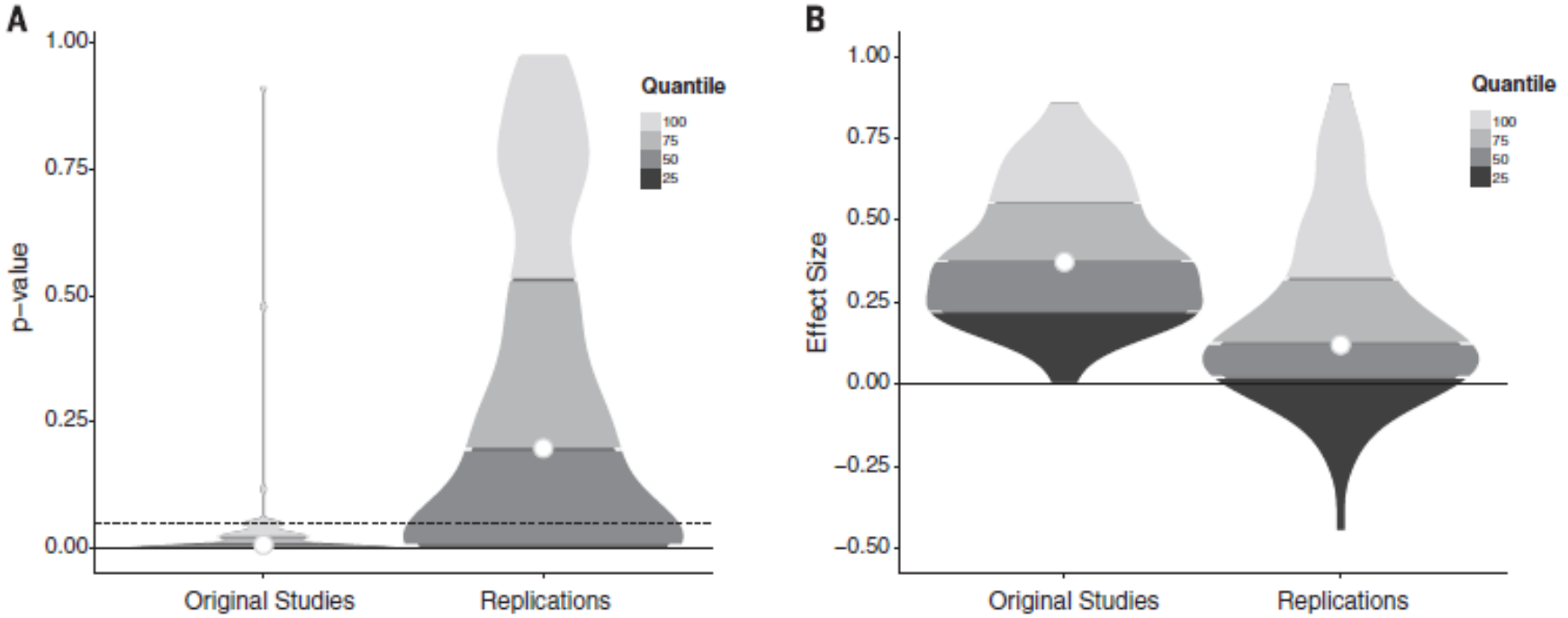


Fig. 1. Density plots of original and replication *P* values and effect sizes. (**A**) *P* values. (**B**) Effect sizes (correlation coefficients). Lowest quantiles for *P* values are not visible because they are clustered near zero.

What about the educational sciences?

- Analysis of 190 large-scale RCTs with rigorous designs
- Much smaller effect sizes than researchers expected based on in the educational literature

Lortie-Forgues, H., & Inglis, M. (2019). Rigorous large-scale educational RCTs are often uninformative: Should we be concerned? *Educational Researcher*, *48*(3), 158-166. https://doi.org/10.3102/0013189X19832850

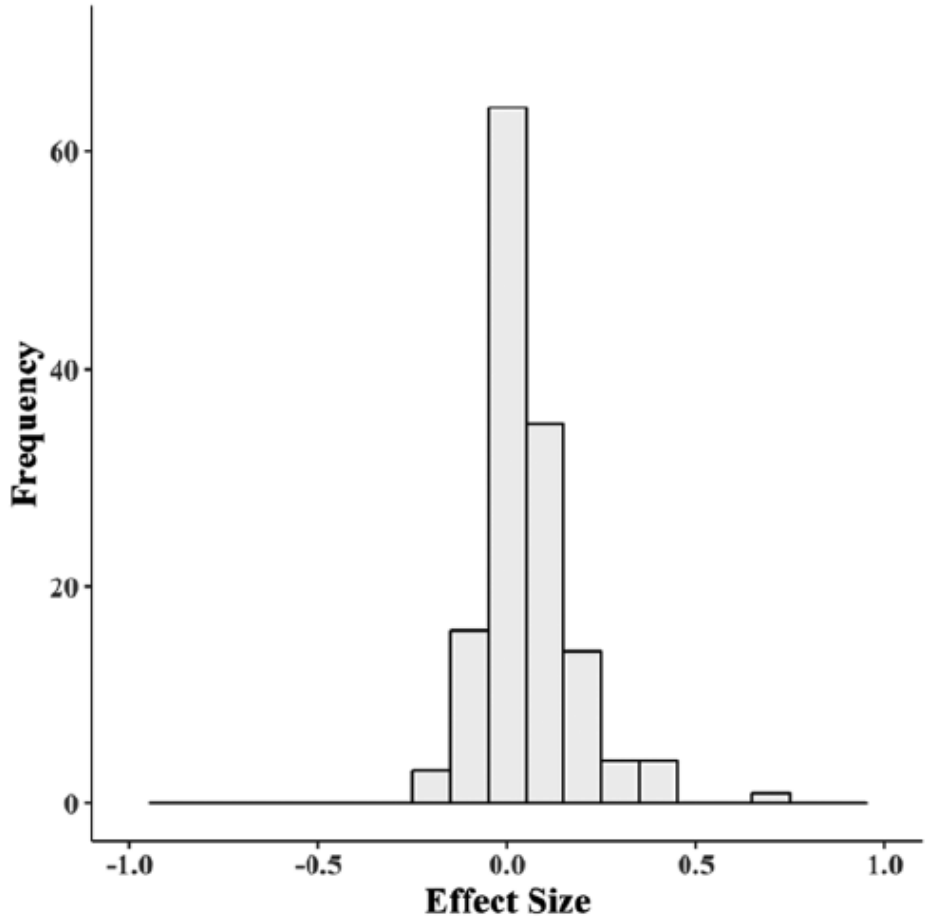


FIGURE 1. *The distribution of effect sizes from the 141 trials commissioned by the Education Endowment Foundation and National Center for Educational Evaluation and Regional Assistance.*

What is going on?

Reviewers and editors

- Bias against null findings
- Bias against replication studies

Researchers

- Lack of transparency
- Questionable research practices

Questionable research practices

Among researchers in the Netherlands

RESEARCH ARTICLE

Prevalence of questionable research practices, research misconduct and their potential explanatory factors: A survey among academic researchers in The Netherlands

Gowri Gopalakrishna[1]*, Gerben ter Riet[2], Gerko Vink[3‡], Ineke Stoop[4‡], Jelte M. Wicherts[5], Lex M. Bouter[1,6]

"We find that over the last three years one in two researchers engaged frequently in at least one QRP, while one in twelve reported having falsified or fabricated their research at least once"

Preregistration as a solution

- To reduce questionable research practices and improve reproducibility

Preregistration

Publicly sharing a research proposal with timestamp

Registered report

Submitting this to a journal

What about qualitative research?

Reasons to not preregister:

- No testing of predefined hypotheses
- Flexibility in design
- Inherent subjectivity

Rebuttal:

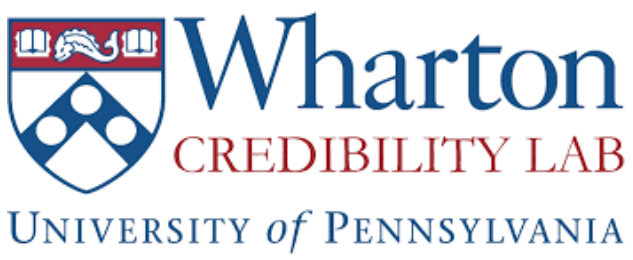
- Increasing transparency about study design and plan
- A living document to track the development of the study

Haven, T. L., & van Grootel, D. L. (2019). Preregistering qualitative research. *Accountability in research, 26*(3), 229-244.

How and where to preregister?

- **Open Science Framework (OSF)**
- https://osf.io/

- **As Predicted**
- https://aspredicted.org/



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Part 2: Assignments

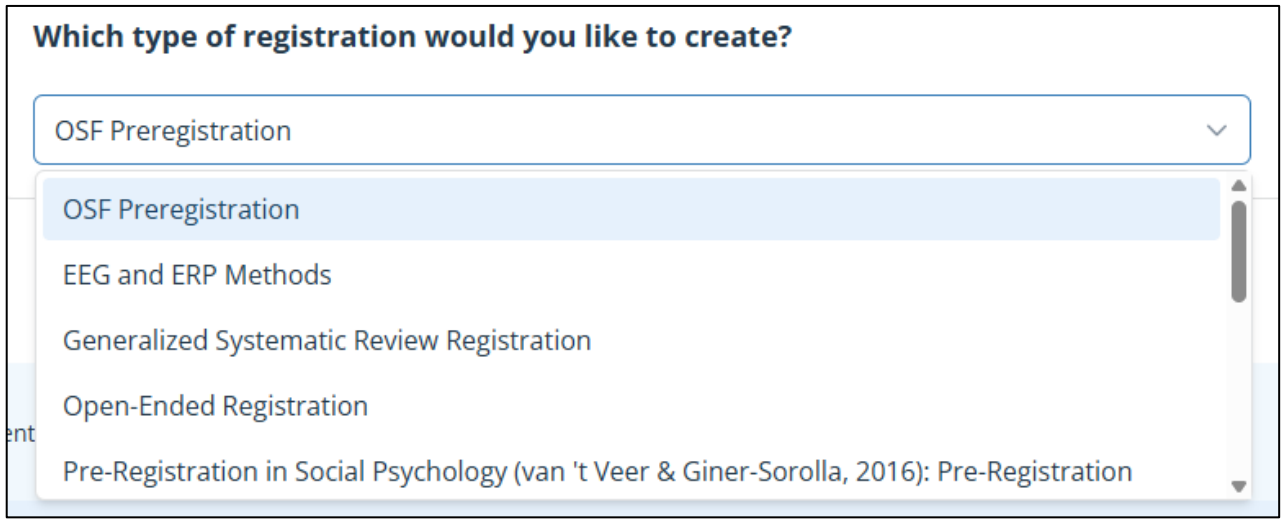
Assignment 1: Comparing templates

Have a look at four templates:

1. OSF Preregistration
2. Open-ended registration
3. Template from AsPredicted.org
4. Qualitative preregistration (developed by Haven & van Grootel)

Discuss in groups:

1. How do these templates differ? Extensiveness, design aspects specified, suitability for your own research.



Assignment 2: Examples of preregistrations

- **Example 1:** Repeated retrieval practice to foster retention and transfer of students' critical thinking skills (https://osf.io/3smbe/)
- **Example 2:** Comparing fourth graders' understanding of texts and videos in terms of cognitive processes and comprehension outcomes (https://osf.io/zxn9j)
- **Example 3:** Digital stress and coping by smartphones: A qualitative research (https://osf.io/k37cr/)

Assignment 3: Reporting in your paper

- **Example 1:** van Peppen, L. M., Verkoeijen, P. P., Heijltjes, A., Janssen, E., & van Gog, T. (2021). Repeated retrieval practice to foster students' critical thinking skills. *Collabra: Psychology, 7*(1), 28881. https://doi.org/10.1525/collabra.28881

- **Example 2:** van Zeijts, B. E. J., Ganushchak, L. Y., Tabbers, H. K., Hickendorff, M., & de Koning, B. B. (2025). Children's comprehension processes and outcomes across different media formats: A think-aloud study comparing expository texts and videos. *Discourse Processes, 62*(10), 744-764. https://doi.org/10.1080/0163853X.2025.2522639

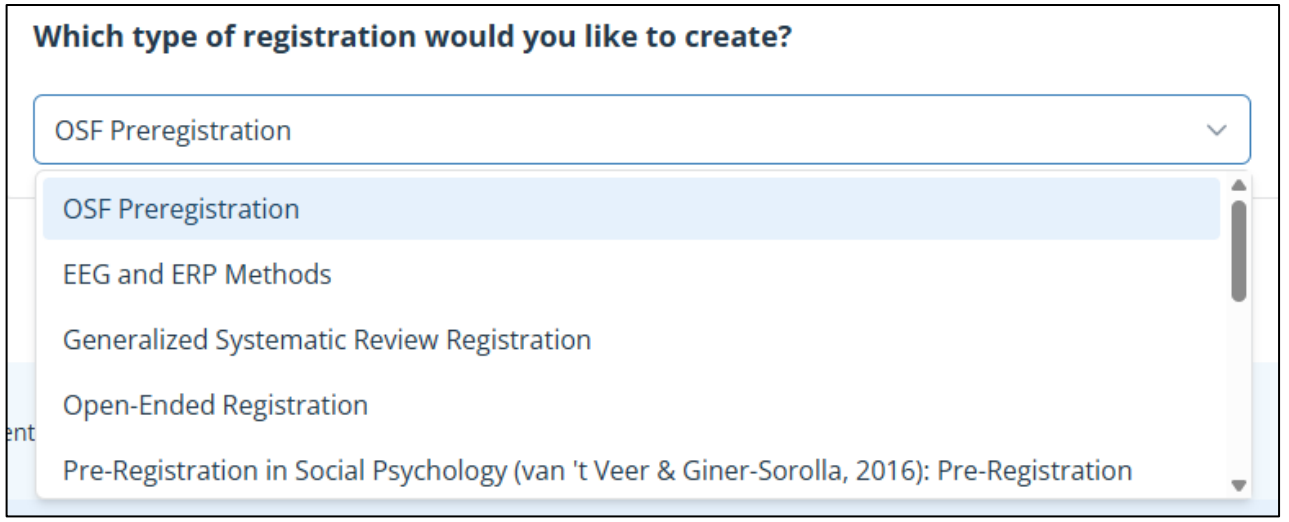
- **Example 3:** Huang, S., Lai, X., Ke, L., Qin, X., Yan, J. J., Xie, Y., ... & Wang, Y. (2022). Smartphone stress: Concept, structure, and development of measurement among adolescents. *Cyberpsychology: Journal of Psychosocial Research on Cyberspace, 16*(5). https://doi.org/10.5817/CP2022-5-1

Discuss in groups:

- Where and how is the preregistration mentioned?
- Do they report deviations from the preregistration?

Assignment 4: Work on your own preregistration

OSF



Support

OSF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Sharing science,
shaping tomorrow