title: Methods for Reliable, Transparent, and Open Science
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Methods for Reliable, Transparent, and Open Science

Week 1: Overview (Rouder)

- **In class** — Jeff Rouder, *Teaching Open Science.* Available here.
- **In class** — Brene Brown, *The power of vulnerability.* Available here.
- **Watch after class** — Brene Brown, *Why your critics aren't the ones who count.* Available here.
- **Write** (due next week) — *Reflections on vulnerability and self-compassion.* — This is for you. You can write as much or as little as you want. It is your chance to reflect as you wish. This assignment is not graded; it is not even evaluated. I am grateful for your consideration.

Week 2: What Went Wrong: Learning From other people's Mistakes (Vandekerckhove)

Mistakes. Mistakes. We review how people fool themselves, and addressing these mistakes motivates much of the rest of the course!

- **Read** — Stephanie Lee (on Brian Wansink), Here's how a controversial study about kids and cookies turned out to be wrong — and wrong again. *Buzzfeed.* Available here.
- **Read** — Victoria Stern (on Brad Bushman), Dispute over shooter video games may kill recent paper. *Retraction Watch.* Available here.
  Updated: Ohio State revokes PhD of co-author of now-retracted paper on shooter video games. *Retraction Watch.* Available here.
- **Read** — Yudhijit Bhattacharjee (on Diederik Stapel), The mind of a con man. *New York Times.* Available here.
- **Read** — Wicherts, J., Borsboom, D., Kats, J., & Molenaar, D. (2006). The poor availability of psychological research data for reanalysis. *American Psychologist, 61(7),* 726-728. Available here.
- **Read** — Sutcliffe, K. M. (2011). High reliability organizations. *Best Practice & Research Clinical Anaesthesiology, 25(2),* 133-144. Available here.
- **Write** (due next week) — *My high reliability lab.* — Each lab has practices that fall under the umbrella "highly reliable organizations." Write a well-organized and formatted document about how some of the practices in your lab meet the principles and how they do not. 500 words max.

Week 3. Preregistration and Open Science (Vandekerckhove)

There are many little decisions that people must make in performing research. These decisions are often made quickly, sometimes without much thought, and sometimes without awareness that a decision has been made. To the extent that these little decisions tend to go in a preferred direction, they may be thought of as subtle biases. Preregistration helps bring these decisions into the light where they may be critically examined. In-class discussion will focus on the limitations of preregistration. Is it ever not useful? Is it ever not possible? Is it ever damaging?

- **Bring** — Details of your next experiment (or of a past one; IRB applications encouraged!).
- **Discuss** — Chambers, C., Munafo, M., et al. (2013). Trust in science would be improved by study pre-registration. *The Guardian.* Available here.
- **Discuss** — Wagenmakers, E.-J., Wetzels, R., Borsboom, D., van der Maas, H.L.J., & Kievit, R.A. (2012). An agenda for purely confirmatory research. *Perspectives on Psychological Science 7(6),* 632–638. Available here.
- **Discuss** — Vandekerckhove, J., & Wagenmakers, E.-J. (2016). C. S. Peirce on the Crisis of Confidence and the "No More Bets" Heuristic. *The Winnower, 4843.* Available here.
- **Discuss** — Nosek, B. A., Ebersole, C. R., DeHaven, A. C., & Mellor, D. T. (2017). *The Preregistration Revolution.* Available here.
- **Read** — Corker, K. (2016). *So you want to pre-register a study.* Available here.
- **Read** — *The Preregistration Challenge.* Available here.
- **Read** — Soderberg, C. K. (2018), Using OSF to share data: A step-by-step guide. *Advances in Methods and Practices in Psychological Science*. Available here.
- **Write** (due next week) — *Look I did a thing.* — Prepare a preregistration on OSF and share it with the class (you don't need to make it public or lock it down).

Week 4. Expanding The Document (Vandekerckhove)

The traditional document has been thought of as output. We find that sometimes people do not write what they do. Here we stress the concept of a document as a process. Documents are executed much like a program, and when they are, data are pulled, analyses are performed, graphs are drawn, tables are tabulated, and equations are typeset. The process of all these things is encoded in the document.

Week 5. Versioning: git push (Rouder)

Every lab encounters the clutter of having multiple, evolving versions of work products. How do you deal with versioning? We present different version strategies including the gold standard — git.

Week 6. Working With Collaborators (Vandekerckhove)

Working with collaborators is hard because they change our awesome text. How do you work constructively, productively, and mistake free with people you kind of resent having to talk to?

Week 7. Computational Lab Skills: Linux/SQL/Python/Bash (Vandekerckhove)

Computers don't make mistakes; people do. So never ask a person to do a dumb, repetitive task when a computer can do it better! This lecture is about working with scripts to automate tasks.

Weeks 8–9. Relational Databases (Rouder)

In these two weeks, we study perhaps the most useful technology for organizing a lab, relational databases.

Week 10: Hack a Lab! (Rouder)