ReproducibiliTea Reading List on Preregistration

Preregistration is one of the new reforms to scientific research from the Open Science movement in response to the reproducibility crisis. These ten papers were selected to provide an introduction to preregistration. They are separated by themes that your journal club may choose to explore in further detail in following meetings! We have also provided a summary, keywords and additional online resources to help inform your discussions.

Order	Block	Paper	Summary	Keywords	Resources
1	**The issues at hand**	Vazire, S., & Holcombe, A. O. (2020). Where are the self-correcting mechanisms in science?. Review of General Psychology, 10892680211033912. https://doi.org/10.1177/10892680211033912	**Self-correction in science.** This review of the current mechanisms in science, such as journal-based peer review and institutional committees, finds they have been inadequate for self-correction. The authors advocate for transparency, such as that via preregistration, to promote scientific credibility.	self-correction, transparency	Talk by Simine Vazire on "Where are the self-correcting mechanisms in science?" for the University of Sydney: https://www.youtube.com/watch?v=Qderf_OQqQU
2		Fanelli, D. (2012). Negative results are disappearing from most disciplines and countries. Scientometrics, 90(3), 891-904. https://doi.org/10.1007/s11192-011-0494-7	**The loss of negative data.** Competitive pressures to publish frequently may have produced enduring changes in scientific content, one of which could be the loss of negative data. This paper shows the proportion of positive results has increased since 1990 towards 90%, more rapidly in the social sciences and psychology.	bibliometrics, publication bias, incentives	A talk by Ulrich Dirnagl on the scientific ritual of significance testing for eLife: https://youtu.be/TCH5_JKXNac
3	**What is preregistration?**	Nosek, B. A., Ebersole, C. R., DeHaven, A. C., & Mellor, D. T. (2018). The preregistration revolution. Proceedings of the National Academy of Sciences, 115(11), 2600-2606. https://doi.org/10.1073/pnas.1708274114	**Preventing biases in reasoning.** Preregistration distinguishes between predictions and postdictions (post-hoc explanations), which can be often confused due to biases in reasoning. The authors also alleviate numerous perceived challenges to doing preregistrations with clear examples.	prediction, inference, hypothesis testing	Webinar by Brian Nosek on the practice of preregistration and how it increases rigor of research: https://youtu.be/PboPpcg6ik4
4		P Simmons, J., D Nelson, L., & Simonsohn, U. (2021). Pre-registration: why and how. Journal of Consumer Psychology, 31(1), 151-162. https://doi.org/10.1002/jcpy.1207	**Best practices with preregistration.** An overall guide on why to preregister that also addresses common concerns with preregistration, and the best practices to writing 'good' answers to preregistration questions with many examples.	how-to, barriers and challenges	A practical guide by Alex DeHaven and Sara Bowman from the Center of Open Science on preregistration with the Open Science Framework registry https://www.youtube.com/watch?v=8QK2-udwoK8
5	**Why do a preregistration?**	Szollosi, A., Kellen, D., Navarro, D., Shiffrin, R., van Rooij, I., Van Zandt, T., & Donkin, C. (2019). Is preregistration worthwhile?. https://doi.org/10.1016/j.tics.2019.11.009	**Preregistration does not lead to better theories.** A challenge to whether preregistration improves theory development or inferences. Preregistration will do little to improve theories if the mapping of statistical models to underlying theories is weak, and it is unclear why preregistration will aid the development of better theories	theory development, inference	A talk by Chris Donkin on whether "Is preregistration worthwhile?" for the University of Melbourne https://youtu.be/ThcGiZFg0O0
6		Nosek, B. A., Beck, E. D., Campbell, L., Flake, J. K., Hardwicke, T. E., Mellor, D. T., ... & Vazire, S. (2019). Preregistration is hard, and worthwhile. Trends in cognitive sciences, 23(10), 815-818. https://doi.org/10.1016/j.tics.2019.07.009	**The attitudes towards preregistration.** Preregistration is a skill that promotes intellectual humility and encourages the calibration of confidence in scientific claims. To maximize the credibility of findings, one should clarify confirmatory and exploratory findings, transparently report deviations from the preregistration and provide identification of error.	transparency, approach to preregistration	A RIOT Science Club talk by Agata Bochynska on the benefits, challenges and practical tips to preregistration: https://www.youtube.com/watch?v=SqF6fQhPURY&ab_channel=RIOTScienceClub
7		Hardwicke, T. E., & Wagenmakers, E. J. (2021). Preregistration: A pragmatic tool to reduce bias and calibrate confidence in scientific research. https://doi.org/10.31222/osf.io/d7bcu	**The evaluation of preregistrations.** A thorough article that shows how preregistration addresses the issue of analytical flexibility and provides recommendations on how preregistrations should be evaluated and interpreted.	experimenter bias, metaresearch, transparency	An editorial by Eric-Jan Wagenmakers and Gilles Dutilh in the APS observer on Seven Selfish Reasons for Preregistration: https://www.psychologicalscience.org/observer/seven-selfish-reasons-for-preregistration
8	**Registered Reports**	Chambers, C. D., & Tzavella, L. (2021). The past, present and future of Registered Reports. Nature human behaviour, 1-14. https://doi.org/10.1038/s41562-021-01193-7	**The Registered Report.** A detailed overview of the Registered Report, a new publication format where preregistrations are peer reviewed and publication is accepted-in-principle before data is collected. This new format incentivizes research rigor and transparency but has some current limitations in its implementation.	registered reports, publication bias,	A RIOT Science Club talk by Charlotte Pennington on "A new way of publishing: Registered Reports 2.0": https://youtu.be/6tTuKfUutzY
9		Scheel, A. M., Schijen, M. R., & Lakens, D. (2021). An excess of positive results: Comparing the standard Psychology literature with Registered Reports. Advances in Methods and Practices in Psychological Science, 4(2), 25152459211007467. https://doi.org/10.1177/25152459211007467	**Registered Reports reduces inflation of positive results.** The majority of psychology articles in the standard literature (92%) report positive evidence for the first tested hypothesis, but this is an unrealistic representation of the research that is being conducted. Only 43.6% of Registered Reports find support for the first hypothesis, which seems to indicate that the format is addressing publication bias.	registered reports, publication bias, hypothesis testing	A RIOT Science Club talk by Anne Scheel on "The importance of Registered Reports": https://youtu.be/d_gT2GLH1jM
10		Kiyonaga, A., & Scimeca, J. M. (2019). Practical considerations for navigating registered reports. Trends in neurosciences, 42(9), 568-572. https://doi.org/10.1016/j.tins.2019.07.003	**A guide to Registered Reports.** A set of practical recommendations to navigating the Registered Report process: delineating confirmatory hypotheses, determining sufficient statistical power and ensuring reproducibility and replicability.	registered reports, how-to	An article by Christopher Allen and David Mehler on the challenges and benefits for early-career researchers to engage in Open Science: https://doi.org/10.1371/journal.pbio.3000246