Why does preregistration increase the persuasiveness of evidence? A Bayesian rationalization.

Abstract

Preregistration is becoming increasingly popular in the psychological sciences as a response to the reproducibility crisis. At the same time, many researchers struggle to translate their theories into precise predictions and may feel overwhelmed by the need to prespecify every minitous detail of their analysis plan. Should they surrender and discard the idea of preregistration altogether? Not at all. We argue for the utility of preregistration beyond strictly confirmatory studies. From a perspective of Bayesian philosophy of science, we define a formal objective for preregistration that neither declares posthoc changes to a preregistration to be sinful nor punishes rigour. This objective rests on the relevence of "theoretical risk" (Meehl, 1978), which is a generalization of type-I error rate, for judging the evidential support for theories. A common view is that preregistration is supposed to limit the type-I error rate by committing to a specific data analysis plan before data are collected. In our view, the purpose of preregistration is to reduce the uncertainty in judging the theoretical risk of a given study. We argue that this perspective provides a principled justification for preregistration, extends its utility, and is more closely aligned with researchers' intuition about evidential support. The more we know about how researchers arrived at their findings, the smaller our uncertainty about the theoretical risk they accepted, and the more pursuasive is the researchers' evidence. Preregistrations effectively reduce uncertainty about theorethical risk, which increases the persuasiveness of evidence, and hence are warranted for any empierical study.

Test PR Preview

Meehl, P. E. (1978). Theoretical risks and tabular asterisks: Sir Karl, Sir Ronald, and the slow progress of soft psychology. *Journal of Consulting and Clinical Psychology*, *46*(4), 806–834. https://doi.org/10.1037/0022-006X.46.4.806