

Talk: Towards a more efficient and reliable psychological science

[Daniel Lakens](#), Eindhoven University of Technology

June 15, 2017, 18:00

Abstract: In psychology, recent concerns about the reliability of published findings has led to the realization that research practices can be improved. In times where science funding is under pressure, and more reliable data often means *more* data, an important question is how reliable knowledge be generated as efficiently as possible, while taking both statistical and non-statistical aspects of the empirical cycle into account, such as the resources researchers have available, and goals they pursue. In this presentation I will talk about why high power is important both when the goal is to show the presence, as the absence, of a meaningful effect. I will explain why current practices to use effect sizes in the literature or from the literature are flawed and inherently biased, and suggest superior approaches to designing studies, for example by using sequential analyses.



Workshop: Some simple improvements to how we do science.

[Daniel Lakens](#), Eindhoven University of Technology

June 16, 2017 9:00-17:00

Abstract: In the morning of this workshop we will briefly discuss different goals of statistical inferences, and then focus on the question how you can falsify your hypotheses. In a group exercise you will be asked to think about your own research, and work out in detail how you can falsify hypotheses you have been working on. Subsequently, we will review different ways in which we might statistically examine the absence of an effect from Frequentist and Bayesian perspectives. In the afternoon, we will consider how we can justify the sample size in studies that we design. Sample size justification is becoming increasingly important in psychological science. We can expect most journals will eventually require researchers to justify the sample sizes in the studies they submit for publication. We will discuss how to determine the sample size you need, from a range of different statistical perspectives and goals you might have. We



will discuss meta-analytic thinking, including the basics of meta-analysis, how to identify bias in the scientific literature, and how we can prevent contributing to a biased literature.

Requirements

An initial understanding of statistics (undergraduate level) will be necessary to get the most out of the course, it's probably helpful to also attend Anne Scheel's workshop. Participants should bring their own laptops.

On their laptops, they should have current versions of R and R studio installed. Furthermore, they will need internet access to install packages (set up eduroam before coming). Finally, a request:

Bring an *empirical* article that you have, or plan to, build on in a future study. The article should test a hypothesis. Before the workshop, please find the *best* description of the hypothesis the authors test in the article. Highlight the hypothesis. During the workshop, we will analyze the hypothesis by the authors, and on the afternoon of the first day, we will think about how we can *falsify* this hypothesis. In addition, highlight the statistical test the authors performed, and the results, that tested this hypothesis. Although it is not necessary, it might be easy to print out the page (or pages) that contains the description of the hypothesis the authors test, and the results.