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Vienna Doctoral School
in Cognition, Behavior and Neuroscience

Using Monte Carlo simulation for power analysis in R

Vienna Doctoral Schools

Tamás Nagy, 05.04.2022, 9:00-17:00, University of Vienna, format and location t.b.a. In Kooperation with ECR.

Statistical power is an increasingly important topic in times when the credibility of a field is questioned by failed replications. Power is directly related to the number of observations, therefore it is used to estimate the required sample size for a study. An increasing number of grant agencies and scientific journals now require that authors disclose an estimate of sample size based on power analysis in their proposal or manuscript. Moreover, the target sample size has to be included in the pre-registration, which is highly recommended (or sometimes compulsory) for any research. Consequently, power calculation is becoming a must-have skill for researchers in intervention studies.

Power analysis is possible through dedicated software, however, these are often not flexible enough to cover complex study designs and analytical approaches. On the other hand, Monte Carlo simulation is an adjustable approach that makes it possible to calculate a priori power for any study design. Besides learning the required sample size, using MC simulation also has some collateral advantages, such as making the data collection and analytical plans more meticulous. In the workshop, we will cover the logic of power calculation and build a Monte Carlo simulation to accommodate study designs from simple group comparisons to intricate multi-level designs.

We will use R tidyverse tools that make the code readable and easy to follow. Laptops/computers (with R and RStudio installed) are necessary!

- Open for ECRs of Psychology and all VDS CoBeNe PhD fellows
- Registration open until 28.02.2022 via this form:
- Due to the Covid-19 pandemic the format could be either onsite or virtual

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