Transparent and Reproducible Research with R

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Reproducibility of research findings is critical to the validity of inferences from studies. If an independent evaluator with access to the study data is unable to reproduce the published findings *exactly*, the trustworthiness of the findings are called into question, as highlighted by several prominent examples (e.g., the Duke crisis; see Peng, 2015). Such issues are also essential in a time in which established findings are being called into question (i.e., concerns about the reproducibility of psychological science findings) because of choices made in the course of a research study.

In this training, we provide an overview of reproducibility and open science, and introduce participants to tools that increase the likelihood of reproducible and transparent workflows. We emphasize tools from the R software environment to weave text with analysis code (e.g., R Markdown), version control to document the entire history of a project, and platforms for sharing analysis workflows publicly.

In the first hour of this four-hour training, we introduce participants to the ideas motivating open and reproducible research in educational research. In the second and third hours, we discuss the basics of R Markdown and the various formats to which documents can be rendered. Finally, in the fourth hour, we provide a primer on version control using *GitHub*. Our target audience is early-career scholars as well as researchers at any stage looking for tools to help increase the likelihood of their work being reproducible. The format will include part lecture and part hands-on applied work.

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References

Peng, R. (2015). The reproducibility crisis in science: A statistical counterattack. *Significance*, *12*(3), 30–32.