Contribution ID: **72** Type: **Talk**

Relations – One possible Way out of the Replication Crisis

Thursday, 12 September 2024 16:30 (20 minutes)

In a survey by Nature (Baker, 2016), 52% of respondents from different disciplines stated that there is a significant crisis in the reproducibility of research results. Possible reasons for this include falsification of studies, questionable research practices, insufficient power of studies, lack of statistical literacy, or too simple (correlative) hypotheses for complex empirical phenomena. Often, hypotheses are still made on the basis of correlations (regressions, structural equations, ...), although their methodological weaknesses have long been known (linearity, bidirectional association, pairwise associations).
The new approach of Relation Analysis (RELAN; Maderthaner, 2022), based on Prediction Analysis (Eye, 1991), takes into account all possible interactions between binary variables, so that complex predictive hypotheses can be tested, explored and simulated for up to ten variables. In this way, variable networks (with cause, effect, moderator and mediator variables) can also be statistically evaluated, as hypotheses are multi-functional, multi-causal and contextual.
Evaluation examples show that (1) a relational analysis can provide explanations for uninterpretable data configurations, (2) more complex hypotheses allow a more precise adaptation to empirical phenomena, and (3) successful replication becomes more likely due to often increased statistical power.
Keywords: Statistical method, complex hypotheses testing, propositional logic
Maderthaner, R. (2022). Relationsanalyse (RELAN) – Aussagenlogische, statistische und kausale Analyse von Daten. Springer, Berlin.

Are you currently an Early Career Researcher?

No

Primary author: MADERTHANER, Rainer (University Vienna)

Presenter: MADERTHANER, Rainer (University Vienna)

Session Classification: Talk Session 1

Track Classification: Clinical Psychology and Psychotherapy