

Expected Knowledge of Research Methods & Statistics

Overall Knowledge Base

In order to have a smooth start at the Research Master Clinical and Developmental Psychopathology, students are expected to be able to translate research questions into statistical models, formulate and test hypotheses, justify the selection of appropriate analytical techniques, specify and interpret regression models, evaluate model assumptions and the consequences of their violation, and independently conduct and report statistical analyses using statistical software in accordance with academic standards. Below, this expected knowledge is detailed, followed by suggested readings to update or improve the knowledge on research methods and statistics.

A. Statistical Foundations

1. Understanding of the statistical characteristics of psychological and educational variables, including levels of measurement, measures of central tendency, measures of variability and range, and interpreting statistical information presented in words, numbers, and graphs.
2. Translating psychological and educational research questions into statistical questions and testable hypotheses.
3. Selecting appropriate statistical techniques based on the research question or hypothesis, the measurement level of variables, and the research design.
4. Applying basic statistical techniques and understanding the rationale underlying their use.

B. Regression, ANOVA, and General Linear Model

1. Understanding the principles and being able to conduct and interpret the outcomes of General Linear Model (GLM), including bivariate regression, multiple regression and (factorial) AN(C)OVA.
2. Evaluating the assumptions and the consequences of violations of these assumptions of the above-mentioned models.
3. Developing and executing reproducible analysis plans using regression and ANOVA techniques.
4. Reporting and interpreting the results of statistical analyses in scientific reports.

C. Psychometrics

1. Understanding the theoretical and statistical foundations of psychometrics, including definitions of psychological tests, types of psychological and educational tests, latent variables, and core psychometric concepts and principles.

2. Transforming raw test scores into interpretable scores, including percentile scores, standard scores, and normalized scores.
3. Knowledge of different forms of validity, their conceptual foundations, and being able to conduct methods for evaluating validity (including factor analysis), and methods for communicating and interpreting validity coefficients.
4. Knowledge of different forms of test bias and being able to conduct statistical approaches for detecting bias, including linear and logistic regression techniques.

Suggested reading

To improve knowledge of statistics and research methods, (a selection of) the following books could be studied.

1. Morling, B. (2021). Research Methods in Psychology.
2. Field, A. (2021). Discovering Statistics Using IBM SPSS Statistics (5thEd.). London: Sage. ISBN 978-1-446249185
3. Alan Agresti (& Barbara Finlay) (2014/2018). Statistical Methods For The Social Sciences 5th (or 4th) edition. Pearson Education International.
4. Rebecca M. Warner (2020) Applied Statistics II - International Student Edition THIRD EDITION Multivariable and Multivariate Techniques, ISBN: 9781071807712