

Research design for Experimental Linguists August 19-23, 2019

Recommended literature:

- Eddington, D. (2015). *Statistics for Linguists: A Step-by-Step Guide for Novices*. Cambridge: Cambridge Scholars Publishing. Chapter 5, 6 and 7.

Also recommended to have SPSS installed on your laptop. A 14-day free trial version can be downloaded from www.ibm.com. Plan your trial period in accordance with the course! Datasets from http://linguistics.byu.edu/faculty/eddingtond/Data_Sets/ will be used.

Day 1

Introduction course - Research question – predictions – SPSS lab intro

- How to formulate a proper research question (RQ)
- Importance of validity (why most published research findings are false..)
- SPSS lab: introduction and descriptive statistics

Day 2

Statistical model – Variables – SPSS lab Chi-square test

- What is a statistical model?
- What are variables?
- Categorical and continuous variables.
- SPSS lab: dichotomize continuous variable, Chi-square test

Day 3

Probability – Significance – Hypothesis testing – Power – Effect size

- Using **p**(robability)-values to test hypotheses
- The importance of power and effect size in testing statistical models
- SPSS lab: independent samples t-test, paired samples t-test

Day 4

More t-tests - One-way ANOVA - Power calculations

- T-test extensions
- Power and the t-test
- Testing differences between more than 2 groups: One-way ANOVA.
- SPSS lab: ANOVA plus power calculations with G*Power (free: <http://www.gpower.hhu.de/>)

Day 5

Two-way ANOVA - Correlation and Regression - Power calculations.

- ANOVA with two categorical predictors: Two-way ANOVA
- Correlation and Regression
- SPSS lab: Two-way ANOVA and regression.
- Article: Why most published research findings are false. Ioannidis, J. (2005). Excerpts from this article will be used to initiate discussion about replicability. See also: Estimating the reproducibility of psychological science. Open Science collaboration. *Science* 28 Aug 2015.