

## **Analyzing psycholinguistic data**

Ivan Vankov

Assistant Professor, Department of Cognitive science and psychology, New Bulgarian University, Bulgaria

[i.i.vankov@gmail.com](mailto:i.i.vankov@gmail.com)

### **Lecture 1. The specifics of analyzing psycholinguistic data**

Data obtained in psycholinguistic studies have several specifics. First, the nature of the problems investigated implies that psycholinguistics are interested in establishing effects which generalize both across people and language entities. Second, the designs of psycholinguistic studies, especially in the sub-field of bilingualism, often involve factors which are nested in one another. Third, the stimuli used in psycholinguistic studies are hard to be controlled for. These problems render conventional statistical tools, such Student t-tests and the analysis of variance (ANOVA), inappropriate for analyzing psycholinguistic data. In this talk, I will present the idea of linear mixed models and will show they can be used to address the requirements of psycholinguistic research.

### **Lecture 2. Non-frequentist approaches to statistics**

The frequentist approach to interpreting experimental data have long dominated in the field of the behavioural and social sciences. However it can be shown that frequentists methods often fail to meet specific research goals. Moreover, it has been argued that the theory and the assumptions of frequentist statistics are poorly understood by researchers and therefore often misused. In this talk I will present several alternatives to frequentist statistics - Bayes factors, Bayesian parameter estimation and bootstrapping - and will demonstrate how they can be used in practice.

### **Lecture 3. Avoiding some of the pitfalls in doing empirical research**

There is a growing concern that the research practices in processing and interpreting behavioural and neuroscientific data are compromised. A number of problems have been identified, such as publication bias, p-hacking, forking, selective reporting, HARKing, misusing statistical tools and running underpowered studies. I will go over these issues and will illustrate how alarmingly easy it is for the analysis of data to go wrong. I will present several considerations which may help improving the quality of research output.