

Márton Sóskuthy

Lecturer in Phonetics and Phonology

Department of Language and Linguistic Science, University of York

A statistician's little shop of horrors

There is an increasing sense of anxiety around research practices in science, especially in fields like linguistics whose main focus is on aspects of human behaviour and cognition. Modern empirical science is based on a set of relatively simple principles that are meant to ensure that our results are reliable. While the logical content of these principles is not usually in question, a range of recent papers have shown that the way they are put into practice often leads to serious issues. In a nutshell, objective measures such as p-values do not seem to guard against false conclusions due to systematic biases in the way we conduct and report research. This sometimes leads to absurd (but statistically significant) findings such as brain activity in a dead salmon shown photos of humans, or "chronological rejuvenation" in response to certain songs. More worryingly, it can also make sensible-looking but false hypotheses appear true, which has created a situation where a shockingly large proportion of research findings is not replicable (in some fields this proportion is likely close to about two thirds of all findings).

In this talk I will present a summary of a range of problems in empirical science, such as multiple comparisons, unspecified researcher degrees of freedom, small effect sizes and the file drawer effect. I will illustrate these principles using examples from linguistic research. Though the talk will not offer a one-size-fits-all solution to these problems, I will argue that a statistically informed and cautious approach to research can greatly alleviate them.

Cecile de Cat

Professor, Linguistics and Phonetics, School of Languages, Cultures and Societies, University of Leeds

Grammaticality judgments as empirical basis for syntax research

To investigate ungrammaticality, syntacticians can only rely on indirect evidence, in the form of native speaker judgements or language processing effects. The latter have moved to the centre stage in recent years. In this contribution, I concentrate on the former. I review arguments for and against grammaticality judgements, discuss their reliability and present some methodological techniques to elicit them.

Dagmar Divjak

Reader in Slavonic Languages and Linguistics and Director of the Centre for Linguistic Research, University of Sheffield

Four challenges for usage-based linguistics

This talk will take a closer look at what is currently considered methodological "good practice" in the field and draw attention to some of the assumptions that underlie our methodology and thereby shape our findings yet have gone unquestioned. It will highlight four challenges and will discuss their theoretical foundations and implications.

Challenge 1. Data annotation: We work in a corpus-based fashion, at the heart of which lies the manual annotation of data. Do we reflect sufficiently on how our very first decisions affect our findings?

Challenge 2. Statistical analysis. We analyze our data statistically, using approaches from the frequentist tradition. Do we give enough consideration to the assumptions on which these techniques are based and to the implications that has for our findings?

Challenge 3. Model validation. We capture human behavior in models, knowing that "all models are wrong" (Box 1976: 792). Are we sufficiently concerned about testing our models against human behavior?

Challenge 4. Experimental design: We run experiments on language, complying with methodological requirements developed for other aspects of human behavior. Should we not pause to consider whether the nature of language meshes with the standard designs?