KU Leuven Open Science Day

Incentives are misaligned with good scientific practices (and open science)

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Abstract

To realize the ambitions of Open Science, the way we reward and evaluate researchers should be adapted. Universities such as KU Leuven make massive efforts to promote Open Science, but the current allocation model remains somewhat schizophrenic. Researchers have very uncertain careers and feel like they have to publish in high impact factor journals to create a future for themselves. This presentation simulates two researchers that use different strategies. One is using high power for all his experiments (80%), and thus large sample size, while the other one is using low power (35%) and low sample size. This sample size difference has wide implications on their ability to detect an effect when there is one, on the size and credibility of the false positive findings, on the number of papers that they can publish with the same resources and, potentially, on how incredible the results are (even when those are positive findings) and thus the probability that their results land in top journals. In light of these simulated data, I discuss how these incentives favor irreproducible results, lead to the publication of effects that are too big to be true, and hinder the progress of science by promoting hype rather than actual science.

Slides

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Author biography

[Jean-Jacques Orban de Xivry](#) (KU Leuven) is an engineer working on motor control/motor learning/aging as an associate professor at the Department of Movement Sciences. His projects focus on the effect of aging and neurological disease on motor control and learning via a multimodal approach (behavior, brain stimulation, EEG, and structural MRI). Since his start at KU Leuven in 2015, he decided to use state-of-the-art research methodologies for the research in his laboratory. All papers are first published as preprints (e.g. [Internal model recalibration does not deteriorate with age while motor adaptation does](#)). All data and code are made available on the Open Science Framework (e.g. [Aging and motor adaptation](#)) and studies are pre-registered when possible (e.g. [The effects of tDCS on motor skill learning in Parkinson's disease](#)). In addition, he tries to provide several lines of evidence to back up the claims in his

papers by replicating his own results and using larger groups of participants (N=20 or 30 per group).