KU Leuven Open Science Day

Registered reports: Benefits, challenges, and future directions

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Abstract

Registered Reports (RR) are empirical articles in which the methods and analyses are peer-reviewed before data-collection (Stage 1 revision). The format aims to prevent manipulation of researcher degrees of freedom or *p*-hacking, to clearly distinguish between confirmatory and exploratory analyses, and to foster the publishing of null findings. These benefits have convinced us to register one study which proved to be an enriching experience that has also made us aware of some challenges that accompany RR. On the one hand, RR require that methods and analyses pipelines in Stage 1 revision are described with sufficient detail to allow exact replication. On the other hand, deviations from the described experimental procedures could lead to rejection of the full article (i.e., including the results and discussion section) in Stage 2 revision. Such lack of flexibility seems to us a major impediment to the widespread use of RR. Setting an experiment in the lab is often a long trial and error procedure that requires changes to the initial plan, especially with new paradigms. The same is valid for pre-processing and analyzing the data. As a result, the RR format especially suits research conducted by expert scientists or replication studies that aim to replicate studies described in great detail. Alternatively, researchers should be allowed to deviate from the initial plan but be obliged to justify such deviations in their RR. To make the research cycle truly transparent, researchers should also report any deviation while setting the experiment and analyzing the data on platforms such as the [Open Science Framework](#) (OSF). This combined format would minimize bias, while enhancing the employability of RR.

Presentation

Author biographies

[Martina D'Agostini](#) (KU Leuven) obtained her bachelor degree with honors in Psychology at the University of Trento (Italy) in 2015 and graduated from the Research

Master in Cognitive and Clinical Neuroscience at Maastricht University (The Netherlands) in 2017. She is currently a PhD student at the Research Group Health Psychology at KU Leuven. Her PhD project focuses on the effect of transcutaneous auricular vagus nerve stimulation (a neurostimulation technique), extinction learning, and noradrenergic biomarkers. Since the beginning of her PhD, Martina has committed to open science practices by pre-registering all her studies and by submitting one registered report.

[Ilse Van Diest](#) (KU Leuven) received her PhD in 2003 at KU Leuven and worked as a post-doctoral researcher at the Center for the Study of Emotion and Attention (director: Peter Lang) and the Laboratory for Respiratory Neurophysiology (director: Paul W. Davenport), both at the University of Florida. She holds a professorship in Health Psychology at KU Leuven since 2006. Ilse is a past president of the International Society for the Advancement of Respiratory Psychophysiology (ISARP) and member of the executive committee of the Belgian Association for Psychological Science (BAPS). She was awarded by the Society for Psychophysiological Research (SPR) for her early career contributions to psychophysiology. She is associate editor of *Psychophysiology* and of *Applied Psychophysiology and Biofeedback*. Her current research themes include interoceptive fear learning, transcutaneous auricular vagus nerve stimulation, respiratory modulation of pain, and misophonia.