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Improving the Transparency and Robustness of Research

One of my first editorials as Editor-in-Chief offered guidelines on statistical reporting (1). This offered specific recommendations, including avoiding dichotomising results into “significant” and “non-significant”, and reporting effect size and confidence intervals. It was in part motivated by a desire to avoid what Gigerenzer (2) has described as the use of “statistical rituals” – conducting statistical tests and generating P-values without a clear sense of why. Since then, there has been considerable interest in initiatives intended to improve not only the quality of statistical reporting, but the quality of how scientific studies are reported (and indeed conducted) more generally.

It is perhaps helpful to reflect on some of the metaphors we use in science – we are often told that our data or manuscripts need to “tell a story”, but this emphasis on narrative, combined with these statistical rituals, may lead to hypothesis-generating research being packaged as hypothesis-testing when it is not. This HARKing (hypothesising after the results are known) (3) is almost certainly widespread – if not, how can over 90% of published studies in psychology claim to have found what they were looking for in the first place (4)? We denigrate hypothesis-generating research by forcing it to conform to a hypothesis-testing model.

How can we improve on the current situation? I have argued that greater transparency is key, allowing readers to better evaluate the research we publish (5), whilst also acting as a quality control process (6). *Nicotine & Tobacco Research* has adopted the Transparency and Openness Promotion (TOP) guidelines (7), and we have recently incorporated these directly into our Instructions to Authors. We have also strengthened our conflict of interest policy, again in the interests of greater transparency, requiring all Deputy and Associate Editors to complete a declaration of potential conflicts of interests.

There are a number of other initiatives that we are promoting. We strongly encourage the use of reporting checklists, which are available through the EQUATOR network (www.equator-network.org). In addition, since replication studies are central to the self-correcting function of the scientific method, we now commit to publishing replications of studies previously published within this journal (subject to the usual peer review). And we are piloting Registered Reports, whereby in-principle acceptance of studies is offered on the basis of the study protocol (i.e., the importance of the research question and the robustness of the methods) before data collection has begun (8).

I would encourage all those considering submitting their work to *Nicotine & Tobacco Research* to read our updated Instructions to Authors, and in particular the section on the TOP guidelines. They are intended to improve the quality of the conduct and reporting of individual studies, and by extension the quality of the work we publish in the journal as a whole. We have attempted to be pragmatic, and avoid creating unnecessary additional work for authors. Our ultimate goal is to ensure that the work we publish is as transparent and robust as possible, so that we can together move the field forward as effectively as possible.

Marcus Munafò
Editor-in-Chief

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