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Correspondence

The psychological burden of statistical significance: editorial reflections from 2015 to 2025

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Academic pressure and the demands of a scientific career may adversely affect researchers' well-being.[1] This psychological toll appears to be unevenly distributed across different career stages and genders. A study in the biological sciences suggested that scientists in their early careers, including those in their twenties and thirties, reported higher levels of stress related to publishing compared to more senior colleagues, particularly those aged around 60. This effect was more pronounced among women than men. While younger researchers, especially women, showed higher levels of publication-related stress, older scientists of both genders tended to report greater satisfaction with the publishing process.[2] Strong institutional pressure can lead some researchers to omit or manipulate data in order to meet expectations. Such environments may foster helplessness, particularly among early-career scientists and compromise both research quality and mental health.[3]

Editors play a crucial role in shaping research culture. By emphasizing transparency over statistical significance in author guidelines, journals can reduce the perceived pressure to deliver only positive results. Clear editorial policies that welcome null or non-significant findings may help shift expectations and promote healthier research practices. At the same time, the quality of statistical reporting remains persistently low in biomedical literature, as expert recommendations are seldom followed and thorough statistical review is rarely applied.[4]

Between 2015 and 2025, in the author's role as a statistical reviewer and editor, the author increasingly encountered author responses that revealed anxiety about statistical significance. Many authors expressed concern that applying appropriate statistical methods would result in non-significant findings, which they believed would reduce their chances of publication. From these recurring comments and requests, it became evident that the perceived need for statistically significant results was a source of psychological strain. Although editorial communication typically invited revision rather than implying rejection, some authors appeared to interpret methodological critique as a threat to the viability of their submission. The author was repeatedly asked by submitting authors, either in response to statistical review or during presubmission discussions, whether outliers could be removed or different tests applied solely because the alternative would yield results deemed more publishable. These questions often reflected not misunderstanding but, in the author's experience, anxiety about institutional pressure, fear of supervisor disapproval, and uncertainty about academic survival.

Authors have increasingly responded to statistical critiques not by engaging with methodological reasoning but by justifying flawed choices on the basis that the analysis produced significant results. Some explicitly stated that applying recommended methods would lead to paper rejection or delay, outcomes they feared could affect their position or trigger emotional distress. The author has been told that reanalysing data appropriately would render the results insignificant, raising concerns among authors that this would make publication more difficult, and could lead to disappointment or even despair. Over the past decade, these patterns have become more frequent and more emotionally charged. The pursuit of significance is no longer just a technical issue but a psychological burden that shapes behaviour, distorts judgement, and affects mental well-being.

Editorial teams can help mitigate this anxiety by providing guidance on sound statistical reasoning, for example, by promoting the use of established frameworks, such as the SAMPL guidelines for statistical reporting,[5]

and by reassuring authors that rigorous methods are valued regardless of outcome. Training for reviewers and editors in assessing statistical robustness, rather than outcome favourability, could support this policy. During the COVID-19 pandemic, some journals, such as *JCI*, adjusted their editorial processes to reduce undue pressure on authors – for example, by extending revision timelines and limiting excessive reviewer demands. While this was a special circumstance, it illustrates that editorial policies can be adapted to support researchers without compromising scientific rigor.[6]

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