Journal Watch

SECTION EDITOR

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Better writing can boost the impact of publications

The title of an opinion article in *Proceedings of the National Academy of Sciences* (PNAS) asks: "How can we boost the impact of publications?" The title also provides a quick answer: "Try better writing".[1] The three authors, from the University of Adelaide, Australia, developed a writing index to assess clarity, creativity, and narrative structure. They measured 11 components and described their rationale for including them:

1. Word count is the most apparent component of an abstract. Longer abstracts include more ideas, but this can come at the expense of clarity.
2. Setting gives context by placing the research in a time or place.
3. Narrator refers to authors who refer to themselves in the first person.
4. Conjunctions provide links between different ideas.
5. Signposts provide a clear structure or order for ideas.
6. Punctuation marks link ideas in nuanced ways, enabling the author to direct the reader's attention.
7. Consistent language reduces complexity by using consistent terminology.
8. Parallel phrasing reduces complexity by using a consistent sentence structure.
9. Hedging uses qualifiers (e.g., largely, has the potential to, may) to dampen the confidence of statements.
10. Acronyms shorten phrases to save space, but they also reduce the clarity of the phrase's meaning.
11. Noun chunks are strings of multiple consecutive nouns. Noun chunks connect objects or ideas in ambiguous ways.

The authors analysed abstracts from 330 papers published in 2012 and 2013 from three disciplines: environmental science (n=48), social science (n=41), and medical science (n=44). They recorded the number of citations for each paper as of July 2018 as indicated in Scopus, and the 2017 Scopus Cite Score of the journals.

Influential articles (those earning 100 to 1000 cites) had more positive writing components and were thus written more with the reader in mind. For instance, highly cited articles were short; used first-person narration; placed findings in context by providing a setting (e.g., "in the world's oceans" or "over the past 20 years"); linked ideas by using conjunctions (e.g., "therefore" or "conversely"), punctuation marks (e.g., semicolons and dashes), and consistent terminology; and avoided excessive acronyms and awkward noun chunks.

This brief paper (2.5 pages) is interesting because of the originality of the score, but the sample is small, and the conclusions deserve confirmation and more clarity. The score should be better validated, and their concept of "writing with the reader in mind" deserves a definition.

Reference

1. Freeling B, Doubleday ZA, Connell SD. How can we boost the impact of publications? Try better writing. PNAS. 2019;116(2):34143.

Significance (not just statistical): The debate must go on

More than 800 researchers have signed a petition calling for the abandonment of "the entire concept of statistical significance".[1]

The poor quality of statistical analysis and reporting in research articles has been widely documented. Probably half of articles have statistical problems. Regularly, papers call attention to the need for improved statistical practices. In early 2019, a petition signed by more than 800 researchers and published by the journal *Nature* called on researchers to retire the idea of statistical significance in papers.[1] The article stated: "…Eradicating categorisation will help to halt overconfident claims, unwarranted declarations of 'no difference' and absurd statements about replication failure when the results from the original and replication studies are highly compatible."

They are not calling for a ban on the use of *P* values. Instead, the authors write: "We must learn to embrace uncertainty. One practical way to do so is to rename confidence intervals as 'compatibility intervals' and interpret them in a way that avoids overconfidence."

This article has been very controversial. John Ioannidis provides a brief thoughtful commentary. He notes that "a low barrier such as $P < 0.05$ is typically too easy to pass. Hence, one option is making the barrier more demanding."

Ioannidis provides a useful summary of the petition:

The petition proposes retaining P values but abandoning dichotomous statements (significant/ nonsignificant), suggests discussing "compatible" effect sizes, denounces "proofs of the null," and points out that "crucial effects" are dismissed on discovery or refuted on replication because of nonsignificance. The proposal also indicates that "we should never conclude there is 'no difference' or 'no association' just because a P value is larger than a threshold such as 0.05 or, equivalently, because a confidence interval includes zero," and that categorisation based on other statistical measures (e.g., Bayes factors) should be discouraged. Other recent articles have also addressed similar topics, with an entire supplemental issue of a statistics journal devoted to issues related to P values.

The brief commentary by Ioannidis deserves a careful reading because all the arguments are clearly presented.[2] There is a debate between statisticians and clinicians, and Ioannidis' position is: "Significance (not just statistical) is essential both for science and for science-based action, and some filtering process is useful to avoid drowning in noise."

Reference

1. Amrhein V, Greenland S, McShane B. Scientists rise up against statistical significance. Nature. 2019;567:3057.
2. Ioannidis JPA. The importance of predefined rules and prespecified statistical analyses: Do not abandon significance. JAMA Published online April 4, 2019. doi:10.1001/jama.2019.4582

Save the date:
EMWA Conference in Sweden
MALMÖ
November 7-9, 2019

https://www.emwa.org/conferences/future-conferences/

The dominance of men in the publication game

We have a lot of data on the prevalence of men in the publishing system. We know that men outnumber women on journal editorial boards. In early 2019, two articles contributed to the literature on the imbalance. Here are the summaries of these articles:

Gender inequalities among authors who contributed equally[1]

We analyzed 2898 scientific papers published between 1995 and 2017 in which two or more authors shared the first author position. For papers in which the first and second authors made equal contributions, mixed gender combinations were most frequent, followed by male-male and then female-female author combinations. For mixed-gender combinations, more male authors were in the first position, although the disparity decreased over time. For papers in which three or more authors made equal contributions, there were more male authors than female authors in the first position and more all-male than all-female author combinations. The gender inequalities observed among authors who made equal contributions are not consistent with random or alphabetical ordering of authors. These results raise concerns about female authors not receiving proper credit for publications and suggest a need for journals to request clarity on the method used to decide author order among those who contributed equally.

This paper has a footnote: †These authors contributed equally to this work; author order was determined both alphabetically and in order of increasing seniority.

Gender differences in peer review outcomes and manuscript impact at six journals of ecology and evolution[2]

The productivity and performance of men is generally rated more highly than that of women in controlled experiments, suggesting conscious or unconscious gender biases in assessment. The degree to which editors and reviewers of scholarly journals exhibit gender biases that influence outcomes of the peer-review process remains uncertain due to substantial variation among studies. We test whether gender predicts the outcomes of editorial and peer review for >23,000 research manuscripts submitted to six journals in ecology and evolution from 2010 to 2015. Papers with female and male first authors were equally likely to be sent for peer review. However, papers with female first authors obtained, on average, slightly worse peer-review scores and were more likely to be rejected after peer review, though the difference varied among journals. These gender differences appear to be partly due to differences in authorial roles. Papers for which the first author deferred corresponding authorship to a coauthor (which women do more often than men) obtained significantly worse peer-review scores and were less likely to get positive editorial decisions. Gender differences in corresponding authorship explained some of the gender differences in peer-review scores and positive editorial decisions. In contrast to these observations on submitted manuscripts, gender differences in peer-review outcomes were observed in a survey of >12,000 published manuscripts; women reported similar rates of rejection (from a prior journal) before eventual publication. After publication, papers with female authors were cited less often than those with male authors, though the differences are very small (~2%). Our data do not allow us to test hypotheses about mechanisms underlying the gender discrepancies we observed, but strongly support the conclusion that papers authored by women have lower acceptance rates and are less well cited than are papers authored by men in ecology.

References

1. Broderick NA, Casadevall A. Gender inequalities among authors who contributed equally. eLife 2019;8:e36399.
2. Fox CW, Paine CET. Gender differences in peer review outcomes and manuscript impact at six journals of ecology and evolution. Ecol Evol. 2019;00:1–21.

Writing and science: A special issue of *Written Communication*

The January 2019 issue of *Written Communication: An International Quarterly of Research, Theory, and Application* focuses on the topic of writing and science. All six papers and the editorial are of interest. In their introductory editorial, Wickman and Fitzgerald note:[1]

Scientific texts are evolving in response to emergent needs and media affordances. While time-honored genres still very much influence the publication and circulation of research, scientists are developing new and hybrid ways to communicate their work…

The actors involved in scientific research and communication are also evolving. Citizen science initiatives in particular emphasise the increasingly distributed work of knowledge making, and digital media continue to transform how we conceptualize boundaries between scientific communities and lay publics. Such developments invite further exploration of writing as a means whereby scientists enroll participants into their inquiries and circulate information for specialist and nonspecialist audiences alike.

Here is a brief look at the six papers in the issue, as summarised in an article introducing the editorial:

1. **"'I think when I speak, I don't sound like that": the influence of social positioning on rhetorical skill development in science"** explores how a young woman of colour negotiates the process of learning and being enculturated into the disciplinary discourse of biomedical science. This study shows us, in the author's words, how "traditionally marginalised individuals negotiate academic and disciplinary boundaries" through writing.

2. **"Registered reports: genre evolution and the research article"** examines how registered reports respond to current exigencies in academic publishing and intervene in the ongoing evolution of the research article. This hybrid genre is shaping the way researchers in the life and psychological sciences conceptualise, undertake, and communicate their work.

3. **"Compressing, expanding, and attending to scientific meaning: writing the semiotic hybrid of science for professional and citizen scientists"** investigates how a group of biologists employ different semiotic resources, and make strategic choices, when composing documents for specialist and nonspecialist audiences, including citizen scientists. This text shows how the work of inquiry gets distributed in a contemporary media environment.

4. **"Writing and conceptual learning in science: an analysis of assignments,"** undertake a systematic analysis of writing to learn scholarship with particular emphasis on concepts employed in empirical studies of writing to learn science. The authors suggest that meanings attached to writing are critical for promoting effective research and classroom instruction.

5. **"Linguistic injustice in the writing of research articles in English as a second language: data from Taiwanese and Mexican researchers"** methodically examines the "linguistic burden" placed on scientists who publish in English as a second, third, or additional language – a form of "linguistic injustice" that has real, and measurable, effects on individual writers.

6. **"How do online news genres take up knowledge claims from a scientific research article on climate change?"** explores how expert information related to climate change gets recontextualised in online news genres. Following the textual trajectory of a single research article over the course of one year, this paper shows how different genres mediate "uptake" and how expertise moves and gets transformed across texts and contexts.

References

1. Wickman C, Fitzgerald E. Writing and science: An editorial perspective. Written Communication. 2019, Vol. 36(1) 3–8.