# Supplementary Information

for

Post-publication critique at top-ranked journals across scientific disciplines:

A cross-sectional assessment of policies and practice

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# Supplementary Information A. Protocol amendments.

The study protocol (rationale, methods, and analysis plan) was pre-registered on February 14th, 2020 (https://osf.io/hjvnw/). Supplementary Table A1 outlines amendments between the pre-registered protocol and final report.

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| **Supplementary Table A1**. Protocol amendments. |
| **Issue** | **Pre-registered protocol** | **Amendment** | **Rationale** | **Amendment made after observing relevant study results?** |
| Terminology | We used the term ‘post-publication peer review’ (PPPR). | We now use the term ‘post-publication critique’. | We adopted the new term to avoid confusion with certain types of PPPR which we did not examine (e.g., the PPPR model of the journal F1000). | Yes. |
| Study Two sample selection | “To evaluate the frequency of PPPR we will examine the last 10 articles involving empirical data published prior to 31stDecember 2018 by each PPPR-offering journal.” | We instead examined a random sample of articles published in 2018. | The previous method could have introduced selection bias (e.g., due to clustering of article types or a themed special issue). | No. The amendment decision applies only to Study 2 and was introduced before Study 2 data had been obtained. |
| Study One limit / peer review variables | “YES” response options. | All “YES” response options were reclassified to either “YES - QUANTITATIVE” or “YES - QUALITATIVE”. | We found that some limits were stated qualitatively rather than quantitatively. | Yes, the change was motivated by observing Study One results. |
| Study One peer review variable | N/A | We added the response option “EDITOR’S DISCRETION” | We found that some policies stated post-publication critique was sent for peer review at the editor’s discretion. | Yes, the change was motivated by observing Study One results. |
| Dual-coding in Study Two. | We planned to code all articles in duplicate. | Duplicate coding was only performed for positive post-publication critique classifications. Coders discussed all cases they felt were ambiguous with TEH. All assessment of post-publication critique features was completed by a single author (TEH). | We did not have the resources needed to evaluate all 2066 articles in duplicate.  | Yes, the change was made after completion of Study One but before starting Study Two. |
| Study Two additional prevalence estimate. | We planned to compute only one PPPR prevalence estimate based on the number of articles linked to PPPR. | We introduced a secondary prevalence estimate based on the number of articles that were themselves examples of post-publication critique. | We realised that a limitation of the primary prevalence estimate (insensitivity to non-linked post-publication critique) could be compensated for with the secondary prevalence estimate. See main text for details. | No, the amendment was introduced after completion of Study One but prior to Study Two. |
| Study Two exclusion criteria. | We prespecified that articles to be assessed in Study Two for the prevalence estimate had to be research articles, but did not specify more detailed inclusion/exclusion criteria. | We clarified that articles included in Study Two were excluded if they (1) could not be found or accessed; (2) were non-English language; (3) had been retracted; or (4) did not include substantive research: specifically, we excluded news, book reviews, editorials, previews, or similar, and included empirical research, case studies, simulations, proofs, theoretical papers, reviews, meta-analyses, and perspectives (if they were predominantly evidence-based rather than opinion-based). | The original inclusion/exclusion criteria were not specified with sufficient clarity or we didn’t realise certain criteria would be necessary. | Yes, the amendments were introduced after starting, but before completing, Study Two. |
| Operational definition of PPPR. | Our original definition of PPPR was “any avenue for publicly sharing peer-initiated scientific discourse related to published articles” | We’ve made slight adjustments to the original definition: “Any journal-based avenue for sharing peer-initiated critical discourse related to specific research articles previously published in the same journal.” (also see Supplementary Information K). | The new definition is a clearer expression of how we operationalised the term post-publication critique. | Yes. The decision was made after observing Study One data. |
| Definition of peer review variable. | For the variable assessing whether PPPR was sent for peer review, we did not provide a strict definition in the protocol. | We now provide a clearer definition of ‘peer review’, as 'independent external peer review' by which we mean reviews solicited from individuals who were not (a) members of the editorial team, or (b) authors of the original article | The original definition was not specific enough. | Yes. The decision was made after observing Study One data. |
| “Other limits” variable not measured. | In the protocol we stated that we would record any “other limits” imposed on PPPR by journals | We did not obtain this data. | The relevant question was erroneously excluded from the data extraction form. | No. The question was never included in the extraction form. |
| Article PPPR content variable. | The response options for this variable in the protocol were “procedural issues” or “research issues”. | We instead adopted a more nuanced classification scheme. | The original classification was too crude, the new one has more informational value. | Yes. The decision to change the variable was made whilst examining the first few examples of post-publication critique in Study Two. |
| Does the original article share data?  | The original response options were YES, MAYBE, and NO. | We changed the response options to TRUE (i.e., data are shared), FALSE (i.e., data are not shared), STATES AVAILABLE ON REQUEST (i.e., there’s a statement saying the data are available on request), NOT APPLICABLE (i.e., the article does not involve empirical data).  | These are subtle changes to the original classification to more clearly reflect the data e.g., that in some cases data sharing is not applicable. | Yes. The decision to change the variable was made whilst examining the first few examples of post-publication critique in Study Two. |
| Target article open access | Variable not included. | Included new variable in Study Two - the open access status of the target article  | We already recorded the open access status of the post-publication critique, so it seemed useful to also record this for the target article. | Yes. The decision to change the variable was made whilst examining the first few examples of post-publication critique in Study Two. |
| Target article correction | Variable not included. | Included new variable in Study Two - did the post-publication critique trigger a correction to the original article. | After finding one example where post-publication critique triggered a correction it seemed useful to measure this for all articles. | Yes. The decision to change the variable was made whilst examining the first few examples of post-publication critique in Study Two. |
| Author reply claims unchanged | Variable not included. | Included new variable in Study Two - in their reply to post-publication critique, do original authors assert their core claims remain unchanged? | During data extraction, this seemed like a useful additional piece of information to record. | Yes. The decision to change the variable was made whilst examining the first few examples of post-publication critique in Study Two. |

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## Supplementary Information B. Variables measured in Study One.

2017 Journal Impact Factors were obtained via Clarivate Journal Citation Reports ([https://jcr.clarivate.com](https://jcr.clarivate.com/)). Journal discipline classifications were defined by Clarivate Essential Science Indicators (<https://perma.cc/MD4V-A5X5>). Journal COPE membership status was established by manually searching the members list (<https://publicationethics.org/members>). All other Study One variables were obtained via the data extraction form completed by coders (<https://osf.io/bkvnw/>; Supplementary Table B1).

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| **Supplementary Table B1**. Variables measured in Study One based on data extraction form (<https://osf.io/bkvnw/>). PPC = post-publication critique. |
| **Variable name** | **Extraction form question** | **Response options** |
| Journal PPC | Does the journal offer any type of PPC? | YESNOOTHER (please specify) |
| Journal PPC name | Enter the name of the PPC type offered by the journal:  | Free text response |
| Journal PPC description | Enter the verbatim description of this type of PPC provided by the journal | Free text response |
| Journal PPC word or comment limits | Are there any word/comment limits for this type of PPC? | YES - QUANTITATIVE (provide number of words/comments)YES - QUALITATIVENONOT STATEDUNCLEAR (provide detail) |
| Journal PPC time limits | Are there any time limits for submission of this type of PPC? | YES - QUANTITATIVE (provide detail of time limits)YES - QUALITATIVENONO STATEDUNCLEAR (provide detail) |
| Journal PPC reference limits | Are there any reference limits for this type of PPC?  | YES - QUANTITATIVE (provide number of references)YES - QUALITATIVENONOT STATEDUNCLEAR (provide detail) |
| Journal PPC peer review | Is this type of PPC peer reviewed? | YESEDITOR’S DISCRETIONNONOT STATEDUNCLEAR (provide detail) |

*Table notes*:

1. For limits / peer review variables, the response option “NOT STATED” meant that no relevant information about this variable could be found whereas the response option “NO” meant that the policy explicitly stated there was no limit / peer review.

2. For limits / peer review variables, the response option “YES” in the data extraction form was subsequently reclassified as YES - QUANTITATIVE and YES - QUALITATIVE. This was to handle cases where a limit was implied, but not stated numerically, for example, stating that articles must be 'short', 'brief', or 'concise'.

3. For limits / peer review variables, policy wording that referred to the majority of PPC (e.g., “usually” or “typically”) was interpreted as “YES”. Policy wording for peer review that used vague language (e.g., “may be”) was grouped with “editor’s discretion” cases.

4. By ‘peer review’, we mean 'independent external peer review' which we defined as reviews solicited from individuals who were not (a) members of the editorial team, or (b) authors of the original article.

5. If limits were stated as a range (e.g., “500-750 words”) we recorded the upper limit.

## Supplementary Information C. Document preservation.

We used three methods to preserve journal webpages. During our examination of webpages between November, 2019, and January, 2020, we firstly attempted to preserve webpages using the service perma.cc (<https://perma.cc>). Occasionally, when this tool failed, we made a PDF copy of the webpage which we stored on the OSF (<https://osf.io/tzjc6/>). Occasionally, we retroactively realised we needed to preserve a journal webpage, in which case we used the Internet Archive’s Wayback Machine tool (<https://web.archive.org/>) to obtain a copy of the webpage as it existed in November, 2019. Links to the preserved documents are available in a data file on the OSF (<https://osf.io/5atjd/>). All coding was performed using the copied information to avoid reproducibility problems if journals updated their websites during coding.

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## Supplementary Information D. Harmonization and transformation.

### Harmonization of names

Prior to data collection, we anticipated that post-publication critique types would mainly fall into three categories: ‘letters’, ‘commentaries’, and ‘web-based comments’. Examination of the data confirmed that most verbatim post-publication critique names matched these expectations, though slightly different naming conventions were used between journals (e.g., "letters", "letter to the editor", “correspondence”, etc.). In such cases, we assigned each post-publication critique to whichever of the above three ‘harmonized’ names we deemed most appropriate. Other than cases involving straightforward grammatical similarity, we note that (1) post-publication critiques identified as “correspondence”, “Discussion Forum”, “Disputes & Debates”, and “Reader Comments” were harmonized as “Letters”; (2) post-publication critiques identified as “Technical Comments”, “Matters Arising”, “Transaction Comments”, and “Comments” (where these referred to articles and not website comments), were harmonized as “Commentaries”; (3) post-publication critiques identified as “Rapid Responses”, “Annotations”, “eLetters”, and “Comments” (where these referred to website comments and not articles), were harmonized as “Web comments”; (4) post-publication critiques identified as “Forum Papers”, “Research Advance”, “Replications and Corrigenda”, and “Update articles”, were classified as “Other”. Note that we also classified one instance of “News and Views” and one instance of “Perspectives” as “Other”, though we typically did not consider articles of this name to be post-publication critique because all but these two examples did not meet our operational definition (Supplementary Information K).

At least two journals (The British Journal of Psychiatry and The BMJ) offered a hybrid type of post-publication critique whereby selected web comments (known as ‘eLetters’ and ‘Rapid Responses’ respectively) were chosen by editors to be subsequently (re-) published in the journal print edition as letters. To avoid double counting this data, we classified them only as web comments. There were no cases where multiple types of post-publication critique offered by the same journal were classified with the same harmonized label.

### Transformation of quantitative limits.

Quantitative limits were expressed in a variety of different units. To address this, all length limits were converted to ‘word’ units and all time limits were converted to ‘week’ units. We multiplied length limits expressed as ‘pages’ by 500 (i.e., 500 words per page), divided length limits expressed as ‘characters’ by 6 (i.e., 6 characters per word), multiplied time limits expressed as ‘months’ by 4.35 (i.e., 4.35 weeks in a month), and multiplied time limits expressed as ‘years’ by 52 (i.e., 52 weeks in a year). The conversion factors for length limits were derived from estimates based on examination of our own recently published articles.

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## Supplementary Information E. Journal characteristics.

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| **Supplementary Table E1**: Characteristics of journals in each of 22 scientific disciplines (n = 15) and in all disciplines combined (n = 330). |
| Scientific discipline | 2017 Journal Impact Factor | COPE Signatories (*n*) |
| Median | Min | Max |
| Agricultural Sciences | 4.09 | 3.74 | 5.42 | 12 |
| Biology & Biochemistry | 11.61 | 7.62 | 35.72 | 13 |
| Chemistry | 11.23 | 7.41 | 30.07 | 13 |
| Clinical Medicine | 23.42 | 18.88 | 79.26 | 9 |
| Computer Science | 7.17 | 4.67 | 22.74 | 3 |
| Economics & Business | 6.48 | 5.40 | 8.49 | 12 |
| Engineering | 7.36 | 6.38 | 46.86 | 9 |
| Environment & Ecology | 7.30 | 6.09 | 19.18 | 14 |
| Geosciences | 5.07 | 4.52 | 14.39 | 11 |
| Immunology | 8.37 | 6.05 | 25.15 | 12 |
| Materials Science | 13.18 | 8.81 | 39.24 | 9 |
| Mathematics | 3.06 | 2.45 | 4.89 | 5 |
| Microbiology | 5.75 | 3.91 | 17.87 | 14 |
| Molecular Biology & Genetics | 15.39 | 9.46 | 32.62 | 12 |
| Multidisciplinary | 7.27 | 2.77 | 41.58 | 13 |
| Neuroscience & Behavior | 11.64 | 8.05 | 27.14 | 13 |
| Pharmacology & Toxicology | 5.73 | 4.60 | 7.88 | 14 |
| Physics | 9.21 | 5.54 | 32.52 | 11 |
| Plant & Animal Science | 6.30 | 4.69 | 14.08 | 14 |
| Psychiatry & Psychology | 6.48 | 5.47 | 30.00 | 9 |
| Social Sciences | 5.85 | 5.06 | 8.36 | 10 |
| Space Science | 4.63 | 2.98 | 8.56 | 5 |
| All disciplines | 7.39 | 2.45 | 79.26 | 237 |

## Supplementary Information F. How many journals offer post-publication critique? Tabular data.

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| **Supplementary Table F1**. Number and percentage of journals in each scientific discipline offering any options for post-publication critique and the number of specific types of post-publication critique available. Note that the latter does not necessarily sum to the former because individual journals can offer multiple post-publication critique options. |
| Scientific discipline | Any post-publication critique | Letters | Commentaries | Web comments | Other |
| Agricultural Sciences | 6 (40%) | 5 | 1 | 0 | 1 |
| Biology & Biochemistry | 12 (80%) | 4 | 6 | 7 | 2 |
| Chemistry | 10 (67%) | 6 | 4 | 1 | 0 |
| Clinical Medicine | 15 (100%) | 14 | 0 | 8 | 0 |
| Computer Science | 7 (47%) | 3 | 4 | 0 | 0 |
| Economics & Business | 3 (20%) | 0 | 2 | 0 | 1 |
| Engineering | 7 (47%) | 5 | 2 | 0 | 0 |
| Environment & Ecology | 11 (73%) | 5 | 7 | 1 | 0 |
| Geosciences | 12 (80%) | 2 | 10 | 0 | 0 |
| Immunology | 12 (80%) | 10 | 1 | 3 | 0 |
| Materials Science | 12 (80%) | 5 | 7 | 1 | 0 |
| Mathematics | 2 (13%) | 2 | 0 | 0 | 0 |
| Microbiology | 12 (80%) | 5 | 4 | 3 | 0 |
| Molecular Biology & Genetics | 12 (80%) | 6 | 7 | 5 | 0 |
| Multidisciplinary | 11 (73%) | 5 | 6 | 7 | 0 |
| Neuroscience & Behavior | 14 (93%) | 11 | 2 | 2 | 0 |
| Pharmacology & Toxicology | 13 (87%) | 13 | 3 | 0 | 0 |
| Physics | 7 (47%) | 2 | 6 | 0 | 0 |
| Plant & Animal Science | 9 (60%) | 5 | 3 | 1 | 1 |
| Psychiatry & Psychology | 10 (67%) | 6 | 4 | 2 | 0 |
| Social Sciences | 5 (33%) | 3 | 2 | 0 | 0 |
| Space Science | 5 (33%) | 1 | 4 | 0 | 1 |
| All disciplines | 207 (63%) | 118 | 85 | 41 | 6 |

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## Supplementary Information G. Post-publication critique types and limits for each journal

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| **Supplementary Table G1**. Post-publication critique types (letters, commentaries, web comments, other) and limits (length, time-to-submit) for each journal. Length limits are in words. Time limits are in weeks. x = Post-publication critique type not offered. QL = Qualitative limit. NS = No limit specified. UL = Unlimited (explicitly says there is no limit of this type). Journals are ordered by discipline (alphabetical) and Journal Impact Factor (descending). |
|  | Letters | Commentaries | Web comments | Other |
| Journal | Length | Time | Length | Time | Length | Time | Length | Time |
| *Agricultural Sciences* |
| Global Change Biology Bioenergy | 800 | QL | 1500 | QL | x | x | x | x |
| Molecular Nutrition & Food Research | x | x | x | x | x | x | x | x |
| Food Hydrocolloids | x | x | x | x | x | x | x | x |
| Soil Biology & Biochemistry | x | x | x | x | x | x | QL | NS |
| Agronomy for Sustainable Development | x | x | x | x | x | x | x | x |
| Journal of Nutrition | 500 | 26.1 | x | x | x | x | x | x |
| Nutrients | 450 | 13.05 | x | x | x | x | x | x |
| Food Microbiology | NS | NS | x | x | x | x | x | x |
| Agricultural & Forest Meteorology | x | x | x | x | x | x | x | x |
| Journal of the Academy of Nutrition & Dietetics | 500 | 26.1 | x | x | x | x | x | x |
| Theoretical & Applied Genetics | x | x | x | x | x | x | x | x |
| Industrial Crops & Products | x | x | x | x | x | x | x | x |
| Soil & Tillage Research | x | x | x | x | x | x | x | x |
| Biology & Fertility of Soils | x | x | x | x | x | x | x | x |
| *Biology & Biochemistry* |
| Genetics Selection Evolution | x | x | x | x | x | x | x | x |
| Nature Biotechnology | x | x | 1200 | QL | x | x | x | x |
| Nature Methods | 500 | NS | 1200 | NS | x | x | x | x |
| Science Translational Medicine | x | x | 1500 | NS | NS | NS | x | x |
| Nature Chemical Biology | x | x | 1200 | NS | x | x | x | x |
| Nature Structural & Molecular Biology | x | x | 1200 | NS | x | x | x | x |
| Nature Protocols | x | x | 1200 | NS | NS | NS | x | x |
| Bone Research | 800 | NS | x | x | x | x | x | x |
| Journal of Pineal Research | x | x | x | x | x | x | x | x |
| Nucleic Acids Research | x | x | x | x | NS | NS | x | x |
| Current Biology | 1000 | NS | x | x | NS | NS | x | x |
| PLOS Biology | x | x | x | x | NS | NS | NS | NS |
| Cell Systems | x | x | x | x | NS | NS | x | x |
| Matrix Biology | x | x | x | x | x | x | x | x |
| Metabolic Engineering | x | x | x | x | x | x | x | x |
| eLife | 1500 | 52 | x | x | NS | NS | NS | NS |
| *Chemistry* |
| Energy & Environmental Science | x | x | x | x | x | x | x | x |
| Nature Chemistry | x | x | 1200 | NS | x | x | x | x |
| Journal of the American Chemical Society | x | x | x | x | x | x | x | x |
| Chem | x | x | x | x | NS | NS | x | x |
| Angewandte Chemie-International Edition | NS | NS | x | x | x | x | x | x |
| Applied Catalysis B - Environmental | NS | NS | x | x | x | x | x | x |
| ACS Catalysis | NS | NS | x | x | x | x | x | x |
| ACS Central Science | x | x | x | x | x | x | x | x |
| Chemical Science | x | x | NS | NS | x | x | x | x |
| Journal of Physical Chemistry Letters | x | x | x | x | x | x | x | x |
| Acta Crystallographica Section C-Structural Chemistry | NS | NS | x | x | x | x | x | x |
| Green Chemistry | x | x | NS | NS | x | x | x | x |
| Biosensors & Bioelectronics | x | x | x | x | x | x | x | x |
| Acta Crystallographica A-Foundation & Advances | NS | NS | NS | NS | x | x | x | x |
| ChemSusChem | NS | NS | x | x | x | x | x | x |
| *Clinical Medicine* |
| New England Journal of Medicine | 175 | 3 | x | x | 200 | NS | x | x |
| Lancet | 250 | 2 | x | x | x | x | x | x |
| JAMA | 400 | 4 | x | x | 600 | QL | x | x |
| Lancet Oncology | 400 | 8 | x | x | x | x | x | x |
| Journal of Clinical Oncology | 750 | 6 | x | x | x | x | x | x |
| Cancer Discovery | 500 | 13.05 | x | x | x | x | x | x |
| The BMJ | x | x | x | x | NS | NS | x | x |
| European Heart Journal | 500 | NS | x | x | 500 | NS | x | x |
| Lancet Respiratory Medicine | 400 | 4 | x | x | x | x | x | x |
| JAMA Oncology | 400 | 4 | x | x | 600 | QL | x | x |
| Gastroenterology | 750 | 4.35 | x | x | x | x | x | x |
| JAMA Internal Medicine | 400 | 4 | x | x | 600 | QL | x | x |
| Annals of Internal Medicine | 400 | 4 | x | x | NS | NS | x | x |
| Lancet Diabetes & Endocrinology | 400 | 8 | x | x | x | x | x | x |
| Circulation | 500 | 6 | x | x | NS | UL | x | x |
| *Computer Science* |
| Journal of Statistical Software | x | x | x | x | x | x | x | x |
| IEEE Wireless Communications | x | x | x | x | x | x | x | x |
| IEEE Transactions on Cybernetics | x | x | x | x | x | x | x | x |
| IEEE Transactions on Evolutionary Computation | x | x | 1000 | NS | x | x | x | x |
| IEEE Transactions on Neural Networks & Learning Systems | x | x | 1500 | NS | x | x | x | x |
| IEEE Transactions on Cloud Computing | x | x | 1000 | NS | x | x | x | x |
| Neural Networks | 1000 | NS | x | x | x | x | x | x |
| IEEE Journal on Selected Areas In Communications | x | x | x | x | x | x | x | x |
| Information Fusion | x | x | x | x | x | x | x | x |
| IEEE Computational Intelligence Magazine | 4000 | NS | x | x | x | x | x | x |
| IEEE Transactions on Wireless Communications | x | x | 500 | NS | x | x | x | x |
| IEEE Internet of Things Journal | x | x | x | x | x | x | x | x |
| IEEE Transactions on Information Forensics and Security | 1000 | NS | x | x | x | x | x | x |
| Medical Image Analysis | x | x | x | x | x | x | x | x |
| IEEE Transactions on Communications | x | x | x | x | x | x | x | x |
| *Economics & Business* |
| Journal of the Academy of Marketing Science | x | x | x | x | x | x | x | x |
| Journal of Management | x | x | x | x | x | x | x | x |
| Quarterly Journal of Economics | x | x | x | x | x | x | x | x |
| Journal of Marketing | x | x | x | x | x | x | x | x |
| Journal of Service Research | x | x | x | x | x | x | x | x |
| Academy of Management Journal | x | x | NS | NS | x | x | x | x |
| Journal of Human Resources | x | x | x | x | x | x | x | x |
| Journal of Economic Growth | x | x | x | x | x | x | x | x |
| Journal of International Business Studies | x | x | x | x | x | x | x | x |
| Journal of Supply Chain Management | x | x | x | x | x | x | x | x |
| Journal of Business Venturing | x | x | x | x | x | x | x | x |
| Administrative Science Quarterly | x | x | x | x | x | x | x | x |
| Strategic Management Journal | x | x | 10000 | NS | x | x | x | x |
| Journal of Retailing | x | x | x | x | x | x | x | x |
| Journal of Finance | x | x | x | x | x | x | 10000 | NS |
| *Engineering* |
| Nature Energy | x | x | 1200 | QL | x | x | x | x |
| International Journal of Computer Vision | x | x | x | x | x | x | x | x |
| IEEE Transactions on Pattern Analysis & Machine Intelligence | x | x | 1250 | NS | x | x | x | x |
| Renewable & Sustainable Energy Reviews | x | x | x | x | x | x | x | x |
| Proceedings of The IEEE | x | x | x | x | x | x | x | x |
| IEEE Transactions on Fuzzy Systems | 1500 | NS | x | x | x | x | x | x |
| Applied Energy | x | x | x | x | x | x | x | x |
| IEEE Transactions on Smart Grid | x | x | x | x | x | x | x | x |
| IEEE Transactions on Industrial Electronics | x | x | x | x | x | x | x | x |
| International Journal of Engineering Science | NS | NS | x | x | x | x | x | x |
| IEEE Transactions on Power Electronics | 1000 | NS | x | x | x | x | x | x |
| Chemical Engineering Journal | 1000 | NS | x | x | x | x | x | x |
| Progress in Photovoltaics | x | x | x | x | x | x | x | x |
| Journal of Hazardous Materials | NS | NS | x | x | x | x | x | x |
| Energy Conversion & Management | x | x | x | x | x | x | x | x |
| *Environment & Ecology* |
| Nature Climate Change | x | x | 1200 | NS | x | x | x | x |
| Ecology Letters | x | x | 800 | 26.1 | NS | NS | x | x |
| Global Change Biology | 800 | QL | 1500 | QL | x | x | x | x |
| Systematic Biology | x | x | x | x | x | x | x | x |
| Environmental Health Perspectives | x | x | x | x | x | x | x | x |
| Frontiers in Ecology & the Environment | 800 | NS | x | x | x | x | x | x |
| Ecological Monographs | x | x | x | x | x | x | x | x |
| Environment International | NS | NS | x | x | x | x | x | x |
| Conservation Letters | 500 | 6 | x | x | x | x | x | x |
| Land Degradation & Development | x | x | x | x | x | x | x | x |
| Molecular Ecology Resources | x | x | QL | NS | x | x | x | x |
| Water Research | x | x | 1200 | 17.4 | x | x | x | x |
| Environmental Science & Technology | 1000 | 26.1 | x | x | x | x | x | x |
| Molecular Ecology | x | x | QL | NS | x | x | x | x |
| Environmental Science-Nano | x | x | NS | NS | x | x | x | x |
| *Geosciences* |
| Nature Geoscience | x | x | 1200 | NS | x | x | x | x |
| Earth System Science Data | x | x | NS | NS | x | x | x | x |
| Bulletin of the American Meteorological Society | x | x | 1500 | 104 | x | x | x | x |
| Remote Sensing of Environment | x | x | x | x | x | x | x | x |
| ISPRS Journal of Photogrammetry & Remote Sensing | NS | NS | x | x | x | x | x | x |
| Gondwana Research | x | x | 1500 | 26.1 | x | x | x | x |
| Atmospheric Chemistry & Physics | x | x | NS | NS | x | x | x | x |
| Geology | x | x | 1250 | 26.1 | x | x | x | x |
| Journal of the Meteorological Society of Japan | x | x | 4500 | NS | x | x | x | x |
| GPS Solutions | x | x | x | x | x | x | x | x |
| Geochimica Et Cosmochimica Acta | x | x | 2000 | 52.2 | x | x | x | x |
| IEEE Transactions on Geoscience & Remote Sensing | NS | NS | x | x | x | x | x | x |
| Journal of Climate | x | x | 1500 | 104 | x | x | x | x |
| Journal of Geodesy | x | x | x | x | x | x | x | x |
| Cryosphere | x | x | 500 | 52 | x | x | x | x |
| *Immunology* |
| Lancet Infectious Diseases | 400 | 6 | x | x | x | x | x | x |
| Nature Immunology | x | x | 1200 | QL | x | x | x | x |
| Immunity | 1500 | 8.7 | x | x | x | x | x | x |
| Journal of Allergy & Clinical Immunology | 500 | QL | x | x | x | x | x | x |
| Lancet HIV | 250 | 4 | x | x | x | x | x | x |
| Journal of Experimental Medicine | x | x | x | x | x | x | x | x |
| Clinical Infectious Diseases | 500 | NS | x | x | NS | NS | x | x |
| Journal For Immunotherapy of Cancer | x | x | x | x | NS | NS | x | x |
| Journal of Autoimmunity | x | x | x | x | x | x | x | x |
| Cellular & Molecular Immunology | x | x | x | x | x | x | x | x |
| Emerging Infectious Diseases | 300 | 4 | x | x | 1667 | NS | x | x |
| Mucosal Immunology | NS | QL | x | x | x | x | x | x |
| Eurosurveillance | 600 | 12 | x | x | x | x | x | x |
| Journal of Allergy & Clinical Immunology-In Practice | 500 | QL | x | x | x | x | x | x |
| Allergy | 600 | NS | x | x | x | x | x | x |
| *Materials Science* |
| Nature Materials | x | x | 1200 | NS | x | x | x | x |
| Nature Nanotechnology | x | x | 1200 | QL | x | x | x | x |
| Materials Today | x | x | 1200 | NS | NS | NS | x | x |
| Advanced Materials | NS | NS | x | x | x | x | x | x |
| Advanced Energy Materials | NS | NS | x | x | x | x | x | x |
| ACS Nano | NS | NS | x | x | x | x | x | x |
| Advanced Functional Materials | NS | NS | x | x | x | x | x | x |
| Materials Horizons | x | x | NS | NS | x | x | x | x |
| Nano Energy | x | x | x | x | x | x | x | x |
| ACS Energy Letters | x | x | x | x | x | x | x | x |
| Journal Of Materials Chemistry A | x | x | NS | NS | x | x | x | x |
| Chemistry Of Materials | x | x | NS | NS | x | x | x | x |
| Small | NS | NS | x | x | x | x | x | x |
| NPJ Computational Materials | x | x | 1200 | NS | x | x | x | x |
| Biomaterials | x | x | x | x | x | x | x | x |
| *Mathematics* |
| Siam Review | x | x | x | x | x | x | x | x |
| Annals of Mathematics | x | x | x | x | x | x | x | x |
| Advances in Nonlinear Analysis | x | x | x | x | x | x | x | x |
| Journal of the American Mathematical Society | x | x | x | x | x | x | x | x |
| Nonlinear Analysis-Hybrid Systems | x | x | x | x | x | x | x | x |
| Communications on Pure & Applied Mathematics | x | x | x | x | x | x | x | x |
| Mathematical Models & Methods in Applied Sciences | x | x | x | x | x | x | x | x |
| Foundations of Computational Mathematics | x | x | x | x | x | x | x | x |
| Journal of the Royal Statistical Society Series B-Statistical Methodology | 400 | 52 | x | x | x | x | x | x |
| Fractional Calculus & Applied Analysis | x | x | x | x | x | x | x | x |
| Applied & Computational Harmonic Analysis | 5000 | NS | x | x | x | x | x | x |
| Inventiones Mathematicae | x | x | x | x | x | x | x | x |
| Annals of Statistics | x | x | x | x | x | x | x | x |
| Applied Mathematics Letters | x | x | x | x | x | x | x | x |
| Archive for Rational Mechanics & Analysis | x | x | x | x | x | x | x | x |
| *Microbiology* |
| Cell Host & Microbe | x | x | x | x | NS | NS | x | x |
| Nature Microbiology | x | x | 1200 | QL | x | x | x | x |
| ISME Journal | x | x | 1500 | NS | x | x | x | x |
| Microbiome | NS | NS | x | x | x | x | x | x |
| Mbio | 500 | NS | x | x | x | x | x | x |
| PLOS Pathogens | x | x | x | x | NS | NS | x | x |
| Emerging Microbes & Infections | x | x | x | x | x | x | x | x |
| Msystems | 500 | NS | x | x | x | x | x | x |
| Journal of Oral Microbiology | x | x | NS | NS | x | x | x | x |
| Cellular Microbiology | x | x | x | x | x | x | x | x |
| Journal of Virology | 500 | NS | x | x | x | x | x | x |
| NPJ Biofilms & Microbiomes | x | x | 1200 | NS | x | x | x | x |
| Journal of Clinical Microbiology | 500 | NS | x | x | x | x | x | x |
| Frontiers in Microbiology | x | x | x | x | NS | NS | x | x |
| Microbial Biotechnology | x | x | x | x | x | x | x | x |
| *Molecular Biology & Genetics* |
| Nature Medicine | 500 | NS | 1200 | QL | x | x | x | x |
| Cell | x | x | 7500 | NS | NS | NS | x | x |
| Nature Genetics | x | x | 1200 | NS | x | x | x | x |
| Cell Stem Cell | 1000 | NS | 7500 | NS | x | x | x | x |
| Cancer Cell | 900 | 8.7 | x | x | NS | NS | x | x |
| Cell Metabolism | 1000 | NS | x | x | NS | UL | x | x |
| Nature Cell Biology | x | x | 1200 | QL | x | x | x | x |
| Cell Research | x | x | x | x | x | x | x | x |
| Molecular Cell | x | x | 7500 | NS | NS | UL | x | x |
| Genome Biology | 800 | NS | x | x | x | x | x | x |
| Autophagy | x | x | QL | QL | x | x | x | x |
| EMBO Journal | NS | NS | x | x | x | x | x | x |
| Molecular Biology & Evolution | x | x | x | x | x | x | x | x |
| Developmental Cell | x | x | x | x | NS | NS | x | x |
| Genes & Development | x | x | x | x | x | x | x | x |
| *Multidisciplinary* |
| Nature | x | x | 1200 | QL | NS | NS | x | x |
| Science | 300 | 13.05 | 1000 | 13.05 | QL | NS | x | x |
| Nature Communications | x | x | 1200 | NS | NS | NS | x | x |
| Science Advances | x | x | x | x | 1000 | NS | x | x |
| Proceedings of the National Academy of Sciences of the United States of America | 500 | 26.1 | x | x | NS | NS | x | x |
| National Science Review | 300 | NS | x | x | x | x | x | x |
| Nanoscale Horizons | x | x | NS | NS | x | x | x | x |
| Gigascience | x | x | x | x | x | x | x | x |
| Scientific Data | x | x | x | x | x | x | x | x |
| Journal of Advanced Research | NS | NS | x | x | x | x | x | x |
| Annals of the New York Academy of Sciences | x | x | x | x | x | x | x | x |
| Science Bulletin | 500 | NS | 1000 | NS | x | x | x | x |
| Scientific Reports | x | x | 1200 | NS | NS | NS | x | x |
| Journal of the Royal Society Interface | x | x | x | x | x | x | x | x |
| PLOS One | x | x | x | x | NS | NS | x | x |
| *Neuroscience & Behavior* |
| Lancet Neurology | 400 | 8 | x | x | x | x | x | x |
| Nature Neuroscience | x | x | 1200 | QL | x | x | x | x |
| Acta Neuropathologica | 1000 | NS | x | x | x | x | x | x |
| Neuron | x | x | x | x | NS | NS | x | x |
| Progress in Neurobiology | x | x | x | x | x | x | x | x |
| Alzheimers & Dementia | 750 | NS | x | x | x | x | x | x |
| Biological Psychiatry | 1000 | QL | x | x | x | x | x | x |
| Molecular Psychiatry | 700 | NS | x | x | x | x | x | x |
| JAMA Neurology | 400 | 4 | x | x | 600 | QL | x | x |
| Brain | 1500 | QL | x | x | x | x | x | x |
| Annals of Neurology | 400 | NS | x | x | x | x | x | x |
| Neuro-Oncology | 600 | 26.1 | x | x | x | x | x | x |
| Movement Disorders | 500 | 8 | x | x | x | x | x | x |
| Translational Stroke Research | x | x | 1000 | NS | x | x | x | x |
| Neurology | 200 | QL | x | x | x | x | x | x |
| *Pharmacology & Toxicology* |
| Journal of Controlled Release | x | x | x | x | x | x | x | x |
| Alimentary Pharmacology & Therapeutics | 500 | 104.4 | x | x | x | x | x | x |
| British Journal of Pharmacology | 800 | QL | x | x | x | x | x | x |
| Clinical Pharmacology & Therapeutics | 400 | 26.1 | x | x | x | x | x | x |
| Particle & Fibre Toxicology | 1000 | NS | NS | NS | x | x | x | x |
| Acta Pharmaceutica Sinica B | x | x | x | x | x | x | x | x |
| Nanotoxicology | NS | NS | NS | NS | x | x | x | x |
| Archives of Toxicology | 500 | NS | NS | NS | x | x | x | x |
| Expert Opinion on Drug Delivery | 1500 | NS | x | x | x | x | x | x |
| Value in Health | NS | 26.1 | x | x | x | x | x | x |
| Journal of Antimicrobial Chemotherapy | 800 | NS | x | x | x | x | x | x |
| Therapeutic Advances in Chronic Disease | 1000 | NS | x | x | x | x | x | x |
| Pharmacological Research | NS | NS | x | x | x | x | x | x |
| Drugs | 1000 | NS | x | x | x | x | x | x |
| Expert Opinion on Therapeutic Targets | 1500 | QL | x | x | x | x | x | x |
| *Physics* |
| Nature Photonics | x | x | 1200 | QL | x | x | x | x |
| Nature Physics | 500 | NS | 1200 | NS | x | x | x | x |
| Physical Review X | x | x | 3500 | NS | x | x | x | x |
| Light-Science & Applications | x | x | x | x | x | x | x | x |
| Applied Physics Reviews | x | x | x | x | x | x | x | x |
| Advanced Science | NS | NS | x | x | x | x | x | x |
| Nano Letters | x | x | x | x | x | x | x | x |
| NPJ Quantum Information | x | x | 1200 | NS | x | x | x | x |
| Laser & Photonics Reviews | x | x | x | x | x | x | x | x |
| Nano Research | x | x | x | x | x | x | x | x |
| Optica | x | x | 1500 | 26.1 | x | x | x | x |
| Nanoscale | x | x | NS | NS | x | x | x | x |
| ACS Photonics | x | x | x | x | x | x | x | x |
| Nanophotonics | x | x | x | x | x | x | x | x |
| Journal of High Energy Physics | x | x | x | x | x | x | x | x |
| *Plant & Animal Science* |
| Fungal Diversity | x | x | x | x | x | x | x | x |
| Studies in Mycology | x | x | x | x | x | x | x | x |
| Nature Plants | x | x | 1200 | QL | x | x | x | x |
| Molecular Plant | 1200 | NS | x | x | x | x | x | x |
| Plant Cell | 1000 | NS | x | x | x | x | x | x |
| Persoonia | x | x | x | x | x | x | x | x |
| New Phytologist | 1500 | NS | NS | NS | x | x | x | x |
| Plant Biotechnology Journal | x | x | x | x | x | x | x | x |
| Plant Physiology | 1000 | NS | x | x | x | x | x | x |
| Cladistics | x | x | x | x | x | x | NS | NS |
| Plant Journal | x | x | x | x | x | x | x | x |
| Plant Cell and Environment | x | x | x | x | x | x | x | x |
| Journal of Experimental Botany | x | x | x | x | NS | NS | x | x |
| Wildlife Monographs | 5000 | QL | x | x | x | x | x | x |
| Evolutionary Applications | x | x | NS | QL | x | x | x | x |
| *Psychiatry & Psychology* |
| World Psychiatry | x | x | NS | NS | x | x | x | x |
| JAMA Psychiatry | 400 | 4 | x | x | 600 | QL | x | x |
| Lancet Psychiatry | 400 | 4 | x | x | x | x | x | x |
| American Journal of Psychiatry | 500 | 6 | x | x | x | x | x | x |
| Psychotherapy & Psychosomatics | 500 | NS | x | x | x | x | x | x |
| Perspectives on Psychological Science | x | x | x | x | x | x | x | x |
| Journal of Child Psychology & Psychiatry | x | x | x | x | x | x | x | x |
| Psychological Methods | x | x | x | x | x | x | x | x |
| Journal of the American Academy of Child & Adolescent Psychiatry | 750 | NS | x | x | x | x | x | x |
| Psychological Science | x | x | 1500 | NS | x | x | x | x |
| British Journal of Psychiatry | x | x | 1200 | NS | 500 | NS | x | x |
| Journal of Personality & Social Psychology | x | x | UL | NS | x | x | x | x |
| Epidemiology and Psychiatric Sciences | x | x | x | x | x | x | x | x |
| Personnel Psychology | x | x | x | x | x | x | x | x |
| Psychological Medicine | 1500 | NS | x | x | x | x | x | x |
| *Social Sciences* |
| International Journal of Epidemiology | 700 | 26.1 | x | x | x | x | x | x |
| European Journal of Epidemiology | 1000 | NS | x | x | x | x | x | x |
| Economic Geography | x | x | x | x | x | x | x | x |
| Global Environmental Change-Human & Policy Dimensions | x | x | x | x | x | x | x | x |
| Bulletin of the World Health Organization | x | x | x | x | x | x | x | x |
| Milbank Quarterly | x | x | x | x | x | x | x | x |
| Tourism Management | x | x | x | x | x | x | x | x |
| Internet & Higher Education | x | x | x | x | x | x | x | x |
| International Journal of Behavioral Nutrition & Physical Activity | x | x | x | x | x | x | x | x |
| MIS Quarterly | x | x | x | x | x | x | x | x |
| American Journal of Political Science | x | x | x | x | x | x | x | x |
| Yale Law Journal | x | x | x | x | x | x | x | x |
| Journal of Travel Research | NS | NS | x | x | x | x | x | x |
| Annals of Tourism Research | x | x | 3000 | NS | x | x | x | x |
| American Sociological Review | x | x | 3000 | NS | x | x | x | x |
| *Space Science* |
| Astrophysical Journal Supplement Series | x | x | x | x | x | x | x | x |
| Astrophysical Journal Letters | x | x | x | x | x | x | x | x |
| Physics of the Dark Universe | x | x | x | x | x | x | x | x |
| Astronomy & Astrophysics | x | x | NS | NS | x | x | x | x |
| Astrophysical Journal | x | x | x | x | x | x | x | x |
| Monthly Notices of the Royal Astronomical Society | x | x | x | x | x | x | x | x |
| Journal of Cosmology & Astroparticle Physics | x | x | NS | NS | x | x | x | x |
| Publications of the Astronomical Society of Australia | x | x | x | x | x | x | x | x |
| Astronomical Journal | x | x | x | x | x | x | x | x |
| Acta Astronomica | x | x | x | x | x | x | x | x |
| Astrobiology | 500 | NS | x | x | x | x | NS | NS |
| Journal of Geophysical Research-Planets | x | x | 2500 | NS | x | x | x | x |
| Publications of the Astronomical Society of the Pacific | x | x | x | x | x | x | x | x |
| Astroparticle Physics | x | x | x | x | x | x | x | x |
| Icarus | x | x | NS | NS | x | x | x | x |

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## Supplementary Information H. Peer review.

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| **Supplementary Table H1**. Number of different post-publication critique types that are sent for independent external peer review. The denominator for percentages is the total number of each post-publication critique type offered. |
| Post-publication critique type | Is post-publication critique sent for independent external peer review? |
| Yes | Editor discretion | No | Not stated |
| Letters (n = 118) | 10 (8%) | 14 (12%) | 20 (17%) | 74 (63%) |
| Commentaries(n = 85) | 42 (49%) | 5 (6%) | 3 (4%) | 35 (41%) |
| Web comments(n = 41) | 0 (0%) | 0 (0%) | 30 (73%) | 11 (27%) |
| Other(n = 6) | 3 (50%) | 0 (0%) | 0 (0%) | 3 (50%) |

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## Supplementary Information I. Variables measured in Study Two.

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| **Supplementary Table I1**. Variables related to post-publication critique (PPC) measured in Study Two. |
| Variable name | Query | Response options |
| Secondary PPC prevalence | Is the (eligible) article PPC? | TRUEFALSE |
| Primary PPC prevalence | Is the (eligible) article linked to PPC? | TRUEFALSE |
| For the instances of PPC identified by the primary PPC prevalence measure... |
| Target data availability | Does the target article share data? | TRUESTATES AVAILABLE UPON REQUESTFALSENOT APPLICABLE |
| Target open access | Is the target article open access? | TRUEFALSE |
| PPC open access | Is the PPC open access? | TRUEFALSE |
| PPC anonymous | Are PPC authors anonymous? | TRUEFALSE |
| PPC COI Statement | Does the PPC include a conflict of interest statement? | TRUEFALSE |
| PPC COI Actual | Do PPC authors state that there may be a conflict of interest? | TRUEFALSENOT APPLICABLE (i.e., if no COI statement) |
| PPC publication time | How long after publication of the target article was the PPC published?  | Difference between publication date of PPC and publication date of target article. |
| PPC content | What does the PPC address? (indicate all that apply) | DesignImplementationAnalysisReportingInterpretationOther (specify) |
| PPC length | How many words are included in the PPC (in main text, excluding references, etc)? | Number of words. |
| PPC analysis | Does the PPC include analysis of target article data? | TRUEFALSE |
| PPC new data | Does the PPC include analysis of new data? | TRUEFALSE |
| Target correction | Did PPC trigger correction? | TRUEFALSE |
| Target author reply | Have the target article authors replied? | TRUEFALSE |
| Reply new data | Did the author reply involve collection of new data? | TRUEFALSENOT APPLICABLE (i.e., if no reply) |
| Reply new analyses | Did the author reply involve new analyses? | TRUEFALSENOT APPLICABLE (i.e., if no reply) |
| Reply claims unchanged | Do target article authors assert their core claims remain unchanged? | TRUEFALSENOT APPLICABLE (i.e., if no reply) |

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## Supplementary Information J: How prevalent is post-publication critique in practice? Tabular data.

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| **Supplementary Table J1**. Primary and secondary prevalence estimates for the use of post-publication critique in practice across disciplines. Disciplines are in descending order by primary estimate. |
| Scientific discipline | Prevalence estimate (%) |
| primary | secondary |
| Clinical Medicine | 13 | 31 |
| Psychiatry & Psychology | 5 | 17 |
| Multidisciplinary | 5 | 3 |
| Neuroscience & Behavior | 3 | 9 |
| Biology & Biochemistry | 3 | 1 |
| Immunology | 1 | 10 |
| Molecular Biology & Genetics | 1 | 2 |
| Social Sciences | 0 | 6 |
| Environment & Ecology | 0 | 4 |
| Pharmacology & Toxicology | 0 | 4 |
| Economics & Business | 0 | 3 |
| Geosciences | 0 | 3 |
| Plant & Animal Science | 0 | 2 |
| Chemistry | 0 | 1 |
| Microbiology | 0 | 1 |
| Agricultural Sciences | 0 | 0 |
| Computer Science | 0 | 0 |
| Engineering | 0 | 0 |
| Materials Science | 0 | 0 |
| Mathematics | 0 | 0 |
| Physics | 0 | 0 |
| Space Science | 0 | 0 |

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| **Supplementary Table J2**. Number of articles linked to post-publication critique (*n*) by journal. Journals not shown had zero articles in our sample linked to post-publication critique. |
| Journal | Scientific discipline | *n* |
| New England Journal of Medicine | Clinical Medicine | 8 |
| The BMJ | Clinical Medicine | 3 |
| Lancet Psychiatry | Psychiatry & Psychology | 3 |
| Current Biology | Biology & Biochemistry | 2 |
| Gastroenterology | Clinical Medicine | 2 |
| JAMA | Clinical Medicine | 2 |
| Lancet Oncology | Clinical Medicine | 2 |
| Neurology | Neuroscience & Behavior | 2 |
| Science | Multidisciplinary | 2 |
| Annals of Internal Medicine | Clinical Medicine | 1 |
| British Journal of Psychiatry | Psychiatry & Psychology | 1 |
| Cell Stem Cell | Molecular Biology & Genetics | 1 |
| eLife | Biology & Biochemistry | 1 |
| JAMA Oncology | Clinical Medicine | 1 |
| JAMA Psychiatry | Psychiatry & Psychology | 1 |
| Lancet Infectious Diseases | Immunology | 1 |
| Lancet Neurology | Neuroscience & Behavior | 1 |
| National Science Review | Multidisciplinary | 1 |
| Nature Communications | Multidisciplinary | 1 |
| Neuron | Neuroscience & Behavior | 1 |
| Science Advances | Multidisciplinary | 1 |
| Science Translational Medicine | Biology & Biochemistry | 1 |

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| **Supplementary Table J3.** Number of articles that were classified as post-publication critique (*n*) amongst the first ten eligible articles for each journal. Journals not shown had zero articles in this sample classified post-publication critique. |
| Journal | Scientific discipline | *n* |
| Lancet Oncology | Clinical Medicine | 7 |
| Lancet Psychiatry | Psychiatry & Psychology | 6 |
| JAMA Internal Medicine | Clinical Medicine | 5 |
| JAMA Oncology | Clinical Medicine | 5 |
| Lancet Infectious Diseases | Immunology | 5 |
| New England Journal of Medicine | Clinical Medicine | 5 |
| Annals of Internal Medicine | Clinical Medicine | 4 |
| JAMA | Clinical Medicine | 4 |
| Lancet | Clinical Medicine | 4 |
| Alimentary Pharmacology & Therapeutics | Pharmacology & Toxicology | 3 |
| Circulation | Clinical Medicine | 3 |
| Frontiers in Ecology and the Environment | Environment & Ecology | 3 |
| Journal of Clinical Oncology | Clinical Medicine | 3 |
| Lancet Respiratory Medicine | Clinical Medicine | 3 |
| Neurology | Neuroscience & Behavior | 3 |
| Acta Neuropathologica | Neuroscience & Behavior | 2 |
| Allergy | Immunology | 2 |
| American Journal of Psychiatry | Psychiatry & Psychology | 2 |
| Annals of Neurology | Neuroscience & Behavior | 2 |
| Biological Psychiatry | Neuroscience & Behavior | 2 |
| British Journal of Psychiatry | Psychiatry & Psychology | 2 |
| International Journal of Epidemiology | Social Sciences | 2 |
| JAMA Neurology | Neuroscience & Behavior | 2 |
| Journal of the American Academy of Child and Adolescent Psychiatry | Psychiatry & Psychology | 2 |
| Lancet Diabetes & Endocrinology | Clinical Medicine | 2 |
| Lancet HIV | Immunology | 2 |
| Pharmacological Research | Pharmacology & Toxicology | 2 |
| Psychological Science | Psychiatry & Psychology | 2 |
| Psychotherapy and Psychosomatics | Psychiatry & Psychology | 2 |
| Science | Multidisciplinary | 2 |
| ACS Catalysis | Chemistry | 1 |
| The BMJ | Clinical Medicine | 1 |
| Brain | Neuroscience & Behavior | 1 |
| Cladistics | Plant & Animal Science | 1 |
| Clinical Infectious Diseases | Immunology | 1 |
| Current Biology | Biology & Biochemistry | 1 |
| European Journal of Epidemiology | Social Sciences | 1 |
| Eurosurveillance | Immunology | 1 |
| Evolutionary Applications | Plant & Animal Science | 1 |
| Gastroenterology | Clinical Medicine | 1 |
| Geology | Geosciences | 1 |
| Gondwana Research | Geosciences | 1 |
| JAMA Psychiatry | Psychiatry & Psychology | 1 |
| Journal of Allergy and Clinical Immunology-In Practice | Immunology | 1 |
| Journal of Climate | Geosciences | 1 |
| Mbio | Microbiology | 1 |
| Molecular Ecology | Environment & Ecology | 1 |
| National Science Review | Multidisciplinary | 1 |
| Nature Cell Biology | Molecular Biology & Genetics | 1 |
| Nature Geoscience | Geosciences | 1 |
| Nature Medicine | Molecular Biology & Genetics | 1 |
| Strategic Management Journal | Economics & Business | 1 |

# Supplementary Information K: Definition of post-publication critique

We adopted the following operational definition of post-publication critique:

*Any journal-based avenue for sharing peer-initiated critical discourse related to specific research articles previously published in the same journal.*

For scientific discourse to constitute post-publication critique under this definition, it had to meet the following specific criteria:

(a) *Journal-based*. The mode of sharing critical discourse had to be directly or indirectly controlled by the journal. Online commenting systems developed by 3rd party services (e.g., Disqus), still counted as post-publication critique if the journal was responsible for operating them.

*(b) Shared.* The critique had to be accessible to the journal’s readership, rather than, for example, handled privately within the editorial team. Critical discourse published behind a paywall still counted as post-publication critique as long as it was visible to the journal’s typical readership.

(c) *Peer-initiated*. It had to be possible for independent researchers to make unsolicited submissions; commissioned articles and/or editorials did not count as post-publication critique.

(d) *Critical discourse*. Post-publication critique had to allow for critical content. Exclusively positive or neutral content (e.g., news or ‘spotlight’ articles) did not count as post-publication critique.

(e) *Related to specific research articles previously published in the journal*. The target of post-publication critique had to be specific research already published in the same journal, rather than research published elsewhere, or articles about general scientific topics or general methodological issues. Systematic reviews and meta-analyses did not count as post-publication critique.

## Supplementary Information L. Definition of scientific disciplines.

The 22 scientific disciplines were defined by Clarivate Essential Science Indicators (<https://perma.cc/MD4V-A5X5>). We did not include the discipline of Arts and Humanities. The discipline definitions are reproduced here verbatim.

### Agricultural Sciences

Agricultural Sciences covers journals in general agriculture, agricultural chemistry and engineering, agronomy, dairy science, and animal science as it relates to agricultural needs, as well as food science and nutrition. Topics covered include tillage research and soil science; agroforestry; horticulture; crop protection and science; pest control and weed science; agrochemistry; phytochemistry; agricultural biochemistry; food chemistry; cereal chemistry; carbohydrate and lipid research; food composition, additives, and contaminants; food microbiology and technology; agricultural engineering and processing; meat and dairy science; animal breeding; animal genetics, nutrition, and production; poultry science; nutrition and metabolism; and nutritional biochemistry. Clinical nutrition also maps here. Agricultural economics maps to *Economics & Business*.

### Biology & Biochemistry

Biology & Biochemistry covers a broad range of general topics. These include structure and chemistry of biological molecules; molecular, cellular, and clinical studies of the endocrine system (but does not include clinical endocrinology); regulation of cell, organ, and system functions by hormones; experimental research in general biology and biological systems; anatomy; physiology; cytology; pathology; morphology; proteomics; histochemistry; biophysics; regulation of biological functions at the whole organism level; exploitation of living organisms or their components; industrial microbiology; pollution remediation; industrial chemicals and enzymes; biosensors; bioelectronics; pesticide development; food, flavor, and fragrance industry applications; and waste treatment. Computational biology and life-science-related microscopy journals also map here.

### Chemistry

The Chemistry category covers a broad spectrum of topics within the chemical sciences, including analytical chemistry, inorganic and nuclear chemistry, organic chemistry, physical chemistry, crystallography, electrochemistry, chemical methods and structures, natural and laboratory syntheses, and isolation and analysis of clinically significant molecules. This category also covers instrumentation and spectroscopy journals. Miscellaneous and applied chemistry journals also map here.

Polymer science journals not largely related to Materials Science map here; otherwise, they map to *Materials Science.*Chemical engineering journals also map here, provided they deal exclusively with chemical engineering—if they deal with multiple forms of engineering, they map to *Engineering*.

### Clinical Medicine

The Clinical Medicine category covers journals dealing with a wide range of medical and biomedical topics. These include anesthesia and critical care medicine, cardiovascular medicine and cardiology, dentistry, dermatology, general and internal medicine, endocrinology, environmental medicine, gastroenterology, gynecology, hepatology, hematology, legal medicine, nephrology, nuclear medicine, nursing, obstetrics and reproductive medicine, oncology, ophthalmology, otolaryngology, pediatrics, radiology, respiratory medicine and pulmonology, rheumatology, surgery (including neurosurgery), and urology.

Clinical pharmacology as it relates to clinical trials maps here; otherwise pharmacology topics map to *Pharmacology & Toxicology*. All nutrition topics map to *Agricultural Sciences*. Ethics journals solely devoted to medical ethics map here. Journals dealing with the clinical aspects of substance abuse are classified here; those dealing with the social aspects map to *Social Sciences, General.*

### Computer Science

Computer Science encompasses computer hardware and architecture, computer software, software engineering and design, computer graphics, programming languages, theoretical computing, computing methodologies, interdisciplinary computer applications, artificial intelligence theory, information systems and information technology, telecommunications, communications via various devices and systems, and acquisition, processing, storage, management, and dissemination of information. Bioinformatics journals also map here.

### Economics & Business

The Economics & Business category includes journals which cover theoretical, political, agricultural, and developmental economics, as well as business, finance, management, organizational science, strategic planning and decision-making methods, and industrial relations and labor matters.

### Engineering

Engineering includes publications covering a number of engineering disciplines, including aerospace engineering, mechanical engineering, electrical and electronics engineering, nuclear energy, civil engineering (which also encompasses water resources and supply and transportation and municipal engineering), the effects of humans on the environment and controls to minimize environmental degradation, applied artificial intelligence, robotics and automatic control, engineering mathematics (which encompasses mathematical modeling, optimization techniques, and statistical methods in engineering systems), energy and fuels, operations research, engineering management, construction and building technology, and the development, manufacture, and application of instruments.

Chemical engineering journals also related to other areas of engineering map here; otherwise they map to *Chemistry*.

### Environment & Ecology

Environment/Ecology covers interrelated disciplines on pure and applied ecology, ecological modeling and engineering, ecotoxicology, evolutionary ecology, environmental contamination and toxicology, environmental health, environmental monitoring and management, environmental technology, environmental geology, water resources research, climate change, limnology, and biodiversity conservation. Natural history journals are also covered here. Environmental *Studies* subjects map to *Social Sciences*.

### Geosciences

The Geosciences category covers a broad range of journals related to physical studies of the Earth. These include geology, geochemistry, geophysics, geotechnics, economic geology, petrochemistry, mineralogy, meteorology and atmospheric sciences, hydrology, oceanography, petroleum geology, volcanology, seismology, climatology, paleontology, remote sensing, geodesy, and geological, petroleum, and mining engineering.

### Immunology

The category of Immunology incorporates journals containing cellular and molecular studies in immunology; clinical research in immunopathology; infectious diseases; autoimmunity and allergy; host-pathogen interactions in infectious diseases; and experimental therapeutic applications of immunomodulating agents.

### Materials Science

The Materials Science category deals with journals covering the admixtures of matter or the basic materials from which products are constructed. These include ceramics, paper and wood products, textiles, composites, coatings and films, biomaterials, metals and alloys, metallurgy, superconductors and semiconductors, ferroelectrics, dielectrics, and the application of chemistry to materials design and testing. Polymer journals largely related to Materials Science map here; otherwise they map to *Chemistry*.

### Mathematics

The Mathematics category comprises journals dealing with pure and applied mathematics as well as statistics and probability.

### Microbiology

The Microbiology category contains journals dealing with biology and biochemistry of protozoa and microorganisms (bacterial, viral, and parasitic), medical implications of the subsets of these organisms known to cause diseases, and the biotechnology applications of microorganisms for basic science or clinical use. Fungi journals are not mapped to this category, but rather to *Plant & Animal Science*.

### Molecular Biology & Genetics

Molecular Biology & Genetics covers all aspects of basic and applied genetics, as well as research that has specific emphasis on cellular functions in eukaryotic systems. These topics include biochemistry in eukaryotic systems; receptor biology; signal transduction; regulation of gene expression; morphogenesis; cell-environment interactions; molecular genetics; developmental genetics; developmental biology; biomedical engineering; mechanisms of mutagenesis; structure, function, and regulation of genetic material; clinical genetics; patterns of inheritance; genetics causes of diseases; and screening for and treatment of genetic diseases. General cell biology journals also map here.

### Multidisciplinary

This category includes journals of a broad or general character in the sciences and covers the spectrum of major scientific disciplines. It also includes journals devoted to a multidisciplinary approach to the study of particular regions, ecosystems, or biological systems, as well as interdisciplinary journals designed to illuminate significant connections between fields.

### Neuroscience & Behavior

Neuroscience & Behavior includes journals that cover cellular and molecular neuroscience, neuronal development, basic and clinical neurology, psychopharmacology, biobehavioral psychology, molecular psychology, and neuronal function underlying higher cognitive processes. Neurosurgery is not covered in this category, but rather in *Clinical Medicine* with other surgical journals.

### Pharmacology & Toxicology

*Pharmacology* covers journals dealing with pharmacology; pharmaceutics, cellular and molecular pharmacology; drug design and metabolism; mechanisms of drug action; drug delivery; natural products and traditional medicines; xenobiotics; medicinal chemistry; and mechanisms of action for clinical therapeutics.

*Toxicology* covers journals dealing with molecular and cellular effects of harmful substances, environmental toxicology, occupational exposure, and clinical toxicology.

### Physics

Physics includes journals covering articles from all areas of physics and the following subfields: mathematical physics, particle and nuclear physics, physics of fluids and plasmas, quantum physics, theoretical physics, chemical physics, applied physics, condensed matter physics, physics of materials, and optics and acoustics.

### Plant & Animal Science

*Plant Science* covers general botany journals as well as non-agricultural plant research, including regional botany, mycology, bryology, plant physiology, forestry, plant pathology, economic botany, aquatic botany and toxicology, marine ecology, plant nutrition, photosynthesis research, experimental botany, and cellular and molecular biology or physiology of plant cells and plant systems.

*Animal Science* covers non-agricultural animal science journals. Topics include animal behavior, health, and genetics; veterinary medicine; lab animal science; marine and freshwater biology; fisheries science; aquaculture; entomology; evolutionary biology; wildlife research; and zoology, encompassing primatology, mammalogy, ornithology, herpetology, nematology, and malacology.

### Psychiatry & Psychology

All areas of psychiatry and psychology are covered in this category, including applied, biological, clinical, developmental, educational, mathematical, organizational, personal, and social, as well as the diagnosis and treatment of psychiatric disorders.

### Social Sciences (General)

The Social Sciences category includes journals which cover communication, environmental studies, library and information sciences, political science, public health and administration, rehabilitation, social work and social policy, sociology, anthropology, law, education, linguistics, tourism and hospitality, and demography. Journals covering the history and philosophy of science also map to this category. Ethics journals are classified here, unless they deal strictly with medical ethics, then they map to *Clinical Medicine*. Journals dealing with the social aspects of substance abuse map here; any with clinical aspects map to *Clinical Medicine*.

### Space Sciences

The Space Science category covers journals dealing with all areas of astronomy and astrophysics, celestial bodies, and observation and interpretation of radiation from the component parts of the universe.

## Supplementary Information M. Study schematic.

Supplementary Figure M1. A schematic illustrating the key features of Study One and Study Two and how they relate to one another.