

UNIVERSITÀ DEGLI STUDI DI MILANO

GUIDELINES



Knowledge behind the scenes of a peerreviewed journal helps in publishing your manuscript



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Abstract

This paper provides insights into the paper submission and review processes and the possible reasons behind paper acceptance or rejection. The main target of this paper is emerging researchers who are writing their first scientific papers in peer-reviewed journals. This manuscript gives clues on how to select a journal and what a preprint is, introduces authorship and the roles of editors, reviewers, and publishers, sheds light on the editorial process, and briefly introduces some ethical issues arising in scholarly publishing. The content is based on a course offered annually to doctoral students at the University of Milan and keeps into account frequently asked questions. The authors of this paper are an editor-in-chief and an associated editor of scientific journals, respectively.

Keywords Selection of the peer-reviewed journal, Early career professionals, Authorship, Preprints, Ethical considerations

Introduction

Started in March 1665 by Henry Oldenburg, 'Philosophical Transactions' was the first journal to be published and is the one that lasted the longest (https://royalsociety.org/journals/publishing-activities/publishing350/ history-philosophical-transactions/). Oldenburg was the first secretary of the Royal Society and at the same time acting as a publisher and an editor. The journal intended to promote the activities of modern science and was published monthly for a shilling.

Since then, scholarly journals have been a primary tool to share and disseminate knowledge. However, changes have been made to the editorial process, including new

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BMC

peer-review models, open access publishing, and optional raw data storage.

To be an author of articles is central to research assessment. Authorship not only signifies who contributed to a study but also measures scholarly productivity and impact. In academia, being listed as an author in peerreviewed articles is a primary way researchers demonstrate their contributions to advancing knowledge in their field. However, the concept of authorship goes beyond mere credit; it carries ethical and professional responsibilities. Authorship should reflect substantial intellectual contributions to the conception, design, execution, or interpretation of the research.

Early-career professionals who are writing their first scientific papers in peer-reviewed journals can get assistance from their supervisors. While supervisors are generally eager to assist their team members in any way possible, they might not be fully available at the time the authors need help. Here the reader can find a systematic approach to publishing in a peer-reviewed journal.

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The editorial process in scholarly publishing involves several stages designed to ensure the quality, validity, and integrity of the research being disseminated. Some authors do not understand why it takes such a long time for their manuscripts to go through the editorial process and sometimes do not understand the decision that they get at the end, so we hope that this manuscript will make it a little bit clearer, opening up the publishing process black box.

Before submission to the peer-reviewed journal Authorship and standard identifiers

Who is the author? Some young researchers are not aware that there are standards for being authors. According to the International Committee of Medical Journal Editors (https://www.icmje.org/recommendations/ browse/roles-and-responsibilities/defining-the-role-ofauthors-and-contributors.html) authorship is based on the following four criteria:

- Substantial contributions to the conception or design of the work; or the acquisition, analysis, or interpretation of data for the work; AND
- Drafting the work or reviewing it critically for important intellectual content; AND
- Final approval of the version to be published; AND
- Agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

Consequently, those who meet fewer than four criteria will not be listed as authors but could be acknowledged in the paper. Interestingly, on more than 12,000, Sauermann and Haeussler (2017) showed that for almost half of the authors, authorship did not reflect the criteria stated in the ICMJE guidelines, mainly because authors were not involved in writing their papers.

Correct authorship includes avoidance of some unethical practices (McNutt et al. 2018). Those detrimental practices include: (i) ghost authors who contributed to the work but were not on the authors' list mainly to avoid conflicts of interest with the editors, the referees, and the audience; (ii) gift authors or individuals who did not contribute substantially to the research but were added because they have notable roles in their organization; (iii) orphan authors who, despite their substantial contribution to the work, were not considered in the list of authors; and (iv) forged authors whose name is in the list of the authors to increase the acceptance of the publication or the visibility or impact of the article.

The first author is usually the person who made the most significant intellectual contribution to the work. According to the ICMJE guidelines, the corresponding author (CA) is the author who takes primary responsibility for communication with the journal during the submission, manuscript review, and publication process. The CA responds to the journal's administrative, editorial, and ethical requests in a timely manner. The CA should also be available post-publication to respond to criticisms of the work and cooperate with any journal requests for additional data or information needed. McNutt et al. (2018) add further details about data, materials, and code claiming that the CA is responsible so that they accurately reflect the original, are retrievable for reanalysis, and minimize obstacles to their sharing. A shared first author (co-first author) or shared corresponding author (co-corresponding author) is also possible (Conte et al. 2013).

Taking into account that research teams have recently grown in size in many fields, and it is no longer uncommon to find papers with 10 or more authors, authorship attribution has become increasingly complex (Hoekman and Rake 2024). Hoekman and Rake (2024) claimed that authorship opportunities in large geographically distributed teams systematically varied depending on how team members were spatially included in projects and, overall, were unequal for people across the globe. Whatever the case, journals should improve their authorship practices to ensure that all important scientific contributions can be recognized and contributions in a long authors list are clarified. To this end, journals are encouraged to adopt the Contributor Roles Taxonomy (CRediT, https:// credit.niso.org/) that defines 14 levels of involvement and allows broader estimation of scientific productivity. The taxonomy also encourages discussion among investigators about whether the order of authorship makes sense to everyone during the research and after its completion. In addition, CRediT is helping the shift from authorship to contributorship (Allen et al. 2019). Notably, ICMJE guidelines and CRediT taxonomy on authorship do not provide information on criteria to decide the order of authors, anyway, some proposals on this relevant topic have been made (Cooke et al. 2021). Responsibility and accountability are key points to confer credit to authors (Cooke et al. 2021), but there are some fields, such as law, where anonymous publications have a long tradition that continues (Li and Zhang 2024). In the name of transparency, Li and Zhang (2024) suggest paying more attention to anonymous citable items.

Many complexities arise to identify a person by name uniquely. For instance, when searching for authors in Scopus by entering the last name 'Li' and the first name 'Zhiwu', the database reports 25 authors (retrieved on 26 March 2024). There are many researcher identifiers, such as ORCID (open researcher and contributor identifier, https://orcid.org/), Scopus Author Identifier, ResearcherID, etc. that work as persistent digital IDs, distinguishing a person from other researchers so that only one researcher can get credit and attribution for his/ her work throughout their career. Several researchers support the use of ORCID (McNutt et al. 2018), which, by the way, is also recommended by Open Research Europe (https://open-research-europe.ec.europa.eu/ gateways/erc/for-authors/publish-your-research), the National Institution for Health (NIH) and other funders (https://grants.nih.gov/grants/guide/notice-files/NOT-OD-19-109.html). ORCID icon is a green symbol close to the name of each author. If anyone needs to learn more about an author, clicking the ORCID icon takes them to their ORCID record.

Group authorship (otherwise named corporate/team/ consortium authorship), which refers to the use of one name in the authorship list for a team of people, has recently increased (Hosseini et al. 2024). Advantages of the employment of group authorship include: highlighting the significance of consortium science, consideration of large-scale research collaborations, increased visibility of group activities, re-solving or bypassing difficult and contentious issues in assigning authorship credit and granting authorship as a group due to insufficient amount of work by an individual. Hosseini et al. (2024) suggest that members of the group as well as their contributions should be always disclosed and a group member's ORCID name should be assigned.

Selection of the journal and preprints

Many criteria can be followed to choose a journal. If you are not the sole author of the manuscript, a good idea is to ask for help from an experienced co-author or someone who has already published in your field. In the case of a PhD student, this person could be his/her supervisor. Another criterion concerns selecting the journal/s in which the articles you have recently read and which are the main references for your future article. If there is a journal in which the manuscripts that are considered most interesting for one's research or one's field are published, you will also find an audience that will be interested in those topics. Alternatively, you search the journals for papers similar to the one you want to submit. Publishers also have online portals designed to suggest journals that have published articles with content similar to your manuscript. If you are interested in publishing in open access journals, the Directory of Open Access Journals (DOAJ, https://doaj.org/) is a database that aims to increase the visibility and ease of use of open access scientific and scholarly journals, thereby promoting their increased usage. You can use the search box on the homepage to access content. Another important criterium is the relevance in the sector which can be measured by metrics (for example the quartile). The SCImago (https://www.scimagojr.com/) Journal & Country Rank is an openly available database, that considers the journals and country scientific indicators, developed from the information contained in the Scopus database. Q1 comprises the quarter of the journals with the highest values and Q4 the lowest values. Written in 2012 by several editors and publishers of academic journals, the Declaration on Research Assessment (DORA, https://sfdora.org/) addresses the problems that arise from undue reliance on metrics in research assessment. It is perhaps best known for being critical of the misuse of the journal impact factor in the assessment of individual research manuscripts. Yet journal impact factor is still broadly used across research and academia.

Last but not least, it is possible to evaluate the editorial process speed or days from submission to first decision and from acceptance to online first publication. Please remember that there's a lot of quality control that goes into publications and quality control takes time. We will talk about the editorial process in a subsequent section.

Before a final decision on the journal to choose, you have to visit the journal homepage. Here you have to carefully read the aims and scope of the journal which includes a brief explanation of its objectives, the main reason it exists, and the aimed audience. On the journal homepage, you retrieve also the types of papers that can be published. Consequently, if you are writing a research article, and the journal publishes only reviews and opinions, this journal is not suitable for you at least at this time.

Whether there are still doubts about the best journal a pre-submission inquiry could be a nice strategy to pursue as responses by editors are typically prompt (approximately 2–5 days). A pre-submission inquiry, in the form of an extended abstract, to a journal is a query sent by email or via an online submission form that enables authors to gather editorial feedback about whether their manuscript is a good fit for the journal before submission. The pre-submission could sometimes be mandatory and the guidelines provide information on this aspect.

Before or in parallel to submitting to a journal, writing a preprint is an interesting option. A preprint is a manuscript yet to be certified by peer review that helps its authors show their results quickly. Preprints are gathering momentum in many disciplines. In some research fields as life sciences, the practice of preprint has dramatically increased in the last years (ASAPbio, https://asapbio.org/). At the time of the coronavirus SARS-CoV-2 pandemic, medRxiv, a preprint server for health sciences, highlighted that preprints are preliminary reports that should not be regarded as conclusive, guide clinical practice/health-related behavior or to be reported in news media as established information pubwork (https://connect.medrxiv.org/relate/conlished tent/181). There are many cons to publishing a preprint.

A preprint is a way to gather comments from fellow scientists and improve a manuscript before submitting it to a peer-reviewed journal. In addition, authors can receive public or private feedback on their work before publication. A preprint is not generally viewed by publishers as a prior publication and some journals, like Plos, encourage all authors to post a preprint of their submitted manuscript. However, a double-check with the chosen journal guidelines is mandatory to be sure of this fact. A preprint server or repository is an online platform dedicated to the production and distribution of preprints, and it is generally a non-commercial database. On this platform, each preprint is registered with a unique digital object identifier making it instantly citable and providing a permanent link to the manuscript. Interestingly, it is an option to upload new versions of the preprint manuscript to the platform. A final advantage of a preprint is that the full text is accessible in case of the selection of a subscription journal. Once the manuscript is published in a peerreviewed journal, it is best practice to link its preprint version/s to the final published work.

When submitting an article to a journal, it is often mandatory to include a cover letter. The cover letter is the document where the corresponding author states that neither the manuscript nor any of its parts are under consideration or published in another journal. The cover letter is a great opportunity to succinctly highlight to the journal editor what makes the specific research novel and valuable, i.e., the cover letter is written to prove the merits of the work. To write the cover letter it is always important to follow the authors' guidelines, providing the information requested within. It is a good practice that the authors disclose the existence of the preprint version/s in the cover letter. When submitting a manuscript, it is good practice to state what is the scientific question the work is addressing, the key findings that answer this question, and why the work is important and timely. The mere absence of prior research does not automatically qualify a study as novel.

Finally, before submission, it is mandatory to publish some data sets (including DNA, RNA, and protein sequence data; genome assembly data; gene expression data; and macromolecular structure data) in public repositories. The repositories release persistent identifiers (DOIs or accession numbers) for the specific set that must be cited and referenced in the published manuscript. In any case, open access policies encourage that all research data be made available to readers without practicing undue reservations. For data repository guidance, the reader can rely on the publisher's research data policy and individual journal guidelines.

The submission system and publishing options

Authors submit their manuscripts to a scholarly journal through an online submission system. The manuscript usually includes the main text, figures, tables, and supplementary materials. Besides the submission, the submission system allows one to track the status of a manuscript and to interact with the editors from anywhere with internet access. All the provided documents and the correspondence are saved and stored in the platform and the manuscript is worked on within the system. The first thing a CA needs to do when dealing with the submission system is to log in, thus registering an account is mandatory before submission. Otherwise, it is often an option to log in via an ORCID account. It is at the time of submission that the publishing option (subscription/open access) and the publishing agreement are indicated or to be accepted. In the case of subscription journals, individuals or institutions have to pay subscription charges to have access to the journal's content. In contrast, an open access journal uses a funding model that does not charge readers or their institutions for access, but authors are charged. A transformative journal is a subscription journal or a hybrid journal (dealing with both subscription charges and APCs) that has committed to transitioning to fully open access. However, outsourcing to a large commercial publisher is not the only viable strategy. Today, we have a much wider array of potential publishers available compared to a decade ago. Among these are university presses, dedicated to disseminating scholarly, intellectual, or creative works at no cost to either authors or readers. This shift expands opportunities for academic dissemination and aligns with the evolving landscape of open-access publishing.

Ethical considerations are grouped in a specific section, however, here two pieces of information are relevant. First, submitting the same manuscript to more than one journal at the same time is considered highly unethical. At the time of submission, the CA often has to declare that the manuscript has not been considered elsewhere. Note that many professionals are involved in the editorial process, multiple submission means a waste of time and resources. To save time, the authors are offered other options: pre-submission inquiries and preprints. Finally, even if the majority of publishers behave correctly, some do not. Predatory publishers or predatory journals are those that charge authors for publication but without providing the desired and expected editorial services. The publication fees are legitimate, but the publisher should provide good service in return. In addition to seeking help from more experienced colleagues and consulting the Committee on Publication Ethics (COPE, https:// publicationethics.org/sites/default/files/cope_dd_a4_ pred_publishing_nov19_screenaw.pdf) document to find a suitable publisher and maximize research impact, the

'Think. Check. Submit' checklists are valuable resources (https://thinkchecksubmit.org/).

After submission to the peer-reviewed journal Editorial roles, reviewers and publishers

Table 1 is a list of possible roles as Editors. The Editorin-Chief with the Managing Editor (if present) also manages the overall review process and sets up the editorial board of Associate Editors. Besides selecting the editorial board, the Editor-in-Chief generally decides the board member's length of term and how s/he wants to involve the editorial board. In general, a journal has multiple editors as the number of submissions is too great for one editor to handle, the journal's scope is broad, and it is impossible for one editor to make informed decisions about submissions in all subject areas.

The Associate Editors, who are listed on the homepage of the journal, are experts covering all the issues provided in the scope of the journals. When the paper comes in, the Editor-in-Chief/Managing Editor selects an Associate Editor who is an expert on that topic. Thus, the Associate Editors have responsibility for a fraction of the submitted manuscripts. Papers may be divided among editors based on many criteria, including geographical origin, specialization, type of contribution, such as original articles or reviews, and equal division of labor. Associate Editors identify suitable reviewers, obtain reviews, and make a recommendation to the Editor-in-chief based on the reviews received and their assessment of the manuscript. They also provide input on journal policy, scope, and direction. The Associate Editor decides about that paper even if the reviewers are in conflict (one says accept and the other says reject). It is the Editor's decision how to resolve those differences. The Editor-in-Chief reads the opinion of an Associate Editor but has the authority to make a final decision about that paper. Associate Editors are part of the editorial board. Board Members' expertise should represent the subject areas covered by the journal's aim and scope. Associate Editors oversee the review process to ensure the timely progression of manuscripts through review and revision.

Guest Editors serve the same function as Associate Editors for submissions to the Special Issue. All submissions are additionally labeled as belonging to a Special Issue. Key benefits of special issues might include: (1) Increased distribution to a wider audience, (2) Additional content for subscribers/audience. Special issues, known for their focused, timely, and insightful content, frequently garner greater attention than regular journal issues. While the workflows for special issues differ across journals and publishers, some have introduced a new publication approach where special issue articles are published on an individual basis. Guest editors are instrumental in sourcing content and leading the review process for special issue publications, which, unlike regular issues, adhere to specific deadlines for paper submissions. It is generally possible to become a guest editor in two ways: (i) the journal may invite a researcher as an expert; (ii) a researcher submits a proposal for a special issue to a journal / Editor-in-chief.

Peer review is the independent assessment of research papers by experts (called reviewers) within a specific field. Its purpose is to ensure that information published in scientific journals is as truthful, valid, and accurate as possible (Steer and Ernst 2021). The role of the reviewer exists to validate academic work, enhance the quality of published research, and foster networking opportunities within research communities. Reviewers make recommendations for publication. Despite many criticisms about the integrity of their work and the reviewing process, peer review is still the best form of scientific validation (Mathioudakis et al. 2022).

The reviewers look at the manuscript, carefully read it, and provide feedback to the Editor regarding the paper. The referee evaluates if the manuscript is appropriate for the journal and if the content is accurate. The review highlights missing or underdeveloped parts and assesses whether the article is confusing or poorly organized. Reviewers are typically not tasked to evaluate grammar, spelling, or punctuation, although such issues may distract reviewers from the paper content. Editors also rely on referees to help identify ethical violations: dual submissions, prior publication, conflicts of interest, etc. Notably, re-viewing is the best way to become a good writer. Any Editor would encourage scientists to volunteer to be a reviewer for a journal in their field. Indeed, Editors are always looking forward to reviewers. While reviews are labor-intensive and time-consuming, they

Table 1 Editorial roles. The full names and affiliations of the editorial board members should be provided on the journal website

Role	Description
Editor-in-Chief	Has final responsibility for the journal's scope content and scientific quality, set up a reliable board of editors, main- tains, develops the journal's profile and reputation and selects new topics. Interacts with the Publisher. Can be an Associate Editor for other journals but he/she is generally not Editor-in-Chief of two journals.
Managing Editor Associate Editor (member of the Editorial board)	Oversees editorial workflow, rejects or asks modification to newly submitted papers, assigns papers to associate editors Manages editorial process for assigned articles, offers feedback to reviewers when required and ensures constructive feedback to authors.
Guest Editor	Is primarily responsible for curating the intellectual content of a special issue and overseeing the manuscripts within it. This encompasses not only securing articles from authors, but also coordinating the review process.

serve as a crucial quality check for published scientific content and play a pivotal role in pinpointing breakthroughs that drive knowledge forward and hasten technological advancement. Unfortunately, the free labor of the scientific community in this regard is largely underrecognized by both publishing entities and institutional administrators. This critical aspect must be addressed to ensure the continued function of the peer review system in the future (Buriak et al. 2024).

In case one does volunteer, one of the most important things is to return the paper review on time. Most reviewers are not paid for their work. According to Aczel et al. (2021), the total time reviewers globally worked on peer reviews was 100 million hours in 2020 (~15,000 years). Despite these astonishing numbers, some professionals claim that financial incentives might corrupt the pure academic ethos of peer review, even if, researchers are often paid to review grant proposals (Cheah and Piasecki 2022). The peer-review of papers published in special issues should maintain the journal's quality standards. Recently, the publication of thousands of papers in special editions of journals has raised suspicions about the rigor of evaluating their content (Brainard 2023).

When submitting an article, the authors may be asked to recommend some potential reviewers. The editors will not necessarily invite the author-nominated reviewers but these suggestions can help speed up the peer review process. It is worth noting that 'big names' often decline the journal invitations and, whenever feasible, people with whom the authors have recently published should also be avoided. In a study on suggested referees to BioMed Central (BMC), a journal in which authors and reviewers know each other's identity, Wager et al. (2006) noted that these reviewers had no impact on review quality, but were more likely to recommend acceptance. In contrast, Pessoa and Pressé (2023) claimed that it is virtually unfeasible, in a single-blind peer review process, for authors to recommend referees who will bias the decision in their favor.

Besides the marketing, it is up to the publishers to manage all of the subscriptions (in the case of a subscription journal) or article processing charges (APC) in the case of an open access journal. The publisher offers a discount (named 'waiver') for certain countries. In all cases, the publisher provides a submission system and helps to manage the final version of the paper with its final editing as well as the editor-in-chief on a day-to-day basis.

Rejection before peer review and transfer service

An Editor can reject the paper even before it reaches the peer review stage. In some cases, there is a request for revision before review. This occurs because a poorly prepared manuscript represents a waste of time for reviewers. Worse, revision before review is a waste of time also for the authors. As more and more papers have been submitted to journals over the years, it is more and more difficult to find available referees for each manuscript. Overburdening them with irrelevant content for the journal only leads to a drop in the quality of the peer review process.

Thus, it is important to understand and analyze the possible reasons for rejection and the request for revision to avoid any such issues in the future. Indeed, there are many reasons behind rejection. Some are listed below. I) A very common one is that the paper does not match the scope of the selected journal. Ii) A manuscript can be also rejected or asked to be revised before peer review based on non-compliance of the manuscript to the guidelines. Authors need to remember that the journals have a particular style that is set out in the instructions for authors. Iii) Another issue is the poor quality of English used, meaning that editors and potential referees will not be able to understand the findings. Iv) In addition, poor-quality images and, in some fields, old references can contribute to immediate rejection. V) If the paper submitted presents a study that is just an extension or too similar to research previously published, the editor rejects it on account of lack of novelty. Papers without any substantial results are easily rejected. So, the authors should present novel and relevant findings, which robustly contribute to the advancement of the field of study. Vi) Sometimes the publication in the journal is prevented as the selected journal has received far more papers about a specific topic than it can publish at a given point in time. Vii) Preliminary and speculative conclusions (or the conclusions are not fully corroborated by the paper results) are not well seen either. If possible, avoid the use of the word "preliminary" in the manuscript title. Viii) Further, the authors need to have a clear idea about the journal's target audience. Some journals target a broad audience, composed of people from various disciplines. In contrast, other journals target a very specific group of people. Therefore, before writing a paper it is essential to know the journal's target group, and subsequently decide whether to write a specialized or general manuscript. Ix) In addition, every editorial team has its preferences and processes, and some journals routinely undergo a transition to new editors. X) Finally, to have a cover letter that is addressed to another journal is highly inappropriate. Please double-check your manuscript to avoid such embarrassing mistakes.

In any case, during the first days after submission, it is a good practice to track the manuscript and remain available for any specific editorial requests.

If the journal to which you submitted the paper rejects it, some publishers offer a transfer service, allowing authors to transfer their manuscript to another journal run by the same publisher. If the researchers do not appreciate the suggested journal or journals, they can simply decline the offer and can then submit their work elsewhere. The choice is entirely on the authors. If the authors accept the offer, e.g., because there is no need to reformat the text, the manuscript, along with all relevant submission information and the editor's as well as reviewers' comments (if present), will be passed to the destination journal.

Appeals of a rejection decision are typically successful only in a few cases, often when researchers provide robust evidence or new data to address and alleviate the concerns raised by the editor. If the editor has highlighted any shortcomings with the work, it is pivotal to address these comments in the appeal. Appeals may receive lower priority compared to new submissions and may take time to resolve. Regardless, appeals should always be conducted professionally, and should not devolve into personal attacks on the editors.

Peer review and response letter

Each article published in a peer-reviewed journal undergoes careful examination by a panel of reviewers who are experts on the paper's topic (i.e., the author's professional peers, hence the term peer review). Every journal should be committed to the highest standards of peer review. Different disciplines and research communities may employ different types of peer review: i) in singleblind peer review, only the reviewers remain anonymous. Reviewers know the authors' names, but authors are unaware of the reviewers' identities. Ii) In a double-blind peer review, both the authors and reviewers maintain anonymity. Only the editor knows the identity of all parties involved. Iii) In open peer review, the identity of both the authors and the reviewers is known to all participants, either during or after the review process. The peerreview system, which mainly relies on unpaid volunteers, has long been strained by the ever-increasing requests for paper reviews. It is becoming for editors more and more difficult to find available referees. Some journals request authors to provide a list of potential peer reviewers, while others ask referees who decline a review request to provide names of alternative reviewers.

Each review type presents its own set of advantages and drawbacks. For example, in single-blind reviews, concealing reviewer identities may empower referees to deliver more critical reviews or, conversely, to write less rigorous re-views. On the other hand, requiring reviewer identification might lead to softened criticisms in the review process. Double-blind peer review entails anonymity for both authors and reviewers. However, authors may inadvertently reveal their identities through selfreferences to prior work, undermining anonymity. Some researchers advocate for open peer review as a means to prevent malicious comments and promote transparency. Others see open review as a less honest process, where politeness or fear of reprisal may temper criticism (1999). In transparent peer review, journals offer authors the choice to disclose the comments received from the reviewers and their responses alongside the published paper. This means that not only authors, editors, and referees involved in evaluating a particular submission have access to the comments, but potentially anyone can view them. In 2015, Nature Communications began a trial of transparent peer review. Under this initiative, the journal published reviewer reports and author rebuttal letters for papers submitted from January 2016 onwards, contingent upon authors' agreement upon paper acceptance (2016). While authors were given the option to opt out of the scheme, reviewers were not provided with the same option and were required to consent to the potential publication of their reports. Re-viewers' anonymity was preserved, unless they chose to sign their reports to the authors. The average opt-in across the journal was about 60%.

When the manuscript proceeds in the editorial process, then referees are chosen to provide a peer review, i.e., quality control. Many journals employ 'structured peer review' where the referees answer a series of questions that should make it easier for them to convey recommendations for improvement. Questions may include if the aim of the study is clearly stated, if the materials and methods section reported has sufficient detail for their replicability, if the statistical analysis is appropriate and well described, and if the study conclusions are supported by the research findings, etc. The reviewers are assigned a given time to review a manuscript, generally less than a month. Besides the comments for authors, there is the option for reviewers to write confidential comments to editors. Special Issue articles follow the same peer review process as other manuscripts in journals.

Peer review aims to improve a manuscript rather than deciding if it should be published or not, which is more the editor's job.

After peer review you can get the following decisions: i) Acceptance as it is at the first round, which is very rare. Ii) Minor and major revision: in case of major revision substantive changes are needed. Iii) Reject but Invite to Re-Submit: it usually requires a complete re-writing based on suggestions made by the referees. Iv) Rejection after peer review. The same suggestions made for rejection before peer review are valid.

Most manuscripts have to be revised at least once before they are accepted by a journal. Once the authors receive a decision for acceptance with major or minor revisions, they have to revise the manuscript based on the peer review. The response letter is a joint effort among all the authors, with the initial stages often involving seeking assistance from senior or more experienced authors for guidance. Being always very polite is both professional and the right way to respond to feedback. The rebuttal letter can be divided into two sections: an introductory part directed to the journal editor, followed by a second part containing detailed point-by-point responses to the reviewers' comments.

In the first part, the corresponding author appropriately thanks the reviewers and the editor for their time and comments. Whether appropriate, the authors claimed they appreciated the inputs given and that these inputs have improved the manuscript. In this part of the letter, the corresponding author explains in a narrative style the main modifications undertaken during the revision and how they are related to the reviewers' main points. It is also polite that the corresponding author clearly states that he/she signs on behalf of his/her co-authors.

In the point-by-point responses, it is always a good rule not to modify or re-phrase the reviewers' comments. If the comments are in the form of long paragraphs, it is possible to break them into separate points so that each one can be addressed separately. In addition, numbering the reviewers' comments allows a quick and efficient way to cross-reference the points of the reviewers within the rebuttal letter. To differentiate between the reviewer's comments and the authors' responses in the letter, the use of different colors or highlighting the referee's comments in bold or italics might help. Similarly, the revisions throughout the manuscript should be clearly shown by highlighting the changes either with a different color or with the track changes feature. It is a good practice in the rebuttal, to quote the modifications you have made in the manuscript. Thus, the editor and the referees do not have to look at the rebuttal letter and the manuscript at the same time if they do not want to. A good rebuttal letter allows relevant information to be accessed at a glance. When quoting the revised manuscript, a practice that has been proven to work well is to mention line numbers in the revised manuscript. New figures and graphs can also be reported in the rebuttal.

Ethical considerations

Ethical considerations in peer-reviewed journals are crucial for both writing and publication, as they ensure the integrity, validity, and credibility of scientific research. COPE (Committee on Publication Ethics) is a major reference for promoting integrity in research and its publication as it supports and provides ethical guidelines to editors, publishers, academia, and other research institutes. We have already introduced the topics 'authorship and contributorship', i.e., proper attribution and acknowledgment of contributions, and the peer review process, and the readers are redirected above for further information. The ethical issues are numerous and very broad and we cannot deepen every aspect here but we will touch on some of them.

The Transparency and Openness Promotion (TOP) Committee and the UK Research Integrity Office highlight that both null results and statistically significant results should be shared as part of the research process (Nosek et al. 2015). Negative results in scholarly publishing refer to findings that do not support the original hypothesis. These results are just as important as positive findings because they contribute to the overall body of knowledge in a field and help to prevent research bias (Fanelli 2012). Negative results can prevent researchers from duplicating experiments that have already been attempted but failed to yield significant results. This saves time, resources, and effort that could be better spent exploring new avenues of research. It can lead to the formulation of new hypotheses and avenues of inquiry and also stimulate scientific discourse and debate by challenging existing theories or assumptions (Miller-Halegoua 2017; Tian et al. 2024). Overall, if the entire evidence is not available, it becomes hard to guide decision-making and future research priorities. In addition, in the materials and methods section, authors should provide sufficient information to allow others to replicate their findings and verify the validity of their research. However, journals are increasingly encouraging authors to share their raw data to promote transparency and reproducibility.

There is an increasing adoption of artificial intelligence (AI) in scientific publishing and therefore pros and cons of its use by authors should be understood in the entire editorial process. AI can aid in searching for pertinent scientific papers, generating summaries, and assisting with writing different sections of the manuscript. It can also correct grammatical errors and improve writing style, which is especially beneficial for non-native English speakers (Giglio and da Costa 1992). Carobene et al. (2024) strive to foster an understanding of AI, not merely as a substitute for a researcher, but rather as a partner in the quest for knowledge. They aim to embrace innovation in learning while addressing ethical issues about integrating AI into academic research and publication. AI is already currently used in the editorial process, for example for adding keywords to a document. However, using such a tool raises some questions for instance in authorship. An editorial published in Science claims that the freely accessible AI program ChatGPT created by OpenAI has become a cultural sensation (Thorp 2023). Holden Thorp says that ChatGPT certainly can write essays about a range of topics. The author tested it for both an exam and a final project that he had assigned students in a class he taught at George Washington University. In the author's opinion, the AI program did well in finding factual answers, but scholarly writing still

has a long way to go. However, even more importantly, he declares that AI programs cannot be an author. The Journals have implemented new policies in response to the increasing use of AI tools by authors. These policies aim to bolster transparency and trust among authors, readers, reviewers, contributors, and editors, while also ensuring adherence to the terms of use for relevant technologies. Authors are thus required to disclose the use of AI in their manuscripts, specifying the type and role of AI involved. Soon, AI applications in paper writing are expected to become commonplace and may even become essential components of many studies. At that point, disclosing the use of AI will likely resemble standard procedures for declaring author contributions, conflicts of interest, and other necessary disclosures during the submission process.

The gender issue is a top issue in ethical considerations. COPE endorsed the Sex and Gender Equity in Research (SAGER) guidelines developed by the European Association of Science Editors (EASE). The EASE Gender Policy Committee works towards 'Greater gender diversity in science and publishing practices for enhanced quality, diversity and transparency for science to remain at the forefront of innovation'. Prohibiting changes to author names on published works, e.g., transgender scholars can harm vulnerable people (Tanenbaum 2020). By providing a personal identifier for researchers, ORCID inherently encourages the inclusion and fair treatment of individuals whose names are more likely to change throughout their careers, such as transgender scholars and women in cultures where it is traditional for them to change their names after marriage. As for the gender issues also for diversity and inclusion, we cannot cover all aspects in this overview. However, we report here the voice of the Royal Society of Chemistry, UK, about inclusion and diversity in research. According to the latter society, researchers of all backgrounds should be allowed to advance and excel throughout their careers as this will widen the range of topics and research questions that will be pursued and allow a more equitable and widespread impact of research outcomes to benefit all in the global world. Regarding peer review, which is generally an unpaid activity, evidence suggests that the number of reviews contributed by high-income countries is higher than the number contributed by low-income countries per published paper as low-income countries have little time for unpaid work (Cheah and Piasecki 2022). Paying for reviews could increase the pool of reviewers, particularly reaching researchers who cannot afford to work for free. More on diversity and inclusion can be found in the toolkit published by the Coalition for Diversity and Inclusion in Scholarly Communications (C4DISC, https:// c4disc.org/).

The following are some key ethical aspects and guidelines typically covered in peer-reviewed journals. Most journals require authors to state that any research involving human subjects or animals has been conducted following ethical guidelines and has received approval from an appropriate institutional review board or ethics committee (Emanuel et al. 2000). Informed consent, including understanding the nature of the research, its potential risks, benefits, and their rights as participants, is not solely confined to medical research but is also a crucial ethical consideration in various fields including social sciences, psychology, education, and others (https:// www.apa.org/ethics/code).

Authors are required to disclose any financial or personal relationships (conflicts of interest) that might bias their work. This includes funding sources, affiliations, and any competing interests that could potentially influence the research outcomes or interpretation. Conflicts of interest can potentially compromise the integrity, objectivity, and credibility of the published research. These policies are often outlined in the journal's instructions for authors and are enforced by the Editorial board.

Journals expect authors to submit original work and properly attribute ideas, concepts, and data of their sources. Plagiarism is the use of work or ideas from another source without the consent of the authors of that source or their full acknowledgment. Plagiarism in any form, including self-plagiarism (reusing one's work without proper citation, e.g., parts of the materials and methods section of one's own previously published paper), is strictly prohibited and, if discovered after publication, may lead the publisher to retract the paper or to publish a corrigendum. As an example of permission required before publication, both the reproduction and adaptation of previously published figures must be considered. If you wish to reproduce materials from an open access journal, you should check the journal's homepage for their re-use policies. For subscription journals, you need to obtain permission from the copyright office of the respective publisher to use materials and ideas from others. As an example of permission, there are both re-production and adaptation of previously published figures. If researchers wish to reproduce materials from an open access journal, they should check the journal's homepage for more information on its re-use policies.

Journals use software to detect similar content between newly submitted papers and previously published texts. This is crucial not only to avoid self-plagiarism but also to prevent redundant publications. The last version of the antiplagiarism software claims the ability to detect AI writing.

According to COPE, misconduct harms the research community, research participants, and the general public (https://publicationethics.org/resources/elearning/ why-should-you-be-concerned-0). The following are some critical aspects: loss of trust in journals and research, damage to careers for both senior and junior researchers, harm to participants, damage to the reputation of institutions, waste and misdirection of funds, and the enrolment of practices and policies based on fraudulent research.

Finally, journals have mechanisms to address ethical concerns that arise after publication. In cases of misconduct or errors discovered post-publication, journals may issue corrections, expressions of concern, or retractions to maintain the integrity of the scientific record. According to COPE, retraction serves as a means to rectify the literature and notify readers of articles containing seriously flawed or erroneous content or data unable to support conclusions. The primary purpose of retraction is to correct the literature and safeguard its integrity rather than to punish the authors. There is no distinct line between ethical and unethical behavior; instead, there is a spectrum ranging from genuine mistakes to deliberate fraud (Nie et al. 2020). Importantly, problems can arise inadvertently due to honest errors. It is imperative to ensure that honest researchers are not dissuaded from reporting problems with their work to journals out of fear that a retraction might harm their career or suggest misconduct. The integrity and commitment to the research record should be praised.

COPE claims that "paper mills" are profit organizations that produce and sell fraudulent manuscripts that look like genuine research. To contrast this unethical practice, a group of stakeholders has written the collaborative document UNIT-ED2ACT with education and awareness as the pre-requisite to facilitate the dialogue among stakeholders about the systematic manipulation of the publication process (https://united2act.org/). Unfortunately, poor-quality papers are not uncommon and significantly pollute the scientific literature (Sanderson 2024). According to Van Noorden (2023), around 2% of all scientific manuscripts published in 2022 resembled papermill productions. Bricker-Anthony and Herzog (2024) claimed that while paper mills have mostly emerged in other parts of the globe, some recent scandals involve also the US dealing with biomedical research.

Overall, adherence to ethical guidelines ensures the trustworthiness and credibility of scientific research published in peer-reviewed journals. In case an institution finds that the reliability or attribution of the published work by one of its affiliated members is compromised, the institution should directly inform the journals where the work has been published (https://publicationethics. org/sites/default/files/research-publication-misconductjournals-institutions.pdf). Resolving issues of unethical practice typically involves collaborations between the publisher and the Editor who discovered the problem.

Conclusions

Journal homepages typically report their editorial system and peer review process. However, there is a notable lack of an overarching guide for early-career professionals. Before accessing a journal's homepage, selecting the appropriate journal is a daunting task. Moreover, general issues such as authorship and ethical considerations are either not addressed or only marginally discussed in journals' pages, which primarily focus on how to submit the manuscript and the authors' guidelines. While publishers can assist in explaining the editorial and peer review process, authors generally find themselves on the publisher's relevant pages after choosing the journal. Additionally, even if manuscripts on related content have been previously published, they are often published in specialized journals tailored to their specific audiences.

Consequently, the information provided in this manuscript is meant for a broad audience of authors, scientists, and humanists alike, who are at the beginning of their careers, where such information may be challenging to access elsewhere. Moreover, the many aspects covered here may also inspire further critical thinking. Finally, the editorial process has been undergoing significant changes in recent years, and more changes are expected in the near future. For instance, likely, unique identifiers for all the authors and mandatory upload of raw research data will soon become standard requirements.

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Author contributions

Conceptualization, F.C.; methodology, F.C. and F.V.; val-idation, F.C. and F.V.; investigation, F.C. and F.V.; resources, F.C. and F.V.; writing—original draft preparation, F.C. and F.V.; writing—review and editing, F.C. and F.V.; visualization, F.C. and F.V.; supervision, F.C.; project administration, F.C.; funding acquisition, F.C. and F.V. All authors have read and agreed to the published version of the manuscript.

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Declarations

Competing interests

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