Evaluating manuscripts

When you first receive the manuscript it is recommended that you read it through once and focus on the wider context of the research.

Ask questions such as:

- What research question(s) do the authors address? Do they make a good argument for why a question is important?
- What methods do the authors use to answer the question? Are the methods the most current available or is there a newer more powerful method available? Does their overall strategy seem like a good one, or are there major problems with their methods? Are there other experiments that would greatly improve the quality of the manuscript? If so, are they necessary to make the work publishable? Would any different data help confirm the presented results and strengthen the paper?
- Were the results analyzed and interpreted correctly? Does the evidence support the authors' conclusions?
- Will the results advance your field in some way? If so, how much? Does the importance of the advance match the standards of the journal?
- Will other researchers be interested in reading the study? If so, what types of researchers? Do they match the journal's audience? Is there an alternative readership that the paper would be more suitable for? For example, a study about renal disease in children might be suitable for either a pediatrics-centric journal or one that is targeted at nephrologists.
- Does the manuscript fit together well? Does it clearly describe what was done, why it was done, and what the results mean?
- Is the manuscript written well and easy to read? If the manuscript has many mistakes, you can suggest that the authors have it checked by a native English speaker. If the language quality is so poor that it is difficult to understand, you can ask that the manuscript be corrected before you review it.

After your first reading, write one or two paragraphs summarizing what the manuscript is about and how it adds to current knowledge in your field. Mention the strengths of the manuscript, but also any problems that make you believe it should not be published, or that would need to be corrected to make it publishable. These summary paragraphs are the start of your review, and they will demonstrate to the editor and authors that you have read the manuscript carefully. They will also help the editor, who may not be a specialist in this particular field, understand the wider context of the research. Finally, these paragraphs will highlight the manuscript's main messages that will be taken away by readers.

You can then proceed in evaluating the individual sections of the paper.

Title, abstract and key words

The title, abstract and key words are items that will help other researchers to find the published paper and decide if they will read further. Abstracts must be a clear, short summary of the full manuscript. Researchers want their work to be read, so it is important that their abstract be interesting and hold the reader's attention. More people will read the abstract than will read the full paper, so it should be easy to understand by readers without a specialized background.

Some questions to ask yourself about the title, abstract and key words are:

- Does the title accurately say what the study was about? If not, can you suggest a different title?
- Does the abstract effectively summarize the manuscript?
- Could the abstract be understood by a researcher outside your specialty?
- Does it include enough information to stand alone? Does the abstract contain information that is unnecessary?

- Is there any information in the abstract that is not in the main text of the manuscript?
- If present, will the key words help readers to find the article? Are they specific, and do they represent the manuscript content?

Introduction

Like the title and abstract, the Introduction tells the reader what the manuscript will be about. However, unlike the abstract, the Introduction gives the background for the research question.

While reviewing the Introduction, ask the following questions:

- Does it explain the background well enough that researchers outside your specialty can understand it?
- Does it accurately describe current knowledge related to the research question?
- Does the Introduction contain unnecessary information? Can it be made more concise?
- Are the reasons for performing the study clear?
- Are the aims of the study clearly defined and consistent with the rest of the manuscript?
- Have the authors missed any key references that would be important for a reader to access? Make suggestions for additional, relevant references if necessary.

Materials and methods

The study's methods are one of the most important parts used to judge the overall quality of the paper. In addition the Methods section should give readers enough information so that they can repeat the experiments. Reviewers should look for potential sources of bias in the way the study was designed and carried out, and for places where more explanation is needed.

The specific types of information in a Methods section will vary from field to field and from study to study. However, some general rules for Methods sections are:

- It should be clear from the Methods section how all of the data in the Results section were obtained.
- The study system should be clearly described. In medicine, for example, researchers need to specify the number of study subjects; how, when, and where the subjects were recruited, and that the study obtained appropriate 'informed consent' documents; and what criteria subjects had to meet to be included in the study.
- In most cases, the experiments should include appropriate controls or comparators. The conditions of the controls should be specified.
- The outcomes of the study should be defined, and the outcome measures should be objectively validated.
- The methods used to analyze the data must be statistically sound.
- For qualitative studies, an established qualitative research method (e.g. grounded theory is often used in sociology) must be used as appropriate for the study question.
- If the authors used a technique from a published study, they should include a citation and a summary of the procedure in the text. The method also needs to be appropriate to the present experiment.
- All materials and instruments should be identified, including the supplier's name and location. For example, "Tests were conducted with a Vulcanizer 2.0 (XYZ Instruments, Mumbai, India)."
- The Methods section should not have information that belongs in another section (such as the Introduction or Results).

You may suggest if additional experiments would greatly improve the quality of the manuscript. Your suggestions should be in line with the study's aims. Remember that almost any study could be strengthened by further experiments, so only suggest further work if you believe that the manuscript is not publishable without it.

Results and figure

Readers will usually first look at a manuscript's title, abstract and results. Therefore the results section including any figures and tables are some of the most important parts of the manuscript. You should carefully examine the figures and tables to check they accurately describe the results. If you think it necessary, you can suggest any changes that would make the results easier to understand.

- For figures, check that the plotted parameters are clearly defined. Figures and tables should include measures of uncertainty, such as standard error or confidence intervals, as well as the sample size.
- Table headings and figure legends should be detailed enough that readers can understand the data without reading the main text.
- Look for places where data are unnecessarily repeated in figures, tables or main text. The text should point out key findings or trends, not repeat data presented elsewhere. Similarly figures that present a very small amount of data can often be combined with another or deleted and replaced with an explanation in the manuscript text.
- If a result is not central to the study's aims, it is often acceptable to summarize it but not present the data. However, failing to show important data, or too many instances of "data not shown," are unacceptable and you can recommend that it be added into the main manuscript.
- Interesting data that are not needed to support the study's major conclusions might be better presented as supplementary material rather than the main text of the paper; feel free to point out such data in your comments.
- Feedback on whether the data are presented in the most appropriate manner; for example, is a table being used where a graph would give increased clarity? Do the figures appear to be genuine, i.e. without evidence of manipulation, and of a high enough quality to be published in their present form?

TIP: *If you suspect image manipulation or believe it would be beneficial to see the uncropped and unedited versions of the images inform the editor in the 'confidential comments' to the editors section. They can then request the original figure files from the authors.*

- Watch for places where the authors have included interpretations in the Results section. This section should simply state what the results were, not what they might mean. Interpretations and inferences belong in the Discussion section. (However, for journals that combine the Results and Discussion sections, results and interpretations do not need to be separated.)

Statistics

Most scientific manuscripts include statistical analysis, and a study's conclusions depend on the results of these analyses. If the data are analyzed or reported incorrectly, the manuscript will mislead readers. Therefore, as a scientist, and as a peer reviewer, it is important to have a solid understanding of statistics, and to carefully examine the statistical methods and reporting in manuscripts you review. If you do not feel qualified to fully evaluate the statistics, tell the editor this in your comments so that they know to ask someone else to review them.

Some questions to ask as you review statistical analyses and results are:

- Was the sample size appropriate and/or justified? Did the authors perform a power analysis as part of their study design?
- Did the data meet the assumptions of the tests used? (e.g., many statistical tests can only be used for data with a normal distribution. Data such as proportions or counts of the number of events are generally not normally

distributed and have to be either transformed or, preferably, analyzed with statistical models suitable for these data types). Were the tests used appropriate?

- Are the individual data points statistically independent? If there were repeated measurements (for instance, multiple measurements on the same patient), have appropriate statistical models been used?
- Have potential sources of bias (e.g. confounding variables) been considered and accounted for in the analysis?
- When percentages are presented, are the numerator and denominator clear? E.g., “Of the 500 bee colonies, 200 (40%) were affected by the virus,” or, “Forty percent (200/500) of the bee colonies were affected by the virus.”
- Are p-values reported where appropriate? Generally, a p-value should accompany all statistical comparisons mentioned in the text, figures and tables. The actual p-value should be stated (e.g. $p = 0.049$ and $p = 0.0021$ rather than $p < 0.05$ or $p < 0.01$). However, it is acceptable to state $p < 0.0001$ if the value is below this threshold. The Statistical Analysis section should also state the threshold for accepting significance, such as "Values of $P < 0.05$ were considered statistically significant".

Discussion and conclusion

In the Discussion and Conclusion sections, authors should interpret the results, place them in context of previous findings, and explain what they mean for future research, as well as for possible real-life applications. If the author has not made these points as clear as they should be, note this in your review.

Other questions to ask include:

- Does the Discussion fit with the aims of the study stated in the Introduction?
- Are there any alternative interpretations of the data that the authors should have considered in their Discussion?
- Is there any general background that belongs in the Introduction section rather than the Discussion?
- Have the authors adequately compared their findings with the findings of other studies?
- Do the authors present data in the Discussion? All relevant data should be presented in the Results section, although important or interesting results can be summarized as part of the Discussion. For example, a sentence such as “Group B’s one-year survival rate was significantly higher than Group A’s,” is acceptable in the Discussion. But a sentence such as, “Group B’s one-year survival rate (1200 / 2000, 60%) was higher than Group A’s (800 / 2000, 40%) ($P < 0.05$),” belongs in the Results section.
- Do the authors mention how the study’s results might influence future research?
- Are the limitations of the study noted? If not, what limitations have you found?
- Are the authors’ conclusions supported by their data? Have the authors overstated the importance of their findings?

References

Pay attention to how the authors use references as you review the rest of the manuscript.

Some issues to watch for include:

- Are there places where the authors need to cite a reference, but haven’t? (In general, citations are needed for all facts except those that are well-established, common knowledge; that come from the current study; or that are clearly phrased as the authors’ own hypothesis.)
- Do the authors cite all the most relevant previous studies and explain how they relate to the current results? If not, note which references are missing.
- Are the cited studies recent enough to represent current knowledge on the topic?

- Do the authors cite the work of a variety of research groups? This is preferable to mainly citing papers from one or two research groups, especially if one of the most cited groups is one the authors belong to (although it is not always possible in very small fields of study).
- Do the authors cite many review articles? It is better to cite the original studies.
- Are all of the citations helpful to the reader? Note any places where the authors seem to be reviewing literature simply to show the depth of their knowledge, or to increase citations of their own previous work.
- Do the authors cite findings that contradict their own (where they exist), as well as those that support their claims? It is important that the authors provide a well balanced view of previously published work.

Reviewing review articles

A review article is written to summarize the current state of understanding on a topic, and peer reviewing these types of articles requires a slightly different set of criteria compared with empirical articles. Unless it is a systematic review/meta-analysis methods are not important or reported. The quality of a review article can be judged on aspects such as timeliness, the breadth and accuracy of the discussion, and if it indicates the best avenues for future research. The review article should present an unbiased summary of the current understanding of the topic, and therefore the peer reviewer must assess the selection of studies that are cited by the paper. As review article contains a large amount of detailed information, its structure and flow are also important.

Writing a reviewer report

Whether you recommend accepting or rejecting the manuscript, keep in mind that one of your goals is to help the authors improve this and future manuscripts—not to make them give up in despair. Avoid overly negative wording or personal comments, point out the main strengths of the manuscript as well as its weaknesses, and suggest specific ways to fix the problems you identify. Also, avoid making overly brief and direct comments, as these can give your report an unfriendly tone. Reviewers for most journals are anonymous, so if anonymity is important to you, avoid comments that could make your identity obvious to the authors.

If the editor sent specific instructions for the reviewer report, or a form to fill out as part of the review, you should write your report in the requested format. If you received no specific instructions, the reviewer report should be divided into two parts:

1. comments to be read only by the editor, and
2. comments to be read by both the editor and the authors.

Comments for only the editor:

In this section, give the editor your recommendation for the manuscript and, more importantly, your reasons behind it. These usually have to do with the manuscript's scientific soundness, novelty, quality, importance, and suitability for the journal. Editors take many factors into consideration when deciding whether a paper is right for their journal so providing evidence or reasoning for your recommendation is extremely helpful.

TIP: *Recommendations are usually one of the following: accept manuscript in its current form, publish with minor changes, publish only if major improvements are made, or to reject the paper.*

Comments for both the editor and authors:

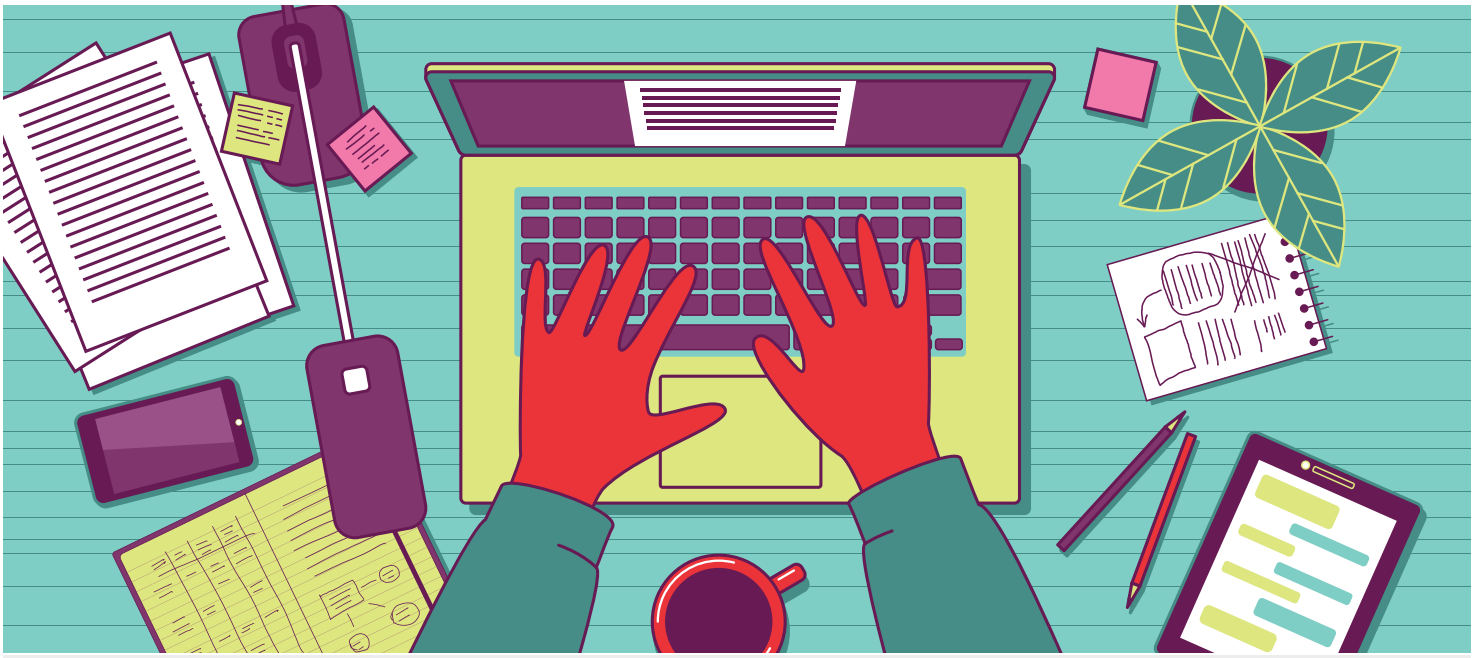
In this section, write a detailed report reviewing the different parts of the manuscript. Start with the short summary of the manuscript you wrote after your first reading. Then, in a numbered list, explain each of the issues you found that need to be addressed. Divide the list into two sections: major issues and minor issues. First,

write about the major issues, including problems with the study's method or analysis. Next, write about the minor issues, which might include tables or figures that are difficult to read, parts that need more explanation, and suggestions to delete unnecessary text. If you think the English language of the manuscript is not suitable for publication, try to give specific examples so that the authors know what and how to address the problems.
Be as specific as you can about the manuscript's weaknesses and how to address them. If the manuscript has line numbers, include the page and line number(s) specific to the part of the study you are discussing. This will help both the authors and the editor, who may later need to judge if the authors have fixed the problems in their revised manuscript. For example, instead of, "*The explanation of the proposed mechanism is not clear.*" You might write, *"The explanation of the proposed mechanism should be more detailed. Consider referring to the work of Li and Smith, et al. (2008) and Stein and Burdak, et al. (2010).*"

Keep in mind that the authors – and even the editor – may not be native English speakers. Read over your comments after you finish writing them to check that you've used clear, simple wording, and that the reasons for your proposed changes are clear.

Reference:

https://www.springer.com/gp/authors-editors/authorandreviewertutorials/howtopeerreview/evaluating-manuscripts/10286398



How to Peer Review: Easy Guide

Why serve as a Peer Reviewer

As well as supporting the advancement of science, and providing guidance on how the author can improve their paper, there are also some benefits of peer reviewing to you as a researcher:

- You will get to read some of the latest science in your field well before it is in the public domain
- The critical thinking skills needed during peer review will help you in your own research and writing
- Serving as a peer reviewer looks good on your CV as it shows that your expertise is recognized by other scientists

For more information
check out our tutorial on
How to Peer Review

Title, Abstract and Key Words

Some questions to ask yourself about the title, abstract and key words are:

- Does the title accurately say what the study was about? If not, can you suggest a different title?
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- Are p-values reported where appropriate?

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In the Discussion and Conclusion sections, authors should interpret the results, place them in context of previous findings, and explain what they mean for future research, as well as for possible real-life applications. If the author has not made these points as clear as they should be, note this in your review.

Tip

Recommendations are usually one of the following: accept manuscript in its current form, publish with minor changes, publish only if major improvements are made, or to reject the paper.

images inform the editor in the 'confidential comments' to the editors section. They can then request the original figure files from the authors.

Writing a reviewer report

Whether you recommend accepting or rejecting the manuscript, keep in mind that one of your goals is to help the authors improve this and future manuscripts—not to make them give up in despair. Avoid overly negative wording or personal comments, point out the main strengths of the manuscript as well as its weaknesses, and suggest specific ways to fix the problems you identify.

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