Thesis statement: Make post-publication self-correction easy / less costly.

Abstract

The changing cultural landscape of science has lead to changes in how scientific criticism and self-correction are performed. Where once papers were generally criticized immediately before publication, online platforms (blogs, social media, pubpeer, pubmed commons, researchgate) allow for criticism *after* an article is published.

In some cases, these criticisms may reveal aspects of a study that wholly undermine its conclusions. The scientific record is well served by the dissemination of criticism and rapid action to address flaws.

But such criticism carries costs. The criticized authors may experience lowered status, stress, and loss of progress towards career milestones. They will incur expenses in the form of time and energy in addressing criticisms. They may need to invest more time in reconsidering theory or study design, leaving less time for publications and career progress. They may feel set upon, unwelcome, excluded, afraid; they may lose enthusiasm for continued participation in psychology.

The critic, on the other hand, spends time and energy in developing, writing, publishing, and disseminating their criticism. In this process, the critic is likely to make enemies. They may develop a reputation as being meanspirited or uncooperative, hurting their ability to collaborate with others. Criticized authors may retaliate in peer review for publications or grants.

The process of criticism and correction has costs for other parties as well. Journals and universities may be embarrassed to receive criticism. Editors have many responsibilities and may prefer not to spend time handling criticism of previous papers.

In short, scientific self-correction in post-publication peer review is done so rarely because it is costly to authors, journals, and critics alike. In this paper, we hope to defray some of that cost by outlining best practices for post-publication peer review. Establishment of a more formal and routine procedure, we hope, will yield post-publication criticism that is less confusing, less upsetting, more clear, and thus, more actionable.

1. What is worth criticism
2. Formatting your criticism
3. Communicating your criticism

# What is worth criticism?

Before you type up and disseminate your criticism,

## Is the problem serious?

Ask yourself whether the problem you have identified is serious enough to require action. Research often involves compromises, and some decisions will inevitably be suboptimal. Avoid nitpicking. We have all experienced pre-publication peer review that we thought was unreasonable; definitely do not be that Reviewer 2 in post-publication peer review. Consult with colleagues you can trust to tell you whether you are being reasonable.

Often we find that we dislike a study because we do not like its results. Ask yourself whether your criticism would be as serious if you liked the result. Also be careful that you are not politicizing the science. Ask yourself whether you are criticizing the science or its policy implications.

## Is the problem unique to this paper?

Sometimes a paper makes an error that is common to its research area. In this case, it may be more productive and impactful to write the broad argument identifying and correcting the problem field-wide. A narrow criticism of one paper may miss the larger point.

## Misconduct

In some cases, you may suspect that an error is due to scientific misconduct. Our advice is that misconduct is too difficult to demonstrate and to prosecute. It is better to focus on the substantive criticisms and assume ignorance rather than malfeasance.

In philosophical terms, consider that misconduct requires ill intent. You may be inferring such ill intent where there is none, as suspicious patterns or results may arise from unintentional, honest errors. It is also difficult to demonstrate evidence of ill intent to third parties.

In practical terms, consider that it is much easier to get a correction or an expression of concern published than it is a retraction or an indictment. Rapid correction of the science should be your primary goal. Retributive justice should be a very distant second.

# How to criticize

The usual writing advice applies to criticism. Be organized, be clear, be succinct. Nothing says “I am a crank” like ten single-spaced pages of incoherent fury.

Below, we consider special topics in formatting criticism effectively.

## Shaming

Shame is, for better or worse, a powerful social force for the maintenance of group norms. Shame can therefore be helpful in enforcing norms of scientific self-correction. However, the use of shame may be counterproductive in some circumstances, and therefore shame should be used cautiously. We suggest that one does not shame the mistake. Instead, shame should be reserved for later, if the mistake is not corrected.

First, it is unkind and unreasonable to shame the mistake. Every one of us has made mistakes, and every one of us will make mistakes again.

Second, it may be counterproductive to shame. When making a mistake is shameful, it is costly to admit to mistakes. Such application of shame may lead to a protracted argument as to whether there were mistakes at all. Let us instead make it as easy and as painless as possible to correct mistakes. [I thought there was a research literature on this but I’m having trouble finding the right jargon: correction culture vs prevention culture?]

Reserve the use of shame for step 4 above, when all formal channels have failed.

## Tone

An excess of ink has been spilled regarding the necessity or irrelevance of tone in scientific criticism. ([Fiske, 2016](https://www.psychologicalscience.org/observer/a-call-to-change-sciences-culture-of-shaming); [Yarkoni, 2016](http://www.talyarkoni.org/blog/2016/10/01/there-is-no-tone-problem-in-psychology/)) I would prefer to make only one statement regarding tone, and it is a pragmatic one. A spicy tone is distracting and makes it difficult to accept and address criticism. To make things easier for the subject of your criticism, use as polite and generative a tone as possible. In much the same way that a letter with correct grammar is easier to read, a criticism with pleasant tone is easier to address.

[That said, a scathing tone can be useful in drawing attention to a criticism. If your criticism has merit but has been shunned by the journals, a sharp tone may help your self-published criticism find an audience.]

## Generalization

It is often tempting to let one or several bad papers tarnish the rest of an author’s work.

This is unfair to the accused, whose work should be critiqued on its own merits. It is unfair to co-authors, who may have other co-authored projects that are still competent.

Such overgeneralization is neither warranted nor helpful. In the end game of overgeneralization, one retraction tarnishes the whole psychological enterprise, and any mistake is cause for defunding the whole business. Let’s not.

Publishing your criticism.

See Box 1 for a flowchart of our recommended path of post-publication criticism. This path begins with the formal channels of criticism, then resorts to the informal channels if unsuccessful.

Box 1. The flowchart

1. Address the authors.
2. Address the journal.
3. Address other journals. (?)
4. Raise a stink through back channels.

There is still considerable value in attempting the conventional, formal avenues of criticism. Study authors are the best equipped to incorporate your criticisms and correct their work. Journal editors have the necessary leverage to inspire action. If nothing else, having attempted the formal channels signifies to others that you are trying to behave well.

Online platforms such as PubPeer and ResearchGate allow for commenting on research articles. Unfortunately, because such comments are not presented alongside the journal’s version of record, they will likely go undiscovered. Authors generally benefit more from ignoring pubpeer comments and hoping they go unread. Some form of leverage and exposure is necessary (either through the authors, a journal, or social media).

## Try the formal channels first

First, relay your concerns privately to the authors. Some misunderstandings can be resolved in this way with a minimum of hassle. We are aware that some have cautioned that approaching authors first may make it easier for misconduct to be concealed. As discussed above, misconduct is generally too difficult to prosecute in the best of circumstances, so we feel it is better to give up on misconduct and instead handle honest criticism to the best of our ability.

Second, if the authors have not been able to resolve your concerns, follow up with the journal. If the editor chooses to get involved, they can be very influential. Emails will be answered, concerns will be addressed, and a correction or an Expression of Concern can be issued in a relatively timely manner.

Third, if the journal in question will not consider your criticism, you may consider approaching another journal. There are several benefits to going through a journal. Peer reviewers can help you to refine your criticism or to abandon it if it is misguided. Acceptance to the journal gives your criticism a mark of legitimacy. Publication in the journal helps to disseminate your criticism.

[Not all journals are COPE signatories. (Does COPE apply to all criticism or only misconduct?)]

[The above steps take time, especially if you have to try several alternative journals. Do we have thoughts on that?]

## After that, try the informal channels

If you have been unsuccessful in getting your criticism published, it may be time to resort to less formal platforms. You can easily self-publish your criticism on a blog or a preprint server. Getting people to read your criticism, however, often requires some self-promotion through social media, typically Facebook groups or Twitter.

At this point, unfortunately, you are in the place where scientific self-correction has become a less-than-zero-sum game. You can make trouble through social media and hope that this embarrasses authors and editors into action. Unfortunately, this will be costly to you as well. Because anonymous comments do not receive much attention, you will need to lend your name to your criticism. You may develop a reputation as a loudmouth, a nitpicker, or a bully. You may make enemies who will remember you unkindly in peer and grant reviews. You will spend time and energy on a product that does not advance your CV. If you are fortunate, you will manage to inspire action before wiping yourself out. If you are unfortunate, you will have embarrassed everybody, including yourself, and still not secured the desired correction.

[Sometimes it is sensible to go straight to blogs if the criticism isn’t too serious, e.g. for reaction blogposts or not-too-withering HIBARs.]

[People probably feel upset when they see criticism of themselves earning praise or moving virally through social media.]

# Making the world safe for post-publication peer review

## Be grateful

Authors are trained in defense from the moment they begin their careers; they defend their articles from pre-publication peer reviewers, they defend their dissertation work from their committee, they defend their conference presentations from questions that are “more of a comment.” When an author is able to step out of this mode to do the unpleasant work of identifying and correcting error, they should be appreciated.

Editors already have a lot to do. If an editor took time and effort to revisit and correct a paper, thank them.

## Maintaining diversity and inclusion in post-pub peer review.

As described above, post-publication peer review incurs certain costs to critics and the criticized alike. These costs may be felt most sharply by underprivileged or underrepresented groups in academia, who may have fewer resources with which to weather such costs. I do not have any strong solutions to this problem, unfortunately. I can only hope that reducing the costs of post-pub peer review in general will lower the barriers of access to these groups as well.

[AUTHOR’S NOTE: I would be grateful for any advice or ideas on this point.]

[Self-publication and self-dissemination through social media is going to be easier for those with a big Twitter following.]

# Summary

Post-publication peer review is a lot of work for all involved. By following these guidelines, we hope, critics can enable scientific self-correction through less work. These guidelines are developed to help criticism enact correction as quickly as possible, using the leverage provided by authors, journal editors, or failing that, social media.