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## Toward Fulfilling the Aspirational Goal of Science as Self-Correcting: A Call for Editorial Courage and Diligence for Error Correction

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### The Self-Correction Norm.

Science is often described as ‘self-correcting’. Correction of scientific errors is vital, but it does not occur spontaneously. Rather, correction depends on individual scientists behaving in accordance with the self-correction norm (1). Some authors have suggested that failure to correct certain errors be considered scientific misconduct (2). But when serious errors are found, our experience suggests that corrections are not always expeditious, thorough, clear, and open. Herein, we address journals’ distinctive roles in correcting peer-reviewed scientific literature. The scientific community needs key individuals, including journal editors, to facilitate the correction process and to adjudicate disagreements in the field.

### Errors Meriting Correction vs. Matters Meriting Discussion.

Disagreements over factors such as choice of study design and execution may involve matters of opinion. In such cases, scholarly discussion among authors and readers is healthy and may not require editorial facilitation, intervention, or correction of the original article. However, *matters meriting dialogue should be distinguished from matters meriting correction*. Throughout this paper, we focus on unequivocal errors that involve factual or analytical mistakes, some of which, if corrected, might alter a study’s conclusions (3). Such errors might arise from honest error, poor research practices, or misconduct.

### The Need for Editorial Courage and Diligence.

When errors are identified, editors are in the unique position to facilitate post-publication error correction through publishing letters and author replies, formal errata and corrigenda, expressions of concern, or retractions, with or without republication. Unfortunately, in our experience many journal editors do not fulfill this responsibility (4). Whether concerns are directed to editors’ attention through formal letters, direct email correspondence, social

media, or post-publication peer review platforms, it would uphold the self-correcting norm if journals accepted the charge to maintain the integrity of the literature even after publication. Below we consider the role of journal editors in addressing potential errors as key guardians of the integrity of the scientific literature.

### **Toward an Improved Post-Publication Editorial Process.**

The International Committee of Medical Journal Editors (ICMJE) and the Committee on Publication Ethics (COPE) have guidelines for error correction that allow flexibility in the handling of different errors, from published correction, to retraction, with or without republication for more serious errors (5, 6). We encourage stakeholders to follow those standards so there are consistent procedures across journals. We also believe additional steps can be taken to improve the process that warrant consideration. We recognize the need for better training of scientists on approaches to post-publication error correction (7), but limit our discussion herein to the support of existing guidelines as well as our own suggestions of practices that journals could implement to facilitate error correction and correspondence. Based on our experiences, scientific error correction would greatly improve if the following norms were enacted:

- 1. Distinguish between error correction and other forms of communication.** Errors that might change a study's conclusions should be handled by journals differently compared with other forms of scholarly discussion. Published corrections are preferable to correspondence with no additional action, and retractions/withdrawals should be considered if errors cannot be satisfactorily resolved. Furthermore, an academic editor should handle potential errors. In our experiences, non-academic editorial staff who screen communications about potential errors sometimes dismiss them, and we have had to appeal to the academic editors for our concerns to be evaluated.
- 2. Handle concerns in a reasonable time frame.** When errors are pointed out, we believe academic editors have the duty to communicate that they have initialized the evaluation of the issue within days of identification, set deadlines for replies, and keep those reporting the error and the original authors regularly apprised of status. Because investigation and correction can be protracted, ideally, readers would be alerted to concerns about an article if authors need time to perform reanalysis and correction.
- 3. Provide editorial contact information.** The contact information of an academic editor should be easy to find when direct communication of concerns is necessary.
- 4. Do not impose time limits for corrections.** Some journals only allow correspondence within a certain time window, such as a certain number of weeks or months, which is prohibitively short and discourages scholarly discussion. Altman (8) lamented time limits on letters 17 years ago, yet we still encounter them today. Editorial judgment is still required to consider the implication of a potential error, age of the article, and publishing norms of the time.

5. **Facilitate data sharing.** Data sharing facilitates error correction, so journals should have data sharing policies and procedures that allow other investigators to use study data insofar as it is ethical and feasible to do so (9). Journals should have transparent policies about how their data sharing policies will be enforced, and should follow through on their policies.
6. **Provide transparency with corrections.** Where errors are corrected, including via retraction, readers should be able to clearly discern the errors and specific actions taken.
7. **Credit those who identify or correct errors.** Error identification and correction require expertise and time. The incentivization of error correction is important to create a sustainable scientific culture of self-correction. Public credit should be offered if requested, whether through a published letter, or editor note in a corrigendum, erratum, or retraction.
8. **De-stigmatize correction of honest errors.** Correcting errors that are neither dishonest nor reckless is admirable and should not be discouraged by terminology that suggests authors have behaved poorly. Different taxonomies or nomenclature may be adopted to de-stigmatize self-correction, such as “withdrawal” in place of “retraction” (10).
9. **Link correspondence to original publications.** For correspondence published within the journal, in our experiences, it is best if letters are linked prominently to the original publication so readers can easily find them. Publishers should ensure such communications are indexed and easy to locate when reading the original article and conducting literature searches.
10. **Allow flexibility in correspondence guidelines.** When writing corrections, we have found we are best able to articulate key points when journals have liberal word limits (even if just as online supplements), reference counts, and authors. Compared with brief letters, detailed correspondence can serve to inoculate authors and readers against future errors. Journals should allow sufficiently long titles to describe adequately the concerns, including the severity, and state which paper the correspondence concerns.
11. **Allow correction regardless of author reply.** In at least one case, a journal did not allow publication of our concerns because the authors did not reply in a publishable fashion. Authors should be invited to respond to concerns, but authors should not be able to block public notices of potential errors.
12. **Waive publication and access charges for correction correspondence.** Most, but not all, journals waive fees for publishing correspondence related to error correction and do not charge authors for retractions (4). More commonly, correspondence may be paywalled. Fees are strong disincentives against correction, and access to discussions of errors should be available freely.

While we have had many positive experiences when attempting to correct errors, we and others often have negative experiences in which errors remain published without correction

(4, 7). Many editors portray courage and commitment to maintain the integrity of the scientific record, including through error correction. But some abrogate their responsibility. Universally enacting the norms described herein would create an environment more transparent and receptive to error correction for all involved. As a linchpin in maintaining the quality of the scientific literature, those involved in the editorial process have a duty to redouble their commitment for fulfilling the ideals of science as a self-correcting process.

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