Ending the retraction stigma: Encouraging the reporting of errors in the biomedical record

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Abstract
Retractions are on the rise as a result of a surge in post-publication peer review and an emboldened anonymous whistle-blowing movement. Cognizant that their brand may be damaged as a result of not correcting problematic literature, journals and publishers that are loosely considered to be non-“predatory” are trying to contain the deluge of reports on flawed research that has flooded the biomedical and scientific literature. Within this climate, many studies have started to be retracted and corrected, reinforcing the stigmatization associated with retractions, i.e., having a retraction is considered to be a bad or negative thing. Negative retraction stigmatization has mainly been borne by authors, whereas journals and publishers, except for headline-grabbing reports, have thus far largely avoided this stigma. One of the efforts to destigmatize retractions, at least those for honest errors, has been to try to relabel or rebrand retractions. The terms “self-retraction”, “amendment”, “publisher-caused error”, and others have emerged, but such a diverse lexicon may complicate the publishing landscape more than it resolves the stigma. Seeking euphemistic terms to represent a truth within a toxic context of negative stigmatization only politicizes the issue, and does

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not resolve it. We suggest that a change is needed in the culture within the biomedical community, to acceptance of critique, and that the culture of shaming needs to be halted in order to achieve this. Only then can academics assume greater responsibility, without the risk of being shamed, of retracting their faulty literature, “honestly”, when they feel that this is needed.

Keywords
Amendment, culture, editorial policies, lexicon, responsibility, retraction notice

Errors are rife, retractions are booming, but the stigma is negative

Retractions are on the rise (Steen et al., 2013), but their rise is simply an expression of a system that has failed at so many levels (Teixeira da Silva, 2016a): at a more sinister level, fraud by authors who sought to game the system for their advantage, financial or otherwise; editors who deliberately turned the other cheek to misconduct; or publishers that sought fame and profit at any cost, including sacrificing basic publishing ethics and quality control. On the other side of the spectrum, but within a range of levels of responsibility, lie: authors who had poor guidance or misguided ethical principles that were not aligned with those of the publishing industry; editors who had deficient oversight during peer review or editorial processing; or publishers that published work that was not fully vetted. However, traditional peer review has failed at many levels, such that retracted articles continue to be cited as valid (Bar-Ilan and Halevi, 2017; Budd et al., 1999; Teixeira da Silva and Bornemann-Cimenti, 2017; Teixeira da Silva and Dobránszki, 2017a), so the only effective means of dealing with this failure is through post-publication peer review (PPPR), which instills a new culture of awareness among authors, editors, and publishers to not only identify errors, but also to correct them (Teixeira da Silva and Dobránszki, 2015). However, the publishing status quo is still very resistant to accepting anonymous complaints about errors in the literature (Teixeira da Silva and Blatt, 2016). This leaves most whistle-blowers or conscientious academics who spot erroneous literature few centralized platforms to report their concerns anonymously, except for, at present, PubPeer, 2 although the culture of acceptance of anonymous critique, provided that it is factually valid and tone-neutral, simply reflects a need to change the culture of acceptance of critique, which could begin with action via concerted efforts in established journal clubs (Teixeira da Silva et al., 2017). The end result of a change in culture shift within biomedical and science publishing that is independent of the cultural differences between authorship, that is able to accept critique, and act responsibly upon it, is a new culture of literature correction, in which, ideally, all errors are corrected, with the greatest errors, or fraud, corrected by retractions (Teixeira da Silva, 2016b).
Nonetheless, academia is still in a nascent stage of this culture shift, and such a responsible action made by academics, editors, and publishers to correct their literature should be met with praise. This is rarely, if ever, observed, and is usually accompanied by a finger-pointing allocation of blame within retraction notices. However – and this is where the debate needs to evolve – how does one assign equal praise for a retraction that resulted from fraud (for example, confirmed after a formal ethics investigation) and one that resulted from author self-reflection and correction? As it currently stands, the PPPR movement has become strongly stigmatized where sites like PubPeer are not equated with open and transparent journal clubs, but rather a platform where discussion is not encouraged but rather where finger-pointing and accusations of error have become the norm. The PPPR movement is also being damaged by the media-driven culture of shaming, where a scandal in academia is met with often aggressive demeaning headlines that focus exclusively on the negative rather than on any possible positive aspects of cases of literature correction. Leading the way in terms of defining the culture of science shaming are three science watchdogs (Teixeira da Silva, 2016c) – PubPeer, Retraction Watch,3 and Leonid Schneider’s “for better science” blog4 – the latter being the subject of several lawsuits for defamation, but the former two being heavily funded by US-based philanthropic organizations which appear to have a larger social or scientific agenda. It is difficult to imagine that the vast majority of academics would not want to see a corrected literature that cleanses the ills of past failures, a more robust infrastructure that embraces responsible correction, and a publishing system that allows for differences of opinion but aims for verified literature under rigorous quality control. That said, it is also difficult to imagine that the vast majority of science, technology, engineering, and medicine (STEM)-related academics would accept a culture of shaming as being compatible with this reparative agenda, for one simple reason: they might one day be the subject of shaming.

Very simply and broadly, at the heart of the argument within this article lies a discontinuous and unmatched set of ideals of what constitutes the problem and the current set of solutions to fix them.

**Are honest errors possible, or is this an oxymoron?**

Above, we have established that all errata and retractions result from errors or misconduct. For example, authors may duplicate a figure in the same article and the peer reviewers and editors might not detect that error, or authors might fabricate data but peer reviewers and editors might not request the original data to verify that it is real, leading to an increasing call for an open-data and thus open-science movement; authors may report a serious error in drug dosage (Christiansen and Flanagin, 2017); or publishers might publish an article twice, having to retract
the duplicate, but leaving a “black mark” on the authors’ names. These examples (and there are, of course, many more) indicate that the landscape of errata and retractions is extremely wide, with responsibility lying on the shoulders of authors, peer reviewers, editors, information providers (Peterson, 2010), and publishers, albeit at different weightings.

How, then, does one ascertain if errors were made in honest error, as a result of fraudulent manipulation, or something in between, such as pure ignorance? The moral nature of error is extremely difficult to determine, simply because to know the full truth, one would have to be within the head of the entity being penalized (currently, the vast majority of errata and retractions, as a result of their negative stigma, constitute a form of moral penalty), or one’s bad faith is identified (Eslava-Schmalbach et al., 2012), or one would have to have a full admission of guilt by the infracting party. Except for the latter case, which ideally is or should be accompanied by full and impartial ethical investigations following the coordinated effort of the authors, author’s institute, editors, and publisher, all other cases may be pure speculation as to whether an error was honest or deliberate.

Some groups have appreciated that correcting the literature via PPPR is not that complex but that there is a cultural stigma that is deeply ingrained in the STEM publishing culture with respect to errata and retractions. Some have sought to rebrand the term “retraction”, for example as “amendments” with several levels of severity (Barbour et al., 2017), “self-retraction” to show that error was unintentional (Fanelli, 2016; Hosseini et al., 2018), or retract-and-replace to replace an earlier version of the academic record with a correct, or more honest, version of that record (Heckers et al., 2015). However, all of these variations in lexicon face serious challenges such as the abuse of such possible variants by editors to offer leniency, so as to protect the image of their journal, the dilution of fraud into a lesser academic “crime”, the unfair opportunity to correct literature that should remain extinct, or the ability of publishers that have benefited financially from the sale of erroneous literature to downplay the seriousness of their slack peer review and exploitative business models with a more PR-friendly and thus marketing-friendly alternative (Teixeira da Silva, 2017).

**Suggestions for resolution and rewarding honesty**

As it currently stands, STEM publishing is grossly unprepared to deal with the reparation of the literature without stigmatizing repair, as it has taken few or no tangible steps to instill a culture of destigmatization. Retraction Watch concocted a category it referred to as “doing the right thing”, but that quickly degenerated into a politically-driven campaign that gave preference to some cases over others,
and was arguably biased by subjective criteria of that blog’s ownership as to what constitutes “the right thing” or honesty, without any possibility of input or influence from the relevant public. Therefore, as it currently stands, there are no concrete or effective policies in place that can systematically deal with the destigmatization of retractions, or with the effective appreciation of “honest error”. In essence, this is because once a reputation is damaged, the scars are difficult to heal and full recovery of image and respect can never be fully recouped, a classic case being that of Pamela Donald and transgenic plants, or even the negative stigma attached to authors who might feel innocent victims of co-authors’ lack of ethics. In other cases, the issue is neither about tone nor stigma, despite a call for a more collegial tone (Bishop, 2017), but simply about the fateful nature of the error, and some articles’ errors simply cannot be corrected, and must remain eternally retracted (Teixeira da Silva and Dobránszki, 2017b).

The stigma of having a researcher’s CV stained with a retraction owing to honest errors or fraudulent or intentional errors exists, as the outcome is similar, if not identical, and can have a serious negative impact on their academic career: the chance of being offered a job is diminished; collaborating with colleagues becomes more difficult; the citation rate to their articles, i.e., non-retracted articles, drops to 10% (Azoulay et al., 2015), a finding that was earlier reported by Lu et al. (2013); and students or fellow peers may perceive an academic with a retraction on their record as less deserving of respect. Furthermore, researchers with a retraction are perceived to be undeserving recipients of grants. In short, the impact of a retraction-related stigma on the career of researchers cannot be underestimated, causing some to treat retractions as “dirty secrets” (Gewin, 2014). Therefore, to encourage academics – as well as editors and publishers – to correct their publishing records, retractions due to honest errors should be praised, and the reason that triggered the retraction should be clearly, fully, and precisely communicated in the retraction notice and not left to the speculation of commentators, Tweets, or rumor. Useless one-line retraction notices (Marcus and Oransky, 2014) should never be acceptable.

We recommend the following measures to avoid, or decrease, the negative stigma associated with retractions:

1. The wording of retraction notices should clearly state the precise reason why a published article is being retracted; if possible, the article that is being retracted due to honest errors should be clearly identified as such. We offer, as one recent example, the case of Moloney et al. This is because if researchers feel that retracting an article is shameful, they will be less likely to correct the literature and self-report errors (Cagney et al., 2016). The example must be set by the publisher and its editors who lead the journals it publishes.
2. A consensus on what justifies errata, an expression of concern, or a retraction should be reached. It is unfair to issue a retraction when an erratum would achieve the goal of correcting the literature, i.e., a perceived unfair retraction. Currently, researchers feel helpless – or with very few formalized options for defense or rebuttal – in the face of an editorial decision to publish a retraction. The balance of power in favor of the editor and publisher makes it difficult for authors to negotiate an erratum when an editor or publisher has made a decision to retract their article.

3. Negative media coverage of retractions due to honest errors should be avoided. Media outlets that do cover retractions should offer a fair opportunity for the authors not only to respond, but also to have their unmoderated side of the argument published. For example, making annual “top 10” lists, as a form of entertainment, as is conducted by Retraction Watch,11 only serves to jovialize and sensationalize the issue of retractions.

4. Journals should respond immediately and correct negative, misleading, or ambiguous media stories that report on a retraction or correction of the literature.

5. Authors should be reminded that the best way to avoid stigma is to honestly report mistakes in a timely manner. According to Lu et al. (2013), self-reported retractions did not have a significant impact, and may have had a positive effect, on the citation rate of the authors’ prior publications.

6. Publishers can establish a reward program to encourage authors to self-report errors and to help cleanse the literature, or a STEM-based rewards system that allows for up or down votes could be linked to sites like PubPeer, although we caution this latter approach, as it may be open to abuse and very self-fulfilling subjectivity. In addition, publishers can acknowledge authors who correct mistakes, because “to err is human, to correct is divine” (Christiansen and Flanagan, 2017).

7. Finally, and most importantly, avoiding the retraction stigma can be effectively achieved if authors whose articles have been accepted are asked to use a special form to request correction of mistakes that might be discovered after the publication of their articles. This form can either be available at the journal website or included with the manuscript acceptance letter.

Conclusions

The correction of the literature has only just begun in earnest. Even so, there are insurmountable hurdles, and considerable resistance by authors, editors, and publishers, who feel that retractions damage their image and their brand. Although efforts to rebrand retractions have been made, they still do not eliminate the
negative stigma, even in the light of “best case” scenarios of “honest errors”, so a total change in publishing culture, such as the instilment of a rewards-free system, may be needed to achieve this objective.

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**Notes**
1. The authors are equal contributors.
2. https://pubpeer.com/
3. http://retractionwatch.com/
4. https://forbetterscience.com/
5. http://blogs.plos.org/absolutely-maybe/2017/11/30/re-branding-retractions-and-the-honest-error-hypothesis/
6. http://retractionwatch.com/category/by-reason-for-retraction/doing-the-right-thing/
7. https://www.independentsciencenews.org/news/can-the-scientific-reputation-of-pamela-ronald-public-face-of-gmos-be-salvaged/
8. http://retractionwatch.com/2018/01/11/devastated-researchers-worry-co-authors-use-fake-reviews-hurt-careers/
9. https://twitter.com/Marcia4Science/status/937723291585822720 (“Scientists are allowed to correct via errata all the time in Science. In some cases, however, if the errors are so fundamental and substantive that they would change the results, conclusions, and involve re-review, an Erratum is not appropriate”)
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