Citing Retracted Papers Affects Education and Librarianship, so Distorted Academic Metrics Need a Correction

Commentary on Bakker, C., & Riegelman, A. (2018). Retracted publications in mental health literature: Discovery across bibliographic platforms. *Journal of Librarianship and Scholarly Communication, 6*(General Issue), eP2199. https://doi.org/10.7710/2162-3309.2199

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Editor's note (August 3, 2018): Language in this commentary appears to imply that Retraction Watch has a biased agenda; while bias is possible in any endeavor, it was not the intent of JLSC to endorse any implication of intentional bias. Furthermore, in the interest of full disclosure, it should be noted that one of this commentary's authors has been the subject of multiple posts on the Retraction Watch blog.

Citing Retracted Papers Affects Education and Librarianship, so Distorted Academic Metrics Need a Correction

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ABSTRACT

A recent paper published in *JLSC* (Bakker & Riegelman, 2018) noted that in mental health scholarship, the retracted status of 40% of 812 records for 144 retracted papers—including as much as 26.3% of published PDFs—was not clearly indicated as such. Even with a visual indication of the retracted status of a paper, which limits the necessary information available to the public and readership indicating that such literature should no longer be used or cited, retracted literature continues to be cited. In this commentary, we reflect on additional reasons for the continued citation of retracted papers and explain how they might affect bibliometrics and scientometrics, and thus librarianship and education. Moreover, we propose actions to help scholars avoid citing retracted papers and to efficiently correct records where retracted papers have been cited. We introduce a prototype concept, the corrected journal impact factor (cJIF), to improve the accuracy of the most widespread journal-based metric, the Clarivate Analytics journal impact factor (JIF), which may have become distorted by the citation of retracted papers.

WHY ARE RETRACTED PAPERS STILL CITED?

Multiple reasons exist for retracting a scientific paper, including violation of codes of ethics or established submission codes, research misconduct, questionable data, copyright in-

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fringement, and authorship-related issues (Bornemann-Cimenti, Szilagyi, & Sandner-Kiesling, 2016; Hesselmann, Graf, Schmidt, & Reinhart, 2017). When a paper is retracted—by either the authors, the journal editors, or the publisher—there is, broadly speaking, an element of that paper that is unreliable or that represents an ethical or other violation. In essence, retractions represent some form of failure, either by the academics, the journal editors, or the publisher, to detect such errors at the peer-review stage (Teixeira da Silva, 2016).

Although the issue of precisely which aspects of a retracted paper are still valid has not yet been studied in detail, it is now generally accepted that the paper as a whole should not be cited in academic research. Recognition that some parts of retracted papers, such as methodology, might still be valid is one reason why retracted papers continue to be cited (Halevi & Bar-Ilan, 2016). The citation of a retracted paper can be deliberate or unintentional, and there are multiple reasons why retracted papers are cited, some quite extensively (Teixeira da Silva & Bornemann-Cimenti, 2017; Teixeira da Silva & Dobránszki, 2017b). These include the use of print or outdated copies of papers; the use of outdated or antiquated reference managers; the failure to check databases for updates; the use of pirate websites such as Sci-Hub that might archive papers in their unretracted state; self-citation in the belief that the findings are still valid, or where not all authors of the retracted paper have agreed with the retraction; and the posting of PDFs of papers still in their unretracted state to author-based social media sites such as ResearchGate or Academia.edu. Bakker and Riegelman (2018) demonstrated the extent to which retracted papers are cited by showing that 40% of 812 records for 144 retracted papers in the mental health field, including as much as 26.3% of the published PDFs, did not clearly indicate the retracted status of the papers. Thus, they found, publishers (primarily Committee on Publication Ethics [COPE] members) as well as indexing platforms and databases such as MEDLINE, PsycINFO, EBSCO, Scopus, Web of Science, and PubMed, were at fault, albeit all to a different extent.

RETRACTIONS AND VIOLATION OF POLICIES RELATED TO RETRACTED PAPERS

An increasing number of journals and publishers are becoming members of COPE, which has established policies for retractions and how the retracted literature should be clearly indicated to avoid being used post-retraction. Despite this, at least until 2017, there was still wide variation among the policies and their implementation among COPE member journals and publishers (Teixeira da Silva & Dobránszki, 2017a). The study by Bakker and Riegelman (2018) expands upon the notion that COPE member journals and publishers are not applying these guidelines rigorously or uniformly. However, COPE (2017) has promised to take more rigorous action, including imposing sanctions against members who violate its policies, with the intention to review its policies in November 2018 based on its practical experience in the interim period. This suggests that academics and the public can expect considerable

alignment of COPE member journals and publishers with COPE policies, including the rigorous implementation of error- and retraction-related policies.

WHO IS RESPONSIBLE FOR CORRECTING THE RECORD?

Although responsibility for the citation of retracted articles is shared among many of the players in the scholarly process (authors, editors, publishers, indexing agencies), there has been little discussion of who should be held responsible for correcting the academic record. How should citations that were attributed to retracted papers be adjusted to avoid downstream effects (Teixeira da Silva, 2015a)? Should papers that cited retracted papers be corrected, for example, with an erratum (Teixeira da Silva, 2015b)? In principle, it would be easy to state that authors whose retracted papers are cited should be responsible for correcting the literature. However, for this to happen, it is imperative that journals and publishers, including those that are COPE members, have clear policies in place for how to correct citations of retracted papers. For example, if a reader finds a citation of a retracted paper that either does not support a claim or that relies blindly on the claims made by the retracted paper, and reports it to the editor, how should the editor, the author of the paper citing the retracted paper, and the publisher respond? Currently, no such specific guidelines exist, so we propose some suggestions below.

PROPOSALS FOR ACTION

Are there practical ways to correct the record, and who should be responsible for conducting these tasks? For example, in 2016, to address this issue, PubMed took decisive steps to correct the visual aspect of papers that had been retracted by introducing bold, large, clear uppercase letters and a pink background box (Teixeira da Silva, Dobránszki, & Bornemann-Cimenti, 2016).

At least three levels of action—preventive, corrective, and punitive—should be considered to avoid and/or correct records citing retracted papers that do not clearly indicate their retracted state. The greatest hindering factors are (a) the lack of clear guidelines on how to treat papers that have cited retracted papers and how to correct the record of papers that use such retracted literature; (b) the lack of a uniform, reliable open database on retracted papers, as current efforts to develop such databases, such as the beta version of the Retraction Watch Retraction Database (McCook, 2015; Oransky, 2016) or Open Retractions (http://open-retractions.com/) (Smith-Unna & Smith-Unna, 2017), still need significant improvements (Bakker & Riegelman, 2018); and (c) the lack of corrective factors to help prevent distorting both journal-based metrics (JBMs) and author-based metrics (ABMs) by citing retracted papers.

Moreover, players at all levels of the publishing process—including citing and cited authors, journal editors, publishers, indexing agencies, and ethical bodies—should be involved as transparently as possible to increase confidence in scientific publications. This accountability will help impede the incongruent citation of retracted papers (i.e., citation in a non–COPE-compatible way), and thereby prevent further distortions of the scientific literature. Even if individual authors are very conscientious and do their best not to cite retracted papers, this is clearly an ineffective solution because it relies on the consciousness of a vast minority of individuals (Cosentino and Veríssimo, 2016; Rosenkrantz, 2016), among other reasons (Teixeira da Silva & Bornemann-Cimenti, 2017; Teixeira da Silva & Dobránszki, 2017b). Recently, some alternative possibilities have emerged for keeping track of retractions, including different databases and software (MEDLINE, PubMed, Web of Science, CrossCheck, CrossRef, etc.), but these serve only as complementary tools.

In order for retracted literature not to be cited, and for rules to be applied in a standardized way, it must apply to all academics. This requires players in scientific publishing to perform a series of tasks in a coordinated manner:

1. Publishers and indexing agencies should establish a uniform, reliable, and freely available open database of retracted papers. Leaving the task to individuals with potentially biased agendas, such as Retraction Watch, is not a viable solution. Groups that represent multiple entities in publishing, such as the Open Access Scholarly Publishers Association (OASPA) and the Association of Learned and Professional Society Publishers (ALPSP), already provide an infrastructure for a network solution. The limitation here lies with publishers that do not form part of these initiatives, but here too, peripheral groups with an equally large sphere of influence , such as the Directory of Open Access Journals (DOAJ) and the Scientific Electronic Library Online (SciELO), could offer assistance.

2. Systems such as the digital object identifier (DOI) and Open Researcher and Contributor ID (ORCID), which already have sizeable databases and links to mainstream publishers and journals, could assist by maintaining a coordinated separate list or database of retracted papers, organized by journal or publisher.

3. Ethical bodies such as COPE, the World Association of Medical Editors (WAME), and the International Committee of Medical Journal Editors (ICMJE) should establish clear guidelines for preventing the inappropriate use of retracted papers in forthcoming work and should add these guidelines to their member publishers' and journals' policies. Instructions for authors should explicitly state that retracted literature should not be cited, and editors and peer reviewers should be tasked with carefully verifying reference lists to ensure that it is not cited. An exception to this

rule would be a case in which the error of the retracted paper is being discussed, or other aspects related to the reason for its retraction, that is, where the retracted paper is the source of discussion and is not being used as an academic reference of scientific validity. Only this exceptional case would be considered an acceptable academic use of retracted papers. COPE guidelines should insist that COPE member journals clearly ensure that their journal editors inspect reference lists for the presence of retracted literature, and correct them accordingly. If a reliable and uniform open database and clear guidelines exist, the system will become more transparent. This way, both authors and journal editors, together with their publisher, can be more reliably responsible for preventing the citation of retracted papers.

4. Ethical bodies should create a clear protocol for how papers that cite retracted publications should be corrected. In addition, new correction factors should be introduced for journal- and author-based metrics (JBMs and ABMs) in order to inspire publishers, journal editors, and authors to prevent the citation of retracted papers in academic work.

5. What responsibility, if any, should authors of retracted papers have to correct papers that have cited their retracted papers? If the cited retracted paper is their own paper, then they become citing authors, and so rules for authors who cite retracted literature applies, provided that there are established guidelines as we suggested above. However, the current publishing infrastructure for self-correction is fraught with weaknesses (Wiedermann, 2018). In the case of retracted papers by deceased authors, remaining coauthors who are still active could assume this responsibility, or it could be assumed by the journal or publisher (Teixeira da Silva & Dobránszki, 2015). A practical solution related to the responsibility of authors of retracted papers who are aware of other academics who have cited their retracted papers is a complex issue that is not easy to resolve, as it would most likely require such authors to take the initiative of asking citing authors to correct the literature.

SHOULD CITATIONS AND ACADEMIC METRICS BE CORRECTED?

Some academics may believe that authors whose retracted papers have been cited have been cited unfairly, especially if they were offered financial rewards prior to the retraction of that paper, or if they continue to receive "rewards" after the paper's retraction in the form of citations (i.e., unfair recognition), and this argument would be strengthened for papers retracted for fraud or misconduct (Teixeira da Silva & Bornemann-Cimenti, 2017). ABMs rely heavily on citations, and similarly the most frequently used JBM, the Clarivate Analytics journal impact factor (JIF), which many academics use for official purposes to show their productivity, or "value" (Teixeira da Silva & Bernès, 2018). However, academics, especially

in countries that literally pay authors based on the JIF score of the journal in which they have published, benefit from gaming this system of metricization (Teixeira da Silva, 2017; Al-Hoorie & Vitta, 2018), and the risks of abuse increase if citations for retracted work are rewarded.

Next, we describe a prototype concept for correcting JBMs, using the most widespread JBM, the JIF, as a model example. We propose the introduction of a corrected journal impact factor (cJIF) in which the JIF is modified by a corrective factor (c) that would include the number of nonacademic citations of retracted papers: c = rc/n, where rc indicates the number of citations of retracted papers, while n indicates the number of total publications in the journal in the previous two years: cJIF = JIF $(1 − c)$. A nonacademic citation is the citation of a paper that was retracted due to methodological flaws, fraud or misconduct, except if it is discussed in a paper within a bibliometric context.

We first measure JIF and cJIF in Year$_X$ in a theoretical example and considering the following data:

Number of published (i.e., citable) items: in Year$_{X-1}$ n_{X-1} = 78, in Year$_{X-2}$ n_{X-2} = 82, n = 160;

Number of citations for papers in the previous two years: in Year$_{X-1}$ cit_{X-1} = 71, in Year$_{X-2}$ cit_{X-2} = 89, cit = 160;

Number of cited retracted papers: in Year$_{X-1}$ rc_{X-1} = 3, in Year$_{X-2}$ rc_{X-2} = 5, rc = 8

It then follows that in Year$_X$:

the calculated JIF is: JIF = cit/n=(71+89)/(78+82) = 160/160 = 1.000, and

the corrective factor considering the citations of retracted papers is: c = rc/n = 8/160 = 0.05.

The corrected JIF, the cJIF, is therefore cJIF = JIF $(1 − c)$ = 1.000 $(1 − 0.05)$ = 0.95.

All other JBMs should be modified and corrected to avoid their distortion by nonacademic citation of retracted papers, similarly to the correction of JIF described above. In the case of ABMs, such as the h-index, the citations of a paper after it has been retracted should not be included at all, except for the cases stated above. If corrected JBMs and ABMs are used, then not only can corrected and punitive actions contribute to correcting the literature, but the use of corrected metrics can also help prevent the future citation of retracted information.

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