

# Citing retracted papers has a negative domino effect on science, education, and society

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*Once an academic paper is retracted, it is by no means certain it will not go on being cited. **Jaime A. Teixeira da Silva**, **Judit Dobránszki** and **Helmar Bornemann-Cimenti** use three key examples to demonstrate how the continued citation of retracted papers can lead to the proliferation of erroneous literature, mislead young academics and cause confusion among researchers as to the veracity of scientific claims. Most damagingly, it can undermine the credibility of science and public trust in research. Retracted papers should not be cited and it is the responsibility of researchers, editorial teams and publishers to guard against this happening.*



Try to imagine a toxic compound, such as [melamine](#) or [mercury](#), that is willingly or erroneously introduced into the first step of a food production chain. Or imagine [a faulty airbag that is installed into a car](#). It is not difficult for members of the public to appreciate the consequences of such events because they are tangible and the outcomes are easy to imagine. Deaths caused by food poisoning or by an airbag that fails to open in a car accident are real-life scenarios that the public can understand. Now, try to imagine a scientific paper that contains errors of such significance that it must be retracted from the literature. Can the public truly understand the importance of such an event?

[Retracted publications represent failure](#) at various levels: authors who might not have been careful enough or were even disingenuous throughout the publication process; [editors who cut corners](#), were naïve or insufficiently cautious; or publishers that eyed profit above quality control. Ultimately, in the most serious cases, faulty literature is retracted. Up until the point a paper is retracted, the peer community may not be aware of its flaws; or once it has been retracted, peers may not notice for a short time. But several months or years after a retraction, why do some papers continue to be cited? And what effects does this have on academia? Here, we focus on three particular examples of retracted papers.



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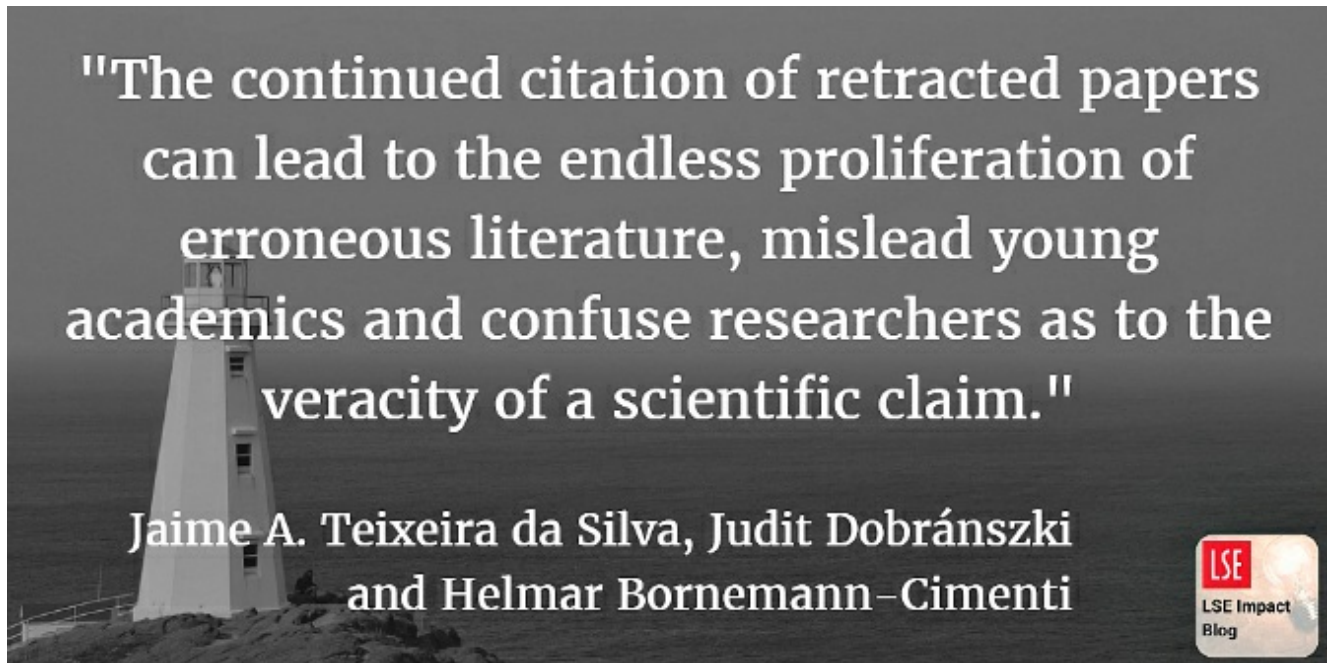
A [2005 paper in \*Science\*](#) discovered a novel adipocytokine, visfatin, which mimicked the effects of insulin. The authors of that paper claimed that, by binding to the insulin receptor, visfatin was able to lower the levels of plasma glucose in mice. They suggested this substance as an – at least partial – explanation for the correlation of body-fat and diabetes mellitus and encouraged further research on visfatin as a potential target in the drug therapy of diabetes. However, following an ethical investigation by the Osaka University Graduate School of Medicine Committee for Research Integrity, the biochemical analyses – specifically the parts related to the interaction of visfatin with the insulin receptor – were shown to be faulty. The paper was retracted in [2008](#). However, according to [Clarivate Analytics' Web of Science](#) (formerly Thomson Reuters' Web of Science), the now-retracted paper has been cited 1066 times, and 819 times since retraction. There are [some possible reasons for the continued citation of this paper](#):

1. a [poorly marked retraction status](#) on the original *Science* website that could cause researchers to believe that the paper's published status was still valid
2. the possibility that the results were still valid, despite the retraction, as [subsequent researchers were able to validate key aspects](#) of the original paper
3. the non-retracted status of pirated copies that may have been downloaded from sites such as [Sci-Hub](#).

A [1998 \*Lancet\* paper](#) that linked the measles, mumps, and rubella (MMR) vaccine to autism was labelled as a [hoax by the \*British Medical Journal\*](#) and subsequently [retracted in 2010](#). Their case series addressed an implicit fear of many opposed to vaccination based on speculation of the causes and effects, but larger epidemiological studies previously conducted by [Taylor \*et al\*](#) and by [Dales \*et al\*](#) did not support any of the suspicions raised by the paper's authors or their colleagues. The now-retracted paper has been cited 1031 times, and 356 times since retraction, despite the word 'RETRACTED' being stamped in red across each page, possibly because *The Lancet* continues to host the [retracted paper, making it available in open access](#).

The third example of a paper continuing to be cited despite its [retracted status](#) is not related to medicine. It involves [an exceptional 1998 paper in \*The EMBO Journal\*](#) that showed that specific virus-encoded proteins, specifically of potato virus Y or cucumber mosaic virus, were able to silence the posttranscriptional expression of a transgene (coding for green fluorescent protein) in transgenic tobacco. Inappropriate figure manipulation by [Olivier Voinnet](#), a

highly acclaimed plant scientist, led to the retraction, and also led to the notion of [boom-to-bust within science](#), in which legends could easily lose their legendary status for errors or fraud committed earlier on in their careers. This paper has been cited 977 times, and 80 times since retraction.



The continued citation of retracted papers can lead to the endless proliferation of erroneous literature, it can mislead young academics and confuse established researchers as to the veracity of a scientific claim. It can also falsely reward scientists whose papers may have been retracted, and fortify the [science zombie culture](#). In cases such as the above *The Lancet* retraction, it can cause a long-term and [widescale public scare](#). Most of all, it pollutes the foundations and undermines the credibility of science, both within the research community and society as a whole. Retracted papers should not be cited. It is incumbent upon authors to thoroughly research the validity of the literature they cite, and it is also the responsibility of editors and publishers to ensure that websites that host retracted papers clearly display notices of retraction. Editors should also point out to authors during the peer review process that a cited paper has been retracted, and should thus [not be used to validate any facts](#), or methodologies. Finally, retracted papers that are found to have been cited should be marked as such, possibly by errata, through [post-publication downstream processing](#).

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*Note: This article gives the views of the author, and not the position of the LSE Impact Blog, nor of the London School of Economics. Please review our [comments policy](#) if you have any concerns on posting a comment below.*

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