

Scientific Articles and The Retraction Epidemic

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Warning: That scientific article you just read may be completely bogus. Scientific articles can be retracted for numerous reasons – errors in data, errors in calculation, plagiarism, duplication of publication, and fraud or suspected fraud. An unmistakable trend in the increase of retractions due to one of those categories has emerged, and it is disturbing. A 2012 *Proceedings of the National Academy of Sciences (PNAS)* [article](#), “*Misconduct accounts for the majority of retracted scientific publications*,” found that the **percentage of scientific articles retracted because of fraud has increased dramatically in the last 40 years.**

The PNAS study is not alone. In 2013, the American Journal of Neuroradiology published an article suggesting that the problem had reached epidemic proportions. The abstract of a 2015 article published in The Journal of Bone & Joint Surgery “*How Do You Know It Is True? Integrity in Research and Publications*” claims that the “current high-stakes research environment has been characterized by an increase in plagiarism, falsification or manipulation of data, selected presentation of results, research bias, and inappropriate statistical analyses.” More than a dozen other studies cite to the 2012 PNAS work.

[R]etractions based on fraud have increased ~10 fold since 1975.

The 2012 PNAS study reviewed more than 2,000 retracted articles from the biomedical literature and found that “the majority of retracted articles were retracted because of some form of misconduct, with only 21.3% retracted because of error. The most common reason for retraction was fraud or suspected fraud (43.4%), with additional articles retracted because of duplicate publication (14.2%) or plagiarism (9.8%) . . . [t]hus, **for articles in which the reason for retraction is known, three-quarters were retracted because of misconduct or suspected misconduct, and only one-quarter was retracted for error.**” The fraud is apparently getting worse. According to the PNAS study, article retractions based on fraud have increased ~10 fold since 1975. The PNAS authors note, even more ominously, that “not all articles suspected of fraud have been retracted.”

The 2012 findings “underscore the importance of vigilance by reviewers, editors, and readers, and investigations by institutions, government agencies, and journalists in identifying and documenting

research misconduct . . . [and] suggest a need for increased attention to ethics in the training of scientists” according to the PNAS study. “However,” the authors cautioned, “this attention alone is unlikely to be successful in curbing poor research practices.”

A recent *priceonomics* post discusses this fraud-centric retraction phenomenon, but also highlights the possibility that it is a good sign, *i.e.* journals are doing a better job self-policing and that the system may be “getting stronger.” As fivethirtyeight.com observed, the increase in retractions may mean that the scientific community is “getting better at identifying fraud rather than getting more fraudulent.” In the meantime, keep the grains of salt handy when reading those new scientific findings

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