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What's Behind Big Science Frauds?

By ADAM MARCUS and IVAN ORANSKY MAY 22, 2015

IN December, Science published a paper claiming that people could change their minds about same-sex marriage after talking for just 20 minutes with a gay person. It seemed too good to be true — and it was.

On Wednesday, the journal distanced itself from the study, after its accuracy was disputed, and one of the authors could not back up the findings. News organizations, which had reported on the study, scrambled to correct the record.

Retractions can be good things, since even scientists often fail to acknowledge their mistakes, preferring instead to allow erroneous findings simply to wither away in the back alleys of unreproducible literature. But they don't surprise those of us who are familiar with how science works; we're surprised only that retractions aren't even more frequent.

Remember that study showing vaccines were linked to autism? The time scientists claimed to have cloned human embryonic stem cells? Or that simple, easy way that was supposed to revolutionize the creation of such stem cells?

Those were all frauds published in the world's top scientific journals — The Lancet, Science and Nature. The vaccine scare has been associated with a surge in cases of measles, some of them deadly.

Every day, on average, a scientific paper is retracted because of misconduct. Two percent of scientists admit to tinkering with their data in some kind of improper way. That number might appear small, but remember: Researchers publish some 2 million articles a year, often with taxpayer funding. In each of the last few years, the Office of Research Integrity, part of the United States

Department of Health and Human Services, has sanctioned a dozen or so scientists for misconduct ranging from plagiarism to fabrication of results.

Not surprisingly, the problem appears to get worse as the stakes get higher. The now-discredited paper on gay marriage — by Michael J. LaCour, a graduate student at U.C.L.A., and Donald P. Green, a political scientist at Columbia, who requested a retraction after his co-author failed to produce the raw data — had all the elements: headline-grabbing research, in a top journal, on a hot topic.

But dishonest scholars aren't the only guilty ones. Science fetishizes the published paper as the ultimate marker of individual productivity. And it doubles down on that bias with a concept called "impact factor" — how likely the studies in a given journal are to be referenced by subsequent articles. The more "downstream" citations, the theory goes, the more impactful the original article.

Except for this: Journals with higher impact factors retract papers more often than those with lower impact factors. It's not clear why. It could be that these prominent periodicals have more, and more careful, readers, who notice mistakes. But there's another explanation: Scientists view high-profile journals as the pinnacle of success — and they'll cut corners, or worse, for a shot at glory.

And while those top journals like to say that their peer reviewers are the most authoritative experts around, they seem to keep missing critical flaws that readers pick up days or even hours after publication — perhaps because journals rush peer reviewers so that authors will want to publish their supposedly groundbreaking work with them.

Most science and health reporters rely on the top journals for news leads. They tend to move in a pack, descending on a small handful of news items each week. When the papers in those journals have the fillip of a hot topic, like sex or race, the frenzy is even greater. And yet many reporters fail to do the necessary due diligence before publishing their work. The drive for scoops is even greater in journalism than it is in science.

Economists like to say there are no bad people, just bad incentives. The incentives to publish today are corrupting the scientific literature and the media that covers it. Until those incentives change, we'll all get fooled again.

Adam Marcus, managing editor of Gastroenterology and Endoscopy News, and Ivan Oransky, global editorial director of MedPage Today, co-founded Retraction Watch,

which tracks scientific errors.

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