

LINES OF INQUIRY

THE LINES OF INQUIRY SERIES TACKLES TIMELY QUESTIONS IN PUBLIC HEALTH SCIENCE, HIGHLIGHTING OUR FACULTY RESEARCH AND PROVIDING PERSPECTIVE ON OFTEN CONTROVERSIAL TOPICS.

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Spin Doctors

The media, the science, and the hyping of research results



Last September, a group of Stanford University researchers published a controversial study reporting that organic foods are no more nutritious than conventional foods.

The media jumped on it.

Organic Food No Healthier than Non-Organic: Study,¹ Reuters reported. Business Week's headline: *Organic Food Adds No Vitamins for Extra Cost*.² Other reputable outlets gave the results similar coverage.

But almost as soon as that news cycle ended, the backlash began. It soon became clear that the researchers had been misleading. They had defined nutrition only based on number of vitamins, downplaying other advantages of organic foods, like reduced pesticides and antibiotic resistant bacteria.

Outlets that had at first reported the study credibly backtracked. "Parsing of Data Led to Mixed Messages on Organic Food's Value"

read a New York Times headline.³ "Lots of chatter, anger over Stanford organic food study," said the Los Angeles Times.⁴

But it was not just the media that was at fault.

In their paper the scientists had represented the risks and advantages of pesticides and bacteria as though those issues fell outside of what it means for food to be nutritious, saying "the published literature lacks strong evidence that organic foods are significantly more nutritious than conventional foods. Consumption of organic foods may reduce exposure to pesticide residues and antibiotic-resistant bacteria."

How did this study get legs so fast? That question has recently been on the minds of both scientists and journalists, touching on important issues related to how science is communicated in an era of 24/7 news.

Recent research into medical spin suggests that the Stanford organics study is hardly an isolated incident. When faculty at Université Paris Descartes reviewed 70 randomized controlled trials published during 2008 and 2009, they found that half of news

1 <http://www.reuters.com/article/2012/09/03/us-organic-food-idUSBRE8820M920120903>

2 <http://www.businessweek.com/news/2012-09-03/organic-food-adds-no-vitamins-for-extra-cost>

3 <http://www.nytimes.com/2012/10/16/science/stanford-organic-food-study-and-vagaries-of-meta-analyses.html>

4 <http://articles.latimes.com/2012/sep/12/news/la-heb-stanford-organic-food-study-controversy-20120911>



reports were guilty of spinning scientific results.⁵ But interestingly, a majority of the spin originated in the conclusion section of the scientific abstract—that is, with the scientists.

“If their trial is negative they try to find at least a positive message and emphasize this positive message,” said Dr. Philippe Ravaud, the senior author of the study, a professor at Descartes, and an adjunct professor in the department.

Some reporters seized on the PLoS study as vindication against scientists who have accused their profession of sloppy and sensationalistic reporting.

Their excitement obscured perhaps a more troubling finding in the PLoS study, which is how complicit the media was—at least initially—in reporting research without questioning it, as in the Stanford organics study.

Although scientists and journalists tend to portray theirs as an adversarial relationship—one in which the scientist’s quest for accuracy is at battle with the journalist’s quest for a story that people will read and find relevant, both scientists and journalists have an interest in hyping positive results and downplaying negative ones.

“Everyone involved can be tempted to benefit from exaggeration. The news person has what looks like an exciting story and the investigator has visibility, which is increasingly valued by medical school PR offices and promotion committees,” says Dr. David Ransohoff, a professor of medicine and epidemiology at the University of North Carolina-Chapel Hill and an associate editor of the *Journal of the National Cancer Institute*.

Not only does media coverage of a study influence a scientist’s prominence, but it can also direct funding toward certain medical procedures and diagnostic tests, shape individuals’ health choices and change grant funding priorities.

There have been many examples in recent years of the symbiotic relationship between medical researchers and journalists.

5 Yavchitz A, Boutron I, Bafeta A, Marroun I, Charles P, Mantz J, Ravaud P. Misrepresentation of randomized controlled trials in press releases and news coverage: a cohort study PLoS Med. 2012; 9(9):e1001308. doi: 10.1371/journal.pmed.1001308. Epub 2012 Sep 11.

One cited by the PLoS study took place in 2009, when researchers at the Henry Ford Hospital in Detroit reported that acupuncture is as effective as drug therapy for treating breast cancer. The media was quick to cover these impressive results.⁶

However, the researchers’ study included only 25 women in each trial group at the study’s conclusion and thus was not statistically significant, say the authors of the PLoS paper.

Dr. Eleanor M. Walker, the lead author of the study and director of breast services in the department of radiation oncology at Henry Ford, defended her paper to the Chronicle of Higher Education, saying “everything that was mentioned is in fact in the paper and supported with data.” She did not respond to a request for comment for this article.⁷

Because of the incentives that both scientists and journalists have to cherry-pick results, some experts say medical journals need to do a better job of catching spin.

“Researchers often have an interest in overstating their findings, sometimes through financial interests, but often, also, because of an honest and passionate belief in their favorite pet theory,” Dr. Ben Goldacre, a frequent critic of science journalism and writer of the website Bad Science said over email. “But for these overstatements and distortions to make it into print, academic journals themselves have to fail.”

And in recent years it seems they have failed. Retractions have risen, drawing attention to the flaws of the peer-reviewed system.

Some of the most prestigious and best-known journals like *Science* and *Nature*, the ones whose studies make it into the news most often, have had more retractions than specialized journals.⁸

6 Walker EM, Rodriguez AI, Kohn B, Ball RM, Pegg J, Pocock JR, Nunez R, Peterson E, Jakary S, Levine RA. Acupuncture versus venlafaxine for the management of vasomotor symptoms in patients with hormone receptor-positive breast cancer: a randomized controlled trial. *J Clin Oncol*. 2010 Feb 1;28(4):634-40. doi: 10.1200/JCO.2009.23.5150. Epub 2009 Dec 28.

7 <http://chronicle.com/blogs/percolator/scientists-often-responsible-for-spin-of-their-results-researcher-finds/30872>

8 Fang FC, Casadevall A. Retracted science and the retraction index. *Infect Immun*. 2011 Oct;79(10):3855-9. doi: 10.1128/IAI.05661-11. Epub 2011 Aug 8.

Some scientists point out that they are operating in a climate that demands sexy results at the expense of accuracy.

The big journals have their eye out for studies that are more likely to generate media coverage, says Dr. Richard Ransohoff, the director of the Cleveland Clinic's Neuroinflammation Center and a cousin of David Ransohoff. The two of them published an article in 2001 called "Media Sensationalism: When Scientists and Journalists May be Complicit Collaborations," which anticipated many of these issues.⁹

Unlike the specialty journals, which are often published by professional societies and run by practicing scientists, high-impact journals are typically headed by professional editors, says Richard Ransohoff. While these editors usually have science doctorates, they have been out of the field for a while and are lacking expertise in most of the areas their journal publishes in.

"The people running those journals always have one eye on the quality of the science and its importance to the scientific community, but there are other eyes on getting publicity because that in some ways helps their journal," says Dr. Ransohoff.

This seems to have been what played out in 2006 when the *New England Journal of Medicine* published a study by scientists at Weill Medical College of Cornell University finding that a computerized tomography or CT scan could prevent 80 percent of lung cancer deaths if detected at an early stage—a dramatic result, especially since the scans were not a part of routine medical screening for lung cancer. The media ran with the story.

Emboldened by the coverage, the Cornell authors and screening advocates were able to pressure Congress into investigating whether to halt a long-running national trial that was comparing the CT scan to the chest X-ray. They also helped get state legislatures across the country to consider bills to direct tobacco settlement funds to CT screening programs.

But the Cornell group came under fire when it was discovered that they had financial interests in the results, including millions in grants from the parent company of a cigarette-maker and patents pending related to CT screening and follow up.¹⁰

Even before those issues emerged, critics had drawn attention to the study's methods. While some in the media reported these objections, they certainly did not lead the coverage.

While no party was blame-free in the debacle, the *New England Journal* bears major responsibility for publishing the study, says Dr. David Ransohoff, who at the time was a prominent critic.

"It will likely go down as one of the bigger publishing goofs the *New England Journal* has ever made," he says, adding that it was a rare but serious slip up on the part of the journal.

What keeps the media from being wary, says David H. Freedman, a journalist and author of *Wrong: Why Experts Keep Failing Us—And How to Know When Not to Trust Them*, is that for them, scientists can

occupy a rarified plane in journalists' minds.

"[I]n health journalism (and in science journalism in general), scientists are treated as trustworthy heroes," Freedman writes in a recent article in the *Columbia Journalism Review*. "Scientists are human beings who, like all of us, crave success, status, and funding, and who make mistakes; and ... journals are businesses that need readers and impact to thrive."¹¹

That perspective is shared by Dr. Kausik Datta, an immunology researcher at Johns Hopkins University who has written on topics related to media coverage of science for the blogging network SciLogs. Journalists can have "too much awe for the scientist/institution associated with the study, including personal/emotional investment," he says.¹²

Some scientists point out that they are operating in a climate that demands sexy results at the expense of accuracy.

"On the one hand, scientists are expected to present their data dispassionately and objectively; at the same time, they are also expected to make their research sound "sexy," or at least relevant and orderly," said cancer and stem cell biologist Dr. Ada Ao on *Nature's Scitable* blog.¹³

Scientists are usually quick to say that there are many journalists who labor to get the story right.

Journalists who get it wrong are often under the gun, pushed by the deadline pressures of publications that demand several stories or blog entries a day, and make it difficult to seek out various points of view. While editors at some publications may give their reporters time to get it right, many others prioritize more news at the expense of better-reported news.

Some scientists are skeptical of this defense, but they acknowledge that their profession could do a better job of communicating their research and making their findings more accessible.

"As a working scientist, I feel that our first duty is to science. But that doesn't mean that we should confine ourselves to the proverbial ivory tower," says Dr. Datta. "We need to actively engage with the general public at large, as well as science journalists, and spend some amount of time on a regular basis to skim through how our research work is being portrayed in the media, as well as engage in dialogs if necessary."

9 Ransohoff DF, Ransohoff RM, Sensationalism in the Media: When Scientists and Journalists May Be Complicit Collaborators. *Effective Clinical Practice*, July/August 2001. http://www.acponline.org/clinical_information/journals_publications/ecp/julaug01/ransohoff.htm

10 <http://www.nytimes.com/2008/03/26/health/research/26lung.html?pagewanted=all&r=0>

11 http://www.cjr.org/cover_story/survival_of_the_wrongest.php?page=all

12 http://www.scilogs.com/in_scientio_veritas/author/datta

13 http://www.nature.com/scitable/blog/theprometheancell/a_humble_rant_re_sipin