

The Cost of Scientific Misconduct

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Whether in elections or sports, on taxes or on Wall Street, cheating has always been the easiest way to win. The motives are frequently the same: money, power, and whatever fringe benefits one can amass on the side. Cheating, however much it may cost others, exacts little from the cheater himself.

In the world of research, the preferred euphemism for cheating is “scientific misconduct,” and it encompasses everything from plagiarizing a paragraph to falsifying data. As the website Retraction Watch shows, researchers who retract papers are allowed to submit, get published, and retract over and over again. A 2009 study by Dr. Daniele Fanelli reported that about two percent of researchers owned up to having “fabricated, falsified or modified data or results at least once” (1). By the author’s admission, the percentage is based on self-reporting and is likely a conservative estimation of the truth. Egregious frauds that receive a lot of publicity, as in the case of Vioxx (2,3), are only pieces in a much larger puzzle.

For the past few years, media outlets and scientific journals have been asking questions about cheating in science. How easy is data fabrication? (4) To what extent are drug companies responsible? (5) How can journals be more rigorous in catching cheating when it happens, and how can we make it stop? (6,7) Most essentially, is it possible to trust published science? (8,9).

Research journals have one essential duty: advancing our understanding of the world and of ourselves. As Assistant Editor for *Pediatric Research*, I have seen my share of misconduct cases; as a member of the public, I am continually surprised that the confirmed cases aren’t publicized more broadly. When scientists dream up data, forge results, or even leave off outliers hoping for a coherent conclusion, they do injury to their own professed cause and to the public at large. If the lie is big enough, the liar is found out—but the fantasy persists, as in the fraudulent link of vaccines to autism (10).

Many countries have organizations that deal with research integrity, but often the punishment for misconduct is relatively slight: submitting to research supervision and being barred from applying for public funding, for example. In the most infamous recent case of misconduct, South Korean researcher Hwang Woo-suk was sentenced to two years in prison for embezzlement and fraud related to purported stem cell cloning, but his prison term was suspended (11). Researchers who intentionally

deceive their colleagues and the public with false conclusions should be taken to task more severely. At best, their misdeeds cost a great deal of time and money (but rarely to themselves); at worst, they cause extensive damage to public health.

In a 2015 editorial for the philosophy journal *Topoi*, Editor-in-Chief Fabio Paglieri called for stricter measures against plagiarism (12): “Sanctioning plagiarism is....about building a better academia to live in. Thus the punished plagiarist has to serve as a cautionary tale for anyone else who may be tempted to follow the same path.” The same goes for researchers who tell elaborate fairy tales about their scientific endeavors. When fiction is published as fact and poses a heavy burden on society, those responsible should be held to account through some other means than a public shaming. The path of research is often long and slow, and intentional diversions are especially wasteful. If it is to be stopped, or at least minimized, cheating must be as costly to researchers as it is to the public.

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Advance online publication 26 August 2015. doi:10.1038/pr.2015.150