



Scientific Falsification

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Scientific falsification has been around in the scientific community since the inception of the idea of scientific experimentation.

This article is about the falsified evidence. For the act of disproving a proposition, hypothesis, or theory, read the article about scientific falsifiability.

Falsification in science is loosely defined as publishing or reporting misleading facts associated with a study, research or experimentation.

Scientific falsification can be considered as:

- Falsifying data
- Falsifying evidence
- Fabricating data
- Fabricating evidence
- Plagiarism

Falsifying data can be as simple as not accounting seriously the margin of error in a study or it can be as extreme as knowingly changing data to support the hypothesis.

Falsifying evidence is very rarely accidental and is usually done to support a hypothesis.

Fabricating data is literally making up data. Perhaps it is mentioning an event that did not occur or reports a population that was not used.

Fabricating evidence is also literal; the researcher makes up evidence that does not exist.

Plagiarism is also considered scientific falsification, if a part of the work reported is taken from another source without proper citation, the report or paper can be deemed as scientific falsification.

All of these key events are considered scientific falsification, either standing alone or combined. This misconduct is considered the ultimate misconduct in the research community. The offender is often stripped of his credentials and because of the tight knit nature of the scientific community even if the credentials are not stripped the researcher may never find work as a researcher again. It will impact the ability to secure funding in the future.

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Cases

Several cases in point were reported in a public notice of determinations by the Office of Research Integrity (ORI) ^[1]

"Raphael B. Stricker, M.D., University of California at San Francisco.

An investigation conducted by the University found that Dr. Stricker falsified data for a manuscript and a PHS-supported publication reporting research on AIDS. In the manuscript, Dr. Stricker selectively suppressed data that did not support his hypothesis, and reported consistently positive data whereas only one of four experiments had produced positive results. In the publication, Dr. Stricker reported that an antibody was found in 29 of 30 homosexuals, but not found in non-homosexuals.

However, Dr. Stricker's control data, which he suppressed, showed the antibody in 33 of 65 non-homosexuals. The falsified data was used as the basis for a grant application to the National Institutes of Health. The ORI concurred in the University's finding. Dr. Stricker executed a Voluntary Exclusion and Settlement Agreement in which he has agreed not to apply for Federal grant or contract funds and will not serve on PHS advisory committees, boards or peer review groups for a three year period beginning April 1, 1993."

Also reported in the same notice:

"Tian-Shing Lee, M.D., Joslin Diabetes Center, Harvard Medical School.

An investigation conducted by Harvard found that Dr. Lee, a former post-doctoral fellow at the Joslin Diabetes Center, fabricated and falsified data in research on diabetes supported by the National Eye Institute. Primary data was missing for almost half of the figures and tables in a series of published papers and manuscripts prepared by Dr. Lee.

Many instances of data fabrication and falsification were found, including presenting data for cell counts that were never performed, indicating that multiple data points were determined when in fact only a single data point was obtained,

eliminating the highest or lowest values in sets of experimental readings, alteration or transposition of data to achieve a desired experimental result, and misrepresentation of the time intervals at which data was collected.

The Office of Research Integrity concurred in the University's findings. Dr. Lee has been debarred from receiving Federal grants or contracts and is prohibited from serving on Public Health Service Advisory Committees, Boards, or peer review groups for a five year period beginning April 18, 1993.

Harvard University notified the four scientific journals which had published papers containing data fabricated or falsified by Dr. Lee that the papers should be retracted."

Another report from the same source notes:

"James H. Freisheim, Ph.D., Medical College of Ohio.

An inquiry and an investigation conducted by the University found that Dr. Freisheim had submitted a research grant application to the National Institutes of Health which contained substantial portions plagiarized from another scientist's grant application.

Dr. Freisheim had served as an assigned reviewer of the other scientist's application when it was reviewed about two years earlier by an NIH Study Section.

During the inquiry, Dr. Freisheim produced a handwritten draft of the plagiarized material that he claimed he had written before the other scientist had submitted his grant application, and that therefore the other scientist had plagiarized Dr. Freisheim's work. The investigation reviewed the handwritten draft and concluded that it had been written much later than purported by Dr. Freisheim, possibly during the inquiry to establish the basis for his defense.

The investigation also concluded that Dr. Freisheim had plagiarized material for two post-doctoral fellowship applications to the NIH. The ORI concurred in the University's findings, and Dr. Freisheim has been debarred from receiving Federal grant or contract funds for a period of three years beginning May 5, 1993.

He has also been required, for a ten year period beginning May 5, 1993, to certify that future applications for research support submitted to the PHS are his own work, and he has been prohibited from serving on PHS Advisory Committees or review groups for the same period."

What are the Effects of Scientific Falsification?

Society as a whole is greatly dependent upon the scientific community to provide direction. Direction is received from the scientific community in every aspect of society.

The medical industry depends on valid [2] research to determine best treatment plans, when evidence of efficacy is falsified it effects directly how a patient will be treated for a specific illness. This is probably the most dangerous aspect of scientific falsification [3]. Falsifying data and falsifying evidence can be extremely dangerous in this setting.

Even the simplest day to day things that every culture and society experience, are brought about by what is to be believed as valid research. How businesses conduct their business is backed by research, consumerism is backed by research. How schools teach their students is effected by research. Just about every aspect of society as we know it is formed by research [4]

People are greatly influenced by what is reported in the media. The media uses facts and figures to validate their reporting, those facts and figures are based on others research. If the research has been falsified and presented, it affects everyone everywhere.

What Causes Scientific Falsification?

Why would a person that is considered top in his/her field fabricate results or falsify data? This is a hard question to answer.

Pride may be a primary motivator. Perhaps the researchers pride is such that they just have to be right. It may be that they so believe in the hypothesis [5] and believe that it should be an accepted theory that they are willing to risk their career on it.

Money is also a huge motivator, funding [6] is normally based on results, unfortunately. If the researcher feels that funding may be cut if the results cannot be proven in the favor of the financier of the project this may promote dishonesty in reporting.

The researcher may perceive that falsifying data may not impact the overall study. It may also be perceived that falsifying evidence that supports the actual outcome does not actually impact the outcome and is not truly dishonest but more of a means to amp up the actual findings.

There may even be instances where the researcher is dependent upon assistants for valid reporting and this information may be falsified. If the head researcher doe not check the data as presented and uses that data to report the findings, and the data is not accurate, this too is considered scientific falsification.

Ultimately it is up to the author to be sure what is being reported is accurate and not based on falsified information.

Scientific falsification goes against everything that the scientific method [7] stands for. It is unethical, immoral and dangerous. It is one of the worst acts that anyone in research can commit. It is severely punished.

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Links

[1] <http://grants.nih.gov/grants/guide/notice-files/not93-177>

[2] <https://explorable.com/validity-and-reliability>

[3] http://en.wikipedia.org/wiki/Fabrication_%28science%29

[4] <https://explorable.com/what-is-research>

[5] <https://explorable.com/research-hypothesis>

[6] <https://explorable.com/research-grant-funding>

[7] <https://explorable.com/what-is-the-scientific-method>