



NSF OIG CORNER

NSF OIG Corner: Uncovering Fabricated or Falsified Data

By James T. Kroll

In the January/February 2020 issue, we discussed NSF OIG's role in investigating allegations of research misconduct. In this article, we'll go more in depth about two types of research misconduct: data fabrication and data falsification.

What's the difference between fabrication and falsification?

According to NSF's policy (45 CFR 689), fabrication means "making up data or results and recording or reporting them" and falsification means "manipulating research materials, equipment, or processes, or changing or omitting data or results such that the research is not accurately represented in the research record."

Data fabrication occurs when researchers never conduct the experiments described and the observations, data, or other characteristics were never measured or recorded. Data falsification occurs when researchers alter or misrepresent the underlying data, such as manipulating data images, changing or selectively omitting data points, or manipulating equipment or research processes to alter the outcomes to a desired effect. Falsification also includes the misrepresentation of the experimental conditions under which data were collected or what the data represent.

How do you investigate data fabrication and falsification?

Our inquiry, investigation, and adjudication processes were detailed in the January/February 2020 issue. However, data fabrication and falsification allegations differ in that we generally contact subjects' institutions, rather than researchers themselves, during our inquiry. This allows institutions to secure all available and relevant data records before the subjects are made aware of the allegations.

What are some consequences for data fabrication and falsification?

Over the past 10 years, our office has reviewed more than 160 allegations of data fabrication and falsification. Of these allegations, NSF made findings of research misconduct against more than 40 researchers. Many of these researchers were graduate students and postdoctoral researchers.

In all cases where NSF made a finding of research misconduct, researchers received a letter of reprimand. In many cases, NSF debarred researchers to prevent them from participating in government contracts, subcontracts, loans, grants, and other assistance programs for a specified period. Other actions NSF often takes include requiring researchers attend a Responsible Conduct of Research course, barring researchers from serving as NSF reviewers, and having them submit assurance and certification documents with future NSF submissions.

How can institutions help prevent data fabrication and falsification?

Rigorous management of research data is critical. In many of our cases, researchers failed to adequately preserve their data records, and those of student researchers. For example, we have seen data maintained on university research equipment get overwritten due to devices' storage limitations. We have also seen problems resulting from students keeping the primary copy of research data on their personal rather than university

computers. Inadequate data records make supporting and defending research results difficult when questions arise. Requiring departments or individual labs to establish data management protocols to ensure long-term data access would be prudent.

Additionally, students who commit data fabrication and falsification often attribute their misconduct to a lack of faculty oversight and review of their work. This highlights how important proper mentoring is in avoiding allegations of research misconduct.

Where can I find additional information?

Find out more information about our office and read our reports at www.nsf.gov/oig.

Information about Research Integrity and Administrative Investigations: <https://nsf.gov/oig/office-inv/administrative.jsp>.

Case closeouts: <https://nsf.gov/oig/case-closeout>.

Semiannual Reports to Congress: www.nsf.gov/oig/reports.

How can I report fraud, waste, abuse, or whistleblower reprisal?

- **Online report:** www.nsf.gov/oig/report-fraud/form.jsp
- **Anonymous Hotline:** 1.800.428.2189
- **Email:** oig@nsf.gov
- **Mail:** 2415 Eisenhower Avenue, Alexandria, VA 22314
ATTN: OIG HOTLINE

Whistleblowers play a critical role in keeping our Government honest, efficient, and accountable. Please visit www.nsf.gov/oig/whistleblower.jsp for information about whistleblower protection.

Have a question or an idea for NSF OIG's Corner?

Please contact us at
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