Research Ethics and Integrity

This section outlines fundamental responsibilities of the research community. It presents some existing frameworks for Research Ethics and Research Integrity, designed to provide researchers with a common basis for defining and implementing tangible and enforceable guidelines. In some countries, integrity is part of an ethical practice of research, whereas in other countries this is inverted and ethics is considered as one aspect of integrity.

What is Research Ethics?

Ethical research conduct implies the application of fundamental ethical principles and legislation to scientific research in all possible domains of research – for example biomedical research, nature sciences, social sciences and humanities.

The most common ethical issues include:

- the involvement of children, patients, vulnerable populations,
- the use of human embryonic stem cells,
- privacy and data protection issues,
- research on animals and non-human primates.

It also includes the avoidance of any breach of research integrity [as explained below].

European Commission Horizon 2020: Ethics

What is Research Integrity?

Good research practices are based on fundamental principles of research integrity. They guide researchers in their work as well as in their engagement with the practical, ethical and intellectual challenges inherent in research. These principles are:

- Reliability in ensuring the quality of research, reflected in the design, the methodology, the analysis and the use of resources.
- Honesty in developing, undertaking, reviewing, reporting and communicating research in a transparent, fair, full and unbiased way.
- Respect for colleagues, research participants, society, ecosystems, cultural heritage and the environment.
- Accountability for the research from idea to publication, for its management and organisation, for training, supervision and mentoring, and for its wider impacts.

All European Academies. (2017). The European code of conduct for research integrity. (ISBN 978-3-00-055767-5) Berlin: Germany.

Assessing integrity in research

The frequency with which scientists fabricate and falsify data, or commit other forms of scientific misconduct is a matter of controversy. Many surveys have asked scientists directly whether they have committed or know of a colleague who committed research misconduct, but their results appeared difficult to compare and synthesize. Fanelli (2009) carried out a meta-analysis of surveys, finding that:

A pooled weighted average of 1.97% ... of scientists admitted to have fabricated, falsified or modified data or results at least once –a serious form of misconduct by any standard– and up to 33.7% admitted other questionable research practices. In surveys asking about the behaviour of colleagues, admission rates were 14.12% ... for falsification, and up to 72% for other questionable research practices. Meta-regression showed that self reports surveys, surveys using the words "falsification" or "fabrication", and mailed surveys yielded lower percentages of misconduct. When these factors were controlled for, misconduct was reported more frequently by medical/ pharmacological researchers than others.

Considering that these surveys ask sensitive questions and have other limitations, it appears likely that this is a conservative estimate of the true prevalence of scientific misconduct.

Fanelli D (2009) How Many Scientists Fabricate and Falsify Research? A Systematic Review and Meta-Analysis of Survey Data. *PLoS ONE* 4(5): e5738.

The consequences of a lack of integrity in research include:

- Undermining public trust in research, through conflicting claims and misleading information.
- Misdirecting funding and unfairly crediting researchers or laboratories on the basis of substandard research, leading to resources being wasted.
- Damaging reputations, both of institutions which have been implicated in high profile cases and that of the UK within the international community.
- Risking public health, for example by asserting evidence that may cause people to decide to either undergo or refuse trials or treatment or to use products that have not been shown to be safe or effective.

Houses of Parliament, Parliamentary Office of Science & Technology. (2017). Integrity in Research. Postnote, 544

Contrasting discourses on scientific integrity

Even though integrity is widely considered to be an essential aspect of research... there is an ongoing debate on what actually constitutes research integrity. The understanding of integrity ranges from the minimal, which only considers falsification, fabrication and plagiarism (FFP), to the maximum, which blends integrity into science ethics. However, underlying this obvious range, there are more subtle differences that are not as immediately evident. There are diverging notions of integrity as an individual or as an institutional responsibility, or of integrity as adherence to a clear set of norms versus an aspiration to an unobtainable ideal.

Horbach, S. P. J. M., & Halffman, W. (2017). Promoting Virtue or Punishing Fraud: Mapping Contrasts in the Language of "Scientific Integrity." *Science and Engineering Ethics, 23*(6), 1461–1485.

PERFORM researcher reflection

> “I struggle at times with ethical controversies in my research. Can it be used to exploit species? Is it ethical to oversell the impact of my planned research to obtain funding? How can I stay upright, when adhering to my principles might jeopardize my academic career?”

Activities

Group discussion

1. In advance of the session, invite participants to read different guidelines to integrity (national ones, European ones, those specific to their institutions). You may also encourage participants to read about different ethical procedures in research. Allow everyone a week or two to read a range of guidelines.
2. A few days prior to the session, invite each participant to write answers to the following questions:
   - How does research integrity apply to your discipline or research project?
   - What research integrity issues are there in your discipline?
   - Is there a person in charge of research integrity in your institution?
   - Is training in research integrity offered to researchers? How do your mentors and colleagues view such training? Do they see it as valuable or as a waste of time?
   - Are there local procedures for dealing with misconduct in your institution? At what level do procedures exist?
   - If there is no formal procedure or named person in charge of research integrity, who can you talk to if you are concerned about misconduct or questionable research practices?
   - How difficult it is to have high standards of integrity and ethics in research?
   - What would success look like in your discipline? Is success compatible with unreliable research production?
   - How can we incentivise high standards of integrity and ethics in research?
3. At the meeting or training session, share your responses and discuss key issues that emerge.

Integrity Dilemmas

Use the Science Integrity Dilemma Game developed by the Erasumus University Rotterdam to discuss common integrity dilemmas: https://goo.gl/cC6nx5

References and additional resources

Research ethics:

- European Commission (2013) *Ethics for researchers Facilitating Research Excellence in FP7* Luxembourg: Publications Office of the European Union. https://goo.gl/EUjRH8
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Research integrity:

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- Houses of Parliament, Parliamentary Office of Science & Technology. (2017). Integrity in Research. Postnote, 544

Malpractice:

- Fanelli D (2009) How Many Scientists Fabricate and Falsify Research? A Systematic Review and Meta-Analysis of Survey Data. *PLoS ONE* 4(5): e5738. https://goo.gl/hy9SYW
- Martinson, B. C., Anderson, M. S. and De Vries, R. (2005). Scientists behaving badly. *Nature*, 435(7043): 737–738 https://goo.gl/1zYuhU

This project has received funding from the European Union´s Horizon 2020 research and innovation programme under grant agreement No 665826.