

CASES IN RESEARCH ETHICS

Dietlinde Wouters

Centrum voor Logica en Wetenschapsfilosofie

Universiteit Gent (UGent)

Blandijnberg 2, B-9000 Gent, België

Dietlinde.Wouters@ugent.be

Acknowledgement

This document is one of the results of the research project “Ethische Richtlijnen voor Wetenschappelijk Onderzoek in de Geesteswetenschappen” financed by the Faculty Research Fund of the Faculty of Arts and Philosophy. The author thanks the supervisors of this project (Prof. Dr. Erik Weber and Prof. Dr. Tom Claes) for their feedback on earlier versions of this text.

CASES IN RESEARCH ETHICS

Introduction

The scientific value and quality of research is important, but researchers also have other preoccupations. Researchers encounter a variety of ethical problems or dilemmas during their research. In this document we want to present the most important problems in a systematic way and illustrate them with examples. We hope this overview can stimulate researchers to reflect about similar ethical situations in their own research (field).

We will first treat some topics which are important for scientific research in general (Part I). Then we will take a look at the different phases of inquiry (the preparation phase, the investigation phase and the reporting phase) and discuss some particular ethical issues for each of them (Part II).

For every ethical issue we will start by providing some background information. Then we give one or more examples. Finally, we list some (ethical) questions that may emerge. This list of questions will of course not be exhaustive, but it will serve as a good starting point for further reflection on the subject. Most of the examples given are fictional. For each researcher, some of the issues and examples will sound very familiar; other issues and examples will differ clearly from the personal experiences of the researcher. We think, nevertheless, that the latter also can stimulate the researchers to reflect on the ethical aspects of their own research or research field.

For the composition of this document (background, examples and questions) we found inspiration in the following books and texts:

- the *Code of Ethics of the American Sociological Association* (ASA, 1999).
- A. BRIGGLE en C. MITCHAM. *Ethics and Science. An introduction*. Cambridge, 2012.
- P. LEWIS, M. SAUNDERS, A. THORNHILL en J. P. VERCKENS, *Methoden en technieken van onderzoek*. Amsterdam, 2008.
- S. LOUE, *Textbook of Research Ethics*. New York: Kluwer Academic Publishers, 2002.
- P. OLIVER, *The Student's Guide to Research Ethics*. Maidenhead/Philadelphia: Open University Press, 2003.
- D. RESNIK, *The Ethics of Science. An Introduction*, London/New York: Routledge, 1998.

I. General ethical themes

In this part we will discuss some ethical issues that are important for research activities in general.

Research subjects

Background

The study subject influences the specific ethical requirements during the development of the study design and during the investigation itself. Researchers always need to have their study subject in mind and they need to be aware of the sensitivities involving their subject. There is, for example, a big difference between studying animals or studying humans. When studying humans, we see that different groups of persons need different treatments. Especially while working with vulnerable groups, the researchers need to take special precautions. Vulnerable groups of people are those: *“who may not have the required degree of understanding (for whatever reason consent) to give their informed consent to participation in research.”* (Oliver, 2003, p. 35) Some examples of these groups are children, people with a disability or persons with another mother tongue (Oliver, 2003, p. 35-38).

Example 1: Homeless people

A researcher wants to investigate the health problems of older homeless people who are living an itinerant life. He hopes that by publicizing their health needs, he can convince the relevant authorities to establish programs of intervention. When he discusses his idea with his colleagues, they warn him for the possibility that the homeless people may not be happy with this intervention because they care much about their personal freedom. Regular medical checks could be annoying for them.

Questions

What is more important, not to disturb the lifestyle of this people or the objective to provide better health care for them? Is there a possibility to reach this last objective without disturbing their personal freedom? (Oliver, 2003, p. 37-38) Can it be an option to discuss the research objectives first with the research subject group? How could this be organized?

Example 2: Research and animals

Researchers are doing a study to know more about aggression in rats. They discover that rats become very aggressive and violent when they are given a special hormone. The hormone given is similar to testosterone in structure and function and can probably offer more knowledge about the relation between testosterone and human aggression. When the hormone is administered to the rats, they become so aggressive that they tear other rats apart. Many rats die. It is difficult to adjust the dosage in order to save the rats' life, because they all react differently: some only need a low dosage while others need more. When animal rights activists hear about the experiments, they want the researchers to stop the study (Resnik, 1998, p. 194-195).

Questions

Should the researchers stop the study? Is the experiment ethical (enough)? A similar study on humans wouldn't be, but is it different for animals in this case?

Informed consent process

Background

The voluntary and informed consent of the research subjects is an important condition for research projects. The Nuremberg code defines the voluntary and informed consent principle as follows:

“The voluntary consent of the human subject is absolutely essential.

This means that the person involved should have legal capacity to give consent; should be so situated as to be able to exercise free power of choice, without the intervention of any element of force, fraud, deceit, -duress, over-reaching, or other ulterior form of constraint or coercion; and should have sufficient knowledge and comprehension of the elements of the subject matter involved as to enable him to make an understanding and enlightened decision. This latter element requires that before the acceptance of an affirmative decision by the experimental subject there should be made known to him the nature, duration, and purpose of the experiment; the method and means by which it is to be conducted; all inconveniences and hazards reasonably to be expected; and the effects upon his health or person which may possibly come from his participation in the experiment. The duty and responsibility for ascertaining the quality of the consent rests upon each individual who initiates, directs or engages in the experiment. It is a personal duty and responsibility which may not be delegated to another with impunity.” (Trials of War Criminals before the Nuremberg Military Tribunals under Control Council Law No. 10, vol. 2, p. 181)

The most important elements of informed consent are: voluntariness, information, understanding and the capacity to consent (Loue, 2000, p. 116). The informed consent process includes that the participants should be informed that they are allowed to withdraw from the research at any moment, without the necessity to give any explanation (Oliver, 2003, p. 47-48). The informed consent process imposes some restrictions on how to carry out the research. The researchers need to find a way to reach optimal research results while treating the research participants in an correct and ethical way.

Example 3: Recruiting participants

A group of researchers is conducting a research about the relation between lifestyles and diet on one hand and the occurrence of cancer on the other. The research takes place in country X in cooperation with local researchers. The authorities of country X offer the researchers the opportunity to conduct experiments on a human population instead of working with statistical data. They propose to conduct an experiment on prisoners who are serving a long sentence. The experiment would provide new knowledge on cancer and its prevention. Nevertheless, the country doesn't have a good reputation with respect to human rights. It is plausible that the prison environment is coercive and that the prisoners will have little to say about their participation in the experiment. The local researchers do not recognize the problem and they interpret it as a way in which the prisoners can repay their debt to society (Resnik, 1998, p. 194).

Questions

Should the researchers decide to undertake the research? Can the research be ethical? How can they check whether the consent of the participants is a voluntary and informed consent? In which circumstances can a free choice be guaranteed for people in prison?

Example 4: Deception

A famous case of deception in research is the experiment of Stanley Milgram. During this experiment, the participants were told that the objective of the research was to learn more about the effects of punishments on learning, while the real objective was to test their obedience to authority. The experiment design includes two groups of people: the teachers (the participants) and the learners (actors). The learners were supposed to learn information and they were punished with an electric shock by the teachers every time they answered the questions incorrectly. The learners were in fact actors and the electric shocks were not real. The participants were asked to increase the severity of the shocks by every wrong answer, which apparently caused bigger discomfort. Many participants obeyed the orders of the authorities, even when this seemed to lead to dangerous levels. The participants were debriefed after the experiments. Given the objective of the experiment - to carry out research about obedience to authority - it was impossible to inform the participants in advance about the real design and purposes of the experiment. Many of the participants suffered psychologically when they realised what they did and which harm they could have caused (Resnik, 1998, p. 138-139).

Questions

Was it in this context ethically acceptable to mislead the participants? Can deception be ethically acceptable? Do we need to avoid deception in general? Are there different ways of deception? Can we still speak about informed consent in cases of deception? How complete does the information need to be before we can talk about informed consent?

Example 5: Vulnerable groups

In case of vulnerable groups, the topic of informed consent is a complex and interesting one. We will take a closer look at children as research participants. If a group of researchers, for example, wants to test a particular drug on children, they need to consider many ethical issues and questions. Children are a vulnerable group because they may lack the maturity to understand the nature and consequences of the research and their participation. Children in general also lack the legal capacity to consent. Therefore, parents can give consent in name of the children (Loue, 1999, p. 135-141).

Questions

A first question is to what extent children need to be involved in the decision to participate in the experiment. What happens when they are too young to be asked for their opinion? Which information about the research should be disclosed to the child and how should this be done? How do the levels of risk and benefit for the child play a role in the decisions? How can these levels be measured? How important are values such as privacy and confidentiality in research on children (e.g. disclosure of information to parents)? (Loue, 1999, p. 135-141)

Confidentiality and privacy

Background

It is essential to keep the information about the research participants confidential. Preserving the anonymity of the participants is one of the best methods to do this. It can be done by the use of fictional names or numbers to refer to the participants. It is important to inform people about the methods that will be used to ensure confidentiality or anonymity (Oliver, 2003, p. 77-84).

Example 5

Confidentiality and privacy are important subjects in Example 5 (research on vulnerable groups).

Questions

How important are values such as privacy and confidentiality in research on vulnerable groups like children or mentally disabled people? Should all the results have been reported to their parents or guardians or should the information be treated confidentially?

Example 6: Editing data for confidentiality?

Two researchers are conducting research on the opinion of high school students on their school. They select the group of participants randomly. When they process the data, they notice that four of the students are really negative about the school and the teachers and that they use offensive language to express this. The other pupils seem less critical and they seem to be generally happy at school. When the researchers take a closer look at the background of the critical students, they notice that these pupils have had some problems with the school. If the researchers publish the data without editing, it will be difficult to guarantee the anonymity of the participants. Because of their strong language use, being recognized can cause them problems (Oliver, 2003, p. 82).

Questions

What should the researchers do, when having in mind the importance of confidentiality? Should they leave the information of the critical participants out of the data, using the argument that their reactions were atypical compared to the rest of the results? Would it be better that they choose to omit the parts with the offensive language? Should they paraphrase the data or delete the offensive words and mark them with dashes? Should they present the data without editing? (Oliver, 2003, p. 82)

Communication with the participants

Background

For every new research project, it is necessary to reflect ethically on the communication with the respondents. The researchers need to decide, for example, if the respondents should be allowed to read, edit or confirm the accuracy of the data (Oliver, 2003, p. 62). The researchers should also decide if it is necessary or permissible to report the results to the respondents (Oliver, 2003, p. 64; Briggie, 2012, p.112). Sometimes if sensitive information disclosed by the respondents, it can be difficult for the researchers to know how to respond or react to this disclosure (Oliver, 2003, p. 48-50).

Example 7: Responding to sensitive material

“A researcher is interviewing employees within a large company operating in the financial services sector. The purpose of the research is to investigate the extent to which employees feel that their career aspirations are encouraged and supported by the company. The management of the company have provided all necessary facilities for the research. They are hoping to use the results to inform their human resources policy. The participants appear to feel that to a reasonable extent, the company tries to provide the necessary support for their career ambitions. However, one respondent, completely unexpectedly, alleges that he is bullied by his line manager. He claims that his work load is excessive compared with that of his colleagues and that when he does not meet targets he is called into his manager’s office and criticized using insulting terms. He asks the researcher not to say anything, as he fears retribution and cannot afford to risk losing his job. The researcher has received no indications of similar problems from other respondents, although the researcher does not thereby discount what the interviewee has said.” (Oliver, 2003, p. 49)

Questions

What should the researcher do? Should he respond to the participant on the subject? And if so, what should he say? Should he ask more information about it, even if the subject doesn’t form part of the research object? Is he allowed to talk about his personal experiences related to the subject?

Objectivity

Background

Objectivity is an important value in science, for example while collecting, recording, analysing, interpreting, sharing, and storing data or during procedures such as publication practices and peer review (Resnik, 1998, p. 74). Objectivity is important during all the phases of the research.

Example 8: Self-deception

The English physicist Robert Hooke believed in the Copernican heliocentric theory of the solar system. A way to prove the correctness of the theory was by the observation of a stellar parallax. This is a "*perceived difference in the position of a star due to the Earth's motion around the Sun*" (Briggle, 2012, p. 109). Hooke believed to have observed a star with a parallax of 30 seconds of arc. There is such a phenomenon but much smaller (1 second of arc) and it would have been impossible for Hooke to observe with the telescopes available at that time. Hooke was adhering to the correct theory, but the way he proved it was not reliable and objective. His believe in the theory made him self-deceptive (Briggle, 2012, p. 109-110).

Questions

Which are possible factors that can influence self-deceptiveness in recent research? How can we assure objectivity in our research? Is a lack of objectivity less serious when the researcher adheres to the correct theory?

Avoiding discomfort

Background

The researcher should avoid disappointment, shame, stress, discomfort, pain, damage, harassment and every other possible form of discomfort of the research participant during every phase of the research (Saunders et al., 2008, p. 173; ASA, 1999).

Example 9: Placebo washout

Some drug trials include a *placebo washout*. This is “a period of time following the consent to participate and prior to the initiation of the study when participants are withdrawn from other drugs they may be using and receive, instead, a placebo.” (Loue, 1999, p. 72) The placebo washout has two clear scientific advantages. First of all, the researchers can examine whether the participants respond to a placebo. On the other hand, it gives them the possibility to exclude the effects of other drugs that the participants have been using before the start of the study. Nevertheless, this period of placebo washout can have significant (and maybe dangerous) effects on participants that are withdrawn from using effective medicines (Loue, 1999, p. 72).

Questions

When is it ethically permissible to include a period of placebo washout in the study design? Can the research be ethical when the participants possibly suffer discomfort and pain? Or when the situation can be dangerous for them?

Quality

Background

Researchers need to pursue at any moment of the investigations the highest possible quality of research (Saunders et al., 2008, p. 173).

Example 10: Lost data

Two graduate students are collecting and analysing soil samples for their investigation. The study is meant to last 6 months. During the last week they realise that they forgot to record the data for six soil samples taken three weeks before. They still remember the approximate but not the exact locations of the samples. One of the students suggests to go ahead and to record some exact locations for the samples. He argues that they don't have sufficient time to go back to the sites and collect new samples. Moreover, he says, this will not have a significant effect on the outcome of the study. The other student has his doubts (Resnik, 1998, p. 180).

Questions

What should they do? Can they decide this alone or should they discuss it with their promoter? Can they decide to continue with the investigation without collecting new samples? How sure can they be that this won't have a significant effect? In which occasions is time more important than quality or perfection? Can time ever be more important than quality or perfection?

Fraud

Background

Fraud can be described as acting in a deceptive way to gain an advantage. It can take place in different phases of the research, but it happens mostly during the investigation phase or the reporting phase. In a scientific context, the wanted advantages can be, for example: publications in important journals, grants for new investigation, acknowledgement in the research field, more job security, etc.

Example 11: Hwang Woo-Suk

The South Korean scientist Hwang Woo-Suk and his investigation team at *the Seoul National University* were specialised in research on cloning. They reported in 2004 in the journal *Science* that they succeeded in the derivation of an embryonic stem cell line from a cloned human blastocyst by the use of a technique of somatic cell nuclear transfer. A year later, they reported even more progress: they succeeded in the creation of embryonic stem cell lines to inject skin cells from patients with diseases or injuries into enucleated oocytes. These results had important medical and economic implications.

Nevertheless, in November 2005, one of the co-authors of the paper confessed in a press conference that they lied about the ways in which they collected the eggs. The donors were no unpaid volunteers, like they had said in their paper. Some of them were paid for their contribution and they also used eggs from two junior researchers.

In December 2005, an investigation of the University showed that fraud had occurred during the research. The team didn't keep the records or the evidence to support the important claims they made. Some of their data were fabricated and their photographs were manipulated. They concluded that the cloned stem cell lines never existed. *Science* retracted both papers and Hwang lost his position at the university (Briggle et al., 2012, p. 88-90).

Questions

Why did the research team commit fraud? Which were there motives? What can the consequences of this behaviour be? Can fraud be understandable or acceptable in certain circumstances?

Supervision of research

Background

Researchers should provide their students, supervisees and employees a proper training and supervision and should take the necessary (and reasonable) steps to make them act responsibly, competently and ethically. The researcher should only delegate them the work of which he/she thinks they can perform it well independently or with the supervision provided. Researchers may not exploit (personally, economically, or professionally) the persons over whom they have authority such as students, supervisees, employees, or research participants (ASA, 1999, §4; §6).

Example 11

Example 11 shows us a good example of possible problems in the relation between supervisor and researcher. Two junior researchers of the research group of Hwang Woo-Suk donated their eggs for research.

Questions

Given the relation of supervisor and researcher it is difficult to examine whether the donation was voluntary and without any pressure. Should it be prohibited that students, supervisees or employees participate as research subjects? Are there contexts in which we can be sure that this will not cause any problems?

Plagiarism

Background

Plagiarism can take different forms. Researchers commit plagiarism when they, for example, copy a (part of) a text, when they use data of others, when they paraphrase a text or when they use the ideas of a colleague in their publications, presentations, teaching, practice, and service without identifying, giving credit or referring to the author. It does not make any difference whether the work is published, unpublished, or electronically available. The ideas can also originate from an informal discussion with colleagues. Plagiarism can be seen as a type of dishonesty, an intellectual theft or an intentional error. Students, for example, sometimes unintentionally plagiarize when they do not realise that they are citing incorrectly. Sometimes researchers do not remember their real inspiration or the real origin of their ideas (Code of Ethics, ASA, 1999, p. 14; Resnik, p. 1999, p. 104).

Example 12: Article plagiarism?

“[A researcher] is writing a paper on civil war photography for a class on the history of technology. As he is doing his research, he finds a paper in an obscure journal that says everything he wants to say and more. He decides to use and cite the paper extensively in his own paper; almost every paragraph contains a reference to his paper. Though he does not copy any sentences from this paper, many of the sentences in his paper are very similar to sentences in the other paper; he makes only minor changes to reflect his own wording.” (Resnik, 1999, p. 185)

Questions

Should we call this plagiarism? Is this behaviour unethical?

Example 13: One sentence plagiarism?

A researcher publishes a research report which contains one sentence copied from another source, without naming this source (Oliver, 2003, p. 133).

Questions

Should we call this plagiarism? Is copying one phrase plagiarism? Can the use of one particular word be plagiarism, for example a special technical term developed by an academic for a particular use in his research? How important is the intention of the researcher before we can accuse someone of plagiarism? (Oliver, 2003, p. 133)

Information and communication technology

Background

The expanding information and communication technology brings new ethical concerns which need to be taken in account during research, for example when storing data, transmitting data, analysing data, communicating with research participants or researchers, searching for information sources, etc. (Oliver, 2003, 50-51).

Example 14:

A researcher asks the participants of his research to fill in a questionnaire about a sensitive subject and to send it a via e-mail. We know that the internet is no safe medium and that e-mail accounts are often hacked. It is also much easier to pass information received from someone over e-mail too others (i.e. to forward). So, it is more difficult to guarantee the participants' anonymity. On the other hand, electronic mailing has some important advantages: it is easy and fast to contact people (also those persons living far away).

Questions

Is e-mail really a safe way to send sensitive information about an investigation? Under which circumstances is it acceptable to communicate with the participants or with colleagues via e-mail about important (and sensitive) subjects related to the research? Which safety measures can or should be taken?

II. Ethical issues related to particular research phases

A. Preparation phase

Some of the ethical issues are particularly relevant during the preparation phase. Interesting ethical questions can, for example, emerge during the elaboration of the study design, during the period of ethical review, when researcher try to obtain permission to conduct the research or when a conflict of interest takes place.

Study design

Background

A research projects usually starts with the elaboration of the study design. The study design is of great scientific importance, but it also has an important ethical aspect. Optimal scientific research design can be unethical. If that is the case, it is necessary to compromise and to opt scientifically for a less optimal research design that meets the necessary ethical requirements (Loue, 1999, p. 71).

Examples 4 and 9

Examples 4 (Placebo washout) and 9 (Deception) show us the importance of an ethical study design.

Questions

Is it ethical to include deception or practices that cause disappointment, shame, stress, pain, damage, harassment or other discomfort in the study design?

Conflict of interest

Background

"A Conflict of interest occurs when a person's personal or financial interests conflict with their professional or institutional obligations. This conflict undermines or impairs their ability to make reliable, impartial, and objective decisions and judgements." (Resnik, 1998, p. 86)

In scientific research, a conflict of interest can lead to a decrease of the objectivity of scientific judgments and decisions. It is possible that the scientist still tends to be objective and that he makes correct judgments and decisions, but there are general reasons to distrust his work because of the conflict of interest (Resnik, 1998, p. 86).

It seems difficult for scientists to rule out all possible conflicts of interest, research is for example often funded or sponsored by industry. Moreover, avoiding all possible conflicts will not always benefit society, business or the scientific profession. Disclosure of all conflicts of interest (real and apparent ones) and the avoidance of the most egregious ones seems therefore the best solution (Resnik, 1998, p. 90).

Example 15: Conflict of interest

The scientist Michael Macknin obtained, during his research, data that show that zinc lozenges can alleviate cold symptoms. He bought stock on a company that makes zinc throat lozenges shortly after the discovery. The value of the stock increased remarkably after the publication of the data and Macknin made a profit of \$145.000 (Resnik, 1998, p. 89).

Questions

Macknin bought the stock after the discovery but before the publication of the data. Can this be considered an example of a conflict of interest?

Example 16: Funding and sponsorship

A researcher is organizing a conference on genetic factors in crime. There will be speakers from different fields (genetics, sociology, criminal justice, anthropology, and philosophy) and with divergent opinions. Some students protest that the conference has a racist character and therefore the university decides to draw back as a sponsor. At the moment that he wants to cancel the conference, a conservative think-tank offers to fund the entire conference (Resnik, 1998, p. 196).

Questions

What should the researcher do? If he accepts the offer, it is possible that the conference will be perceived as racist because of its funding, even if the content isn't racist at all. Should he accept the offer? If he accepts, should it be better to withhold the information about the funding or to communicate openly about it? Did the university have sufficient reasons to cancel the funding? (Resnik, 1998, p. 196)

Permission to conduct research

Background

Before starting, it is important to have a permission to conduct research and to reach an agreement with the institutions or organizations in which the research will be conducted. In some cases it can be difficult to find such an agreement (Oliver, 2003, 41-44).

Example 17: Permission to conduct research

Two students want to conduct a sociological field study in a public park in which they want to interview the visitors of the park about their personal perception of the space and the different forms of social interaction in the park. They are not sure if the park should be seen as a public space with a different character than for example the public streets. The park is owned and administered by a local authority.

Questions

Should they ask for permission to conduct the research? If that is the case, from whom do they need permission? (Oliver, 2003, p. 43-44)

B. Investigation phase

Some of the ethical issues are particularly relevant during the investigation phase. The collecting of data, the processing of data, the data storage and the analysis of data are for example processes that need to be taken care of in an ethical way.

Collecting data

Background

During the process of collecting data many ethical problems can emerge. Some are related to the different specific ways of collecting data - such as recording data (Oliver, 2003, 45), the observation in a public setting (Oliver, 2003, 86), the use of questionnaires (Oliver, 2003, 56) or research interviews (Oliver, 2003, 55). But there are also some general ethical questions about, for example, the use of inducements or deception to provide data (Oliver, 2003, 58-59; Loue, 2000, p. 72) or values such as accuracy, completeness and objectivity while collecting data (Saunders et al., 2008, p. 179).

Examples 4, 10 and 17

The examples 4, 10 and 17 and their corresponding questions are related to the theme of collecting data. In example 4 we made reference to the question whether it is acceptable to collect information by means of a research design with a deceptive part. Example 10 makes us think about the importance of exact data and the possible dangers of fabricating data. In example 17 we discussed the necessity to ask for permission for research before starting with the collection of data.

Data processing and data storage

Background

The theme of the storage of data does raise questions about privacy and confidentiality but also about the period of storage, the kind of data that need to be stored (e.g. raw data), the possibility to use the data for other research purposes, the regulation of access to data, the safety of the storage methods, etc. (Saunders et al., 2008, p. 182-185; Oliver, 2003, p. 64-67; p. 90).

Example 19: The Baltimore affair

Margot O'Toole was a postdoctoral student working at the Whitehead Institute under supervision of Thereza Imanishi-Kari. Imanishi-Kari had been co-author of a paper on experiments supervised by the Nobel Prize winning scientist David Baltimore. The experiments had showed that: *"the insertion of a foreign gene into a mouse can induce the mouse's genes to produce antibodies mimicking those of the foreign gene. If this claim were true, it would suggest that one could control the immune system by using foreign genes to make it produce antibodies."* (Resnik, 1998, p. 6)

Margot O'Toole found some pages of Imanishi-Kari's notes that contradicted the findings of the experiment. She tried to repeat some of the experiments and got other results. This made her suspect that the original experiments had not been done or had had different results too. She informed the review boards, which started their investigations. During these investigations, some errors were found, but the work wasn't labeled "questionable". O'Toole didn't receive a prolongation at the research center and she had difficulties finding a new job.

The Office of Research Integrity (ORI) of the NIH, heard about the scandal and two hearings were organized by its representative of Michigan and his staff at the *House Oversight and Investigations Committee*. When they investigated Imanishi-Kari's notebooks, they noticed that the dates had been altered and that the results had been written with different inks on different kinds of paper. They concluded that she had fabricated and falsified the experimental data and the results. After the publication of this report, Imanishi-Kari was asked to take a leave of absence (Resnik, 1998, p. 6-7).

Questions

Why should someone fabricate and falsify data? Can they have acceptable reasons to do so? Which are the effects of such practices? Should the researchers that do so be punished? If so, which kind of punishment should they receive? Bad data storage of data and the fabrication or falsification of data can have the same consequences, but are they also equally wrong? How important is the notion of intention here to evaluate these acts?

Analysis of data

Background

The results of the analysis of data depend on the different decisions and interpretations of the researcher(s) (Briggle et al., 2012, p.106). To ensure a good analysis, objectivity is needed (Saunders et al., 2008, p. 185-186). We expect the researchers to make valid inferences and to avoid negligence, haste, inattention, biases and self-deception (Briggle et al., 2012, p.108-110).

Examples

Example 8 shows the importance of being perceptive and critical with respect to biases and self-deception.

Example 20: Omitting data

A graduate student is conducting a research together with her promoter. To know how to analyse the data, she searches for an example in the old papers of the promoter. She finds a useful paper, but when she compares the results reported with the records for it, she realises that they do not agree. About 10 % of the recorded data is omitted in the paper. When she talks about it with her promoter, he explains that he omitted the data because he felt that the telescope was not working correctly when he produced the poor results. He tells her to trust his judgement.

Questions

Should she accept this or should she report what she found out? Is it acceptable that the promoter omitted data in his paper? Could he have mentioned or discussed the problems with the data in the article? (Resnik, 1998, p. 179)

C. Reporting phase

Also the reporting phase has its typical ethical issues. Researchers need to meet with certain ethical standards when –for example - reporting their research findings, establishing authorship, sharing their data or reviewing articles of colleagues.

Reporting findings

Background

The publishing of the research results is an important part of the research activities. It is a good way to make your work public, to exchange information with other researchers, to inspire or stimulate researchers who are working on a similar subject, to give other researchers the possibility to replicate the work of others, etc. Most of the research is published in academic journals. But it can also appear as a chapter in an edited book; in the form of a complete authored book; in the newspaper or in popular journals (Oliver, 2003, 125-128).

Example 21:

A research group did research on the notion of *ideal weight*. Insurance companies and health organization often make use of this concept, but the research shows that the ideal weights set by these companies or organisations do not help to find out the ideal weight of individual persons. Based on their research they developed new recommendations involving notions such as *body type*, *muscular strength* and *percentage body fat*. They are planning to organise a press conference to communicate their results and recommendations. Nevertheless, they are not sure what the precise content of the press conference should be. The investigation is quite technical and difficult and the researchers fear that the public will not understand enough of it if they present their findings in detail. One of the researchers proposes to simplify the findings and to soften the recommendations to assure sufficient understanding and compliance. They could refer to their article for a more complete explanation (Resnik, 1998, p. 187).

Questions

Should researchers adapt their talks or articles to the public and how should that be done? Is it acceptable to simplify findings or soften recommendations to talk about the research? May they give an incomplete representation? Is it ethical if they withhold information or if they lie about some parts to reduce the complexity?

Authorship

Background

The results of research can be published in different media, such as journal articles, a book, a research report, etc. The number and the quality of publications are important for the career of researchers and the pressure to publish can be high. The ranking and the impact factor of the journals in which they publish play an important role. Also the number of authors and the order in which they are mentioned are important. The first person listed will be associated more often with the research and will in general receive more recognition than the others. When different persons work together at a paper, it may be difficult to establish authorship at the end. It is important that the listing of authors happen in an ethical way with respect to all the persons involved in the research (Oliver, 2003, p. 122-124; Resnik, 1998, p. 105-108). Resnik lists three common ethical problems concerning the assignment of credit for scientific research: *“Granting authorship that is not deserved, listing too many authors, and failing to recognize important contributions to research.”* (Resnik, 1998, p. 107)

Example 22: Establishing authorship

A group of 8 scientists of different universities worked together at a study. All authors collected and analysed data. Some of them worked hard on the grant writing, others wrote a big part of the paper and one of the researchers organized the whole project. Their paper on the study is accepted for publication in a prestigious journal and probably it will be cited often in the literature of their field. The publication will be cited as “first author et al.”, so the first author will receive more recognition than the others. Three of the scientists do not care about being the first author, but the others do (Resnik, 1998, p. 186-187).

Questions

How can they best decide on the order of the authors?

Example 23:

A Ph.D. student is reading the most recent paper of his supervisor. He notices that many of the speculations in the discussion part are ideas that he suggested to his supervisor during their informal discussions. The paper does not mention his name (Resnik, 1998, p. 186).

Questions

Should the student deserve to be listed as an author? Should the student be mentioned in the acknowledgments section of the paper? What should the student do? (Resnik, 1998, p. 186)

Editorial procedures and reviewing process

Background

Because the publications in academic journals are so important for researchers, it is necessary that all the procedures concerning the publication of articles in journals and books happen in an ethical way. It is, first of all, important that the editor(s) ask reviewers with a sufficient knowledge of the subject matter and the methodology to review the articles. The reviewers have a big responsibility in the academic world and need to take their task seriously. The articles need to be judged based on the merits of the article and whether the text is suitable for publication. They need to write a clear report to argue for their judgment. When the reviewers have a different opinion, a third reviewer can be asked or the editors can decide to take the final decision themselves (Oliver, 2003, p. 128-132).

Example 24: editorial judgment

“A journal editor receives reports on an article from two reviewers. The first reviewer recommends that the article should be rejected outright, because the subject matter of the article is only peripherally connected with the main subject matter of the journal, and also that the writing style is far too colloquial for an academic journal. The reviewer feels that the author has such an insufficient grasp of an academic writing style that a revision would not be feasible. The second reviewer agrees with the two main criticisms of the first reviewer. However, the second reviewer feels that the writing style can be corrected if appropriate advice is given, and indeed provides detailed annotations on the manuscript. The second reviewer also points out that the journal has published several articles in the past, which were only tangentially connected with the core subject of the journal. The second reviewer recommends acceptance subject to appropriate amendments to the writing style. The editor is unsure on the action to take, and sends the article to a third reviewer. This reviewer again criticizes the style, and recommends acceptance subject to the article being rewritten. However, this reviewer argues that it is not the job of the reviewers to provide advice on English grammar and style, and does not include any suggested amendments, but argues that the rewriting should be left to the author. The reviewer also feels that the subject can be considered broadly within the scope of the journal. The editor is currently under some pressure from the publishers to provide more articles. The forthcoming issue urgently requires two more articles if it is to have its normal number of pages. The editor is reflecting on the appropriate action to take with regard to the article.” (Oliver, 2003, p. 131)

Questions

How should an editor decide if the reviewers have different opinions? How should he or she communicate the final decision? Should reviewers focus only on the content, argumentation and methodology of the paper or should they also take language and grammar into account? Should they correct mistakes and formulations or is this the responsibility of the author? How many revised versions should the editor accept before rejecting the article? Is it acceptable if the editor changes his review procedure when he has the pressure to finish an issue for publication?

Data sharing

Background

Data sharing can be important to verify research. The data can prove that the research was done in a correct way. Nevertheless, there are no clear rules about sharing data. Different groups of people can request to share data: collaborators, colleagues, scientist working in the same field, funding agencies, government officials, the press, laypeople, etc. Not sharing data can be a decision having different reasons, such as the idea that rivals could steal data; the concern that the data could be destroyed; the possibility that others (laypeople or scientist) could misinterpret the data; the preoccupation to protect the confidentiality of the research participants or to meet agreements with employers or clients (Resnik, 1998, p. 93-95; ASA).

Example 25: sharing information

“Sara Huxely and Curtis Weston [*fictional names*] are developing a new, more efficient process for desalinating water, which they hope to patent. At a conference they discover that Bream and Lorenzo [*fictional names*] are conducting similar experiments and are also close to perfecting a new desalination process. After the conference, Bream and Lorenzo send Huxely and Weston an email message asking them for some more information about their experimental designs and preliminary results.” (Resnik, 1998, p. 182)

Questions

Should they share their information or data? What would be the reasons to share? What would be the disadvantages of sharing information or data? What would be the best decision for their own research? What would be the best option for their research field or for science in general?