

Ethics in Research

Bruce Craven

Reader in Mathematics at Melbourne University until retirement. Still active in mathematical research and writing.

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Abstract

Some ethical questions in research are surveyed, including pressures on researchers, financial constraints, issues of quality and responsibility.

Key Words

Ethics, research, pressures on researchers, financial constraints, quality, openness.

1. Introduction

A few months ago, a leading Korean researcher in stem cells and cloning was found to have faked his methods and results. This puts an immediate question mark over not only this whole project, but other related research in the area. Those outside this specialty must now wonder how well founded are other results in the area. Even if honest, are some results, perhaps, over-optimistic?

The treatment of people involved in research involves well known ethical questions. But there are many more issues. It is not enough to formulate ethical guidelines, and expect them to be followed, or to set up management structures to monitor behaviour, without also considering the pressures on researchers and research managers to behave unethically. The various medical ethics committees make a great contribution; but individual researchers must also be committed. To what extent can they? Moreover, research results can be seriously misleading if some technical matters of planning and reporting experiments are not adequately handled. This is also an ethical issue.

This survey lists various ethical questions involved in research, with some emphasis in the pressures on researchers who may wish to act well. While ethical principles come from several origins, which may be labelled 'code, conscience, and consequence', such an analysis is not attempted here, since ethical ideas of all these kinds are needed. There is no clear separation between 'what research should be done' and 'principles of how to do it': they interact. Moreover, one must often (indeed, usually) consider one 'good' which conflicts with another 'good', rather than follow any single clear rule.

2. Examples of frauds and fallacies

There is historical precedent for such questions. A century ago, after Roentgen's discovery of X-rays, a leading French physicist announced his discovery of another radiation called N-rays, with notable properties. But N-rays proved a delusion—they still seemed to be observed, after an essential part of the apparatus was removed, unknown to the experimenter. The issue here is not only that one leading researcher was deluded. It is that some other researchers shared the delusion, and reported that they had also observed the phenomenon.

This mentioned instance of faked research is only one more in a long list of fakes. A Norwegian cancer researcher published the results of a large research program that never even took place. While one does not know the motives in an individual case, one may enquire as to what ideas and what circumstances may lead to such consequences.

These instances of scientific fraud are perhaps only the tip of an iceberg, consisting of scientific work which is somewhat careless as to standards of performance and reporting, and optimistic as to results. Recent enquiries into published papers about pharmaceutical treatments have shown that many are not up to standard in the statistical treatment of highly variable data, leading to optimistic conclusions (see section 5). Moreover, 'meta-analyses' which combine the results of many studies may be seriously biased, because studies that gave negative results are usually not published, and not accessible on any database.

3. Abuse of power?

Some risk is inherent in medical experimentation, and in the giving, or withholding, of medical treatment. From Hippocrates on, many medical people have been greatly concerned with the ethical principles that they should apply, and many sets of rules and principles have been formulated. But guidelines such as 'do no harm', or 'act in the patient's interests', are often unable to give a clear direction, because the outcomes are uncertain. Moreover, how can a patient's 'informed consent' be obtained when, as often, the patient is suffering and relatively ignorant, and the medical people have much knowledge and authority? Also, what is to be done when the risk to the patient appears small, and the experiment might yield information valuable to other sufferers? There is no escape from the kind of balancing of risk against (actual or potential) advantage, that is so often required in many other human activities. Moreover, this balance moves against the individual at times of perceived great collective danger (e.g. war, terrorism, pandemic), and the general principles often stated may give little guidance as to how far the balance should move in such circumstances.

The medical profession has been greatly concerned with ethical issues. But there have been many occasions when their power has been abused. The Nazi atrocities, including experiments on the effects of poison gas or extreme temperatures on helpless prisoners (and many more), and well known. Less well known are American experiments where syphilitic

patients were denied treatment, or unnecessary surgery (to observe the results). There is a parallel between such behaviour and the frequent tendency of people with high social status (or other authority) to treat those beneath them as of little value, and not fully human (e.g. 'plenty more peasants, or factory workers, where these came from'). While current medical research by responsible people is surely not being equated to the Nazi horrors, there is a danger if anyone supposes that because a piece of research can be done, then it must be, and that hoped-for good results are alone enough to justify questionable methods.

The medical tradition of withholding information from a patient, if it is judged that it might harm him/her, is at odds with any requirement for 'informed consent'.

Recent research in neuroscience has made it increasingly possible to 'monitor and manipulate' brain processes, thus 'measuring and influencing our emotion, thought and behaviour through intervention at the neurobiological level' (Wong 2006). Does a patient have any rights, or any defence, against such manipulation?

4. What ethical principles should apply?

The scientific enterprise depends critically on the honesty of the researchers. This ethical requirement is not deducible from science. Historically, it derived from Christian ethics. There is no reason to quarrel with those many scientists who derive similar ethical standards from other religious (or philosophical) traditions (of which several could be cited). But what can be expected from those who share none of these traditions, but instead follow more recent philosophies, which assert that ethical standards are entirely relative to social structure, or are entirely personal and subjective, or that (in principle) there is no truth 'out there' to be found, or that one story is as good as another? One cannot be very hopeful. As a warning, one may recall that the atrocities of the Hitler regime required the participation of some scientists, and the oppressions of the Stalin regime were supported by many scientists.

However, it would be unwise to attack the ethics of some scientists without considering their circumstances, and the severe pressures on them. There is some likeness to a business executive, whose company has had a bad year, but with a reasonable hope that next year will be better. He may be under strong pressure to fudge the accounts, not just to save his own skin, but to keep the company going and preserve the jobs of its workers. The head of a research department or institute, or the leader of a research team, may be under similar pressure to make the research results look better than they are.

5. Financial pressures

The current system of funding scientific research has elements which a candid person (thus, one not seeking a research grant) might consider seriously unethical. This is not at all to accuse the XYZ Pharmaceutical

Company of soliciting faked results from the research they pay for. They do, however, want positive results that they can use. So the pressure may be on the researchers to supply them, even when they don't naturally come in the continuous stream that may be expected. It might be better if some fraction (say 10%) of the funding went to longer-term research, for which there could be no guarantee of quick results, so the researcher should not be fired for not publishing results on such a project for several years.

The system of applying to research councils for research grants requires a researcher to spend weeks or months (which might otherwise go to research) on preparing detailed grant applications, which require him/her to specify in close detail what the research is going to discover, and with what timetable. But this is scientific nonsense! One does not know the results thus in advance. According to anecdotal evidence, this difficulty is commonly circumvented by putting down for next year's discoveries the unpublished results of this year. Unless a researcher follows this 'less than honest' procedure, he/she will likely not get a grant. When the system compels such a dodgy procedure, one should not be surprised if some corners are cut elsewhere.

This system will not get mended until some people in high places say loudly and publicly that this emperor has no clothes (and so, perhaps, put at risk their own department's funding). Unethical behaviour will surely continue, with a system of research funding that makes it almost compulsory to 'cut corners'.

However, just to show the thing is possible, an alternative scheme may be suggested, for research grants of moderate size. Each applicant should submit a one-page application, thus long enough to say concisely what is aimed at, but no room for blue-sky promises. The applications would be vetted by an expert committee, to remove the obvious 'ratbags'. A number of grants, up to the limited funds available would then be allotted by lottery.

As well as financial pressures, political pressures, and the pressure exerted by the media, with the simplification and 'spin' given to issues, may seriously constrain both the research objectives and methods. The public debate can be sadly ill-informed. This matter is always serious, and perhaps harder to deal with in a society where intellectual questions are not highly regarded.

6. Ethics of quality

Sometimes, an unexpected result is claimed, but essential experimental details are glossed over in the published paper, and not available elsewhere, so that nobody can exactly repeat the experiment. In such an instance, it is clear that something is amiss. There needs to be some provision for storing records, such as laboratory notebooks, and data tapes, including negative results, in addition to what gets published, or sometimes rejected, by the recognized scientific journals.

In biological and medical areas, but not only there, there is much underlying variability, so that statistical techniques are unavoidable. It is well known that an observed result that is not large enough to reach 'statistical significance' has not been established. But if there are several results that might be significant, the level of significance needs adjustment, to allow for 'several shots at the target'. This is not quite routine, so not always done.

However, a more serious difficulty arises, concerning sample size. If the experiment is not done on a sufficient scale, then a real effect, which is large enough to be important, may fail to be detected. The sample size needed to detect an effect of practical importance, supposing it to exist, is often unintuitively large, and expensive. If the publication of the results does not make it clear that the sample size was too small, then others may conclude, wrongly, that the treatment (e.g. a new pharmaceutical) considered has been proved to be ineffective, and so others may then not investigate it further. There is an ethical requirement here to not mislead.

Is the investigation worth doing at all? One cannot automatically condemn 'pottering around', because many valuable discoveries have resulted from curiosity, about something 'off the beaten track'. On the other hand, valuable resources may be wasted on trivialities. Too many articles are published, which offer only a trivial extension of something already known. A young researcher must be allowed to learn his/her craft on small projects, but a career should not continue in this way. There is a serious responsibility on a thesis supervisor, to not offer projects that are only 'thesis fodder', for which the results have little hope of being of any significance.

7. Accountability

When public money is spent on research, there is a natural demand for some accountability of how the money is spent. Financial records, that can be audited, of expenditures are sadly necessary, else someone is likely to steal the money. But accountability for the output of research is a different matter. There is a common requirement for many reports, in terms understood by managers, but often misunderstanding the nature of scientific research, and especially the unpredictable element in it. If a researcher has to fudge reports to his administrative masters, will he then be tempted to fudge his scientific results?

Only limited results may be expected from attempts to enforce ethical behaviour by managerial methods. Much might indeed be done to reduce the pressures on researchers for 'quick positive results at any cost'. But, for the most part, research will be ethical if researchers believe that the truth must be told, no matter what. If this standard is no longer valued by the general community opinion, then research ethics, and much else, will be lost.

8. Openness

Codes of ethical rules, in medical and other areas, can provide very valuable guidelines. But they cannot be laws, to be enforced by the ponderous (and slow) processes of the laws. And there will always be difficult questions when one 'good' must be balanced against another 'good'.

This difficulty may be illustrated by considering attitudes to violence. A consistent pacifist will not act violently, even when such action is the only way to protect other people from horrendous consequences. There are few consistent pacifists. While by no means asserting that 'the end justifies the means', the point of 'balance between good and good' may well be influenced by consideration of the likely consequences.

It would be well if such awkward decisions are open to scrutiny by others, rather than decided in secret. This applies surely to medical experiments on human populations where the patients are not in any position to withhold consent, informed or otherwise, or where the significance of the experimental results, even if successful, is in some doubt. Are some research projects worth doing at all? If the results are reckoned important, could they be obtained by other means?

Many atrocities seem to have followed from a viewpoint which allows little or no intrinsic value to an individual human embryo, or animal, or even adult human. This is not a call for a ban on all such experiments. But if intrinsic value is asserted, one might look for alternatives to some such experiments. We all have some involvement in 'doing bad so that good may come', often because we don't know what else we can do. Perhaps we should acknowledge this, not pretend that certain actions follow the highest ethical standards, and find better ways as soon as we can.

9. Acknowledgement

The author thanks the participants in the Victorian ISCAST meeting of 21st November 2006 for their diverse reactions to an oral presentation of this material. Various of their points have been included in this revised version. But the author must take all the blame for his mistakes and prejudices.

This paper does not propose any new ethic for research. The New Testament does not mention research. (Its criticism of speculative philosophy has been construed as an attack on mathematics! The only research institute in the ancient world, the Alexandria museum, had long ceased to do research when the NT books were written.) Truth and honesty are considered of basic importance, as they are in the gospels, and need no specific citation. It is inferred that the paymaster should not control the conclusion from a piece of research. Moreover, a Christian, responsible to God and for his treatment of his neighbours, is also concerned with the methods used, and the predictable consequences of his investigations.

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