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The Ethics of Health Professions Education Research: Protecting the Integrity of Science, Research Subjects, and Authorship

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Abstract

The author was invited to write a commentary on the ethics of health professions education research. Based on the author’s own experiences, published guidelines, and discussions with international colleagues, the author found that research ethics can be roughly grouped into 3 distinct areas, each with their own distinct aims: protecting the integrity of science, protecting the integrity of research subjects, and protecting the integrity of authorship. The focus of this commentary is to provide some guiding thoughts on each of the 3 areas for mentors of emerging health professions education scholars.

While any framing logic is arbitrary, the 3 areas of research ethics can be illustrated by 9 distinct breaches of ethical principles, ranging from outright fraud to strategic authorship practices, and 27 practical lessons for learners to counter these and shape ethical research conduct. In general, the international variations in habits, rules, and regulations do not strike the author as being substantially different, but there are cultural variations in terms of what is emphasized and regulated.

The ethics of research in health professions education has developed quite extensively in the past few decades, following advances in biomedical and other research domains, and are now grounded in several useful and authoritative guidelines. At the end of the day, however, ethical research conduct is a matter of internalized rules and regulations that researchers must develop over time. Emerging scholars need both instruction and role models to develop their own moral compass to navigate the rules, regulations, and purposes of research ethics.
About 10 years ago, an emeritus professor in a surgical specialty asked me for advice. With a committee, and on behalf of his specialty society, he had studied why so many of their colleagues had never reached a reasonable retirement age. Many had left the profession prematurely for various reasons, including illness, a destructive atmosphere, suboptimal performance, and other circumstances leading to involuntary career termination.

He gave me a printed, not electronic, copy of a manuscript, and asked me to give it back and make no copies.

I read, gave advice, and strongly encouraged him to complete and publish the work. It would provide important lessons for junior generations of physicians about the risks of this and possibly other medical specialties, that could be harmful to themselves, their environment, their career, and possibly their patients.

As it turned out, the study was never published. The society’s committee had discussed the findings and had solicited legal advice. The society’s board decided that the article, even with deidentified individuals, could get the committee and the society into serious trouble.

I was reminded of this case when preparing for this invited commentary about the ethics of health professions education (HPE) research. Research ethics, in my view, can be roughly grouped into 3 areas, each with distinct aims: protecting the integrity of science, protecting the integrity of research subjects, and protecting the integrity of authorship. Many of the rules governing ethical behavior in these areas cannot be strictly enforced but instead rely mostly on the deliberate behavior of researchers, journals, peer reviewers, supervising researchers, funders, and institutions. Also, rules and habits may differ among cultures and countries. In preparation for this commentary, I talked to several colleagues in different countries to obtain a sense of the similarities and differences and included some of their insights in the discussions below.
My goal with this commentary is to provide some guiding thoughts on each of the 3 areas for mentors of emerging HPE scholars, summarized in Table 1. I freely admit these are personal considerations, derived from my own collaborative experiences with other researchers, mentors, and mentees; from published guidelines; and from discussions with colleagues in various settings and countries.

**Protecting the Integrity of Science**

**Background**

Science, as a building block of cultural and societal development, must be trusted and research must serve its advancement for the well-being of populations. The COVID-19 pandemic has shown how unprecedented scientific advancement in laboratories can save myriads of lives, while simultaneously showing how distrust and denial of scientific information can cause unnecessary deaths. To maintain its credibility, science must be fed by true advances. Relevant and thoughtful research questions, clever study designs, conscientious execution, proper data analysis, and accessible and uncompromised reports are needed to support its trustworthiness. Breaches of these principles are breaches of ethics and research integrity.

Outright fraud (such as data falsification and fabrication) occurs, though relatively infrequently. Questionable research practices and “sloppy science,” which consume research funds while not producing worthwhile contributions, are more prevalent, including in HPE research. The risk of sloppy science has increased with the rapid growth of publications, the pressure to publish, the predominance of research metrics for career advancement, commercial and other conflicts of interest, external pressures affecting the quantity and quality of reports, and predatory journals that do not have rigorous quality procedures. HPE research may suffer less from some of these factors and more from the other factors, but its quality, on average, can certainly be improved.
Lessons for learners

John P.A. Ioannidis, known for his criticism of scientific advancement,\(^9\) recently called for educating the educators who teach about research on research in the health professions.\(^{10}\) While there is global consensus about the need for research integrity,\(^2\) countries differ in how they have gone about trying to implement this. After a case of extravagant social science research fraud in the Netherlands in 2018,\(^{11-13}\) relevant bodies introduced a Code of Conduct for Research Integrity, to serve as a reference when investigating misconduct, in accordance with established European and international best practice recommendations.\(^{14}\) The code led to a pledge for graduating PhD candidates at several Dutch institutions to be honest, scrupulous, transparent, independent, and responsible.

Suggestions for how to prepare researchers in training to conduct research with integrity include rigorous research training; working in teams; planning studies out in detail ahead of time; starting with reviewing the literature; carefully drafting research questions, hypotheses, study designs, and outcome measures; sharing all findings; accepting disappointing findings if they occur; using established reporting guidelines; avoiding initiating research that would only reproduce existing data; publishing in credible journals; and engaging in critical peer review. Planning study details ahead of time is difficult but conditional for high-quality contributions to the literature. Discussing codes of conduct, such as the Singapore Statement on Research Integrity,\(^2\) Artino et al’s report on ethical shades of gray in HPE research,\(^4\) and other sources\(^ {15}\) in a journal club is an excellent approach to get emerging researchers acquainted with the integrity of scientific conduct.

Protecting the Integrity of Research Subjects

Background

Ethical approval by institutional or other review boards primarily serves to protect subjects of research and is grounded in the principles of the Nuremberg Code,\(^{16}\) the Declaration of
Helsinki,\textsuperscript{17} and the Belmont Report,\textsuperscript{18} which prioritize research subjects’ well-being. While codes of ethics in the social sciences are less explicit about protecting research subjects than codes of ethics in medical research, the avoidance of harm (standard 5 in the AERA Code of Ethics\textsuperscript{19}) is a common rule across scientific domains. Most grant funders and HPE journals require ethical review of empirical studies or at least explicit reference to ethical conduct in reports.\textsuperscript{20} Schools may restrict permission to approach students for research. Institutions may require that all researchers complete an ethics course. Ethical review committees generally want to see guarantees that subject autonomy will be preserved, usually through voluntary and well-informed participation; that any possible harm is justified by the importance of advancing science through the study; and that data and privacy are properly protected. Such committees are most often linked to an institution (in the United States and Canada these are called institutional review boards) but can also be national or state committees, or national health systems committees. Their composition can be regulated, for example, to include content experts, ethics experts, legal experts, and lay persons. In Europe, data protection is also enforced since May 2018 by the European Union’s General Data Protection Regulation.\textsuperscript{21} Data protection seems a more sensitive issue in some countries than in others, possibly rooted in differing historical experiences.

Research subjects in HPE, usually students or teachers, differ from patient subjects in biomedical research, and HPE researchers have complained that ethical review procedures can be overly time consuming and unwieldy if studies are scrutinized as if all subjects were patients.\textsuperscript{22} To complement the Dutch Medical Research Ethics Committees’ primary obligation to protect patients, the Netherlands Association for Medical Education created a separate ethical review board specifically for HPE research.\textsuperscript{23,24} Likewise, some institutions in other countries have established pre-evaluation committees or full replacement committees to create focused and rapid ethical review procedures for HPE.\textsuperscript{25} One specific case of subject
protection regards Indigenous research subjects, which sometimes requires that representatives of these minority groups be involved in any decision making, following the credo “nothing about us without us.”

Lessons for learners

Unlike 20 years ago, obtaining ethical approval has become standard for most research in HPE. For emerging scholars, it is useful to think of the preparation required for ethical approval not as a burden but as an opportunity to think through all aspects of the study ahead of time and write a protocol as if it were the start of a journal manuscript (introduction, methods, and anticipated tables for results). Providing written information for participants forces researchers to clarify data collection, analysis, and storage issues. Involving potential participants when drafting the protocol may help to gauge their information needs, possible benefits and disadvantages to participation, and the need for data protection.

After Angela Merkel, the Chancellor of Germany, had delivered an address on May 5, 2021, to commemorate the liberation of the Netherlands from German occupation during World War II, a student asked her to compare Eastern Germany’s Secret Service population data collection with current big technology firm data collections. Merkel stressed the importance of citizens demanding transparency about the purposes for which their personal data are collected and stored. As suggested by Merkel’s response, data protection extends beyond ethical research issues to a fundamental human right.

Protecting the Integrity of Authorship

Background

Research ethics also covers fairness and justice with regards to the researchers. This does not affect the integrity of science nor that of research subjects, but it does affect the recognition and esteem researchers deserve for their creative productivity. Clearly, plagiarism, as an example, lifts one researcher at the cost of another researcher. Scooping ideas after
confidential peer review, breaching copyright, and deliberately omitting references to implicitly claim original thinking are ethical wrongdoings. These practices are unjustified self-promotion, as are self-plagiarism and salami slicing. Protecting authorship integrity should therefore be read as treating all researchers fairly and recognizing what they are worth. While questionable practices such as those mentioned above do happen, there does not seem to be much disagreement internationally about the right ethical course, as witnessed in conversations I had with my colleagues.

There were slight differences when authorship was discussed. Like my colleagues, I could also recollect cases of questionable senior authorship, assumed by persons in power, but this seemed to be more prevalent in some countries than in others. We also recognized cases where esteemed colleagues were invited or offered “honorary” authorship after the work was mostly done, with the primary purpose of increasing the chances of publication or citation. Honorary authorship may benefit these authors’ scientific production at first sight, but it decreases the validity of publication lists as a measure of true scientific merit.

Lessons for learners

Plagiarism may haunt researchers long after the fact. Revelation of such conduct at any moment can be devastating for one’s career and junior researchers should understand that these practices can never be undone or excused. Habits of plagiarism can start small (e.g., “forgetting” to provide a reference) and may grow until it is too late. Codes of conduct, such as the Singapore Statement on Research Integrity, cover this domain of ethics, but the role modeling that is done by research supervisors is likely to be at least as powerful. A hidden curriculum that permits or rewards such questionable practices by senior colleagues is likely to undermine any ethical code.
There are powerful tools to settle issues of authorship and contributorship that every junior researcher should become acquainted with. Of chief importance are guidelines for authorship, established by the International Committee of Medical Journal Editors. These state that every author (a) should have substantially contributed to the conception, design, acquisition, analysis, or data interpretation of the work; (b) should have written or critically revised the work for important intellectual content; (c) should have given final approval of the version to be published; and (d) should be accountable for all aspects and the integrity of the work.\textsuperscript{30} Failing on any of these should preclude authorship. It may be worth posting these principles on conference tables or office walls to make a researcher’s position on authorship clear from the outset and to hopefully avoid painful debates down the road. More detailed guidelines, such as the Contributor Roles Taxonomy (CRediT),\textsuperscript{31,32} are highly recommended readings, and all emerging scholars should also be encouraged to acquire a personal Open Researcher and Contributor Identification (ORCID)\textsuperscript{33} to establish a transparent identity.

**Coda**

While any framing logic is arbitrary, the 3 areas of research ethics can be summarized (Table 1) in 9 distinct breaches of ethical principles, ranging from outright fraud to strategic authorship practices, and 27 practical lessons for learners to counter these and shape ethical research conduct. Developing ethical integrity is served by such instructions and discussions, whenever issues arise. But it should be remembered that acting ethically can require navigation of seemingly conflicting interests. Let us go back to the case of the emeritus professor. Clearly, ethics were at stake. Could unintended disclosure, even if only identifiable to a very small group of readers and even if it might not occur until long after the fact, possibly harm subjects? Should they be asked for consent before publication? On the other hand, would it not be unethical \textit{not} to publish the data and so block the advancement of important knowledge that could benefit new generations? Finally, could the authors and the
specialty board be seriously vulnerable after publication? The advancement of science, the protection of research subjects, and the integrity of the authors were all at stake. It was probably the best choice not to publish the study but that happened at the cost of advancing our knowledge.

Writing this invited commentary and discussing these issues with colleagues made me realize how fundamental ethics is to all of the work of research. To be of worth, research and researchers must be trustworthy and develop a moral compass in what they do, say, and publish. Ethics deals with morality or “the pursuit of the good” and governs a researcher’s behavior. It is good to remember that ethical behavior and high morale does not preclude ethical difficulties. My interactions with the emeritus professor convinced me that he and his committee members acted as persons of high moral standards. Their moral compass may not have been informed by the guidelines I have proposed for learners—as most of these are fairly recent—but by the wisdom gathered over the course of their professional lives. The primary lesson is that, as holds true for many objectives of training, learners should gradually absorb instructions and guidelines, gain experience through practice, and eventually incorporate these to develop their own personal repertoire of behaviors and their compass for ethical conduct.
References


11. Levelt Committee; Noort Committee; Drenth Committee, eds. Flawed science: The fraudulent research practices of social psychologist Diederik Stapel.


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<th>Area</th>
<th>Breaches</th>
<th>Examples</th>
<th>Adverse consequences</th>
<th>Lessons for learners</th>
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| Protecting the integrity of science       | Fraud                           | Deliberate data fabrication or manipulation      | Misleading other researchers, policy makers, and the public | • Adhere to a code of conduct for research integrity  
|                                           |                                 |                                                  |                                               | • Work in teams and share all findings  
|                                           |                                 |                                                  |                                               | • Support open science                                                                 |
|                                           | Sloppy science                  | Low-quality methods, unjustified conclusions     | Distorted knowledge syntheses, including low-quality studies | • Master and understand research methods  
|                                           |                                 |                                                  |                                               | • Avoid initiating research after data collection  
|                                           |                                 |                                                  |                                               | • Engage in peer review                                                                 |
|                                           | Irrelevant research             | Superfluous studies, inadequate research questions | Wasted resources; diluted knowledge syntheses | • Review and know the literature before beginning a new study  
|                                           |                                 |                                                  |                                               | • Take time to develop sound, relevant research questions  
|                                           |                                 |                                                  |                                               | • Avoid predatory journals                                                                 |
|                                           | Compromised reports             | External pressure and conflicts of interest affecting what is published | Slowing down the advancement of science | • Resist questionable conditions of funders or employers  
|                                           |                                 |                                                  |                                               | • Anticipate possible research findings before data collection  
|                                           |                                 |                                                  |                                               | • Use established reporting guidelines                                                                 |
| Protecting the integrity of research subjects | Autonomy breach                 | Coercion to participate; deficient informed consent | Anger; resistance; suboptimal participation | • Secure voluntary participation  
|                                           |                                 |                                                  |                                               | • Be as open as possible with subjects about procedures and possible harms  
|                                           |                                 |                                                  |                                               | • Show respect for participants and their autonomy                                                                 |
|                                           | Harmful treatment               | Extreme experimental conditions; questionable interviews | Physical or psychological harm; unequal treatment of subjects | • Prioritize subject well-being; be open about possible harms  
|                                           |                                 |                                                  |                                               | • Compensate for possible harm or inequitable treatment  
<p>|                                           |                                 |                                                  |                                               | • Allow for retraction after data collection                                                                 |</p>
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<th>Breach of anonymity and privacy; use of data for unintended purposes</th>
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<td>• Deidentify data before storage and use</td>
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<td>• Retain data no longer than needed</td>
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_Misplaced credit_  
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<th>Protecting the integrity of authorship</th>
<th>Plagiarism; copyright breach; self-plagiarism; salami slicing; scooping findings after peer review</th>
<th>Hampered career advancement of others; spurious personal research credit and metrics</th>
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<td>• Be scrupulous about all citations</td>
<td>• Seek permission for any reused materials</td>
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Abbreviations: ORCID, Open Researcher and Contributor Identification; CRediT, Contributor Roles Taxonomy; ICMJE, International Committee of Medical Journal Editors.