

The Problem of Research Misconduct

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Summary

The rationale, goals, content, and proposed outcomes of research ethics education are too frequently defined by research misconduct. While this is perhaps not surprising, a case can be made that this focus has not worked, is not likely to work, and may get in the way of other more productive uses of research ethics education programs.

Introduction

Conversations about research ethics often begin with or focus on our outrage about cases in which scientists have done really bad things. The outrage is justifiable. In my own introductory courses on research ethics, I often begin with a notorious case from my institution, UC San Diego. In the mid-1980s, Robert Slutsky's research career was highlighted by two years during which he published one paper every ten days; many of those papers were found to be fraudulent or at least questionable (Engler et al., 1987). Such anecdotes are reinforced by research about research misconduct. In recent years, surveys have documented rates of between 1 and 30% for researchers who commit, or are willing to engage in, practices

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that can be characterized as serious misconduct (e.g., Kalichman and Friedman, 1992; Martinson et al., 2005; Titus et al., 2008). It is appropriate that both students and teachers of ethics find these cases repugnant. But is there more to this story?

Not a good start.

In reflecting on how we teach about responsible conduct of research (RCR), we should consider what it might mean to our students (*adult* students) when we define our teaching by referencing egregious cases of misconduct. Horror stories are certainly a great way to get the attention of our audience, but it is also conceivable that the audience, at least unconsciously, will wonder what this has to do with them. Do we recount these stories to emphasize that science is a corrupt enterprise? Are we telling our students these terrible things because they might not yet know that it is wrong to lie, cheat, or steal? Or is it possible that we view our students as morally flawed human beings who need to be put on the right path? Hopefully, these are not our goals. We teach ethics not because we distrust the scientific enterprise, but because we believe in its value. When we tell these stories, we presume that the adults who fill our classrooms already understand that lying, cheating, and stealing are wrong. And even if we believed that our classrooms are filled with morally flawed human beings, few of us realistically believe that we can correct those flaws through a single course in research ethics. To the extent that our course is the message, our focus on research misconduct may lose our audience soon after they come in the door. Emphasizing research misconduct is a debatable basis for teaching about research ethics.

Questionable impact.

Whether or not we focus on research misconduct, it is inescapable that federal research ethics education regulations (NIH, 1989; NIH, 2009; NSF, 2010) have been driven principally by worries about research misconduct. Conversely, concerns that scientists need to think more about less dramatic issues (e.g., what it means to be an author of a paper) have probably *not* been a driving force for federal requirements for education. If that's the case, then we should reasonably ask: Does RCR education decrease research misconduct? Unfortunately, we do not yet have evidence of a positive impact on research misconduct. Despite over 20 years of the NIH RCR training requirement, there is no evidence for decreases in either allegations or findings of research misconduct as reported by the Office of Research Integrity (Kalichman, 2009).

It's us.

If the numbers are to be believed, a high percentage of researchers either have committed research misconduct or are likely to do so in the future (Martinson et al., 2005; Titus et al., 2008). Since nearly all of us view ourselves as good people, we are likely to view those data with some degree of self-righteousness. We wouldn't do those things, so how dare they? Those of us working in the field of research ethics education are likely to be particularly disturbed by the prospect that one out of three of our trainees would commit misconduct.

However before we succumb to self-righteousness about the moral character of our students, we should be more critical about what these data tell us. There is no reason to assume that these ethical failings are restricted to only some disciplines of academic scholarship, which means there is no reason to assume that even those of us who study research ethics are somehow immune. If one of three scientists commits misconduct, then one of three of *us* commits misconduct. This possibility is certainly sobering, but these numbers may underestimate the willingness of our colleagues (and us) to do things that we know are prohibited by regulation *and* are significantly correlated with potentially harmful outcomes. For example, surveys, polls, and our own anecdotal observations reveal that an overwhelming majority of drivers readily and regularly exceed the posted speed limit. These high percentages do not make speeding *right*, but they do require us to think more deeply about how, if at all, we can convince our trainees, and also ourselves, to choose to act in ways that we could characterize as *right*. It may be appropriate to adopt the perspective articulated by Walt Kelly in the context of Earth Day in 1970: "We have met the enemy, and he is us."

Necessary failures.

While the incidence and prevalence of research misconduct might not be known precisely, it is known that research misconduct does occur. There are many possible causes that might cause someone to commit research misconduct (e.g., Goodstein, 2002), but it is anything but clear whether particular factors predominate or can easily be remedied. Rather than spend additional energy characterizing the rate of research misconduct, or to speculate on the reasons why someone would commit misconduct, it might be more fruitful to ask what

preventable factors allow misconduct to occur in the first place. Can we identify failures that were necessary for the misconduct to have occurred and are also correctable?

It is noteworthy that most cases of serious research misconduct are characterized by multiple, necessary failures. The focus here is not on failures of moral fiber or character, but on flaws in the environment in which the researcher is working. Breaches occur in many possible areas, including but not limited to:

- mutual understanding of collaborator responsibilities;
- understanding of the risks of bias and strategies for its mitigation;
- understanding of good research recordkeeping practices;
- mutual understanding of co-author responsibilities;
- understanding of the meaning of publication;
- support for a research environment in which questioning and discussion are welcomed rather than discouraged; and
- support for anyone who has witnessed misconduct to come forward in an appropriate and timely fashion.

For most instances of research misconduct, a case can be made that the act of misconduct would have been avoidable even if one or several of the above breaches had not occurred.

When failures in all of these dimensions occur, research misconduct becomes not only possible, but perhaps even likely. If we frame our educational interventions on these necessary

failures instead of on research misconduct, we could plausibly expect that research misconduct would decrease as consequence of our focus on promoting good research practices.

Disease or symptom?

In his essay on the Jan Hendrik Schön case, Goodstein (2002) proposes three factors as key to the occurrence of research misconduct:

1. "...the scientist is under career pressure."
2. "...the perpetrators always think they know the right answer."
3. "...the work is always in a field where reproducibility is not expected to be very precise."

The first factor places the onus on how a scientist responds to the pressures he or she faces. As Goodstein notes, career pressure is virtually synonymous with much of academic research, but he also makes the distinction that career pressure and not money is the motivating factor.

That distinction can be tenuous because our careers are typically sources of continuing and increasing income. Further, in some cases of misconduct, the boundaries between science and financial gain are not clearly delineated (e.g., Anand, 2002).

The second factor again places the focus on the individual, and again it's not clear that this is particularly unusual. For better or worse, researchers often pursue strategies or approaches precisely because they "think they know the right answer." That might be true for many of those who have committed research misconduct, but it does not fully explain why misconduct occurs.

The final point about reproducibility is an interesting one, but again, it does not sufficiently explain research misconduct. Research at the cutting edge in almost any field is going to be characterized by questionable reproducibility. The implication of including this proposed factor is that the perpetrator believes it possible to escape detection because differences in findings will be attributed to imprecise research tools. But it is hard to make this case for the numerous individuals who have gone so far as to publish duplicate images for different experimental conditions (e.g., Hwang Woo Suk: Chong and Normile, 2006 and Jan Hendrik Schön: Reich, 2009), or inserted the names of co-authors who did not know they had been included (e.g., Robert Slutsky: Engler et al., 1987). These individuals apparently did not fear the risk of being discovered. Goodstein's arguments for what is necessary for research misconduct have some degree of truth, but taken together they fall short of understanding what leads a researcher to compromise the integrity of her or his work.

While it is of sociological interest to understand why someone would be willing to commit serious scientific misconduct, the same question might be asked about any kind of misconduct. Given our collective willingness to speed on the freeway, it may be less important to understand why we might commit misconduct (the reasons are probably numerous and varied) and instead ask how it is possible that the misconduct can occur in the first place. An important part of the answer is that bad behavior is more likely to thrive when it is easy to do what is wrong and there is a cost to doing what is right. Framed in this way, perhaps we should be thinking more about research misconduct not as a disease *per se*, but instead as a symptom

of a disease. The disease in this case is our failure to create an environment and culture that recognizes those traits that we would rightly label as *Responsible Conduct of Research* or *Good Research Practices*.

In short, perhaps our best chance of protecting against research misconduct is to keep our focus on responsible conduct of research.

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