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Sexual harassment damages researchers, research products, and the research environment; it is a research integrity problem. It is therefore time for the research community to start treating sexual harassment as a violation of responsible research conduct. This means the community and its individual members must become more aware of how sexual harassment occurs in research settings, expand the range of behaviors that deserve censure, hold people accountable for the damage they are doing to researchers and research, and take actions to protect researchers and research from damage done by perpetrators of sexual harassment. Attending to sexual harassment in this way will take careful and creative thought and action by leaders and the research community. This article brings together the research on sexual harassment and on research integrity to inform and advance a conversation within the research community about effectively dealing with sexual harassment.

To explore how the research community could protect the integrity of research from sexual harassment, it is best to start by describing what sexual harassment looks like and how it harms people, then examine how sexual harassment affects the integrity of research and how the research community responds to and handles behavior that

damages research integrity. This sets the stage for discussing how to bridge these two issues to take seriously the effect sexual harassment has on research. Valuable research and information to inform this conversation can be found in two recent National Academies of Sciences, Engineering, and Medicine reports, *Sexual Harassment of Women: Climate, Culture, and Consequences in Academic Sciences, Engineering, and Medicine* and *Fostering Integrity in Research*.

Effects of sexual harassment on the integrity of research

Most people can identify two of the three types of sexual harassment: sexual coercion and unwanted sexual attention. Sexual coercion is the prototypical “sleep with me or you’re fired” or “sleep with me if you want a promotion” or “sleep with me if you want to be first author” situation where career prospects are linked to sexual favors. Unwanted sexual attention is physical and verbal sexual advances that are unwelcome, unreciprocated, and unpleasant to the target of the advances. In some instances, these types of sexual harassment can include sexual assault, meaning that it can be both a civil rights violation and a crime. Yet these two varieties of sexual harassment are just the tip of the iceberg. (See Figure 1.)

By far the most common form of sexual harassment is gender harassment: “verbal and nonverbal behaviors that convey hostility, exclusion, or second-class status about members of one gender,” as defined in the *Sexual Harassment of Women* report. This takes the form of demeaning jokes or comments about women, including comments that women do not belong in leadership positions, or are not smart enough to succeed in a scientific career. It can also include sabotaging women’s work or careers, and denigrating them, often with crude language based on their gender. As a woman who is an assistant professor of engineering put it during an interview that was conducted as part of qualitative research for the National Academies sexual harassment study:

Most of them are demeaning the woman, shutting her up in the workplace, demeaning her in front of other colleagues,

Treating Sexual Harassment as a Violation of Research Integrity

Sexual harassment harms researchers and the research enterprise in pervasive and pernicious ways that are not commonly understood or addressed.

telling her that she's not as capable as others are, or telling others that she's not [as] sincere as you people are ... I think more stress should be on that. It's not just, you know, touching or making sexual advances, but it's more of at the intellectual level. They try to mentally play those mind games, basically so that you wouldn't be able to perform physically.

This woman's comments were in response to a question about the impact of sexual harassment, and they reinforce what over 30 years of research shows: that sexual harassment is damaging and harmful even when it is not of the more blatant, threatening, and physical varieties that are at the top of the iceberg. In fact, research shows that frequent or severe gender harassment does the same professional and psychological damage as a single instance of sexual coercion. So when it comes to considering the effect sexual harassment has on the integrity of research, we should consider all three types of sexual harassment as causing damage, and we should be much more aware of the risk that sexist hostility and the crude behavior of gender harassment plays, especially in damaging the research enterprise.

Research on sexual harassment shows that it affects not only the mental and physical health of its targets, but their professional and education attainment as well. Increased harassment leads to decreased psychological health in the form of stress and anxiety. It can also result in eating disorders, fear, self-blame, lowered self-esteem, lower satisfaction with life in general, and physical symptoms such as headaches, exhaustion, and sleep disruption. Studies have even documented significant associations between sexual harassment and symptoms of depression and posttraumatic stress disorder (PTSD). According to one study, one in five sexually harassed women meet clinical criteria for major depressive disorder, and one in 10 meet criteria for PTSD. Additional research has revealed that exposure to gender harassment triggers levels of cardiovascular reactivity similar to what people experience in threat situations, which over the long term is linked with coronary heart disease and depressed immune system functioning.

Sexual harassment also damages work lives as people try to cope and escape abusive situations. When women are sexually harassed, their job satisfaction declines, they find their work more stressful, and their productivity and performance decline. They may withdraw from their work, taking more time off, using sick leave, being late to work or meetings, missing meetings, making excuses to get out of work, and neglecting tasks. Some will simply leave their institution to take positions in their field at another institution, but others leave their field altogether. Students may show similar signs of withdrawal by skipping or dropping classes, changing majors or advisers, or dropping out of school. And women of color, as well as sexual and gender minorities, will experience more harassment and more harm from the experience than white heterosexual women.

And yet, when a woman is subjected to sexual harassment, the harm may spread even further. Research shows that sexual



Figure 1

harassment can impair team relationships and increase team conflict. And people of all genders who witness sexual harassment can themselves experience the same undermining of personal well-being that leads to work withdrawal. In hostile work environments characterized by sexual harassment, it turns out that everyone may suffer.

To illustrate how sexual harassment impacts the careers of women in science, engineering, and medicine in higher education, the committee that conducted the sexual harassment study commissioned RTI International to interview female faculty who had experienced such behavior. Their words provide powerful examples of how sexual harassment harms the research enterprise and damages women's careers and work. A number of women described how the experience of sexual harassment led them to miss out on leadership and research opportunities. One woman was instructed by her institution's human resources department to resign from an important committee position to avoid interaction with the perpetrator,

who was the chair of the committee. Another dropped out of a major research project. Such experiences can also lead women to miss out on publishing opportunities when they either opt out of coauthoring because it would involve working with a perpetrator or when they are removed as an author as a form of retaliation. Similar dynamics play out at professional society meetings where women may protect themselves from hostile situations by choosing not to make presentations, or even attend.

Yet the damage may not stop there, as the victims' professional reputations may suffer because colleagues often do not know why these women step away from career opportunities and disengage from work. As one nontenure-track faculty member in the geoscience reported: So, there's been a negative kind of chain of events where supervisors at the institution have seen that I dropped out of the research project and may not understand, because they were never told what happened. So, it seems ... I have been blacklisted in some ways and not invited to join other research projects and perhaps seen as a failure. Ultimately, the research enterprise is harmed as well, because promising careers are damaged, research findings are not shared with the community, and financial and other resources are wasted.

The idea that sexual harassment damages the integrity of research is not new. Two earlier reports by the National Academies, *Responsible Science* (1992) and *Fostering Integrity of Research* (2017), defined sexual harassment as "other misconduct"—one of three types of behavior (along with "detrimental research practices" and "research misconduct") that affects the integrity of research—and grouped it with misbehavior such as "other forms of harassment; misuse of funds; gross negligence by persons in their professional activities; vandalism, including tampering with research experiments or instrumentation; and violations of government research regulations such as those dealing with radioactive materials, recombinant DNA research, and the use of human and animal subjects." What has been frustrating for many—especially those who have been or are most likely to be harassed—is that the research community and research institutions have not taken seriously how damaging sexual harassment is to research, and so have not given it the same level of attention as other types of behavior that they readily recognize as damaging research integrity.

And yet, sexual harassment is not only damaging to research integrity because it is a form of "other misconduct," but also because it can result in behavior that falls under what the *Fostering Integrity* report terms "detrimental research practices"—the second of three types of behavior that damage research integrity. Detrimental research practices are described as including "denying authorship to those who deserve to be

designated as authors," "neglectful or exploitative supervision in research," and "abusive or irresponsible publication practices by journal editors and peer reviewers." When a supervisor sexually harasses someone working under them or when sexual harassment in a research group leads to a scientist leaving the research group, this is exploitative supervision and a detrimental research practice. When sexual harassment leads to a scientist not getting authorship or other recognition for contributions to a project, this is denying authorship to those who deserve it and a detrimental research practice. When the promise of authorship or participation in research projects is conditioned on having sex with a supervisor or other colleague, this is a detrimental research practice. When refusal to accede to sexual coercion leads to denial of authorship or other credit for research contributions, this is a detrimental research practice. And when journal editors or peer reviewers use their authority to retaliate or sexually harass authors, this is a detrimental research practice.

The need for policy convergence

Over the past several decades, government agencies, research sponsors, and research institutions in the United States and many other countries have taken steps to prevent and address behavior that damages research integrity, but sexual harassment has often not been included. To date, these approaches have mostly taken one of two forms. First, regulatory frameworks have been introduced through legislation or policy that seek to a) ensure that researchers and research institutions follow important rules and procedures, b) that allegations of irresponsible behavior are investigated, and c) that corrective actions are taken when warranted. Second, agencies have introduced requirements that students, and in some cases others involved with research, receive training in the responsible conduct of research (RCR). Although the focus here is on the United States, it is important to remember that all research-performing countries are being challenged to address irresponsible research behavior.

The first formal efforts to address irresponsible research behavior emerged decades ago in reaction to revelations of wrongdoing, such as the human experiments undertaken by the Nazis, the Tuskegee syphilis study of the US Public Health Service, and widely publicized cases of laboratory animal abuse. Today, the policy and regulatory structures aimed at protecting human research participants and laboratory animals in the United States involve oversight and monitoring at the federal and institutional levels. Locally, Institutional Review Boards and Institutional Animal Care and Use Committees are responsible for reviewing research plans and proposals, and for ensuring institutional compliance with laws, regulations, and policies. Requirements are complex, with education and training playing an important role in protecting both human participants and laboratory animals.

In the 1980s, in response to a series of data fabrication and falsification allegations against prominent researchers, and

questions about the adequacy of institutional responses to those allegations, new policies and regulations were introduced to address research misconduct. Before that time, research institutions were solely responsible for preventing research misconduct and addressing allegations. In 2000, the Office of Science and Technology Policy adopted a policy for federally funded research that defined “research misconduct” as data fabrication, data falsification, and plagiarism, and specified procedures to be followed by research institutions and agencies in response to research misconduct allegations. These policies require research institutions to notify the funding agency when cases move from the inquiry stage into a formal investigation and to notify the agency of the results of the subsequent investigation. As with policies protecting human and animal research subjects, both the National Science Foundation (NSF) and the National Institutes of Health (NIH) have introduced RCR training requirements for grant-supported and other researchers.

The next phase in the evolution of policies and processes to protect and improve research integrity is to integrate actions to deal with sexual harassment into the regulatory frameworks and training on responsible conduct of research. This will take collaboration and coordination among those who are responsible for harassment issues at research institutions (such as Title IX officers, human resource officers, ombuds officers, and general counsel offices) and those who are responsible for the protection of research integrity (such as research compliance officers, research integrity officers, responsible conduct of research educators, and Institutional Review Board members).

Expanding RCR training to include problems of sexual harassment is the most obvious first step in this evolutionary process. This would require that RCR instructors and educators develop the skills to speak and teach about sexual harassment in the research setting. It would also mean that behavioral expectations would have to be clearly established and articulated, much as they are for RCR training in mentoring and research supervision.

The more challenging and complex need is to bring sexual harassment under the umbrella of research integrity regulatory frameworks so that damage to the research enterprise is formally recognized as a consequence of harassment. This integration will require a number of important changes or additions to the current system for identifying and addressing violations of research integrity, including:

- Sexual harassment investigations should be coordinated, and results shared, across federal agencies.
- “Trusted persons,” who in the research context are there to provide information and guidance before someone proceeds with a formal investigation, need to be prepared to handle individuals coming forward with sexual harassment experiences, and institutions need to ensure that they can remain trusted sources rather than mandatory reporters who

will have to inform the institution about the incident against the victim’s wishes.

- Institutions must be held responsible if they show a disregard for, or inability or unwillingness to implement and follow, the regulatory requirements related to sexual harassment and its effect on research integrity regulations, and for substantial or recurrent failures to comply with the regulatory requirements covering sexual harassment and research integrity.
- Penalties for sexual harassment violations of research integrity should reflect the need to protect the research process and researchers, and they should include a variety of measures depending on the severity of the behavior, such as removing perpetrators from grants; suspending or terminating grants; prohibiting perpetrators from serving on advisory committees or peer review committees, or as consultants; requiring supervision for perpetrators; and debarment of perpetrators from eligibility for federal funds for grants and contracts.
- Research and publication of results should be halted when active investigations are ongoing and the severity and type of the behavior warrants it.
- Measures should be put in place to recognize and prevent retaliation in research settings, but especially those forms of retaliation that further damage research integrity.

The National Science Foundation has recently announced that academic institutions must report when NSF-funded researchers are found to be responsible for sexual harassment, or when administrative action is taken against NSF-funded researchers. This policy is already leading to conversations between university Title IX offices and research compliance and integrity offices. The hope is that it will also result in penalties that protect researchers and the research from damage caused by sexual harassment. What is needed now is an effort to make such policies consistent across federal funding agencies so that the nation does not end up with a patchwork of rules, and so that federal funding agencies stand together against sexual harassment in research.

The pervasiveness of sexual harassment across society has only recently come into focus. That sexual harassment is a problem in the research enterprise is thus unsurprising, but the threat that it creates for research integrity needs to be more widely recognized and addressed. We certainly do not yet have all the answers for how to protect the research community from the damage caused by sexual harassment—damage to people, to careers, to institutions, to teams and projects, and to science itself—but the problem demands, and is finally beginning to receive, the nation’s utmost attention.

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