Cross-Cultural Considerations in U.S. Research Ethics Education

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Demand among graduate and postdoctoral trainees for international research experience brings together students and investigators from increasingly diverse cultural backgrounds around the world. Educators in research ethics and scientific integrity need to address the cultural aspects of both science and ethics to help all trainees learn ethical practices for effective collaboration with a diverse array of partners. NIH and NSF’s mandates for instruction in the responsible conduct of research do not specifically address the needs of international trainees or U.S. trainees who undertake research projects abroad. Nonetheless, research ethics educators’ typical focus on policy and professional standards can offer trainees and faculty investigators helpful insights into differing ethical values and priorities in research. Examination of linguistic differences can also reveal important conceptual frameworks that shape ethical practice. New resources for teaching research integrity in cross-cultural settings can be a valuable addition to the development of shared understanding of the goals of scientific research.

INTRODUCTION

Contemporary science education and scientific research are characterized by globalization and international collaboration. Demand among undergraduate, graduate, and postdoctoral trainees for international research experience brings together investigators from increasingly diverse cultural backgrounds in academic research institutions around the world. International collaborative research is booming. Educators dedicated to meaningful instruction in research ethics and scientific integrity are challenged to address the cultural aspects of both science and ethics to help their students develop best ethical practices for effective collaboration with diverse partners. The establishment of formal standards of research integrity remains a worldwide work in progress, making the cross-cultural exploration of norms and differences in science a valuable source of ethical insight.

U.S. DEMOGRAPHIC TRENDS IN INTERNATIONAL EDUCATION

International trainees are an essential population in U.S. science programs. Despite fluctuation in admission rates over the last decade, due largely to worldwide political and economic uncertainty, the number of international science trainees in the United States is large and growing.

The most recent joint survey by the National Institutes of Health (NIH) and National Science Foundation (NSF) found that 31% of graduate students and 36% of new doctoral graduates in U.S. science and engineering programs were in the United States on temporary visas (14). More strikingly, over half of postdoctoral research fellows in science and engineering—54% nationwide—were international trainees with temporary visas (14).

Although international trainees commit to returning home after graduation as a condition of entering the United States, most international graduates stay to join the U.S. science workforce when their formal programs end. Over 60% of international doctoral students who received their degrees in 2012 expected to work in the United States after graduation; most had offers of employment in science when they finished their doctorates (22). The NSF’s Science & Engineering Indicators reports that the majority of international trainees who graduate from U.S. doctoral programs in science and engineering are still working in the United States five years after graduation (23).

A large and growing number of U.S. citizens in graduate science programs also seek international experience as part of their education. Through activities such as the United States Agency for International Development (USAID), Partnerships for Enhanced Engagement in Research (PEER) Science Program (26), and the U.S. State Department’s Fogarty-Fulbright Scholar programs (4), the NSF, NIH, and other federal agencies sponsor highly competitive international research training programs for U.S. citizens, sending trainees to work in both technologically developed and developing countries.
Nowhere has the enthusiasm of U.S. students for international research been more evident than in the growth of global health programs. Today, almost all U.S. medical schools address global health in their curricula (6). Many also offer opportunities for short-term research abroad, particularly in developing countries (27). Medical student exchanges, such as those sponsored by the International Federation of Medical Student Associations, also send U.S. medical students to other countries for clerkships and research experiences (16). In 2007, over 25% of U.S. medical school graduates entered residency with some international experience (6). A 2009 review of residents’ perspectives on international training found that residents in all specialties have a strong interest in international rotations and many plan future work in international settings (7).

Trainees’ experiences abroad frequently do result in longer-term international activities, particularly research collaborations with colleagues in other nations. An NSF survey in 2012 found that one in every six researchers in the United States works with international collaborators (10). Academic scientists born in other countries and educated in the United States were found to be more likely to collaborate internationally, with those who had studied in both the United States and elsewhere reporting the most international partnerships (10). The so-called BRICK countries (Brazil, Russia, India, China, and Korea), which send significant numbers of graduate and postdoctoral trainees to U.S. universities (15), reap the economic rewards of their investment in international education through highly productive international research collaborations (1). The success of U.S.-educated researchers’ international collaborations depends in large part on their ability to work cross-culturally with integrity and to resolve sometimes unpredictable ethical differences with international partners.

EDUCATIONAL STANDARDS IN RESEARCH ETHICS AND SCIENTIFIC INTEGRITY FOR INTERNATIONAL PROGRAMS

Today there is general consensus among U.S. science programs that formal attention to research ethics and scientific integrity is essential to every research trainee’s formation as an independent investigator, whatever their country of origin or plans for international work. Both the NIH and the NSF require formal instruction in the responsible conduct of research (RCR) for trainees in funded research education programs (20, 24), and both agencies extend that requirement to their international training programs (19, 24, 25). Non-U.S. citizens are not eligible for support from the training grants under which the federal mandates for RCR education originated, but the NIH has long encouraged programs to provide formal RCR education to all graduate and postdoctoral trainees, regardless of their source of funding (17).

Over the past decade, worldwide public and professional attention to the larger ethical dimensions of research has prompted efforts to define international standards of research integrity. Since 2007, international participants in the World Conferences on Research Integrity (http://www.wcri2015.org/background.html) have developed consensus statements on both basic principles of research integrity and on researchers’ responsibilities in international collaboration. Still, attention in U.S. universities to the content of research ethics education for international trainees and U.S. trainees in international research settings has been vague and irregular (12, 27). Although NIH and NSF policies provide guidance on topic areas for RCR instruction, neither agency defines the specific content of the education it requires. The NSF’s policy on RCR education notes that considerations related to the responsible conduct of research in a global context may present special challenges, but it offers no specific recommendation on how to meet these challenges (24). The fundamental challenge for academic research institutions providing RCR education is that their trainees come not only with different professional goals but also from a variety of prior institutions and disciplines, informed by their personal academic experiences and cultural assumptions. Most institutions need to prepare both U.S. and international trainees from diverse countries to work with integrity in the U.S. system. Many also need to prepare U.S. students to work ethically in diverse settings abroad. Some institutions face the triangulated educational challenge of teaching international trainees to work both in U.S. settings and on projects that involve collaborators from multiple fields in multiple other countries.

As current NIH policy reflects, such diverse programmatic goals cannot be met by a universally prescribed online module or one-time symposium, any more than they can be achieved by the sort of ad hoc mentoring common before the current policies took effect (18). Instead, program directors and academic administrators must take the time to define the relevant ethical knowledge and best-practice skills that their trainees need to succeed in the program and in the field, irrespective of the trainees’ national origins or future plans for working abroad. They then must plan to provide relevant RCR education that tracks with their trainees’ level of overall research experience as well as program- and project-specific activities that may include international work.

A useful starting point for cross-cultural education in research integrity is examination of the role of formal policy, regulation, and professional standards in research. Most new graduate students have little understanding of the U.S. policy framework for research, and many international trainees come from countries with significantly less—and often quite different—regulation in science. Looking at where research policy and professional guidelines come from can be an effective way to introduce the importance of cultural considerations in both science and ethics, since they are typically developed within specific structures of governance in response to particular problems and events. For example, NIH’s original requirement for National Research Service Awards to include instruction in the responsible conduct of
research was a policy response to Congressional concern about “scientific fraud” in the 1980s, implementing professional recommendations from the Institute of Medicine (28).

Most curricular materials and core competencies for research ethics already focus on policies and formal standards (2, 8, 9, 11, 21). Moreover, U.S. policies governing federally-funded research apply wherever that research is carried out (19). Thus, all trainees in U.S. programs need to understand the origins and purpose of federal research policies, the ethical values that they embody, and the importance of compliance. These basic lessons can then be extended to understanding the institutional mechanisms that support good research practice (such as the IRB, IACUC, IBC, conflict of interest disclosure system, misconduct investigation process, etc.). More focused instruction should then address whether and how related institutional policies and procedures affect trainees’ own work, and the limits of policy in defining best practices.

Understanding the general purpose and scope of research policy, together with the responsibility of U.S. institutions and their investigators to adhere to federal policy, can help trainees appreciate the need for ethical discernment when policies are conflicting or silent. Additionally, familiarity with the importance of research policies in general will help trainees recognize relevant research policies—or the lack thereof—in international settings where they plan to work. The cross-cultural exploration of national differences in research policy and practice can be an effective means of examining the values that shape scientific cultures, including our own. For example, exploring the worldwide role of publication in academic success can explain the markedly different responses to plagiarism among native speakers of English and individuals with limited English proficiency. It can also highlight different cultural conceptions of originality, intellectual property, and the value of discovery. Examining how international policies on conflict of interest define “significant” financial interest can illustrate international researchers’ disparate income levels as well as why bribery and corruption may pose problems for U.S. investigators abroad. Case studies that illustrate trainees’ own experiences with different cultural norms and expectations can encourage them to consider why certain practices may be adopted as well as how these practices serve researchers’ needs and the good of the field.

"PRE-DEPARTURE EDUCATION" IN ETHICS: A VALUABLE MODEL FROM GLOBAL HEALTH RESEARCH

Although most global health programs are subject to no official mandate for ethics education beyond the requirement of the Office of Human Research Protections for training in human subjects protections (29), many global health programs have taken important steps to identify the responsibilities of program directors and faculty members in preparing students for the cultural and ethical challenges they will face abroad. Global health educators’ efforts to articulate their programs’ ethical obligations provide a valuable model for educators in non-clinical science and research education whose trainees engage in international collaboration at home or abroad.

A leading voice for attention to ethics in global health education is The Working Group on Ethics Guidelines for Global Health Training (WEIGHT), a consortium of ethics educators from institutions with global health programs (5). Beyond required instruction on human subjects protections, the WEIGHT group recommends that programs develop and provide integrated education in the practical ethical dimensions of conducting research in another country. Their recommended topics include: norms of professionalism and standards of practice in both the trainees’ own setting and the local environment in which they will work abroad; recognizing and dealing effectively with cultural differences (also known as cultural competence); means of dealing appropriately with disagreements and conflicts over scientific and clinical approaches to shared work; capacity in the local language and communication; personal safety; and the implications of differential access to resources for foreign and local trainees. The WEIGHT group encourages universities to develop well-structured international programs in which both the U.S. sending institution and the international hosts have a clear and shared understanding of goals, expectations, and available resources, and derive mutual, equitable benefit from the program (5).

Global health educators from Yale and Stanford Universities have outlined essential “pre-departure” training that institutions should provide to their trainees involved in short-term research projects abroad (27). Primary among the content of such training, they recommended introduction to key characteristics of the local culture and basic skills in the local language, as well as practical, case-based instruction in research ethics. Once trainees arrive at their research site, program directors have an additional responsibility to provide comprehensive support for “troubleshooting” any cultural or ethical issues that may affect the trainee’s work or the relationship between the U.S. institution and the international host.

LINGUISTIC CHALLENGES IN TEACHING RESEARCH ETHICS AND SCIENTIFIC INTEGRITY TO MULTI-NATIONAL TRAINEES

English is overwhelmingly the universal language of contemporary science. Academic researchers in many countries with longstanding scientific communities and in-depth scientific literature in their national language now use English to communicate with a global network of collaborators and peers. They are expected to report their work in English in indexed journals and professional meetings (30) and expect their trainees and staff to keep research records in English as well. Internationally, many undergraduate and graduate science students use English-language materials in science coursework and demonstrate their command of English as part of the application process for training programs in
the United States. It is thus tempting for U.S. educators to assume that trainees in international research contexts, whether in the U.S. or abroad, can learn and communicate about research ethics and scientific integrity in English, just as they do their science. However, exclusive reliance on English, particularly without consideration of the linguistic aspects of ethics, can result in miscommunications that impede successful teaching of key ethical concepts and rationales.

Trainees typically learn the language of their new fields through a combination of formal instruction and contextual exposure. A “universal language” may hide subtle differences in meaning and intent when used by people from different cultural environments and linguistic backgrounds. In research ethics, this is most apparent in the key concepts that are distinguished by two or more nuanced words in English but expressed in a single comprehensive term in other languages. For example, distinctions in English between policy and politics; biosafety and biosecurity; teacher, tutor, and mentor; to search and to do research; and morality, ethics, and integrity, are all difficult to convey in languages that communicate several related concepts in a single, undifferentiated term. International trainees introduced to research ethics in English may struggle to understand distinctions not reflected in the language of their daily lives.

Many English words important to research ethics also convey concepts or characteristic events that are ethnically meaningful in Anglo-American culture, but not necessarily elsewhere. For example, the words stewardship, stakeholder, and mentoring reflect culturally important stories and values that may be lost in translation if their origins are not spelled out. Even today, new technologies and phenomena may get different names in different languages with significantly different cultural and moral meanings. For example, the English term stem cell is morally neutral compared to the Spanish term célula madre (“mother cell”), which carries a host of symbolic meanings that may affect both researchers’ and lay people’s response to stem cell research. Moreover, ethical concepts such as mentoring and plagiarism that are first presented in English may appear to be foreign, externally imposed, or generally “not our problem” in societies where the local language offers no ready parallel term (13). An English-only approach to research integrity in multicultural research settings risks focusing on the lowest common denominator of moral and professional language. In contrast, teaching research ethics to trainees from multinational backgrounds is enriched by the exploration of other languages’ terminology and the cultural concepts and ethical values that other languages reflect.

FUTURE STEPS AND NEW RESOURCES

Since 2003, the Council of Graduate Schools (CGS) has worked to promote scholarly integrity and best practices in multiple aspects of graduate education in research ethics and the responsible conduct of research. In the coming months, CGS will report on its NSF-funded efforts to identify learning objectives and successful educational strategies for preparing graduate students to meet the ethical challenges of international research (3). Its larger goal is to develop effective means of integrating research ethics education into international collaborations and to promote their adoption. An online library will provide case studies and other curricular material created and tested by four partner institutions and six additional affiliates. These new resources will facilitate the introduction of cross-cultural education in research integrity for CGS member institutions, setting a standard more consistent with the international nature of graduate science education today. Such broader inquiry into cultural differences and commonalities should bring researchers and academic institutions closer to a shared understanding of the worldwide pursuit of scientific knowledge.

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