Research Ethics Workshop:
Promoting Ethics in Research

Friday
March 27, 2015
8:30 am – 12:30 pm

Virginia Commonwealth University
Richmond, Virginia

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<th>Time</th>
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<td>8:00 am</td>
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Introduction and Overview

Description

This workshop is designed to assist research faculty in creating concrete, discipline-specific strategies to incorporate research ethics education into the context of the research environment. The workshop is grounded in a recognition that many research ethics issues are relevant to the practice of scholarly and creative activities spanning the full range of science, engineering, and technology.

The long-term goal of this workshop is to promote education in the ethical dimensions of research. This educational need is, in itself, an ethical obligation for the research community, and is also increasingly encouraged, if not required, internationally.

Participants will be introduced to rationales, content, approaches, and resources sufficient so that they will have the means to develop and implement research ethics education in their research environment.

Learning Objectives

On successful completion of the workshop, in the context of their particular research environment, participants will be able to:

1. Articulate rationales for integrating research ethics education
2. List and describe ethics topics suitable and useful to be addressed
3. List and describe approaches for integrating research ethics education
4. Design one or more activities to introduce research ethics
Introduction and Overview

Instructors

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Kalichman has taught research ethics for over 25 years. He is founding director of the UC San Diego Research Ethics Program (http://ethics.ucsd.edu), the San Diego Research Ethics Consortium (http://sdrec.ucsd.edu), and the ethics service for the NIH CTSA-funded Clinical and Translational Research Institute. In addition, Kalichman is co-founding director for the Center for Ethics in Science and Technology (http://ethicscenter.net). Kalichman has taught train-the-trainer, research ethics workshops throughout the U.S. and for groups and institutions in Central America, Africa, and Asia. In 1999, with support from the Office of Research Integrity, he created one of the first online resources for the teaching of research ethics (http://research-ethics.net). He leads NIH- and NSF-funded research on the goals, content, and methods for teaching research ethics. Internationally, he has had significant roles in a collaboration between the AAAS and the China Association of Science and Technology (CAST), co-chairing the working group for RCR education at the 2010 Singapore meeting of the World Conference on Research Integrity, and assisting Korean leaders in setting a national research ethics agenda.

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Macrina is the author of the widely used text, Scientific Integrity: Text and Cases in Responsible Conduct of Research (4th ed.; 2014 ASM Press). He is the director of three courses in RCR offered at VCU. He frequently lectures in RCR courses at universities and colleges across the nation and has co-organized and taught in numerous train-the-trainer RCR workshops. Macrina has served two terms on NIH study sections and was chair of the NIDCR Board of Scientific Counselors. He also served on the NIH National Advisory Dental and Craniofacial Research Council. He was a member of the ASM Ethics Committee and the Ethics Committee of the American Association for Dental Research. He has been a consultant to the USHHS Office of Research Integrity, the National Institutes of Health, and the National Science Foundation on matters related to responsible research conduct. He was a member of the NAS/AAAS Committee on Assessing Fundamental Attitudes of Life Scientists as a Basis for Biosecurity Education. He is presently serving on the National Science Advisory Board for Biosecurity.

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Nichols-Casebolt joined the VCU School of Social Work as Associate Dean in 1993, and also served as the School’s Interim Dean from July 2008-2010. She came to the VCU Office of Research and Innovation in 2005, where she is presently Senior Associate Vice President for Research Development. Her research interests have been in the areas of poverty, social welfare policy and gender issues. Nichols-Casebolt served as a member of the VCU Social-Behavioral IRB panel for over 10 years and was the Chair of the panel for five years. At the national level, she has served in a leadership capacity in several social work organizations, including six years as President of the Board of the Institute for the Advancement of Social Work Research. Nichols-Casebolt teaches an RCR course for graduate students within the Preparing Future Faculty Program at VCU, and is the author of a handbook for social work researchers, Research Integrity and Responsible Conduct of Research, published by Oxford University Press in 2012.
What is Research Ethics?

The subject of this workshop is research ethics. The focus is a very practical one: How should we, as researchers, act?

Unfortunately, the choices we face are not always clear. And even those cases that are clear may at times be better characterized as "right vs. right" rather than "right vs. wrong." For these reasons, our obligation is not necessarily to make the right decisions, but to strive to make the best possible decisions. In this context, "ethics" should not be confused with ethical theory, morality, and/or simply following the rules.

While there are many possible formulations for the scope of research ethics, one useful summary for the purpose of this workshop is to focus on our obligations as researchers. Those obligations might be summarized to include research, other researchers, and society, but also a fourth overarching responsibility in all cases to ask questions:

1. *Research:* How should research be conducted so as to meet our obligations to preserve and promote the integrity of research findings?

2. *Researchers:* How should researchers interact with one another to meet our obligations to other researchers?

3. *Society:* How should researchers interact with the larger communities, academic and public, to meet our obligations to the society in which we live and work?

4. *Asking Questions:* How, when, and where should researchers be prepared to ask questions about the conduct of science so as to meet their obligations to the research, researchers, and society?
What topics are covered under the heading of "Research Ethics"?

<table>
<thead>
<tr>
<th>Topics recommended by NIH</th>
<th>Other Possible Topics</th>
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<tr>
<td>1. Research Misconduct</td>
<td>10. Duplicate publication</td>
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<td>2. Data Management</td>
<td>11. Plagiarism</td>
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<td>3. Conflict of Interest and Commitment</td>
<td>12. Sabotage</td>
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<td>7. Mentoring</td>
<td>16. Bias: Causes, protections</td>
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<td>8. Social Responsibility</td>
<td>17. Credit</td>
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<td>9. Animal and Human Subjects</td>
<td>18. Open access</td>
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<td>20. Ghostwriting</td>
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<td>21. Managing a research group</td>
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<td>22. Communication with public about science</td>
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<td>24. Scientists as activists</td>
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<td>25. Censorship</td>
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<td>26. Deception</td>
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<td>27. Speaking up: When, how, consequences</td>
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<td>28. Dependence on funding</td>
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<td>29. Managing budgets</td>
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<td>30. Any major scientific discovery</td>
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<td>31. …Other topics?</td>
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Why Teach Research Ethics?

Many who believe we should teach research ethics have a clear idea of why we should do so. However, even a moment's reflection reveals many possible motivations for such teaching. Based on a series of interviews with teachers of research ethics, the range of possible goals was numerous and diverse (Kalichman and Plemmons, 2007). And the many possible outcomes vary greatly along dimensions such as importance, feasibility, and measurability. An understanding of this range of possible goals is a precursor to making good choices about not only what might be done to teach research ethics, but what is worth doing.

**What are the goals for teaching research ethics?**

- **Meet** federal, institutional, or departmental requirements for teaching research ethics?
- **Enhance** public perception of the research community?
- **Protect** the interests and welfare of the human and animal subjects of research?
- **Improve** choices of research to be pursued and research outcomes?
- **Decrease** Research Misconduct?
- **Decrease** disputes and misunderstandings?
- **Increase** responsible conduct in research (RCR)?
- **Increase** knowledge about RCR?
- **Increase** moral or ethical decision-making skills? Other skills?
- **Increase** positive attitudes and disposition for RCR? Moral sensitivity?
- **Increase** conversations about these issues?

While these goals are clearly distinguishable from one another, there is also considerable overlap. For example, an intervention designed to increase knowledge might at the same time meet departmental requirements for teaching research ethics.
Introduction and Overview

Rationale for Ethics in Context

If teaching research ethics is taken to be important, then what role if any is there for ethics teaching in the context of the research environment? A case might be made that the range of goals one might reasonably consider is so wide that the research environment is neither sufficient nor perhaps appropriate to be the sole venue for delivering research ethics education. However, if it is instead seen as an appropriate adjunct to other institutional programs, then a more modest agenda might be appropriate.

With that in mind, what is the value added from integrating ethics into the fabric of what we do as researchers rather than as a separate activity or program? In the context of the research environment, researchers:

1. **Learn by example:**
   researchers have the opportunity to learn by observing how others address ethical challenges.

2. **Learn in context:**
   researchers can see how what they do is intertwined with the norms and standards of practice in their particular research discipline.

3. **Learn by doing:**
   researchers can learn through the experience of addressing ethical challenges in the context of performing their research.

4. **Learn what is most important:**
   researchers can learn about the specifics that are most important to their particular practice of research rather than the much longer list of everything that is potentially relevant to other areas of research.

5. **Continue to learn:**
   working in a research group is an ongoing opportunity for continuing education, and addressing new and evolving issues that might not otherwise be covered in courses.
Mentoring and Teachable Moments

One of the most important mechanisms by which knowledge is passed from one generation to the next is **Mentoring**. In the sense that a mentor is an individual who has succeeded by overcoming the hurdles to success, he or she is in the best position to help a trainee with facing those same hurdles. Mentoring (teaching), in the context of research groups, is recognized as an important part of research training. While little has been written about teaching research ethics in this setting, it is clear that much can be learned about the roles, responsibilities, and joys of science through the process of conducting research.

Mentoring might include many topics, one of which is the responsible conduct of research or research ethics. One purpose of this discussion will be to consider the proper role for such one-on-one or small group mentoring in teaching research ethics, the topics that should be covered, and specific strategies for mentoring in research ethics.

Teaching about research ethics in the context of the research environment is widely encouraged (Whitbeck, 2001; Fryer-Edwards, 2002; Davis, 2006; Peiffer et al., 2008). The presumption is that research mentors are in an ideal position to convey standards of conduct. Unfortunately, such mentoring is infrequent or even non-existent (Brown and Kalichman, 1998; Swazey and Anderson, 1998). Although this is not happening explicitly, that does not mean an absence of socialization into science. Clearly, trainees do learn about their ethical obligations and responsibilities by doing and observing. This may often result in sufficient education, but the worry is that this ad hoc approach risks that the lessons learned will be too little, too late, or wrong. The alternative proposed here is that research mentors identify and take advantage of **Teachable Moments**.

Because research training environments vary greatly, it is not possible to prescribe one common set of teachable moments. Instead, it is worth noting that may opportunities to introduce discussion about research ethics issues might be identified for any given research group or discipline. Some examples appropriate to at least some research training environments include:

- One-on-one mentoring
- Ad hoc conversations
- Research group meetings
- Journal clubs
- Research lecture and seminar series
Within each of these opportunities for education, there are numerous tools that might be adopted to promote thoughtful discussion and learning about research ethics. Some of these include:

1. Review of professional *Codes of Conduct*
2. Following a *Checklist* of mentoring responsibilities
3. Discussing historical, current, or fictional *Cases* that illustrate research ethics challenges
4. Adoption of mentor-trainee *Individual Development Plans* outlining mutual roles and responsibilities
5. Definition and adoption of research group *Policies* regarding one or more aspects of responsible conduct of research
6. Reading or viewing of recommended *Resources*, such as books, websites, and videos on the subject of responsible conduct of research
Checklists

Much of teaching about research ethics can be handled effectively through one-on-one mentoring on an *ad hoc* basis. The fact that this happens all too rarely may be primarily a simple matter of being overlooked. An easy solution is to create a reminder checklist for items particularly important to cover (e.g., see Gawande, 2011) as well as stages of training when those items might best be covered. The goal is to ensure that practical issues will be addressed at appropriate times of graduate student training.

The material to be covered will vary by discipline, but some topics likely to be important for trainees in any discipline include the following:

1. Criteria for authorship
2. Recordkeeping
3. Standards for sharing
4. Ownership of materials (including plagiarism)
5. Risks of bias and how they can be addressed
6. Roles and responsibilities for mentors and trainees
7. Risks and benefits of collaborations
8. Conflicts of commitment
9. Asking questions, consensus building, and whistleblowing

Optional Questions for Discussion

- Are other items missing from this list that are likely to be important for most if not all disciplines?
- What items might you want to add specific to your focus in science and engineering?

Optional Exercise

- What, if anything, would be important to know in your research group about each of the above items?
- *When* would those items be best addressed?
## Draft Checklist

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<th>Item</th>
<th>When to address?</th>
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Individual Development Plans

Increasingly, various science organizations have proposed agreements or "individual development plans" (IDPs) to spell out mutual obligations for mentors and postdocs (AAMC, 2008a) and mentors and graduate students (AAMC, 2008b). The value of such agreements is summarized in a widely cited manual for training of graduate students (University of Michigan, 2011):

> Departments can affirm that mentoring is a core component of the educational experience for graduate students by developing a compact or agreement, relevant to the discipline or field of study, for use by faculty and the students with whom they work. Such a document would list the essential commitments and responsibilities of both parties, set within the context of the department’s fundamental values. This could be included in the departmental handbook and reviewed—or even signed—by both parties to acknowledge the mentoring relationship.

The Federation of American Societies for Experimental Biology (FASEB) provides on their website an IDP for postdocs, which is not only a template for planning one’s career, but also "serve[s] as a communication tool between individuals and their mentors" ([http://www.faseb.org/portals/0/pdfs/opa/idp.pdf](http://www.faseb.org/portals/0/pdfs/opa/idp.pdf)). The presumption is that such agreements will open channels of communication and serve as a reminder of mutual roles and responsibilities for a successful training experience.

**Discussion Questions**

1. Which of the sample development plan items (next page) is/are appropriate to your discipline?
2. Would such a development plan be useful or counterproductive in promoting responsible conduct?

**Exercise**

Using the sample plan as a starting point, design an IDP for your research group. In doing so, consider:

What should be changed? Deleted? Added?

How and when would you use such an agreement?

Present your draft agreement to the workshop participants.
## Sample Development Plan

<table>
<thead>
<tr>
<th>Student</th>
<th>Mentor/Advisor</th>
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<tr>
<td>1. If in doubt, ask.</td>
<td>1. If in doubt, ask.</td>
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<tr>
<td>2. Meet with advisor once each ______.</td>
<td>2. Meet with student individually once each ______.</td>
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<tr>
<td>4. Request performance evaluations once each ______.</td>
<td>4. Provide performance evaluations once each ______.</td>
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<tr>
<td>5. Perform self-evaluation once each ______.</td>
<td>5. Request student self-evaluation once each ______.</td>
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<tr>
<td>6. Strive to meet expectations for recordkeeping, data ownership, sharing of data, credit, and authorship.</td>
<td>6. Provide guidance for expectations about recordkeeping, data ownership, sharing of data, credit, and authorship.</td>
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<tr>
<td>7. Maintain research records sufficient for others to reconstruct what was done.</td>
<td>7. Review original research records once each ______.</td>
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<tr>
<td>8. Pursue opportunities for professional development (e.g., writing, speaking, mentoring, learning and teaching about research ethics).</td>
<td>8. Propose opportunities for professional development (e.g., writing, speaking, mentoring, learning and teaching about research ethics).</td>
</tr>
<tr>
<td>9. Comply with government and institutional guidelines and regulations for the conduct of research.</td>
<td>9. Provide adequate information about relevant government and institutional guidelines and regulations for the conduct of research.</td>
</tr>
<tr>
<td>10. If e-mail communication is breaking down, schedule an in-person meeting.</td>
<td>10. If e-mail communication is breaking down, schedule an in-person meeting.</td>
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Group Policies

Misunderstandings and disputes among researchers are much more frequent than actual Research Misconduct (Martinson et al., 2005; Martinson et al., 2010). While some of these challenges may be unavoidable, many could be mitigated simply by clear and early communication. One way to meet this goal is by developing policy documents covering such issues as authorship or data management.

Sample Policy

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<tr>
<th><strong>Authorship Policy</strong></th>
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**Criteria for authorship:**
To be included as an author on a paper, it is necessary to have made a substantial and new contribution essential to publication of the paper, to provide a good faith contribution to writing and/or editing of the manuscript, and to approve the content of the version submitted for publication.

**Criteria for acknowledgement:**
Contributions to the publication of a manuscript that do not meet the criteria for authorship should be recognized in the acknowledgements section of the paper.

**Order of authorship:**
If a paper has more than one author, and assuming all authors meet the "Criteria for authorship," then the first author will typically be the person who wrote the first draft of the manuscript, the last author will be the head of the research group, and authors listed in between will be listed in order of decreasing contributions to the project.

**Disputes about authorship:**
If anyone believes that someone proposed to be an author, or someone left off of the list of authors, has been not been given credit appropriate to their contributions, then they should raise their concerns with the head of the research group, who has ultimate responsibility within the group for decisions about allocation of credit.

**Appeals to decisions about authorship:**
In the event that the above guidance is insufficient to resolve a dispute about authorship, then the interested parties should each draft an anonymized version of their perspective on the issues at stake. These summaries will then be submitted to a mutually agreeable third party for a decision based on binding arbitration. If no clear decision is rendered, then a final decision will be made by a flip of a coin (or the equivalent if multiple competing options are proposed).
Examples of Possible Topics for Policies

- Dealing with particular human or animal subjects
- Recordkeeping
- Statistical Methods
- Data Sharing
- Contacts with media

Questions for Discussion

1. What topics might be appropriate for a group policy in your area of research?
2. Is it possible to have a policy that would be meaningful and not counterproductive?

Exercise

1. Identify a topic for a policy of common interest to all participants in the workshop.
2. Propose possible elements to be covered in the policy.
3. Select those elements for which there is agreement, and draft wording for the proposed policy.

How should a policy be implemented?

1. Handed out to new members of research group.
2. Annual or periodic discussions to review at group meetings.
3. Group collaboration to write or re-write policies to ensure ongoing relevance and clarity.
Assessment

Given the proposed teaching of research ethics in the context of the research environment, the goal of assessment is to determine whether the approaches proposed have had a positive impact. At a minimum this means two overlapping, but not necessarily identical questions:

1. What is the impact of your use of the proposed approach for teaching research ethics to your students?
2. What is the overall impact of use of the proposed approaches for teaching research ethics on students of faculty who have participated in workshops like this one?

We are proposing an assessment to address question #2, but in the process one that will hopefully reflect on the general value of the different approaches and help to answer question #1. However, while assessing impact might seem straightforward, it is not easily accomplished. Even the possible goals for assessment are highly diverse.

Goals of assessment

Assessments can address many different qualities of learning outcomes (e.g., Nightingale et al., 1996; Kalichman and Plemmons, 2007), including improvements or increases in:

- knowledge
- creative or critical thinking, problem solving, determining impact, or making plans
- moral reasoning, ethical decision-making, or sensemaking
- attitudes or values in the context of research ethics
- ability to communicate, or to prevent or resolve conflicts
- frequency and effectiveness of communication with others
- making good judgments
- successful recognition of ethical dilemmas in the practice of research

Given the many possibilities, it is neither feasible nor perhaps useful to consider assessing all of these outcomes in the context of research ethics interventions in the research environment.

Challenges to conducting assessments

Each of the above outcomes, and the many other possible outcomes, potentially requires a very different and very specific approach for assessment. Some outcomes might be best assessed by objective multiple choice questions, others by written answers to open-ended questions (e.g., how, if at all, has your ability to recognize ethical dilemmas been changed?) or requests to provide an analysis of a case that describes a research ethics dilemma, and still others might require interviews or focus group discussions. And even with an appropriate method for assessing an outcome, being able to ascribe any effect to a particular approach can be problematic (e.g., having only post-assessments for those exposed to the approach vs. pre- and
post-assessments from the same individuals vs. assessments for those exposed to the intervention as well as an appropriate control group).

**Criteria for choosing assessment goals**

Choosing among the many possible outcomes and measures should begin with whether a particular outcome meets the following criteria:

1. **Important**: The goal should address something that is particularly relevant (*important*) to the ethical or responsible conduct of science.
2. **Deficient**: Some things that are important may not in fact be lacking. The goal should address something that needs improvement or correction because it is *deficient*.
3. **Independent**: Even if something is important and deficient, it could be secondary to some other goal. Meeting the goal should be *independent* of first needing to meet other goals.
4. **Amenable to Intervention**: Even if something is important and deficient, we may have no realistic way to repair that deficit. The goal should be something for which we have, or we could reasonably produce or acquire, an *intervention* that would enable us to make a change.
5. **Measurable**: It is possible that there is something that we can change by intervention that is both important and deficient, but we have no means to assess our impact. The goal should be something for which we have the tools for defining *measurable* outcomes. [NOTE: Measurable outcomes can also include qualitative findings. The key is to have something credible to convince ourselves and others that there is some value added because of our efforts.]
6. **Magnitude**: It is possible that there is something that we can change by intervention that is important, deficient, and measurable, but the magnitude of our impact might be too small to be considered cost effective. The goal should be something for which we can produce a change of sufficiently large *magnitude*.
7. **Feasible**: Even if something reasonably meets all of the above criteria, it may not in fact be practical or feasible in the research environment because of the amount, type and availability of resources required or because of the characteristics of the research environment. The goal should be something that is *feasible*.

**Optional Exercise**

What challenges have you experienced in promoting some of the goals discussed above?

- Did you obtain feedback to indicate success in achieving your goal?
- If not, how might you assess the impact of what you did?

For the approaches we discussed today, what learning objectives would be realistic outcomes? What would be the most important outcome for your students after implementing some of these approaches?

How might you assess the impact?
**Assessment Plan**

For the purposes of this project, we hope to obtain feedback both from the faculty participants in this workshop and from their students. The plans for each group are summarized below.

**Faculty Feedback**

Prior to the workshop and six months after the workshop we will ask you to complete a brief (2-3 minutes) online survey. Although we will need your name and e-mail address to invite your participation in the survey, your identifying information will be de-coupled from the data and not be part of any analysis, summary, or publication.

In addition to feedback on which of the proposed approaches you attempted, the two primary questions we hope to answer are:

1. Do you perceive that the proposed approaches are feasible, relevant, and effective?
2. Do you have observations or experiences consistent with the presumption of a positive impact?

**Student Feedback**

Prior to the workshop and six months after the workshop we will ask your trainees to complete a brief (2-3 minutes) online survey. Although we will need trainee names and e-mail addresses to invite participation in the survey, their identifying information will be de-coupled from the data and not be part of any analysis, summary, or publication.

As a control group, students are being surveyed similarly for those faculty who were interested in attending this workshop but unable to do so. In addition to feedback on which of the proposed approaches you attempted, the two primary questions we hope to answer are:

1. Do the students perceive that the proposed approaches are relevant and effective?
2. Do the students report outcomes consistent with the presumption of a positive impact?

The surveys we are using are provided on the following two pages.
Faculty Feedback Questions

1. During the most recent academic term, which of the following strategies did you use as a basis for discussion with one or more of your trainees (graduate students and/or post-docs)?

<table>
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<tr>
<th>Strategy</th>
<th>Yes / No</th>
</tr>
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<tbody>
<tr>
<td>Code of ethics or conduct for your research profession</td>
<td></td>
</tr>
<tr>
<td>Items on a checklist of research ethics topics</td>
<td></td>
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<tr>
<td>A real or fictional case to demonstrate research ethics issues</td>
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<tr>
<td>An Individual Development Plan establishing responsibilities for you and your students</td>
<td></td>
</tr>
<tr>
<td>A group policy addressing research ethics issues</td>
<td></td>
</tr>
</tbody>
</table>

2. For each of the above strategies that you used:
   A. Did you use this strategy in the context of a group meeting (e.g., journal club, discussions of data or research strategies) and/or one-on-one?

   Using a scale of agree/neutral/disagree, please rate the following statements:
   In my particular research group, this strategy for teaching research ethics is
   B. Feasible (it can be done)
   C. Relevant (it is meaningful to our practice of research)
   D. Effective (it helps to promote research integrity)

   A. How many trainees are part of your research group?
      Graduate students _____  Post-docs ________

   B. Over the most recent academic term, how many hours did you discuss research ethics issues with one or more of your trainees (graduate students and/or post-docs)?

      In the context of:                  Hours
      One of more of the proposed strategies?
      Other conversations?

3. Please note any observations you’ve had that speak for or against the effectiveness for your research group of any of the above strategies you have used.

4. Please share with us any other strategies, whether purposeful or ad hoc, you have successfully used to generate discussions about research ethics in your research group.

5. Please provide any other comments you may have.
**Student Feedback Questions**

1. During the most recent academic term, which of the following strategies did your research mentor use as a basis for discussion with you?

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<tr>
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</tbody>
</table>

2. For each of the above strategies that your research mentor used:
   A. Did your mentor use this strategy in the context of a group meeting (e.g., journal club, discussions of data or research strategies) and/or one-on-one?

   Using a scale of agree/neutral/disagree, please rate the following statements:
   In my particular research group, this strategy for teaching research ethics is
   B. Relevant (it is meaningful to our practice of research)
   C. Effective (it helps to promote research integrity)

3. Over the most recent academic term, how many hours did you discuss research ethics issues:

<table>
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<th>With:</th>
<th>Hours</th>
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<tbody>
<tr>
<td>Your research mentor?</td>
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<tr>
<td>Others?</td>
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</table>

4. If the number of hours in question 3 was >0, then what impact, if any, did those conversations have on you?

5. Could you briefly describe any other approaches your mentor has used to generate discussions about research ethics in your research group?

6. Please provide any additional comments you may have.
Recommended Resources

The purpose of this section on readings is to provide a starting point for further information about the teaching of research ethics or responsible conduct of research, particularly in the context of the research environment. While all of the resources listed are recommended, this list is not intended to be comprehensive. Resources recommended as a starting point are written in bold.

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Selected Resources: By Topic
Recommended Starting Resources are in **bold**.

**Checklists, Agreements, and Policies**

1. AAMC (2008a): Compact Between Postdoctoral Appointees and Their Mentors. [https://www.aamc.org/initiatives/research/postdoccompact](https://www.aamc.org/initiatives/research/postdoccompact)
2. AAMC (2008b): Compact Between Biomedical Graduate Students and Their Research Advisors. [https://www.aamc.org/initiatives/research/gradcompact](https://www.aamc.org/initiatives/research/gradcompact)
7. University of Wisconsin: Mentees Individual Development Plans Overview, Resources for each phase of the mentoring relationship. [https://mentoringresources.ictr.wisc.edu/MenteeIDPOverview](https://mentoringresources.ictr.wisc.edu/MenteeIDPOverview)

**Assessment (and Goals)**


12. Schmaling KB, Blume AW (2009): Ethics instruction increases graduate students' responsible conduct of research knowledge but not moral reasoning. Accountability in Research 16:268–283
General Resources

General Web Resources

1. Ethics Core Digital Library (National Center for Professional and Research Ethics). [http://nationalethicscenter.org](http://nationalethicscenter.org)

Texts on Research Ethics


**Research Ethics Internet Courses**

2. Responsible Conduct of Research (CMDITR). [https://nationalethicscenter.org/rcrtutorial](https://nationalethicscenter.org/rcrtutorial)

**Courses for Research Ethics Instructors**

1. Teaching Responsible Conduct of Research (RCR) Certificate program: National Center for Professional and Research Ethics. [http://ethicscenter.csl.illinois.edu/teaching.rcr](http://ethicscenter.csl.illinois.edu/teaching.rcr)

**Fostering Integrity in Research**


**Integrating Ethics in the Curriculum or Discipline**


Mentoring and Responsible Conduct


Mentoring


Recommended Resources


Readings for Students about Science and Ethics


Other Approaches for Ethics in Context

The approaches discussed in this workshop are only selected examples that may be useful for you and your research environment. However there are many other approaches that might be worth considering. Some of these include the following:

1. Review of research plans or protocols:
   Depending on the nature of your research, it may be that existing documents outline methods, approaches, and/or plans for the conduct of your research. A careful review of those plans can be a useful exercise to identify ethical or values issues intrinsic to your research.

2. Guest speakers:
   Inviting others with appropriate expertise is an opportunity to gain helpful perspectives on topics that might be a good match for your area of research. Some possibilities might be a campus ombudsperson to talk about how to handle difficult questions, someone from internal audit services to discuss recordkeeping, or a representative from an office that has oversight responsibility for research with animal subjects, human subjects, or stem cells.

3. Illinois Two-Minute Challenge (2MC) Approach:
   Originally developed for teaching ethics and professional responsibility at the University of Illinois by C.K. Gunsalus, Director of the National Center for Professional and Research Ethics, two minute challenges are designed to present realistic dilemmas that arise concerning research ethics, along with a structured decision-making framework for assessing how to respond. Given the brief time commitment, this is a good option for use in the research environment. The National Center for Professional and Research Ethics (NCPRE) [http://ethicscenter.csl.illinois.edu] hosts a library of 2MCs that connect to other resources including teaching materials, bibliographies, videos, etc.
Research Ethics Workshop Evaluation

Your anonymous evaluation of this workshop will be invaluable for planning for future versions of this type of program.

Using a scale of 1 to 5 (1=very low, 5=very high), please rate the extent to which today's workshop helped you to meet the stated objectives for your particular research environment, which include being able to:

1. Articulate rationales for integrating research ethics education. ___
2. List and describe ethics topics suitable and useful to be addressed. ___
3. List and describe approaches for integrating research ethics education. ___
4. Design one or more activities to introduce research ethics. ___

5. Using a scale of 1 to 5 (1=very low, 5=very high), how would you score the overall value of this workshop? ___

6. How, if at all, have your perceptions or understanding been changed by participating in today's workshop?

7. How would you describe the value of this workshop to your plans for teaching or promoting research ethics?

8. What changes would you recommend to help improve future versions of this workshop?

9. Please use the space below or the back of this page if you have any additional comments or suggestions about future workshops on this topic: