WEB-BASED RESEARCH ETHICS TRAINING FOR GERONTOLOGISTS

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As part of a Canadian Institutes for Health Research (CIHR)-funded Strategic Training Grant, we have developed and delivered a brief course in research ethics directed toward postgraduate students in experimental gerontology. In this paper, we report on the initial offering, its content and delivery, and student reactions to the course. We conclude with some thoughts for others who wish to develop and evaluate similar courses in the future.

For the past six years, with funding from the Canadian Institutes for Health Research (CIHR), experimental gerontologists from across Canada have been training postgraduate students under a Strategic Training Grant entitled Communication and Social Interaction in Healthy Aging (Scialfa, Pichora-Fuller, & Spadafora, 2004 or go to our Web site, www.healthyagingresearch.ca). One component of training is that pertaining to research ethics, a critical element of any research career, and one that often receives short shrift in formal training curricula. In the pages to follow, we will describe the initial development and delivery of a research ethics course as well as some of the responses to that experience.

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RATIONALE AND BACKGROUND

Since the postwar period and with increasing attention, the importance of conducting ethically sound human research has been acknowledged within the scientific community and its associated professional bodies. This attention has many manifestations including the publication of ethical principles, the establishment and development of research ethics boards, and the inclusion of courses on professional issues and ethics in many training programs. For example, both the Canadian and American Psychological Associations (American Psychological Association, 2003; Canadian Psychological Association, 2000) have codified ethical principles that include respect for the dignity of people, responsible caregiving, and societal obligations. Reflecting a somewhat different orientation, the U.S. National Academy of Sciences (1995) emphasizes the use of verifiable techniques, the admission of fallibility, giving appropriate credit for research effort, and avoiding conflicts of interest. These generally complex issues have evolved along new dimensions as research moves to the Internet and World Wide Web (WWW). In fact, the WWW is being used to provide students, professionals, and the public with information on and training in research ethics. Examples include the Tri-Council Policy Statement on Research Ethics in Canada (Canadian Institutes of Health Research, 1998) and the U.S. National Academy of Sciences’ On Being a Scientist: Responsible Conduct in Research (1995).

Ethical issues in research take on additional complexities when working with older adults (e.g., Doron, 2007; American Geriatrics Society Ethics and Research Committees, 2001). Effective informed consent and debriefing are more challenging for the many older adults who are unfamiliar with academic settings or scientific research. This is particularly true for those suffering from cognitive impairment. As well, research protocols often need to be adapted for older participants and demand characteristics that can be manifested in very different ways when older adults come to the laboratory. Finally, the way we communicate about research to the public changes when the audience consists of older individuals.

While there has been considerable improvement in knowledge of and sensitivity to ethics issues in research, formidable deficiencies are still present. For example, in 1998 the Interagency Advisory Panel on Research Ethics (2003) surveyed researchers funded by the Natural Science and Engineering Research Council of Canada concerning their knowledge of research ethics issues. Their findings were based on almost 300 scientists with an average of 16.5 years in their careers.
Fully one-half of those sampled came from psychology and the life sciences, and most of the research they conducted involved human participants.

On the positive side, most of those responding felt that they were familiar with ethics principles about risk, informed consent, and confidentiality. As well, most of the research was assessed as involving only “minimal risk” (although defining what is minimal is a challenge).

There was less familiarity with issues of conflict of interest, criteria for expedited review, and monitoring. Somewhat surprisingly, only 25% of those responding were aware of the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans, even though the agency providing their funding is mandated to subscribe to this statement. In addition to general lack of familiarity, the Interagency Advisory Panel (2003) identified several emerging ethics challenges for research: confidentiality of data in WWW-based data collection studies, deception in social psychological research, mass administration of psychometric tests, training of undergraduate research assistants, human-computer interaction and usability tests, invasive procedures such as imaging techniques, and research conducted by students using other student participants.

Even more troubling is the 1996 report of the Canadian National Council on Ethics in Human Research that concluded with the assessment that ethical guidelines were not being followed in medical research. Several years later this agency advocated accreditation as the only means of dealing with the challenge, and accreditation was endorsed by Canada’s Parliament in 2004 (National Council on Ethics in Human Research, 2006).

Clearly research ethics is an important, controversial, and complicated topic, one that is worth serious consideration by graduate students who are training for research careers. However, even when one admits the value of such consideration, challenges of curriculum design and delivery take on new dimensions when the students are dispersed across multiple institutions and thousands of kilometers. WWW-based delivery of age-related course material has become more common (Majeski & Stover, 2007; Thompkins & Siegel, 2000; Weinrich & Tompkins, 2006) and we felt that the judicious use of the WWW might allow us to meet the training needs of the grant while respecting geographic distances and financial realities. It was against this background that we developed the course in research ethics described below.

THE STUDENTS

There were 18 postgraduate trainees who took part in this initial offering, all enrolled in MSc or PhD programs in Canadian universities. By
age, they were in their 20s and 30s and had done their undergraduate work in Canada, the Netherlands, China, Germany, and Israel. Most of them had received undergraduate training in psychology.

Despite this background, their exposure to issues of research ethics was quite varied. More than 50% had not had any course in research ethics in their graduate training. Only five reported having had an in-depth discussion of research ethics in their respective labs. Only one-half had ever submitted an application to a research evaluation board (REB), and only a minority was familiar with the Tri-Council Policy Statement (TCPS) or its associated tutorial. Although it is certainly the case that graduate students in professional programs (e.g., APA and CPA-accredited programs in clinical psychology) would have more exposure to ethics issues in their coursework, there is no reason to believe that our trainees are vastly different than students in other research-oriented programs. Clearly, there was room for some training in the area.

In terms of familiarity with the technologies used, most students had not been exposed to either Blackboard\textsuperscript{1} or Elluminate,\textsuperscript{2} two of the applications we used in course delivery. Many, however, had used web-based survey and feedback tools before, and many were also familiar with threaded discussions. The group as a whole was very familiar with computers, and most students by virtue of their research programs were using computer-based technologies on a daily basis.

THE COURSE

The online educational experience is constructivist in nature, with learners becoming central to their own educational experience (Palloff & Pratt, 1999). Constructivist learning is a process through which learners—not the facilitator—make sense of their experiences (Merriam & Caffarella, 1999).

The level of learner participation in an online environment is directly linked to the presence of the facilitator (Salmon, 2000). Facilitators become catalysts for learning rather than transmitters of information (Garrison & Anderson, 2003). Brookfield (1987) suggests that facilitators need to be specific, work from the particular to the general, and be conversational in their approach.

In online environments, the lack of understanding of technical aspects of the environment can lead to anxiety (Zheng & Smaldino, 2003) and result in a less-than-ideal learning experience for both learners and facilitators (Palloff & Pratt, 1999). Learners can be overwhelmed by the volume of information in a virtual environment
Pacing activities appropriately is critical. Fulford and Zhang, 1993 (as cited as in Zheng & Smaldino, 2003) note that interactivity among learners is a critical indicator of overall learner satisfaction.

Basing the curriculum design and delivery on the considerations above and the work of others (e.g., Burrow & Glass, 2001; Gilbert & Dabbagh, 2005), we spent time in advance instructing students in how to use the technologies involved, used a multitude of techniques, responded frequently and individually to input, periodically summarized discussions, and posed additional questions to keep the discourse “alive.”

As summarized in Table 1, the course was made up of about 12 hours of content and activities. It used traditional methods; WWW-based presentations; asynchronous, threaded discussions; and synchronous, multipoint collaborative learning to deliver content and allow discussion.

**Course Overview**

This was a three-week course delivered in a blended format. The course started off with some prework and a face-to-face workshop. The remainder of the course was conducted through the Blackboard® learning platform. A synchronous session, using Elluminate® was used to wrap up discussions of the course topics and to conduct a course evaluation. Blended models of delivery allowed the learners to reflect and self-direct their studies while participating in a paced, group class.
Course Goals

To familiarize trainees with issues of ethics for research involving human participants.
To relate ethics principles and practice to both the experimental and clinical study of aging.
To become sensitive to special issues of ethics for older adults (for example, informed consent for those with Alzheimer’s Disease).
To utilize leading edge learning technologies to deliver ethics and aging courses.

Each week had an exercise and an online discussion component. The work totaled two hours weekly. The completion dates were a guide for students to plan their time. Students completed the assignment whenever it was suitable for them during the week, but it needed to be submitted before the completion date. The online discussions took place over one week each. We requested students to participate twice at a minimum.

Course Evaluation

After Week 2, a formal course evaluation was conducted. As this course was part of a research project, students were told data would also be collected regarding their experiences. Data collection was in the form of an online synchronous session and/or an online survey; the exact date was set midway through the course. Students were also told there was an intent to publish, and anonymous quotations may be used in any resulting publications. If a student did not wish his/her quotes to be used anonymously, this was indicated in writing to Dr. Scialfa, and we would extirpate anything said by that student from the archived record of the course. This proposal has the approval of the Conjoint Faculties Ethics Board at the University of Calgary.

The first component to this course was the completion of the TCPS tutorial on research ethics (http://pre.ethics.gc.ca). This is an online version of the TCPS Statement that takes approximately two hours to complete and, when completed, provides the user with a certificate that acknowledges their participation. The topics covered include a discussion of the origins of research ethics, an overview of the guiding principles of the TCPS (see Table 2) and fuller treatments of informed consent, privacy and confidentiality, conflict of interest, inclusion in research, and the rationale and function of research ethics boards (REBs).
Table 2. TCPS ethical principles in research

<table>
<thead>
<tr>
<th>Requirement for Free and Informed Consent</th>
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<tr>
<td>Individuals are generally presumed to have the capacity to make free and informed decisions. Free and informed consent should be sought from potential research subjects or their representatives.</td>
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<tr>
<th>Respect for Vulnerable Persons</th>
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<td>Individuals with diminished competence and/or decision-making capacity are considered vulnerable. The interests of the vulnerable individuals should be protected.</td>
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<tr>
<th>Respect for Privacy and Confidentiality</th>
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<tr>
<td>The access, control and dissemination of personal information of research subjects should be protected.</td>
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<tr>
<th>Respect for Justice and Inclusiveness</th>
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<tr>
<td>The benefits and burdens of research should be fairly distributed across society. Ethics review should have fair standards and procedures.</td>
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<th>Balancing Harms and Benefits</th>
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<td>The foreseeable harms associated with the research should not outweigh the anticipated benefits.</td>
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<th>Minimizing Harm</th>
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<tr>
<td>Harm to research subjects should be avoided, prevented, or minimized.</td>
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<tr>
<th>Maximizing Benefit</th>
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<tr>
<td>The benefits of research for the subjects themselves or for society as a whole should be maximized.</td>
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After completing the TCPS tutorial, students came together as part of a three-day research symposium funded under the grant. During that symposium, we held a half-day workshop on research ethics using the TCPS tutorial as a springboard. Even though many of the students knew each other from previous work under the grant, we felt that a face-to-face component to training early in the course would facilitate later communication for those components of the course offered at distance. This workshop recapped the TCPS, contrasted the ethics principles embodied in that work with perspectives from other organizations including the U.S. National Academy of Sciences and the Canadian Psychological Association, and then provided fuller treatment of the goals and procedures of REBs, informed consent, privacy, conflict of interest, inclusion of minority and disadvantaged groups, and authorship.

Interactive parts to the workshop were based on a case-study model. For example, students were provided with a one-page description of a study that purported to examine aging, cognitive impairment, and the comprehension of signage. They were then asked to discuss the risks involved in participation and to develop, in outline form, a consent document that would delineate these risks.
The major portion of the course was delivered on the WWW using a variety of technologies (see Table 1). For example, students were presented with a one-page debriefing statement for a hypothetical study. They were asked to answer two questions:

1. Is this debriefing document appropriate for undergraduates? What about for healthy older adults and those who are ill or cognitively impaired?
2. How would you change the debriefing to make it a more effective means of communicating the purpose and potential value of the work? Refer to the TCPS tutorial or other materials in providing a rationale for your suggestions.

Students provided responses to these questions in a threaded discussion conducted within Blackboard. Each student was asked to return to the discussion on at least one occasion, read some of threads, and respond to them. It was the senior author’s responsibility to read each entry, respond to each student at least once, and to summarize the results of the discussion at the end of a one-week period.

There were more than 40 postings to the discussion, from which several themes emerged, including the following:

- The complexity of language vis-à-vis the participants.
- The need to be more explicit about the role both younger and older adults play in the research.
- Formatting, font, and layout to improve legibility and understanding.
- A better sense of future research.
- An explicit statement of applications and potential benefits.

Additionally, however, some of the responses given were indicative of the diversity of opinion on ethical principles and how these principles apply specifically to issues of willing, informed participation. Examples are included in the following student statements:

This study does not involve misleading any of the groups. Therefore, in my opinion, this debriefing statement is not necessary.

We... ask researchers to be explicit about hypotheses being tested, the tests that are done, the way data patterns (shown graphically perhaps) would inform theory, etc.
the participants should be given the opportunity to sign up to receive the lab newsletter to stay informed regarding the outcomes of various studies.

I want to refer to alternative effective means of communicating the purpose of the work for the ill and cognitively impaired participants. One simple way is to debrief the participants orally, using some stimuli from the experiment to aid the explanation. Personally, I present on the monitor a single slide from the experiment, during the oral debriefing.

Pictures are such a good way of communicating what you’ve done. I think that this is particularly true for older people who can then link memories of their specific experiences to the explanation you provide.

In the next week of online work, students were given the following scenario and again asked to comment, again via a threaded discussion:

Some of the more distressing disagreements in academics revolve around issues of authorship. This is understandable because our status, competitiveness for grants, tenure, and the like are influenced profoundly by the work that is credited to us. Consider the following then, in light of ethical guidelines as delineated in by TCPS and other works.

Mary has been working in your lab for three years as a research assistant. Her duties include programming experiments, recruiting and testing participants, and building data sets for later analyses. She regularly attends lab meetings.

Does Mary deserve authorship credit on your MSc thesis or is an acknowledgement of her contribution sufficient?

Again, the diversity of opinion was illuminating. Most students felt that authorship should be reserved for those making an intellectual contribution to the design, analysis, and write-up of the research. Some people expressed the view that authorship was merited for those who can communicate to others an accurate understanding of the research. Others made reference to outside disciplines where, for example, craftspeople working under an artistic great are not generally given credit for their contribution. Most people felt that this is an important issue to deal with early in the research process. They also felt that flexibility was a key component to decision-making (for example, when researchers are added to a study after its initiation).
The final component to the course concerned the role and procedures of research ethics boards. We asked students to gather information and be prepared to discuss how their institutions define and exemplify “minimal risk” in research, what requirements exist for debriefing of research participants, the length of time for which data may/must be stored, and the composition of their REB; that is, the audience to whom they would address ethics applications.

For this exercise, we asked students to submit their work in text documents to be summarized by a course facilitator. In addition, we incorporated a synchronous discussion component using Elluminate, a web-based, multipoint virtual classroom. Its functionality includes audio and video communication, presentation software, synchronous feedback, shared applications, a whiteboard, and archiving (www.elluminate.com). Our group had used this application in the past to have planning meetings and, on the basis of those past experiences, believed it would be useful for teaching purposes as well.

Again, the diversity of responses was enlightening. The concept of minimal risk was often framed in comparative terms of everyday activities, but generally without further elaboration or example. In some cases, there was no statement defining the construct, and students were told by contact people that risk was defined and assessed on case-by-case basis. Most institutions did not require any debriefing statement unless deception was involved. Data storage requirements ranged from a minimum of 1 year to a required 25 years.

With regard to the composition of the REB, many had representation from researchers, the public, and a person knowledgeable in ethics and the law. Sometimes graduate students and administrators were included in the body as well.

**FEEDBACK AND LESSONS LEARNED**

At the conclusion of the course, we asked students to give us their thoughts on both course content and delivery tools. With respect to content, some themes that emerged were an increased familiarity with ethics issues and institutions, a realization of shared concerns, appreciation of the complexity of issues, and the diversity of opinion surrounding those issues. Exemplifying some of these themes, one student wrote the following:

I would say the most beneficial aspect of the tutorial was a thorough discussion of the ethical issues that you’ve learned to just accept as
‘fact.’ So often, ethics policies have been presented to me as ‘here’s the policy, learn it.’ It was nice for a change to read over a policy and then discuss some of the more challenging aspects of the policy to better understand why some of the policies are there in the first place and how some of the policies really leave it up to you to decide what’s best.

Most students found the TCPS tutorial to be useful but, “a bit dry” and repetitive in the discussion questions that were posed within the tutorial. Many students enjoyed the flexibility, convenience, and interactive qualities of threaded discussions, but several expressed specific usability concerns about the format in which threads were organized. They noted that subtexts tended to proliferate in the discussions. There was greater diversity of opinion on the synchronous discussions. Some students liked the “real-time” nature of the vehicle and the opportunities for more spontaneous interaction in a larger group. Criticisms centered on difficulties with “set up,” problems with transmission quality, lack of opportunity to “think before responding,” and greater difficulties for those who were not fluent in the language used (in this case, Canadian English).

There were a large number of lessons to come out of this experience, some of which echo other writers in the area of online adult education. In no particular order or priority, the following were some of the most obvious:

- For facilitators, plan that your involvement will be much greater than in many traditional courses. In addition to developing content and making it available, you must become fluent in the technologies used. As well, responding to, integrating, and summarizing discussions is a rewarding but time-intensive activity that grows exponentially with student number.
- Use at least one and, generally, two facilitators for the course, one who focuses on technology (e.g., making sure that everyone has a password) and the other on content.
- Anticipate that many students will complete assignments and prepare for sessions at the last minute. In addition to sending explicit instructions to students well in advance, reminders should be standard procedure and a technology-orientated facilitator should be available immediately before technology-based activities. Have phone numbers and e-mail addresses for all students in case they need to be contacted on short notice.
- Hold an orientation to the technology, with no focus on the content, before content-related activities are planned. This lets everyone focus on learning material and delivery tools.
- Do not expect that all students will participate equally. In fact, some may not participate at all. This can be a cause for concern and can be expressed by asking uninvolved students if they need assistance getting “set up.” Alternatively, recognize that in traditional courses many students are only marginally involved, and this medium will probably have that characteristic as well.
- Do not expect students to wade through large amounts of information to become familiar with the teaching technologies being used. Avoid complicated bells and whistles, summarize the essentials in your own documents, and point them to more detail if they want it.
- Use technologies that are reliable. Newer versions and special purpose applications can be wonderful, but it takes only a few bad experiences with an unreliable tool before people stop using it altogether.
- Archive activities so that students can review or get the information if they were unable to participate. Archiving of threaded discussions is common practice in many applications such as Blackboard, and both audio and video archiving is possible in synchronous learning environments such as Elluminate.
- For threaded discussions, pose one question at a time. Branches off even one question are often quite complex and difficult for students to follow. Posing multiple questions only adds to the potential for confusion.
- For threaded discussions, set a brief period for the discussion (we used five days), try to respond to each student’s initial contribution within 24 hours of their submission, and summarize the discussion with a brief (e.g., one-page) synopsis within 24 hours after the discussion has closed. This lets students know that you are interested in their thoughts and brings closure to the discussion.
- Instead of asking open-ended questions such as “Did anyone have a reaction to this scenario?” ask more specific questions and, if necessary, ask them of specific people. Posing questions ahead of the session will help students formulate reactions.
- Don’t be surprised if one or two people play a larger role in the discussion, but be aware that this can intimidate people who are new to the group, content, or language.
- For synchronous work, try to set up sessions with approximately eight students attending. Any less and the “dead time” might
inhibit conversations. Any more and managing turn-taking can become a challenge.

- For synchronous work involving audio interchanges, don’t rely on internal microphones and headsets. A USB headset is affordable, reduces feedback, and improves sound quality considerably.
- For synchronous work involving audio interchanges, enunciate clearly, insert somewhat longer pauses between phrases and sentences, and use less complicated sentence structure. Signal-to-noise ratios are often not quite as good as in a classroom.
- Expect students to play with the tools. It was often the case that our students were carrying on secondary conversations (via text messaging) during a synchronous activity. This may be distracting at first, but it can also be a good indicator that students are using the environment to multitask, build relationships, etc.

REFERENCES


Interagency Advisory Panel on Research Ethics. (2003). *NSERC community whose research involves human subjects: Results of a survey about their needs and supports in research ethics*. Ottawa, Canada: Author.


