Chapter 21: Methodology, Ethics, and Publicizing your Study

This book has been devoted more to the methods used to put an experiment on the Web and analyze the results than to broader issues of what you should do to conduct good research on the Web. This chapter will deal with some of these broader questions.

A. Methodological Suggestions

1. Conduct a comparison study of Web and lab research in your domain. If you plan to do research on a topic that has not been explored in Web research, you should probably collect data in the lab for comparison with your Web study. Once a study is on the Web, it is easy to recruit a sample from the "subject pool" to complete the same materials in the laboratory using Internet-connected computers. Such comparison studies address two issues that are of concern: (1) the lack of control in Web research, compared to the lab; and (2) the different sample demographics in Web versus "subject pool" research.

There have been a number of studies comparing data between the Web and the lab. The typical finding is that Internet research yields the same conclusions as lab research (Birnbaum, 1999; in press; in press-b; Buchanan, in press; Buchanan & Smith, 1999; Krantz, Ballard, & Scher, 1997; Krantz & Dalal, in press; Pasveer & Ellard, 1998; Pettit, 1999; Smith & Leigh, 1997; Stanton, 1998). Demographics of the samples do depend on manner of recruitment, however, and the results correlate with demographics (Birnbaum, 1999; in press-b; Schillewaert, Langerak, and Duhamel, 1998).

Although the emerging trend of this research is that Web research and lab research reach the same conclusions (Krantz & Dalal, in press), there may be skepticism in your field of work if this trend applies to each new research problem. Therefore, until your

research community becomes accustomed to the results of Web studies, it would be a good idea to address this question before someone else asks it of you.

2. Problem of drop-outs in between-subjects research. In Chapter 9, you learned that even a very carefully executed between subjects study can reach the silly conclusion that 9 is a bigger number than 221. Between-subjects experiments are also plagued by another severe problem that may be more troublesome on the Web than in the lab. That problem is the problem of drop-outs. Piper (1998) warned of drop-outs in Web research, and noted that between-subjects studies on the Web can have high drop out rates.

If a manipulation is done between-subjects, and if people can select themselves to drop out of the study, it can happen that the effect of drop-outs can easily outweigh the effects of the manipulation. For example, in a drug study, those who feel better might drop out. In another study, those who feel worse might drop out, for fear that the medicine is causing more harm than good. Either way, the results do not measure the true effect of the medicine, because of missing data.

Even if the overall drop-out rates are the same in both the treatment and control groups, and even if people are randomly assigned to conditions, it can easily happen that the problem of drop-outs can make a beneficial treatment look harmful, or a harmful one look beneficial. Birnbaum and Mellers (1989) showed how treatments can lead to drop outs in experimental and control groups in such a way that the drop out rates can be the same and yet the observed result is opposite the true mean difference. By developing mathematical models to describe why people are dropping out, Birnbaum and Mellers showed that regression-based statistical methods intended to correct data for drop-out rates will not yield appropriate conclusions.

These analyses show that the validity of between-subjects experiments is severely threatened by drop outs, even if they occur at the same rate in both experimental and control groups. Unless that problem can be adequately addressed, scientists will remain very skeptical of between-subjects research. If Web research were to have relatively high drop out rates, such research will not find ready acceptance.

Reips (in press) discusses this problem in detail and recommends a "high threshold" method for recruiting to such an experiment. The idea is to pre-select participants who will be likely to complete the experiment. The experimenter asks each prospective participant for his or her name, email address, home address, work address, and other contact information. The person might be asked to come on-line to supply additional information each week for several weeks. Many people would refuse to supply the information, or would drop out for other reasons. Hopefully, those who stick it out will also finish the study.

The procedure is intended to both discourage people who are not serious in their willingness to complete the experiment, but also to obtain the kinds of information required to track down participants to complete the experiment. Only *after* the high threshold has been reached should participants be randomly assigned to conditions. That procedure is intended to restrict the subject sample before the real experiment takes place. Although the conclusions of the study may be applicable only to those very special people who meet the high threshold, if the procedure can eliminate drop-outs, it can save the internal validity of the study.

3. Multiple Submissions. A participant can complete a study, click the submit button, read the thank you and debriefing messages, and then press the *Back* key in the

browser to do the study again. That would result in a second set of data from the same person. Such repeated records are called *multiple submissions*.

Schmidt (1997a) and Reips (in press) discuss this issue, and suggest ways to solve this potential problem. Here are some suggestions for dealing with it: First, you can ask your participants to do the experiment only once. In most studies, there is little incentive to participate more than once, but those that might be in the form of a learning task or game of skill might be interesting to people to repeat. If you have such an experiment, you can ask people to report identifying information so that you can keep track of how many times they have done the study. By the use of "cookies" it is possible to track your participant's history. Schmidt (in press) describes methods for implementing these ideas on the server, which can also keep records of participation.

Second, you can use identifying information to learn if the same person has participated more than once. If you ask for name, email address, etc., you may lose some of your potential audience, but you can ensure that each person participates only once.

Third, you can use the remote address and demographic information to detect multiple submissions. In my experience, most multiple submissions come within a few minutes of each other, and appear to occur as people click the submit button and then go back to view their responses once more. These are easily detectable as coming from the same remote address, with the same demographics (age, sex, education, nationality, etc.), and in most cases, exactly the same responses. In a few cases, the same person "rethinks" the task and sends different responses the second time. In such cases, you should follow a pre-planned rule of whether you take the first or last version of the experiment from a given person.

Fourth, you can remove any motivation or incentive to participate more than once. For example, if your study offers chances of prizes to people who participate, there might be a motive to participate more than once, if each entry provided another chance to win. However, you can state in the rules that each participant may enter only once, and that multiple entries will be deleted. If the experiment is interesting to repeat (e.g., if it involves some type of video game), provide another version of it on the Web for your participants to repeat as often as they want. That way you can provide the same entertainment to your participants, while controlling the experiment.

As noted by Reips (in press) and Musch and Reips (in press), multiple submission has not proved to be a serious problem to Web researchers, and when simple precautions are taken, this potential problem can be easily handled.

4. Hackers, mischief, and malfeasance. Although the media have reported cases of people creating computer viruses, hackers attacking computers for the sake of causing trouble, computerized spying, threatening email, and other misdeeds via the Internet, such criminal activities are rare.

You should certainly take precautions to avoid being the victim of such crimes, the same as you should take precautions to avoid being the victim of robbery. However, one should not overestimate the dangers and expend too much effort worrying about how to prevent unlikely possibilities. Most people do not commit crimes, and if you reduce the incentives and opportunities, you will reduce the likelihood that you will be a victim.

A person who carries large sums of cash, who makes this fact known to a number of people in a bar, and who then falls asleep from too much to drink in the alley after insulting everyone has increased the risk of being victimized. Suppose your experiment

collected names, addresses, social security numbers, credit card numbers, phone numbers, for people who provide abortion services, and suppose you made known on the Web that your computer stores this information. You would put yourself at greater risk of a break-in, either by a hacker or a burglar, because you have announced that you have private data on controversial people. If your study does not collect sensitive data and stores data anonymously, your data are unlikely to attract much interest. In fact, you can post your anonymous data on the Web to make them available, reducing further any motive to break in to get them.

There are some obvious precautions that should be followed. Don't give out your passwords (or house keys) or leave them around. If you are going to collect sensitive data, keep a low profile. Keep your computer in a secure building and don't advertise its location. Remove data from the computer often to a secure storage site. If you are going to do sensitive research on the Web, you may want to acquire secure lines and encryption systems.

Suppose a person decides to "foil" your experiment by sending fake data to your script. A person might try to use a researcher's script that sends data by email in order to send threatening email that looks like it came from the researcher! Schmidt (1997a) discussed this problem and methods to avoid, prevent, or track down how it was done. He recommends that one should avoid systems that send data by third party email. Appendix A describes a method in PolyForm that allows only one referrer (Web page) to send data to a given script. Server-side scripts can also keep track of the referrer that sends data.

If someone did attempt to interfere with your experiment via the Web, or do other nasty things, they might easily be caught. That person would risk civil lawsuits and

criminal charges, so one would not expect a rational person to attempt such action without motivation. Although it is possible that your Web research could be attacked, it is probably more likely that you will be attacked for the cash you carry. Musch and Reips (in press) surveyed Web researchers and found no evidence that pranksters or hackers have yet been a problem.

5. Recruitment and samples. The users of the Internet are sometimes considered a population. However, I think it is misleading to treat the Web as if it were a stable, definable population. The group of people who use the Internet is rapidly changing, so it is not a stable group. Patterns of use are also rapidly changing, as more and more services are offered via the Web. The type of sample that one obtains probably depends less on the fact that the Web was used to collect the data, than it does on the procedures used to recruit the sample.

People who use the Internet are not a random sample of people in the World; people who volunteer to participate in a Web study are not a random sample of Internet users, and people who participate in behavioral experiments on the Internet are not a random sample of those who volunteer. For example, it might be that at a given time, 49% of the population are male, 60% of Web activity might be by males, and yet 65% of participants in a psychology experiment on the Web are female. In other words, do not expect samples obtained from volunteers on the Web to be representative of people on the Web, and do not expect the Web to be representative of the world's population.

The fact that there are many sub-populations available on the Web is a potential advantage of the method. By using different methods to recruit (Buchanan, in press;

Birnbaum, 1999; Schillewaert, Langerak, & Duhamel, 1998), different demographic groups can be tapped. Data can be analyzed separately for each method of recruitment.

Because large samples can be obtained on the Web, one can analyze the data separately for different groups. One could analyze data as a function of education, levels of wealth, age, gender and other demographic characteristics. With large samples, one can find out if results obtained with college students also generalize to more highly educated people, less highly educated people, or whatever group is of interest.

When you plan to compare people recruited by different methods, consider placing your experiment in several different Web sites. Then recruit by different methods to the different Web sites (which contain the same experiment with a different hidden variable indicating the recruitment). You can also ask several questions to find out what brought the participant to your site. Even if you use different methods for recruitment, intended to reach specific target populations, those recruited may tell their friends, so that you end up with participants that you did not plan to recruit. The questions in your test or experiment can help you identify people recruited by word of mouth, for example, from those who responded to your notices.

Do not expect to find large differences between demographic groups in conclusions of a well-designed study. There may be some areas where large demographic correlations are found. However, from the study of individual differences, it is known that correlations between measures of individual differences and other behavioral measures are typically quite modest. These modest correlations, discussed in Chapter 10, mean that experiments in such fields as perception, cognition, and sensation should not be expected to yield different conclusions in different groups.

6. Lack of Experimental Control. Experiments in the lab have greater control of the conditions than exists in Web studies. To understand this point, imagine giving an exam to a class of students either in the classroom or via the Web. Suppose the exam is supposed to be done without reference to notes or books and without help from others. The classroom version could use monitors to make sure that these rules were followed.

In the online version, the instructor would not have the same control. The instructor giving the exam could ask the students if they referred to books or got help from others. However, the answers to such questions might not be accurate. Thus, the instructor would never know for sure if the students had followed the instructions.

There is probably less motivation to "cheat" in a Web study by violating rules than there would be in taking an exam for a grade. However, the lack of control of conditions should be clear from the analogy. The Web researcher can ask the participants to follow certain procedures, the researcher can ask the participant what procedures were followed, but the researcher can not know with the same certainty as in the lab what the conditions were.

There are two types of effects in violations of control. One effect is random, which merely adds more "noise" to an experiment. The other type of effect would be a systematic bias produced by a lack of agreement between the researcher's intended procedure and what actually happened in the study.

Early Web researchers worried that such research topics as the probability problem in Chapter 5 and the logic problem in Chapter 7 might give very different results in the lab and on the Web. If people are at home, alone with their computers, they might take the time to construct a truth table for the logic problem, for example. The fact that

the same types of results are obtained via the Web as are typically found in the lab suggest that in research domains studied so far, the lack of control in Web studies has not been crucial to results. The potential consequence of the lack of control provides the reason to follow the suggestion that you should also collect data in the controlled conditions of the lab.

B. Steps in Planning Your Research

When designing a research study, I think you should consider each of the following steps.

Step 1. What are the theories? What would *disprove* them? The first step in a psychological research project is to consider two or more rival theories of the same phenomenon. If you consider one theory to be plausible, ask yourself: what would disprove this theory? Think of tests that you can do that will decide which of two rival ideas is more plausible. Remember that disproof is a stronger form of evidence than finding data consistent with a particular idea.

This point cannot be emphasized too strongly. Too many studies are designed as follows:

"If bread is made of arsenic, and if everything made of arsenic is good to eat, then bread will be good to eat (those who eat it live). So, I plan to eat bread, and if I live, it will prove my theory."

The argument is fallacious. Eating bread does not prove that it is made of arsenic, nor would it prove that arsenic is good to eat. The fallacy of the argument is that one “proves” a theory by looking for evidence consistent with the theory. Instead, think of

looking for implications of a theory in which the theory might fail. In this case, you should be able to imagine several tests that would disprove the above theory.

Many students set out to "prove" some notion by looking for evidence that might be consistent with it. Remember: they are like people eating bread to prove it is made of arsenic. This concept is probably the hardest lesson to teach in experimental science.

Remember the story of Kluegerhans, related in Chapter 1. The investigators in that study made manipulations that showed the conditions under which this clever horse could *not* get the answers right. From those experiments, it was learned that the horse could answer questions only if the audience knew the answer, and only when the horse could see the faces of the audience. Remember as well the logic problem of Chapter 7. People often fail to understand how to test a proposition such as *if A then B*. Scientific theories are exactly in that form, if the theory is true, then *X* should happen. In Chapter 7, people missed testing *not X*. The moral of this story: learn the power of negative thinking. Design an experiment to disprove a theory.

Step 2: How do you plan to analyze the data? Before you prepare your experiment, plan your data analysis. Instructors of statistics dread the following question: "I have just finished a year-long study that was a great effort to complete. But I do not know how to analyze the data. Can you help me figure out how to analyze the data I just collected?"

The answer to the question is: "If you did not know how you were going to analyze the data when you designed the study, you should probably throw your data away and start over. Unless you planned your analysis, the odds are that your experiment and its data are worthless." There may be an exception to this unfortunate problem; perhaps

someone, somewhere, once upon a time who did not know how he or she would analyze the data and yet designed a good experiment, but I have not yet heard of one such instance in thirty years.

Students sometimes think that first you do the study, then you figure out how to analyze the data. Nothing could be more wrong. The statistical analysis is a plan to answer the question of the study. Unless you know *how* your data will answer your research question, then you have no business collecting data and wasting everyone's time.

Step 3: Plan the Study's Design. Plan the design of the study, being careful to make sure that you have a chance to disprove a theory. What is known about the phenomenon that you are planning to study? What do previous experiments show? What do theories predict?

In my area of research, decision making, I can use calculators to compute what should happen on the basis of previous models and parameters published in the literature. One can check to see that rival theories make different predictions for the experiment before one collects the data.

Step 4. Plan the instructions, materials, and ethical review of the study. Studies should not put people's lives, health, property, or reputations at risk. If your study is a typical, harmless, psychology study, the ethical review should be easy. However, it is a good idea to be even more careful in materials you plan to put on the Web than for use in the lab, since those materials may be viewed by people all over the globe who have different ideas of what is insulting, annoying, or upsetting. In his suggestions for student researchers, Paul Kenyon (URL http://salmon.psy.plym.ac.uk/mscprm/forms.htm) suggests that you think of yourself as

lost in an inner city in a foreign nation where you stop in a bar to ask for directions, and you realize that everyone knows each other but not you. Adopt that attitude when you plan your Web experiments.

Step 5: Pilot test your materials with a few friends. Run your experiment with a few friends, and have them tell you where the instructions were not clear. It is better if your friends are not in your field of study, as they will raise more questions with your instructions. Analyze the data from the pilot tests, to make sure that you know how you will analyze the data, but don't expect to find decisive results with a small sample.

Step 6: Put your materials on the Web, but do not publicize it until you conduct some additional pilot tests. Participate as a subject yourself. Check that the data are being properly sent to the file. Participate a second time yourself, this time responding with the stimuli, and make sure that the data return to the file in the proper order. Check out your experiment with different types of computers and different browsers. Correct any errors in the experimental material that you find. Next, conduct a local pilot test with several volunteers. Again, check the data and make sure that your method of analysis will work.

Make sure that your study satisfies the ethical review. Will the knowledge gained be worth the time and effort that you and others put in to do this study? Ethics will be discussed in greater detail in the next section.

Step 7: Publicize your study. Who do you want to serve as participants in your study? Your method of recruitment will determine the type of sample that you obtain. The Web is probably a good place to seek rare and unusual participants. For example, you could probably do well recruiting on the Internet if you needed mothers of triplets,

transvestites, or another type of special participant. By searching the Web for your participant's interests, you will develop ideas of how to recruit them to your study. The second question to ask yourself is why do they want to help you? This step will also be the topic of a separate section.

C. Ethical Review

The purpose of an ethical review is to find out if the likely potential benefits of the research outweigh the risks and costs of the research. Medical research that risks the lives of patients must have the potential benefit of saving lives. Research that might bore some people for a period of time should have a benefit that outweighs the cost of that boredom.

Why do people agree to participate in your study? In most cases in psychology, they do so to get extra credit in a lower division psychology class. On the Internet, people will participate if they believe that some benefit will accrue to you, to themselves, or to science. People are willing to complete questionnaires just for the sake of helping others learn more.

It is unethical to promise something to people in order to gain their agreement to participate and then fail to fulfill your promise. Such a failure is a type of fraud. For example, if you promise to pay people to participate, then you must uphold your end of the bargain and pay them. If you promise to offer a people a chance to win a prize, then you must carry out the contests honestly. You should have a neutral witness oversee the operation to be able to certify that the procedures were followed correctly.

If you get people to participate in order to help you complete your experiment, then you should be certain to do good research and complete your experiment. If you

promise to calculate a test score and give people information about themselves, then you should make sure that people get the feedback they were promised. If you offer to post your results to the Web and contact the participants, then you should do that.

Most people feel that the same standards of ethics should apply to Web research as to laboratory research. However, Web researchers have additional concerns about ethical principles. Web researchers are particularly sensitive to any studies involving deception that involves posting lies on the Web. You should be careful to avoid doing any study that would risk making people wary of studies on the Web. That would give psychology and the behavioral sciences a bad reputation and cause a number of angry people to come looking for you.

On the Web, it is easy to copy the work of others. There is a tradition of posting materials to the Web in order to share ideas with people and make "gifts" to the world. People like to post information that they think will be interesting, entertaining, or educational for the benefit or amusement of others. The tradition of sharing, however, does not mean that you can freely copy the work of others and use it as if it were your own.

For example, people post research papers to the Web before they are published, so that other researchers in their field can learn of their results and theories as soon as possible. However, if you were to copy that work and present it as if it were your own, you would be violating ethical principles and probably violating the law as well. Certainly, if you were to attempt to publish that work as your own, or to submit it as a class assignment, you would run the risk of severe penalties for academic dishonesty and fraud.

If you find something useful on the Web, you can ask the author and copyright holder if you can have permission to use their photograph, table, program, or image. Some Web sites contain announcements telling what you can do and cannot do with material available in their sites. For example, some people allow you to use their material, if you identify their work and ideas and give appropriate credit in the same way you would when citing a published article in the list of references. You can consider that material on the Web is "published," and treat it as you would any other printed work.

Consider when you place an experiment or a file on the Web that millions of people will have access to it. Therefore, you should avoid posting anything there that you would hate to see others "steal." You should also not post anything of your own or anyone else that is personal and private. The U.S. House of Representatives set a bad standard by posting to the Web testimony obtained without cross-examination before a grand jury in the case of the Clinton/Lewinsky scandal. Because the proceedings of a grand jury are private by law, that is the kind of material that psychologists would consider unethical to post. Can you imagine a clinical psychologist posting the secrets of clients on the Web? Such behavior would lead to losing the license to practice and expulsion from the APA. It would also open the person to civil lawsuits claiming damage. The ethical standards of the APA are available on-line, and are linked in the examples to this chapter (http://www.apa.org/ethics/).

King (1996) discusses research on Online communities, where some people were very unhappy with how their Internet communications were reported by researchers. The issues raised in that article should be considered by those planning to do such research.

The Internet makes a person's actions more powerful, for either good or bad. An indiscretion in former days might have resulted in a few people being hurt or offended. On the Internet, you can offend millions.

The good side of the issue is that science is becoming more open and transparent. By posting experimental methods and (anonymous) data on the Web, more researchers can gain access to data and to methods more quickly than was possible with print media. This will enable science to progress more rapidly.

D. Methods for Advertising a Web Study

1. Use a descriptive title for your experiment as the title for your Web page. If your experiment's title is "experiment" or "home page," it will not give anyone enough information to know by title if they want to visit that file. The title of the document is not only displayed at the top of the page in the browser, it is also sent to search engines that list search results. Suppose you conducted a search for "reaction time" and you got the following three entries. Which one would you click first?

Page 6

Experiment 2

Experiment on Choice Reaction Times

I think you would click the title that matched your key words.

2. Use `META` tags in the head of your document to describe your experiment. `META` tags go in the head of a document and help search engines determine the content of a page. Here is an example of the HEAD of a study on choice reaction times:

```
<HTML><HEAD>

<META NAME="keywords" CONTENT="Reaction time, decision making,
experiment, science, research, psychology, CRT, choice response time">
```

```
<META NAME="description" CONTENT="Participate in a choice reaction time
study. Takes 20 min. Participants will be given estimates of their
decision time and reaction time">

<TITLE>Choice Reaction Time Experiment</TITLE>
</HEAD>
```

Note that the above tags specify the time required and the potential benefit to the participants of getting feedback on their decision times.

3. You can publicize your experiment by email to your friends and family, asking them to ask their friends to participate. Such word of mouth may have a snowball effect, if your study is interesting and fun to experience. However, if it is boring, then this effort will likely end with your family.

4. You can submit your site to the popular search engines. Once a search engine has cataloged your site, then people who are looking for your topic will find its title as one of the results of their search. That may draw some people to your site. A study of sexual behavior (Bailey, Foote, & Throckmorton, in press) was advertised only by search engine and has been filled out by over 10,000 people since 1995, despite the fact that the questionnaire is quite long (over 400 items). Perhaps there are a lot of people looking for sex on the Internet.

There are services that enable you to suggest your page to several search engines at once. For example, Submit-it can be reached from http://www.submit-it.com.

5. You can advertise by conventional means. You can put up posters on your campus, use flyers, and make announcements to classmates in other classes. If your study requires only a small sample, you might use the Internet as a data collection/entry device and strictly use the conventional "subject pool" to recruit subjects, and test them in

conventional, computer-equipped laboratories. You might also offer the participants the opportunity of serving in the computer lab or of completing the experiment from home.

6. If your research deals with a special population and if the research might potentially have benefits for that population, you might be able to get relevant organizations (that deal with your population) to post an announcement in the organization's Web site. If the special population has an email list, and if a member of your population vouches for your research, that person might be willing to send an email or post to an electronic bulletin board information about your study. An announcement by a member of a relevant Usenet newsgroup might also be appropriate. As Schmidt (1997a) notes, there is strong disapprobation of “spamm”. If you send or post messages unrelated to the newsgroup’s interest, your spamm might provoke hostile responses, or *flames*, from members. That consequence would backfire by making people hostile to your study, and you will lose time and lose face apologizing for the spamm. See Hewson, Laurent, & Vogel (1996) for other suggestions for recruitment.

You have to be careful not to advertise on the Web in a way that might provoke flames or compromise privacy. For example, suppose you were to obtain a list of people who belong to a club for persons with an unusual and socially unaccepted sexual paraphilia. If you sent them all an email request to participate, in which everyone's address was in the header of the email, then you should not be surprised when a number of angry and hostile people come looking for you. Everyone on that list would see that their names were sent to many other people.

You would do better to ask a member of the club to forward your message, or to post your message to the club's bulletin board or Web page. People do not like "junk"

mail in their email anyway, so be very careful of any idea for advertising your study that resembles a chain letter. If an organization sees that you are a serious, ethical, and responsible researcher, and if the members conclude that the information gained in your study may help to understand issues that are of importance to organization, you may get a good deal of help.

You should be careful not to send long messages asking people to participate—people are annoyed by long email. Do not send attachments explaining your study. People hate to receive unsolicited attachments, even from people they know, because attachments can carry viruses. Attachments also clog up the email system and will cause mailboxes to become full. If you are going to send email, keep it short and to the point. Include a link to any lengthy material, which you should place on the Web. On most mail utilities, a complete URL will become a "hot" link that can be clicked to send the reader to your study or to any lengthy materials you want them to read. A sample email request might be as follows:

> I am conducting a study of attitudes toward driving. If you drive a car, you can help my research. The questionnaire can be taken on-line and takes 5 minutes to complete. The study can be reached at URL http://address.ext/document.htm. Results will be posted on line by Jan 1, 2001. Questions can be sent to Name, Address, Phone Number. Email: mailto:user@address.comain.

Note that the example used two "hot" links, one for the Web address, and the other for email. Most people using mail utilities will be able to click these links to reach your study or to send you email. Note also that the example gave your name, your address, and phone number. These should be your "work" address at a respectable university or research institution.

Most people on the Web are happy to be of help, if they think that your study will learn something. Many people are willing to help you for the sake of helping you out. You should live up to their expectation and do good work to deserve the effort they give to you.

E. Summary

This chapter presented some advice and considerations in planning and conducting Web research. Potential problems of discrepancy between lab and Web research, drop-outs in between-subjects designs, multiple submissions, mischief, recruitment and lack of control were discussed. Solutions were suggested for addressing these issues. A set of procedures was suggested for planning Web research. It was urged that investigators be clear on the purpose of the research and how the data obtained will answer the question before data collection begins. Procedures for ensuring that the experiment is ready were suggested. The ethics review of research was discussed, along with some issues that are particularly sensitive to Web researchers. Deception and false information should be avoided at all cost, so that behavioral research will not acquire a bad reputation. Ask permission to use materials found on the Web and give proper credit. Methods for recruitment were discussed, including the idea that different ways of recruiting might produce interesting differences in the samples obtained.

F. Exercises

1. List methods for handling multiple submissions.
2. Why are drop-outs a problem in between-subjects research? What about drop-outs in within-subjects research?

3. List some of the ways in which control is reduced in a Web experiment compared to a lab experiment. Do you think these variables would matter in your area of research?
4. Read the APA ethical guidelines. What are the key tenets of ethical behavior in research?
5. List methods for recruiting participants to a Web study. Do you think that people recruited by different methods would give different results in your research area?

6. Project idea: Ask scientists to judge the potential risks and benefits of research in your area of research. To establish a context, your judgments of risk can include everyday risks such as *driving a car in the city for 1 hour*, *eating at a fast food restaurant*, etc. For example, which activity is more likely to lead to accidental death, *serving 1 hour in a reaction time experiment* or *driving 1 hour in the city*?