

Research on the Internet:

Issues and questions

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Paper presented at the annual meeting of the  
Association for Practical and Professional Ethics<sup>1</sup>

The purpose of this paper is to examine the use of the World Wide Web or Internet as a research tool. Specifically, I initially was interested in the extent to which federal guidelines regarding the review of experimental protocols for informed consent were being followed, in spirit if not in fact. As my examination of this issue proceeded, I decided I had been drawn into a deepening pool of important research issues raised by research being conducted on the internet. These issues include (but probably are not limited too) the following questions:

1. How can informed consent be obtained over the internet?;
2. Are internet data sets secure and confidential?;
3. Does debriefing mean something else for internet participants?;
4. Are internet participant samples less (or more) valid than samples drawn from the population at large?;

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<sup>1</sup> This paper was presented at the Annual Meeting of the Association of Practical and Professional Ethics, Cincinnati, OH, March, 2001.

5. What happens when the results of internet studies differ from those conducted in the laboratory?;
6. Can clinical trials of psychological services be carried out using the internet?; and
7. Are ethnographic and other observational experiments that focus on internet participant behavior proper?

These and other questions regarding the participation in research were examined by the National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research. The Commission was established as part of the National Research Act (Public Law 93348) which was enacted in 1974 and was chaired by Dr. Thomas J. Ryan. The Commission's report, known as the Belmont Report (DHEW Publication (OS) 78-0012, 1978) contained a number of recommendations that changed the way research with human participants would be conducted. For example, the Commission recommended the creation of institutional review panels who would have the responsibility of protecting human participants in research, particularly biomedical research. The authors of the Belmont Report established a strong foundation for procedures that would assure that the best interests of individual research participants were properly weighed against the need to learn and conduct research. These protections were grounded in three basic moral principles: Beneficence, Respect for Persons, and Justice.

For the authors of the Belmont Report, **Beneficence** was "understood in a stronger sense, as an obligation." Two principles were stated "as complementary expressions of beneficent actions in this sense: (1) do no harm; and (2) maximize

possible benefits, and minimize possible harms.” Thus the authors of the Belmont Report recognized the underlying conflict that exists in research – the advancement of scientific knowledge **vs.** the improvement of the health and welfare of the patient. In practice, implementation meant that investigators must assess both the risks and benefits associated with a research project. Often those risks are born by the research participant. And just as often the benefits accrue to society at large and not specifically to the research participant. When the goal of research is the advancement of knowledge, providing a cure or improved treatment to a the specific participant (who is a medical patient) is of secondary interest. However, beneficence must be seen in concert with the principle of respect for persons. Thus the informed consent information must provide an assessment of the risks (real and potential) to the individual as a result of participating in the study. The informed consent information also should tell the potential participant of the benefits, both societal and personal, that **may** accrue from participating in the research.

**Respect for Persons** referred to “... two ethical convictions: first, that individuals should be treated as autonomous agents, and second, that persons with diminished autonomy are entitled to protection.” These convictions translated into a requirement that research participants be permitted to decide for themselves, without coercion or undue pressure, whether they wish to participate in a research project. Those potential participants whose capacity to decide for themselves was limited should be represented by a parent or guardian who was legally charged with protecting their interests. These principles were implemented in the requirement that research participants must execute an **informed consent** to be in an experiment.

Until recently, the third principle of the Belmont Report, **justice**, may have been the most neglected of the three principles. Justice not only requires that the benefits to society that accrue from research be distributed equitably to members of that society, but also that the opportunity to participate be equitably distributed. Just as all groups must benefit, so too must all groups be studied. If the class of participants (not just the participants themselves) are denied the benefits of the research, an injustice has occurred. Implied in this principle is the requirement that populations of convenience should be treated very carefully in research. This is particularly true when the population of convenience is defined racially, by ethnic background, or by income. Too often the poor provide the data and receive none of the benefits. The Tuskegee studies exemplified this kind of injustice. But the same issue is of concern for the college populations who serve in so many research projects. College populations are not representative, and results from research using college populations alone may be skewed in unknown directions. The implementation of this principle is behind new requirements for inclusion of minority groups, women, and children to have the opportunity to participate in research projects.

**Sites that Post Psychological Research.**— With the principles of the Belmont report as a background, I now wish to turn to what is “out there” on the internet. Although the “what is” and “what should be” differ somewhat, it is comforting to learn that some professional organizations presumably require all research posted to their web-sites to be peer reviewed by institutional review boards (IRB’s). It would be nice if the participants in the research (and the public) knew whether that assertion is real or an illusion. One cannot always determine that by inspection of the experiments.

Experiment web sites that make research projects available to participants are sponsored by the American Psychological Society and by the Social Psychology Network. An analysis of each of these two sites produced the following results:

APS – <http://psych.hanover.edu/APS/exponnet.html> – With more than 120 links to experiments (some of which are experiment sites themselves) the American Psychological Society sponsors the largest of the internet research sites. A review of the 120 links at the beginning of 2001 resulted in the message “File Not Found” for 17 sites, 25 links simply failed when I attempt to go to them (these failures could reflect server errors, down computers, or abandoned links). Finally, 8 links had messages that the studies were complete (with links to the results) and one was suspended because it received too much data too fast.

SPN – <http://www.socialpsychology.org/expts.htm> – the Social Psychology Network’s internet research web site is structured much differently from the APS site. First of all, the HTML page features a link to a “Terms and Conditions” page as well as the links to experiments. The Terms and Conditions page clearly outlines principles of the American Psychological Association policy on research integrity. For example, users of the site (those who submit experiments to post) agree to be “honorable” and abide by a set of general good practice research policies that includes not using false names or making false claims, debriefing subjects, obtaining informed consent, and receiving IRB approval. A brief examination of the experiments at the SPN site indicated that they were, in general, conforming to these “terms of use.”

## **Informed consent and the internet**

Informed consent represents a potential weakness of research conducted on the Internet. There are some questions about internet research and compliance (or at least conformity) with good research practice. On the internet, the potential participant is directed to the experiment site from one of the sites listed above, from a classroom assignment, or from an internet search. Upon reaching the site, one finds a description of the experiment, usually (but not always) a paragraph or more. For example, consider the cognitive experiment posted to the APS experiment web site by Christopher Wolfe of Ohio University (<http://tornado.wcp.muohio.edu/wolfe/consent.html>). Wolfe describes his experiment, the time required, risks and benefits, and asks participants to click on a button labeled "I agree to participate," after which the experiment is presented. While Wolfe requests that participants be 18 years of age, there is, of course, no way to assure that the age requirement is met. Most experiments posted to the internet operate in a similar fashion. The experimenter has to assume that the participant is actually qualified and has read the consent information. There is no way to verify that the participant is over age 18, or indeed is the person represented in the demographic data requested on the first page of the experiment proper.

How is this process different from what happens in face to face experiments? There is one major difference – while in a face to face experiment, the investigator cannot be absolutely certain the individual who came to the session is not misrepresenting his or her identity, some misrepresentations cannot easily occur. For example, a young adolescent cannot appear and represent himself as a young

adult. Nor can a male easily represent himself as a female. But should the person who made the original commitment to participate become ill or busy, he (or she) could have a roommate or friend show up at the experiment site and take his (or her) place. I know of no experimenters who ask for a picture identification or student identification card.

Another difference in the consent procedure is that in a face-to-face experiment, the investigator can observe the participant read and sign the consent form, can ask questions of the participant, and can answer questions from the participant. While this same sequence of events could take place using the internet, it is unlikely that a potential participant will send an email and wait for a response before deciding to participate (note that investigators who use a mouse-click consent procedure ordinarily list their email address for questions). In fact, the analogy can be made for most readers to software license agreements. When we install a new software program, many users do not bother to read the entire license agreement, but instead go the “agree” button, click on it, and install the software.

The solution to these problems would be to use electronic signatures and interactive consent forms. The former would (hopefully) be a more reliable means for identification and the latter could be used to ask questions about the consent material to assure that the potential participant is reading and understanding the materials. Such a procedure would be particularly valuable for clinical research conducted over the internet. In the setting of a clinical experiment or trial, patients are providing private and sensitive information to a therapist - researcher. Patients in clinical trials often expect some direct benefit to result from their participation – usually improved

physical or mental health. The consent process in clinical trials normally emphasizes that the patient is a research participant, and that the purpose of the research is to learn what treatment is most effective for a population of individuals who suffer from the same symptom or problem. That is quite different from an expectation that “I will get better,” an expectancy of many clinical trial participants (and sometimes of their referring physicians as well). The face-to-face forum would seem to be much better suited to assuring that the participants understand that difference (although in practice that expectation may not be realized).

### **Confidentiality and data security**

Respect for persons implies obligations of a positive nature. Beauchamp & Childress write that in research, investigators have a “*positive* obligation of respectful treatment in disclosing information and fostering autonomy.” (Beauchamp & Childress, 1994, p 126.) Participants in a National Institute of Mental Health workshop on internet research expressed concerns that confidentiality could not be maintained in a internet environment populated by malicious hackers who may as readily steal medical information and research results as they do credit card numbers and bank records.

What information should be kept secure. Certainly the personal information about specific individuals who participated in a research study should not be made available directly or indirectly. But this sort of confidentiality is probably less of a threat to individuals who participate in internet research than previously thought. Risk in psychological experiments is generally conceived of as a contrast to what an ordinary individual is exposed to in the normal course of events. For most individuals, more

significant sources of personal information exist in bank records, credit card files, and the personal preference profiles developed by web merchandisers.

However, information may be gathered in some research studies that could be damaging to the individual. For example, the data files from studies of sexual behavior and/or preference, past relationships, belief systems, etc., could lead to damaging disclosures. Suppose an individual in a contested divorce proceeding learns that the spouse had participated in a survey of sexual preference and behavior. and some precautions should be taken. Sensitive information about research participants should be removed from servers that are connected to the Internet. In addition, the researcher can use a secure server to collect data, and may discard any possible identifying information (e.g., email addresses, IP address for computers, etc.). The likelihood of participants being held hostage to data is probably no greater for the internet than it would be for the lab (where someone can break in or even get information using FOIA requests).

**Beneficence:** I believe beneficence is shown in experiments by the degree to which participants are informed of the goals and nature of the experiment and by designing experiments to give something to the participant. In psychological research, that benefit is often the satisfaction of contributing to the scientific process. The typical statement from many psychological experiments that describes the risk/benefit analysis is that “the ratio of negligible risks to some benefits is positive.” Or, the risk/benefit ratio comes out on the side of supporting the research. While that statement is true (perhaps damningly so) of psychology experiments, it does not

address the one aspect of helping that face to face experiments can provide – thorough and effective debriefing.

I believe that participants may benefit from what they learn about themselves in an experiment, but only if they have information about their performance and about the context of that knowledge. Thus debriefing subjects, the primary mechanism for meeting the test of the risk/benefit analysis, is just as essential for internet experiments as it is for experiments we create in the university lab. But debriefing is not a common occurrence on the internet. Musch & Reips (2000) surveyed experimenters who were conducting research on the internet. They report that only nine of 34 experiments included individual feedback to each participant. More general information was provided about the goals and hypotheses of the research in 26 experiments. And I saw little evidence in my informal survey of experiments at the APS web-site. Typically an experiment ended when the participants submitted their data. Feedback was provided only either by listing the email address of the investigator or when the study was complete (with a link to a written review of the research). All experiments approved by for our psychology department must provide written debriefing information. The same standard should exist for the internet.

**Justice:** There is one aspect of Justice that clearly is better served by the internet than by the typical university laboratory – and that is a broader cross section of the population may be sampled. The university or college student population is not a representative sample. It too is a convenience sample. Even for those of us who do research with children in the public schools, the population rarely is very representative. For example, in West Lafayette, our public schools lead the state in

required testing results, usually 95% (or more) of the graduates go on to post-secondary education, and many of the parents are students themselves (which often skews the income level of the population in weird ways). An internet experiment that sampled from public schools around the country would clearly have a more representative sample.

Musch and Reips (2000) and Bailey, Foote, and Throckmorton (2000) each report information on the makeup of the internet sample in a volume of chapters edited by Michael H. Birnbaum (2000). The data from these two chapters is somewhat contradictory, and raises some interesting empirical questions.

Are the participants in an internet study a representative sample? Is that sample more or less representative than what we obtain using other venues? The answers to these questions may direct us to carry out more of our research on the internet. The difficulty is determining whether people are being truthful in their responses on demographic information. Gender, age, and ethnicity all may be faked more easily on the internet. However, we should not make the mistake that seeing a subject face to face is a cure-all for subject fraud or misrepresentation. College students may send their roommate because they are busy, they may lie about class rank, grades, family, etc. But it is unlikely that they can lie about gender, age, or ethnicity. Internet participants may lie about some things, but cannot lie about others. For example, geographic location can be traced to specific computers. In all, the real question is whether untruthful participants can distort the findings of research (whether they are in college or at a computer terminal).

Musch & Reips asked web experimenters whether they ran their experiments with non-internet participants as well as internet participants. If so, comparisons of findings could be made. 18 experimenters did so. Musch & Reips report that “almost all experimenters observed complete or good agreement between their Web and lab data.” Low agreement was found in only one experiment (and the experimenter attributed that to characteristics of the stimuli as presented on the web).

Because Bailey et al (2000) report an experiment specifically designed to contrast internet collected data with a college survey, I will examine their study in more detail. This study concerned human sexual behavior. A series of questions, some very sensitive, were administered to both college classes and to internet “denizens.” The results were compared with previous studies of human sexuality – the Kinsey studies of the 1940's; magazine surveys in *Psychology Today* (Athanasίου, Shaver, & Tavis, 1970) and *Redbook* (Tavis & Sadd, 1976); and a study by M. Hunt (1974). Of these previous studies, only the Kinsey studies and the Hunt study attempted to obtain a representative sample. The two magazine surveys were self report data by individuals who chose to respond (perhaps not unlike an internet sample). Bailey et al collected data from some 600 college students (of which 400 provided complete data) and just over 7200 individuals from the internet (of which 3000 were usable). The next question for this study was the appropriate comparison group – Kinsey’s studies from the late 1940's or the more current studies and surveys. The primary comparisons were with the Kinsey studies because these data are “the best available.” While one might question that judgement, for many of the variables in this study, data are included in tables from all of the studies and surveys so that the

reader can make an independent judgement. What I was interested in were the comparisons of the internet and college population.

With regard to demographics, the data collected indicates that the college sample is female (61% to 46%), younger (23 vs @26), better educated (but with fewer completed degrees [sic!]), ethnically more diverse (e.g., Asian: 24% vs. 4%; Caucasian: 28% vs. 84%), more likely to be unmarried (90% vs. 64%), overwhelmingly heterosexual (96% vs. 83%). In terms of the questions of distributive justice, the focus of this inquiry, the college population seems over-represented on some variables and under-represented on others.

With regard to results on behavioral variables, again there are differences between the two populations. For example, three of the questions asked related to sexual experience with a partner (same sex genital contact; opposite sex genital contact; and self-stimulation). The College sample reported much less same sex genital stimulation (11% vs. 38% for males; 12% vs. 68% for females), the same amount of opposite sex genital contact, and less self stimulation (77% vs. 93% for males; 56% vs. 96% for females). Similarly sized differences occurred with other variables.

I am not reviewing this study in more detail. The primary question is whether the answers obtained in this study by the two different populations differ, and what that difference might mean. Bailey et al. conclude “although some demographic differences emerged, our college student and Internet respondents did not differ on the majority of the behavior characteristics assessed, and differed only moderately on

some of the attitudinal variables” (Page 166). For demographic variables, comparisons were made with census data and it was clear that the Internet population was not representative (reflecting the lack of access to the Internet by large segments of the population). However, the college population also is not representative, just in different ways (e.g., more diverse rather than less diverse). On the behavioral measures, I respectfully disagree with the authors. I think there are observable differences between the two groups – differences that could lead to very different conclusions about population behavioral characteristics. Unfortunately, Bailey et al do not report any significance tests comparing the proportions of responses in the two groups.

## **Conclusions**

I spent more time on the question of Internet samples and results than on the other issues for a reason. Two of the major concerns of the NIMH workshop were that the samples were not representative (leading to “incorrect” results) and that minors might access materials that would be inappropriate for their age group.

With regard to the former, I would submit that neither the Internet nor the College sample is typical of the population at large. For studies with major policy implications, we need a better way to access the relevant population. The internet will not solve the problems of representativeness, but it might be a closer approximation than the college population.

The internet is, in my view, more susceptible to “fraud” and “misrepresentation” by research participants. And there is a danger that minors will find access to proscribed material, like the materials used in the Bailey et al study. Short of requiring

on line visual checks, there probably is no way to counter this tendency. Some part of the Bailey Internet sample may have misrepresented their credentials, but we will never know how much. I suspect that the number will be low. The population willing to deceive the experimenter will probably never be large, and will generally take the form of individual “pranks.” And that danger is probably no greater than that of college students “faking” or “making up” data for our live sample studies.

Thus I believe that the basic “danger” of research data collected over the Internet is with the potential access to minors of adult materials. I have no clear answer to that issue except to say that extreme caution must be exercised in the conduct of studies with Internet populations. Perhaps IRB’s should not approve such studies until procedures are developed to restrict access by minors. But for other studies, after review the data and the literature, and much to my surprise, is find that for many social psychology studies, perhaps most cognitive studies, the Internet will provide a mechanism for collecting data that is fast, economical, and accurate.

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## Additional SPN Guidelines for Web-Based Studies

In the case of web-based studies that have a link in Social Psychology Network, informed consent can be "documented" by requiring participants to click on a link or image that (1) indicates acceptance of the consent form, and (2) advances participants to an online study web page that is otherwise inaccessible to visitors. The consent form should also clearly identify the institutional review board that approved the study (e.g., the Wesleyan University Institutional Review Board), the name and email address of the principal investigator (or faculty supervisor if the study is a student project), and should include information on who participants can contact if they wish to bring a complaint or get further information (e.g., the name and telephone number of a departmental chairperson).

In addition, studies linked in Social Psychology Network should not exceed minimal risk (i.e., the level of risk found in daily life) or involve deception, and consent forms should inform participants that responses transmitted over the World Wide Web may not be secure (unless the study is using a secure server with https rather than http). To see a consent form that can be used as a template for web-based studies, see [Sample Consent Form](#).

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Thus 35% of the links on the APS page failed to lead to an experiment. Seventy experiment links had functioned (including two sites with multiple experiments). I

examined these 70 sites to determine whether a consent form was being used, whether the experimenter discussed privacy issues, and whether there was a reference to an IRB approval. Here is where my initial discouragement was greatest. Only 13 of the 70 active links indicated that they had IRB approval for the studies (I listed an additional 10 studies as probable since they had information about contacting a university official or used consent forms very typical of those required by an IRB. Thus my initial conclusion, and concern, that studies were being posted to this internet site without consultation for IRB review. That impression was countered only after personal communication with John Krantz, web master of the site. Krantz indicated via email that he did in fact require IRB approval by the investigator's institution for all studies posted. Krantz further indicated that he personally reviewed the study and has rejected studies that did not conform (apparently to his expectations of acceptability). Why the discrepancy between my first impression and what Krantz reports? I cannot answer that question yet, but it is clear to me that subject consent may be ignored by some investigators who use the internet to conduct their research (and who use the APS site). One important caveat – many of these and other internet studies would qualify as "Exempt Research," and would not require formal IRB review. Their data collection procedures are anonymous and no names are collected (however, at a minimum, these investigators should tell that to the potential subject). However, even exempt research must be certified as exempt by the IRB – the investigator cannot make that determination.