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How Informed Is Online Informed Consent?

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We examined participants' reading and recall of informed consent documents presented via paper or computer. Within each presentation medium, we presented the document as a continuous or paginated document to simulate common computer and paper presentation formats. Participants took slightly longer to read paginated and computer informed consent documents and recalled slightly more information from the paginated documents. We concluded that obtaining informed consent online is not substantially different than obtaining it via paper presentation. We also provide suggestions for improving informed consent—in both face-to-face and online experiments.

Keywords: Internet research; ethical issues; informed consent

Informed consent ensures that potential research participants are informed about the nature of the research project in which they are invited to participate (Fischman, 2000). Potential research participants are informed about the research procedures, the risks they might face in participating, possible benefits of their participation, their right to decline to participate or withdraw without being penalized once they have begun participating, any limits to confidentiality that might occur, incentives for participating, and the contact information of the researchers should the participant have any concerns about the study (American Psychological Association [APA], 2002; Medical Research Council of Canada, National Sciences and Engineering Research Council of Canada, & Social Sciences and Humanities Re-

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search Council of Canada, 2003). This information is commonly imparted through a written informed consent document that is signed by the participant prior to participating in the study.

How informed is informed consent? In a number of studies of attitudes toward and recall of informed consent and related legal informational documents, participants report not reading or only skimming the material, and recall findings support these reports (e.g., Estey, Wilkin, & Dossetor, 1994; Stanley & Guido, 1996; Wogalter, Howe, Sifuentes, & Luginbuhl, 1999). Common reasons for not reading these types of documents included trusting the researcher or person preparing the document, not having time to read the document, and having had the document orally explained (Wogalter et al., 1999). Even when research participants do carefully read informed consent, their comprehension of and recall for the information is affected by readability and vocabulary of the document and their age, education, and cognitive and mental status (e.g., Arscott, Dagnan, & Kroese, 1999; Bruzzese & Fisher, 2003; Lawson & Adamson, 1995; Moser et al., 2002; Taub, 1986; Waggoner & Mayo, 1995). Consequences for not reading or not understanding (or both) informed consent documents can be severe; Stanley and Guido found that participants in some medical research studies did not even realize they were participating in research.

In face-to-face research, researchers may orally describe the research, procedures, incentives, risks, and safeguards. This face-to-face procedure allows researchers to (a) impart the necessary information to allow participants to make an informed decision about consenting to participate, (b) assess whether potential participants actually comprehend the information, and (c) determine that the participant has voluntarily agreed to participate. Oral communication that may occur during face-to-face presentation may also enhance comprehension or the consent document and understanding of what the participant is consenting to (Wogalter et al., 1999). However, more and more research is being conducted on the Web (e.g., http://www.psychologie.unizh.ch/sowi/Ulf/Lab/WebExpPsyLab.html, http://psych.hanover.edu/research/exponnet.html, http://www.socialpsychology.org/expts.htm) with participants who are separated physically and temporally from the researcher.

Although much has been published on conducting research on the Web, including posting online surveys, obtaining adequate samples and participants, and on the importance of and methods for obtaining informed consent, and comparisons between face-to-face and online results (Birnbaum, 2000, 2001, 2004; Keller & Lee, 2003; Kraut, et al., 2004; Musch & Reips, 2000; Reips, 2000), there has been little empirical research on obtaining informed consent and other ethics issues in Web-based research (Pittenger, 2003). As we begin conducting more online survey and experimental research, we need to be able ensure that our research participants understand what they are consenting to so that our research conforms to ethical principles and practices.

How informed is informed consent obtained on the Web? The goal of this research was to examine participants' reactions to, reading of, and recall for online informed consent documents compared with paper informed consent documents. This research is important to determine the empirical reality of obtaining informed consent as required by institutional review boards as well as to determine whether participants in online studies are able to provide informed consent to participate in the research (Frankel & Siang, 1999). As a first step in this line of research, we examined the ability of university students to provide informed consent. We used university students because this population is less likely to be affected by the readability and vocabulary of the informed consent document as well as less likely to be impaired by lack of education and cognitive or mental status than other populations. As well, although no statistics are likely collected, an overwhelming number of methods sections of social science journals report using university students as their research participants.

Participants read an informed consent document before completing an online survey on attitudes toward and experience with technology and Web-based learning supplements. The informed consent was presented either in a paper document, with a readily available experimenter to answer questions, or online. This manipulation of medium—paper versus online—allowed us to compare traditional paper informed consent and face-to-face communication with online consent procedures and outcomes.

We examined two formats for presenting documents. Consent documents on the Web are often formatted in a scrollable box (e.g., software licenses that require the user to scroll through the agreement and then click an acceptance box at the bottom of the agreement or a scrollable Web page containing all the elements of the informed consent with a button below the text to consent to participate and continue on to the experiment) and paper consent documents often are printed on multiple pages. This manipulation of a long versus a page-by-page presentation format allowed us to determine a presentation format that maximizes reading of and recall for informed consent.

We measured reading time and recall for the informed consent documents presented in the different ways. A surprise recall task was administered after a short intervening task (completing the online survey on attitudes toward and use of technology as described in the informed consent document). The reading time measure allowed us to verify if participants were actually reading the documents and to control for reading time in analyzing recall for the information in the informed consent document. Because we hypothesized that participants who read the document more carefully would recall more than participants who were less careful in their reading, we used the reading time measure to control for the relation between time on task and recall performance. The recall measure allowed us to examine any differences in memory for the information in the informed consent document as a function of medium or presentation format (or both). If we obtained recall differ-

ences, we could conclude that presentation differences influence ability to obtain informed consent (cf. Kraut et al., 2004).

Following the recall task, we asked students whether they even read the informed consent document and their reasons for reading or not reading the document. Finally, we asked students to suggest ways in which we could improve likelihood that a participant would read and attend to an informed consent document for psychological research.

METHOD

Participants

Participants were 100 introductory psychology students who participated in partial fulfillment of a course requirement.

Materials

We wrote a standard informed consent document describing the intervening task study of students' attitudes toward and experience in using technology in their psychology courses. We included the required elements, consisting of (a) purpose of the research, (b) nature of participation, (c) description of research procedures, (d) description of risks, (e) voluntariness of participation, (f) right to withdraw at any time without penalty, (g) handling of data (anonymity, confidentiality), (h) contact information for researcher, and (i) contact information for concerns about the project. The informed consent document contained 55 idea units, each idea unit corresponding to a simple predicate, and 518 words.

We prepared the informed consent document for *paper* and *online* medium conditions. Two formats were created for presenting the document in each medium. The *long* format consisted of typing the document on a single sheet of paper or in a scrollable text box; the *page* format consisted of typing separate paragraphs on eight separate paper or hypertext pages. Figure 1 shows a screen capture of the long and page formats used for the computer presentation. The entire long formatted consent document is found at http://www.psych.ualberta.ca/~varn/consent/consentBeginB.html and the entire page formatted document is found at http://www.psych.ualberta.ca/~varn/consent/consentBeginA.html. Font faces and sizes and line lengths were identical in all cases.

Design and Procedure

Participants were randomly assigned to conditions. Participants in the paper condition were instructed to read the informed consent document in one of the presenta-

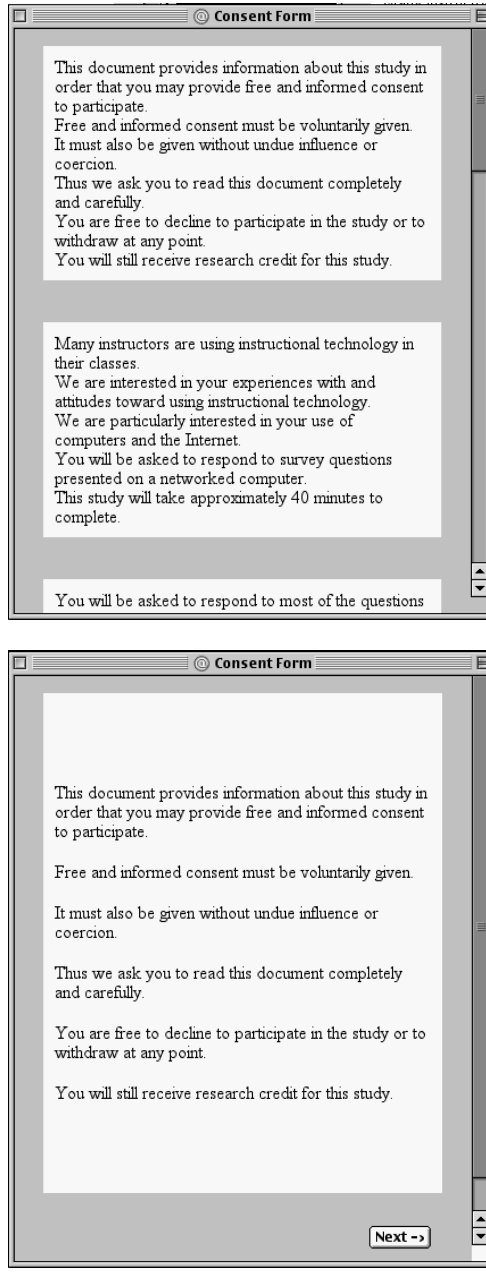

FIGURE 1 Online version of the informed consent document. (a) long format, (b) paper format.

tion formats (long or page) and sign their informed consent documents, should they wish to participate, prior to moving to separate small cubicles to complete the online survey. Researchers in the back of the room timed participants while they read the document. Time to read the paper document was measured from when the participant received the document to when the participant began to sign the document. Participants in the online condition were instructed to read the informed consent documents online in one of the two formats in their cubicle and click the "I accept" button should they wish to participate. Time to read the document was recorded on the computer and measured from the participant's click to access the informed consent document to the click to consent to participate.

After reading the informed consent document, participants individually completed a 15-min online questionnaire on attitudes toward and experience in using technology in their psychology courses. This served as an intervening task and was not analyzed.

Participants then completed a surprise online recall task. The participant was instructed to type everything he or she could recall from the informed consent document in a text box. Gist representation of the idea units in the consent document was taken as the recall measure. Thus, a participant writing, "I don't have to participate, but if I do, I will be doing a survey on the computer," was given credit for recalling the idea units, "You are free to decline to participate in this study," "You will be asked to respond to survey questions," and "presented on a networked computer."

Following the recall task, participants completed another online questionnaire asking if they had read the informed consent document for the study and to give reasons why they did or did not read the consent. Participants were also asked to suggest changes that might influence a participant to read informed consent documents more thoroughly.

After completing the second questionnaire, participants were individually given a debriefing sheet and provided with the opportunity to ask questions about the study. The debriefing, which the researcher explained to the participant, described the true nature of the study, namely to investigate issues related to reading and recalling the information provided in informed consent documents for research projects. The majority of the participants who commented on the study indicated that they had guessed the true purpose of the study when asked to write recall for the informed consent document. Following revealing the deception and true purpose of the study, participants were asked for verbal consent for their data to be included in the analyses; all participants consented. Participants were then thanked for their participation and dismissed.

RESULTS

We analyzed time taken to read the informed consent document using a two-factor analysis of variance (ANOVA), with medium (computer vs. paper) and presenta-

tion format (long vs. page) as between-participants factors. We found a main effect of time to read for medium, $F(1, 96) = 14.19$, $p < .001$, $MSE = 12{,}678.76$, $\eta^2 = .36$, with participants taking, on average, 10 sec longer to read the consent document online ($M = 96.4$ sec, $SE = 4.4$) than on paper ($M = 86.8$ sec, $SE = 5.0$). We also found an interaction between medium and presentation format, $F(1, 96) = 12.91$, $p < .001$, $MSE = 11{,}534.76$, $\eta^2 = .34$. Format did not have an effect on reading time for the computer presentation ($M = 95.8$ and 96.9 sec, $SE = 7.3$ and 5.2, for the long and page formats, respectively) but it did for the paper presentation ($M = 64.8$ and 108.8 sec, $SE = 3.5$ and 7.1, for the long and page formats, respectively). Mean reading times were 5.3, 5.4, 4.8, and 8.0 words per sec for the computer–page, computer–long, paper–page, and paper–long conditions, respectively.

Because we obtained differences in time taken to read the consent documents, we used a two-factor analysis of covariance to examine recall, with time as the covariate and medium and format as between-participants factors. Across all conditions, recall was very low, with participants recalling less than 10% of the idea units on average. We found a main effect of presentation format, $F(1, 92) = 6.95$, $p < .01$, $MSE = 78.81$, $\eta^2 = .27$. Participants reading the page formats recalled, on average, one idea unit more than participants reading the long versions; recall was $M = 4.4$, $SD = 3.9$, and $M = 3.2$, $SD = 2.9$ for the page and long formats, respectively. We found no effects of medium and no interaction between medium and format.

Participants most commonly recalled the risks involved (e.g., slight eyestrain from viewing the monitor; 35% of participants recalled at least one of these idea units), the voluntary nature of the study (28% recalled at least one of these idea units), and procedural aspects of the study (e.g., anticipated duration; 15% recalled at least one of these idea units).

Five of the 100 participants indicated on the questionnaire that they did not read the informed consent document at all, 30 indicated that they skimmed the consent, and 65 indicated they read the consent document. A chi-square analysis revealed no differences in self-report as a function of medium and format, $\chi^2(3) = 1.63$, $p > .7$, with 16, 18, 16, and 15 of students in the computer–page, computer–long, paper–page, and paper–long conditions, respectively, reporting reading the consent document) so we collapsed the data for the remaining analyses.

We categorized participants' reasons for reading or skimming the informed consent document as follows: (a) 56% of the participants stated that they read or skimmed the informed consent document to obtain information about the procedural aspects of the study (e.g., "I wanted to make sure that I followed the correct procedure to ensure sound results"), (b) 45% indicated they read the document to assess risk of participation (e.g., "I read it to look for any risks that might be involved"), and (c) 20% indicated they read the document because they were instructed to read the informed consent document as part of the introduction to the study (e.g., "I read it because the person gave it to me," "I read it because it was on the screen"). Some participants cited multiple reasons; each reason was classified for this and the following analyses.

Participants' reasons for skimming or not reading the informed consent document were categorized into the following categories: (a) 47% of participants reported that they did not read the information because informed consent documents are all about the same (e.g., "Consent forms all run along the same general line"), (b) 18% reported not reading the document because of the time to read or length of the consent document (e.g., "I was trying to save time," and "It looked too long and had lots of things on it"), and (c) 15% reported not reading the consent because the Department of Psychology follows ethical guidelines (e.g., "Since this research project has to follow strict psychology guidelines, I would not be in any danger").

Seventy-three participants provided suggestions for improving informed consent documents. We categorized their suggestions into the following categories: (a) 42% of these participants suggested shortening or simplifying the document (e.g., "Make it shorter," "Make it simpler to read"), (b) 31% suggested using different text formats to encourage reading (e.g., "Use bold font," "Make it coloured text"), (c) 25% suggested other content and format changes (e.g., "Make it more interesting," "Use pictures," "Include headings"), and (d) 20% suggested developing incentives for participants to read the document ("Test comprehension," "Tell people it is very important for them to read it").

DISCUSSION

Overall, we found very little difference between online informed consent and face-to-face paper informed consent. Participants read the documents quickly, particularly in the standard paper format. Participants recalled very little of the information in the document although almost everyone reported at least skimming the informed consent document. The predominant reasons participants reported reading informed consent documents were to obtain procedural information and assess risk. The predominant reason participants reported not reading informed consent documents was because such documents were all about the same and therefore it was unnecessary to read them prior to participating in each research study. Participants suggested that shorter and simpler informed consent documents with attention-getting text formatting (e.g., use of color and bold font) might influence whether they would read the information more carefully.

Extending the previous studies of comprehension and recall of paper-based informed consent documents (e.g., Estey et al., 1994; Wogalter et al., 1999), participants had poor recall for both the paper-based and online informed consent documents. Informed consent for medical procedures appears to be better understood and recalled, although comprehension is still quite low considering the implications of participating; Stanley and Guido (1996) reviewed more than 20 studies and found comprehension, as measured by recall questions, to range from 35% to 80% for medical research studies.

One benefit of obtaining informed consent in person is the presence of a researcher who can answer questions participants may have (Kraut et al., 2004). No students in this study asked researchers for clarification and less than half of the participants indicated that they read informed consent documents to assess risk of participating in the research. Similarly, many participants who reported skimming or not reading the document at all indicated that they trusted in the researcher or department (or both) not to expose them to undue risk. This high level of trust is consistent with Wogalter et al. (1999), who found that research participants who did not carefully read a complex informed consent document for a risky study still consented to participate, although they could select an option to complete a less risky task.

Some differences from our findings might be expected in a less controlled study. For example, we might have found differences in reading times due to different amounts of scrolling on different size monitors and different times to load pages as a result of different modem speeds. Similarly, more naïve research participants may have read both the paper and online documents more carefully. However, considering our results in the context of previous research, we argue that research participants do not closely attend to conventional informed consent documents, whether presented off- or online. This may be because people are confronted with consent on a daily basis, such as students consenting to classroom research projects, parents consenting to their children's artwork being displayed in school, computer users consenting to downloading and installing software, and so on. The important and surprising finding of this and the research reviewed here is that in many cases, in violation of ethical principles and policies (cf. APA, 2002; Medical Research Council of Canada et al., 2003), participants are not providing fully informed consent.

How do we encourage potential research participants to read and attend to informed consent documents, whether they are presented on paper or on the Web? Fischman (2000) suggested building in procedures to ensure participants have understood the information in the consent document, including testing comprehension through objective measures or requiring participants to paraphrase the information. On the Web, this might take the form of a short test following the informed consent and prior to beginning the research. PsychoBabble, a discussion group dealing with various mental health issues, requires a participant to successfully complete a quiz on the informed consent to participate (http://www.dr-bob.org/babble/consent.html). Although quizzing may be ideal for ensuring that potential participants are providing truly informed consent, this may deter some online participants from participating (cf. Kraut et al., 2004). Supporting this, O'Neil, Penrod, and Bornstein (2003) found that participants were more likely to decline to participate in an online study if they had to do anything more (e.g., enter a password or answer simple questions) than click their consent to participate.

Relatively few participants in this study suggested quizzing as a method to increase likelihood of reading informed consent documents. More students suggested making the document shorter and easier to read and improving on formatting to emphasize importance. The common suggestion of simplicity is consistent with the research of Wogalter et al. (1999), who found large effects of readability and complexity on comprehension of informed consent information. Use of headings (e.g., Procedure, Risks, Benefits) may direct attention to the different components of the informed consent document and encourage participants to read at least some of the components of the document. Similarly, use of color and other text formatting devices, such as a bold font to distinguish different components of the document, may encourage reading.

We had hypothesized that the page-by-page format might slow participants down and draw their attention to at least some of the information on each page. However, we found no effect of format on reading time (for the computer medium) or recall. Combined with the increased likelihood of dropout with an increasing number of clicks before accessing an online study obtained by O'Neil et al. (2003), presenting online informed consent as a series of pages does not appear to be a viable option for presenting information necessary for obtaining informed consent.

An example of a possible solution to encouraging participants to read an online informed consent document, while still providing the detailed information required by institutional review boards, is found at http://www.psych.ualberta.ca/~varn/ConsentStudy. The basic information is presented in outline form on the Web page and participants can mouse over the text to obtain more details about their participation in the study. In this format, participants are not required to click through multiple pages but, because they are relatively novel, participants might be motivated to mouse over the terse information to learn more about the study. An analogous format for a face-to-face informed consent document would be to provide the outline for participants to read while elaborating the information orally. Additional research is needed to determine whether such presentation formats will increase likelihood of reading and comprehending the informed consent document.

One issue that we did not address in this study—because the participants were all physically present—concerns authentication of the participant. Because researchers are not in direct contact with online participants, they cannot verify the accuracy of self-reported participant characteristics. Although there is some controversy in the literature regarding accuracy in self-representation (cf. Birnbaum, 2004), Frankel and Siang (1999) argued that issues surrounding participant authenticity affect implementation of informed consent procedures. For example, inappropriate participants may respond and be placed at unanticipated risk, for example, children responding to a study on pornography on the Web. Binik, Mah, and Kiesler (1999) suggested that researchers follow up online consent with telephone contact or third-party authentication prior to conducting sensitive research.

The Web provides an exciting new environment for conducting research. Pittenger (2003) argued that as we transform our research to make use of this unique environment and medium, we have the opportunity to reconsider our ethics procedures. This research, although designed to address issues in obtaining informed consent in online research, has demonstrated that we are not obtaining informed consent in face-to-face psychological research. Improving our informed consent documents for online presentation may have the added benefit of improving our informed consent documents and procedures for face-to-face research as well as online research.

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