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So You Want to Do an Online Study: Ethics Considerations and Lessons Learned

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The use of the Internet in conducting psychological research has become increasingly common over the past few decades, as Internet access has become more widespread. Although web-based work has a number of benefits, including lower cost, easy access to large samples, and strict standardization of administration, the limitations must also be considered. Among these limitations are the ethics concerns related to conducting psychological research online. These concerns include limitations in maintaining confidentiality, conducting thorough informed consent, and conducting valid assessment. Particular focus is given to the limitations inherent in conducting a fully automated online study. All of these limitations are discussed in detail through both a review of existing literature and the brief review of a recent study. The recent study identified areas in which participants struggled with completing a fully automated online task. This article discusses the ethics implications of Internet research as well as offering suggestions for researchers who intend to conduct web-based research, and thoughts on future directions as psychology moves forward in web-based research and assessment.

Keywords: ethics, couples, Internet

Psychological research has long sought ways to find access to large samples, contributing to the long-standing debate regarding the use of college sophomores (e.g., Cooper, McCord, & Socha, 2010). In recent decades, increasing use of the Internet has led to exploration of using the web as a medium for conducting psychological work, including research, assessment, and treatment interventions (Allen & Roberts, 2010; Pearlman, 2009). With Internet use on the rise, and becoming increasingly widespread, this appears to be a means of finding a large and generalizable sample with relative ease. Studies have found that nearly 80% of Americans now have regular online access (The World Bank, 2010), with older adults being the fastest growing group of Internet users (Whitehead, 2007), and nearly one fourth of Internet users falling in lower socioeconomic status groups (Zillien & Hargittai, 2009). Research has found that some of the most commonly used means of conducting online research, including Amazon.com's Mechanical Turk, yield large, diverse, and representative yet fully anonymous samples (Buhrmester, Kwang, & Gosling, 2011; Paolacci, Chandler, & Ipeirotis, 2010). Thus, it has become increasingly common for

researchers to turn to the Internet for conducting psychological research. In addition to established researchers, students in some graduate programs are being increasingly encouraged to conduct studies online due to the ease of completion.

Given this trend, many authors have begun to examine not only the logistical aspects of Internet-based research but also the ethics implications of expanding psychological work into this realm. With the ease of collecting large, anonymous, yet representative samples, Internet-based work seems to be the obvious new direction. However, Buchanan and Hvizdak (2009) noted the importance of ensuring that online research is conducted because of methodological factors and not simply convenience sampling. Researchers, especially young researchers, may be swayed into web-based research by the numerous apparent benefits, without taking the time to consider the potential ramifications of this work, and the additional considerations that must be undertaken to ensure ethical research is conducted. This article considers the benefits and limitations through both a review of existing literature and a brief review of a recent web-based study that highlights some potential areas of concern in conducting this work.

BENEFITS

Researchers have identified numerous benefits to conducting psychological work, such as assessment, through the Internet. The widespread use of the Internet allows for collection of data from varied demographic groups as well as the targeting of underserved populations, including people in rural areas, those who may be less likely to participate in person, or participants who may not have physical access to services (Naglieri et al., 2004; Taylor, Jobson, Winzelber, & Abascal, 2002). Online research also allows for the collection of a much larger data set with ease, as well as the collection of variables that may be more difficult to assess in a laboratory setting (Hoerger & Currell, 2012; Kraut et al., 2004). Internet data collection minimizes human error (Fox, Murray, & Warn, 2003), eliminates the risk of examiner or researcher bias (Allen & Roberts, 2010; Kraut et al., 2004; Nosek, Banaji, & Greenwald, 2002), and allows for strict standardization of administration (Kraut et al., 2004). The cost of conducting research online is also often significantly lower than in-person testing (Kraut et al., 2004).

Examination into the psychometrics of online testing has also been promising. Existing research has found that the differences between pen-and-paper testing and Internet testing are negligible when using near-identical questionnaires (Denscombe, 2006) and that the efficacy and effectiveness of some web-based interventions are comparable to face-to-face interventions (Fitzgerald, Hunter, Hadjistavropoulos, & Koocher, 2010). Reliability and validity have also been found comparable or, in some cases, even better in web-based assessments when compared with face-to-face measures (Brock, Barry, Lawrence, Dey, & Rolffs, 2010; Buchanan, 2003). However, it should be noted that other studies have found that score distributions and test validities vary slightly between online and in-person administrations, although the specific findings have been conflicting. Some authors have found that participants score slightly higher on computer-based measures, whereas others have found that those who are less familiar with the technology may actually score artificially low when compared with those who are more fluent (Naglieri et al., 2004; Whitehead, 2007). This suggests that the psychometric strength of online administrations may vary from measure to measure.

In addition to the previously described methodological strengths of Internet research, some studies have found that Internet research may also enhance the experience for participants. The

anonymity of web-based work has been shown, in some cases, to encourage deeper levels of participant self-disclosure (Denscombe, 2006; Keller & Lee, 2003). Internet assessment also allows for the provision of immediate feedback to participants, with fewer errors due to automatic scoring and use of item response theory to tailor item difficulty or increase individualization throughout the administration (Buchanan, 2003; Naglieri et al., 2004). With technology readily available for “out-sourcing” the construction of the website, it is becoming increasingly easy for psychologists to provide information and assessment via websites without having to worry about website coding (Allen & Roberts, 2010). Given these benefits for both the researcher and the participant, it appears that Internet-based research may be the direction of the future. However, upon examining the existing literature regarding concerns and limitations, it becomes clear that the benefits need to be carefully weighed against the limitations also inherent to conducting online research.

LIMITATIONS

A review of the available literature reveals a number of shortcomings to Internet-based assessment and research. These limitations have the potential not only to muddy research findings but also to pose as serious ethics considerations. Although the APA Ethics Code does not specifically address Internet-based work, the Code does state that “the fact that a given conduct is not specifically addressed by an Ethical Standard does *not* [emphasis added] mean that it is necessarily either ethical or unethical” (American Psychological Association [APA], 2010,). This statement calls for psychologists to consider their research as it fits within the existing guidelines and to extrapolate as needed to ensure that their web-based research work meets ethics standards. Common existing concerns that may impact the ethics of online work include both concerns about confidentiality and the lack of debriefing for participants who choose to leave the study prematurely (Hoerger & Currell, 2012). Confidentiality may be limited in multiple ways, including the website automatically storing potentially identifying information such as IP addresses (Nosek et al., 2002); the hacking of stored information (Singer & Couper, 2011); or the outsourcing of website design, coding, and data storage to an external individual or company not familiar with confidentiality standards (Allen & Roberts, 2010).

In addition, some ethics standards cannot be ensured in Internet-based work, including maintaining test security, due to participants’ ability to save and/or print questionnaires (Standard 9.11), and assessment by unqualified persons or with tests that don’t meet professional standards, due to the ease of posting studies online (Standard 9.07; Kraut et al., 2004; Naglieri et al., 2004; Pearlman, 2009). Poor cross-validity from in-person to Internet-based research has been cited by some authors, and the need to revalidate measures prior to their use online is repeatedly stated in the literature (Pearlman, 2009; Whitehead, 2007). Standard 9.02b specifically states that “when . . . validity or reliability has not been established, psychologists describe the strengths and limitations of test results and interpretation” (APA, 2010). This suggests that, when available, tests should be used that are specifically validated for online use and, when unavailable, participants must be explicitly made aware of the limitations of the feedback and interpretations they receive (Buchanan & Williams, 2010; Naglieri et al., 2004; Pearlman, 2009). Until the measures have been specifically validated, they should not be assumed to meet ethical and professional standards for assessment or research.

Other ethics standards may actually contradict “best practice” in web-based research. Of particular note is Standard 8.02a, which notes that “psychologists informed participants about . . .

their right to decline to participate and to withdraw from the research once participants has begun” (APA, 2010). Researchers often code websites that require all fields to be completed before the participant is allowed to proceed to the next page or question, in order to ensure a complete data set. However, ethics standards for research should be applied not only to the study as a whole but also to individual questions within the study. By requiring participants to complete all responses, their right to decline a response is violated. Although authors have offered various ways to address this difficulty, one study found that providing the option of “I prefer not to say” actually primed participants to be more concerned about privacy issues, making it a less than ideal solution (Allen & Roberts, 2010). No way to balance the concerns of participant rights to decline with the need for a complete data set has been identified as a “best practice” to this point in time. Similarly, anonymity makes it more difficult for participants to retrospectively withdraw from the study after completing part or all of the requirements, marking another potential violation of Standard 8.02a (Buchanan & Williams, 2010). These concerns highlight the importance of considering not only methodology but also participant rights, and how best to balance the two, when designing a web-based study.

Automated Research

In addition to all of these areas of concern, many authors have focused specifically on the potential limitations of fully automated online research. As mentioned previously, one of the greatest benefits of online research is that it allows for ease of completion in part because it *can* be automated, which removes researcher bias and seemingly ensures standardization of administration. This benefit also lowers the cost of administration and allows the research to be conducted in various settings. However, when a study is conducted fully online, inherent difficulties arise. The researcher is far less aware of and able to intervene during a possible crisis or misunderstanding, making it important to have a contingency plan available in case of crisis (Buchanan & Williams, 2010; Fitzgerald et al., 2010; Nosek et al., 2002). By fully automating the study, the research may stand in violation of multiple ethics standards, including posing difficulties with taking steps to minimize any harm that may have occurred during research, as the researcher may be unaware of the harm (Standard 8.08c), as well as raising concerns regarding Principle A, which states that “when conflicts occur . . . [psychologists] attempt to resolve these conflicts in a responsible fashion that avoids or minimizes harm” (APA, 2010). In the case of fully automated studies, the researcher may remain unaware of harmful outcomes, and thus the study may stand in opposition to upholding the ethics standards. In some ways, the researcher is also less able to standardize the administration, due to lack of knowledge about the setting in which the study is being completed—at times including the number of people involved in the completion or who is actually completing the study (Buchanan & Williams, 2010; Hoerger & Currell, 2012; Keller & Lee, 2003; Naglieri et al., 2004; Nosek et al., 2002; Pearlman, 2009).

One area that has the potential to be especially impacted in a fully automated process is that of completing a thorough informed consent document (Standard 9.03). Consenting is described by many authors as an ongoing process but is typically provided as a single web page of an online study. Some authors deem this insufficient, as there is no way for participants to ask questions or clarify concerns (Buchanan & Hvizdak, 2009; Hoerger & Currell, 2012). Others argue that informed consent becomes especially important in online studies for reasons previously stated, including the fact that the investigator cannot intervene if problems arise (Nosek et al., 2002) and

cannot ensure that the participant is actually capable of consenting (Naglieri et al., 2004). Further, according to Standard 8.02a, “psychologists inform participants about . . . whom to contact for questions about the research,” suggesting that it is the duty of the researcher to ensure that the participant has access to his or her contact information (APA, 2010). This is especially problematic for participants who leave the study prematurely or may be unable to find the study again if concerns arise, as the researcher’s contact information may be lost to the participant.

A second area that may be similarly negatively impacted is not discussed in great detail in the current literature. Automated research may also limit the validity of any individualized feedback provided to the participant, due to an inability to interpret valid questionnaire results. The ethics code calls for psychologists to both “use assessment instruments whose validity and reliability have been established *for use with members of the population tested* [emphasis added] . . . [or] describe the strengths and limitations of test results and interpretation” (Standard 9.02b) and “take into account the . . . characteristics of the person being assessed” (Standard 9.06; APA, 2010). These standards both require psychologists to be aware of the population completing the measures in order to provide valid interpretation. However, as previously noted, it is not always possible to ensure that the participants are honest in self-reported demographics. For this reason, some authors recommend that feedback be provided only in a generalized sense (Buchanan & Williams, 2010; Naglieri et al., 2004). No research could be found into the potential use of more specific feedback in a fully-automated Internet study.

THE CURRENT STUDY

When considering the current literature as a whole, it becomes clear that there are a number of potential logistical and ethics concerns with Internet-based research. It also becomes clear that, although there are potential concerns regarding the use of a fully automated Internet-based study, there appears to be little empirical research currently available regarding these concerns. The majority of authors who comment on automated sites simply state that generalized feedback and one-way provision of information is likely the best format. The current study involved a fully automated online intervention designed to increase participant motivation. The intervention was designed to enhance participant motivation to strengthen their romantic relationship and was based loosely on key aspects of motivational interviewing theory (Miller & Rollnick, 2002). Although a thorough review of the study is outside the scope of this article, the article includes a brief review of this study, followed by a discussion of the findings in the context of ethics considerations for fully automated studies and individualized feedback in web-based research.

METHODS

Participants

Participants included a sample of 561 adults, all of whom were recruited using Amazon.com’s Mechanical Turk (MTurk) program. MTurk is designed to allow for fully anonymous and voluntary participation, with no storage of any potentially identifying data such as IP addresses.

As noted previously, MTurk has been found to be an adequate way to conduct research with large, diverse, and representative yet fully anonymous samples (Buhrmester et al., 2011; Paolacci et al., 2010). Each participant was paid \$0.50 for his or her participation, although all payment was automated through MTurk so that no identifying information was provided to the author. Participants were restricted to Native English speakers currently living in the United States.

Procedure

After viewing and completing the informed consent document, all participants were randomly assigned to one of three conditions: motivational enhancement, feedback only, and no feedback. For the purposes of this article, only the motivational enhancement group ($N = 177$) is discussed. The website asked participants to describe a recent relationship conflict and complete the Relationship Conflict Questionnaire.

After completing the questionnaire, participants were educated about the six types of feedback that they would receive based upon their responses. They indicated where they would like their scores to fall (e.g., “Above 60% of people”) in each feedback area. Participants were then provided with feedback on a graph, with their actual scores from the questionnaire responses presented alongside their desired scores to allow for easy comparison of the two. To ensure participant attention, participants were asked to indicate whether the actual result for each area was lower, equal to, or higher than their desired scores. The graph portrayed side-by-side bars representing the two scores in each of six feedback areas.

Participants were then asked to choose one feedback area on which to focus. They responded to open-ended prompts regarding that area of their relationship, including questions regarding how they could strengthen the area, what roadblocks might arise in attempting to strengthen it, how they might overcome the roadblocks, and ways to increase the likelihood that they would engage in the change behaviors. The intervention was based loosely on the key aspects of motivational interviewing (Miller & Rollnick, 2002).

After completing these tasks, participants were asked to complete a series of outcome questionnaires to assess motivation. Participants were then provided with information about six different areas of relationship improvement, as well as information about additional resources to continue engaging in relationship enhancement if they so chose.

Measures

A brief summary of the measures used is provided but is limited to those measures used to provide feedback to participants. Participants received feedback based on their scores on the Relationship Conflict Questionnaire, which comprised four instruments: the Conflict Communication Inventory (Sanford, 2010a), the Negative Attributions Scale (Sanford, 2010b), the Couples’ Underlying Concerns Inventory (Sanford, 2010b), and the Couples Satisfaction Index (Funk & Rogge, 2007). Internal consistency reliability of these scales ranged from 0.85 to 0.97 in the current study. It should be noted that all of the measures used had been previously validated online.

RESULTS

This study was designed to examine how participants engaged with the intervention to identify potential areas of difficulty given the fully automated nature of the study. Analyses revealed three key areas in which participants appear to have experienced difficulties, including one area that was potentially related to the automated nature of the individualized feedback provided to participants. Specifically, participants appeared to have difficulty understanding the provided feedback graph.

As stated previously, participants were provided with graphs to highlight the discrepancy between their actual scores, as determined by the Relationship Conflict Questionnaire, and their self-reported desired scores in each of six feedback areas. Participants were then asked to report the size of the discrepancy. For participants to understand the discrepancy, they would first need to be able to successfully read the provided graph and identify the discrepancy. Analyses revealed that there was no relationship between participants' actual discrepancy and their report of the discrepancy size on a 5-point Likert scale ranging from *much lower than* to *much higher than* ($r = .10, p = .90$). Multiple explanations for this lack of relationship can be made, including the lack of information about the settings in which the questionnaires were completed, which may have impacted the questionnaire validity, or the fact that previous research has shown that 30% of adults to have difficulty with reading web-based graphs (Galesic & Garcia-Retamero, 2011). As there was no open-ended area for participants to report questions or concerns, the reason for this lack of relationship cannot be determined with certainty.

DISCUSSION

The current study examined a fully automated online intervention designed to increase participant motivation to engage in a task involved the provision of individualized feedback. The feedback aspect was designed to help develop discrepancy and increase their motivation, consistent with the principles of Motivational Interviewing (Miller & Rollnick, 2002). When examining the results, it becomes clear that participants appeared to have difficulty understanding this automated and individualized feedback. This is consistent with previous authors' statements that automated feedback should be provided only generally, as opposed to offering individualized feedback, and provides an example of how participants may misunderstand more individualized feedback without guidance for interpretation (Buchanan & Williams, 2010; Naglieri et al., 2004).

However, this study did address some of the most common concerns regarding web-based research. First, the study was conducted in a way that allowed for full confidentiality, through the use of MTurk coupled with the provision of an individualized code, assigned to the participant, which could later be used to withdraw data or file questions or complaints with the researcher. Perhaps more important, all of the measures used to provide feedback had been previously used and validated online. On one hand, this appears to address the ethics standards regarding reliability and validity of measures (Standard 9.02b) and taking demographics into consideration when interpreting testing (Standard 9.06), both of which have been highlighted as potential areas of concern in web-based feedback. As the measures were found valid in other studies, and to have high internal consistency reliability in the current study, one may assume that they presented valid findings to participants.

However, in the current study no questions were specifically asked about who was completing the questionnaire, where the study was being completed, or how many people were present in the room. Some authors suggest that it is actually this uncertainty regarding completion environment that contributes to the interpretation limitations in Internet-based work, as opposed to simply the automated nature of the feedback (Buchanan & Williams, 2010; Hoerger & Currell, 2012; Keller & Lee, 2003; Naglieri et al., 2004; Nosek et al., 2002; Pearlman, 2009). By not asking about the completion environment, the current study may have missed identification of some variables that could have challenged the validity of the measures.

This study suggests that participants may have been confused by their results, in part because the results may not have been valid. The results may indicate the need to acknowledge limitations of fully automated online research and to raise participant awareness of the conditions required to yield valid results. By not acknowledging these difficulties, the study highlights some of the ethics concerns that may arise with fully automated studies, including the need to “indicate any significant limitations of . . . interpretations” (Standard 9.06) and the expectation to “take reasonable steps to correct any misconceptions that participants may have” (Standard 8.08a). By conducting a fully automated study, the researcher is unable to assess potential misconceptions or harm to the participant, which, as this study demonstrates, can have repercussions both for the ethics of the study as well as the actual usefulness of the intervention and data collected.

Suggestions for Internet Research

The current study and previous literature yield a number of suggestions for solutions to many of the ethics and logistical concerns that can arise in conducting Internet-based research. Authors cited throughout this article gave multiple suggestions for future researchers, including having participants create an anonymous identification code for tracking purposes, instead of using IP addresses (Hoerger & Currell, 2012), instructing participants about how to respond to an Internet failure midstudy (Fitzgerald et al., 2010), acknowledging the limitations of forced choice answers or giving a “decline” option instead of forced choices (Fox et al., 2003), and providing an “exit link” on each page that directs the participant to debriefing and researcher contact information (Hoerger & Currell, 2012; Keller & Lee, 2003; Nosek et al., 2002; Whitehead, 2007).

Given the number of concerns associated with conducting online informed consent, many articles have proposed solutions specific to this area. Some authors claim that it may be beneficial to complete informed consent as an interactive process, with questions to ensure comprehension and further teaching if necessary, as opposed to allowing the participant to passively consent (Buchanan & Williams, 2010; Hoerger & Currell, 2012; Singer & Couper, 2011). To complete this as part of an automated website, this would require more sophisticated coding, and may require outsourcing of the construction and/or hosting of the site, which may lead to concerns regarding confidentiality.

A common problem, and one that arose in the current study, is discovering areas of concern once the study has been posted. For this reason, some authors recommend pilot studies to ensure thorough review of the methodology and allow for problem solving prior to posting the study publicly (Fox et al., 2003; Hoerger & Currell, 2012; Kraut et al., 2004). This may also serve as a solution to the aforementioned informed consent concerns, as informed consent documents could

be pretested as well and revised as needed (Kraut et al., 2004). Authors often note the use of a frequently updated FAQs page, perhaps started during a pilot study or focus group, to help bridge the gap that can occur within a fully automated website (Fox et al., 2003). The current study would likely have benefitted from also providing participants a means in which to provide feedback or questions, to allow for updating of the FAQs page as necessary, and the author recommends this as part of any fully automated study in addition to providing contact information for the primary investigator.

Authors claim that solutions such as these allow for the continued use of Internet-based research while addressing many of the most prominent ethics concerns previously discussed. It is also noteworthy that many of these recommendations can be easily integrated into simply coded websites, without the need for outsourcing of the website construction. By allowing for in-house coding, the expense and potential violations of confidentiality can be minimized, making online work even more appealing.

Future Directions

Together, these recommendations provide a foundation of guidelines for conducting web-based research in accordance with current ethics standards. All questionnaires and measures should be either validated for Internet use prior to the study being posted or marked as not yet having been validated for Internet-based use, to ensure that participants are fully informed. This may also help to reduce potential confusion or frustration if results are not well suited to the participant. Participants should be instructed and asked about the setting in which they should and do complete the study, including the number of people in the room, to help ensure as much standardization as possible about the environment. Within the study, participants should be provided with a “decline” response that allows them to skip questions and an “exit link” on each page with debriefing information and researcher contact information.

As many authors suggest, it would likely be beneficial to conduct a pilot study prior to posting the study. Information from this study could then be used as the basis for resolving problems and beginning an evolving FAQs page that will remain accessible throughout the study. Participants should also be provided with an open-ended prompt area to ask questions or provide comments to add to the FAQs page. The website should be coded to allow for live, individualized feedback to be provided to the participant to ensure understanding of tasks and informed consent and to redirect the participant to additional instruction as needed. Finally, it would behoove organizations conducting online research, including universities, to have trained staff and/or faculty members who are capable of coding a secure website that would meet the ethics and methodological requirements of any study approved by the Institutional Review Board (IRB) of the organization. This would reduce the complications that come with both outsourcing coding and with coding based on limited knowledge, allowing instead for the focus to be on meeting ethics standards while conducting valid and meaningful studies.

Conclusion

As Internet use increases, it is almost certain that psychological use of the Internet in research will continue to increase as well. Many authors recommend that psychologists who are interested in conducting web-based research would benefit from a basic understanding of coding, to

help ensure confidentiality and bridge the gap between the researcher and the study (Hoerger & Currell, 2012). At the same time, universities and organizations must set standards for their researchers to ensure that appropriate measures are being taken to ensure that ethical conduct is maintained (Allen & Roberts, 2010).

Although many authors have called for them, this author knows of no formal APA ethics guidelines specific to Internet-based psychological research at this point in time, although many individual university IRBs have developed guidelines for conducting this work (Buchanan & Williams, 2010; Fitzgerald et al., 2010; Hanggi, 2004; Singer & Couper, 2011). It will remain the researcher's duty to be aware of not only psychological testing advances but also technological advances, including up-to-date security measures, and ethics standards for professional Internet use (Allen & Roberts, 2010; Keller & Lee, 2003). It is also becoming increasingly important for *all* consumers of psychological research, including students, to be aware of the ethics concerns relevant to Internet-based work as it continues to increase in popularity, to ensure that research can both be done correctly and well-evaluated (Buchanan & Hvizdak, 2009; Buchanan & Williams, 2010). As psychologists, we must learn to apply ethics standards not only to an evolving culture and increasingly diverse clientele but also within the increasingly broad technological challenges that come with the continued evolution of our field.

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