Conducting your PhD via the internet

BY KATHRYN GARDNER

CHOOSING to conduct my PhD using the internet was a decision that was made with little thought as to the trials and tribulations that 'internet-mediated research' (IMR) might present. My decision was based on some of the seemingly attractive features that this data collection technique had to offer: in my case, reduced financial cost, easier access to a general population and reduced data entry time. With one PhD web-based study now under my wing and a second currently in the pipeline, I wish to use my experience to provide an accessible guide to conducting postgraduate research using the internet.

Step 1: Ask yourself whether it will work
You should seek answers to questions such as: Can the internet cater for particular design features of my study? Will the authors of the instruments I wish to use grant copyright permission to place their instruments online? Do I possess the skills to design and develop an internet-based study, and if not, do I have the time available to learn them or the funds to pay for software to design and build the study?

Step 2: Consider the pros and cons of IMR. The internet offers psychologists and other researchers a vast array of opportunities compared to traditional paper-and-pencil tests or laboratory experiments, although a whole host of methodological and technical problems may also be faced by researchers. Many of the problems inherent in IMR can be avoided (e.g. 'drop-out' can be avoided by the use of financial incentives) or dealt with at a later date (e.g. identifying and dealing with multiple submissions of data from the same participant), and a

researcher who begins internet research without any prior consideration of these issues may be faced the prospect of obtaining poor-quality data. The knowledge that paper-and-pencil research would have been equally, if not more effective, is a notion that no researcher wishes to contend with.

This cost–benefit analysis will help identify problems that have to be dealt with in online research, and aid the decision as to whether IMR may be suitable. There is no point choosing to conduct internet research on the basis that it increases sample diversity if the high drop-out rate in internet studies isn't considered and addressed. A small diverse sample may not be any better than a large homogeneous one!

Possible advantages and disadvantages of IMR are displayed in Table 1 and have been the subject of much discussion in the IMR literature (e.g. Kraut *et al*., 2004; Reips, 2002).

Step 3: Select a method of programming. There are now many software packages and programmes available to aid the development of internet studies (e.g. *www.surveymonkey.com*; *www.psychdata.com*; *www.psychdesign.com*; and *http://psych-wextor.unizh.ch/wextor/en/index.php*). Many of these cost money (prices vary) and some are limited in the functions that they perform. Their advantage, however, lies in the speed with which websites can be designed, since all of the underlying programming is done for you. Most of these packages come with a designated internet server and domain name to upload your website to.

Alternatively, websites can be manually programmed. This allows greater flexibility in terms of design, and also enables choice of web-hosting package and domain name (e.g. for my current 'emotional intelligence' online study I chose the address *www.e-intell.co.uk*, registered via *www.1-and-1.com*). Manual programming also allows you to upload your website to your institution's server if you wish. On the downside, this method of web design can be timely and difficult unless you are already well equipped with programming skills.

Step 4: Consult the IMR literature for guidelines concerning the design and development of web-based studies. Table 2 briefly summarises some of the key methodological and technical features that

need to be considered when designing internet studies.

Step 5: Recruit participants. Online research provides access to people all over the world, and recruitment effectiveness depends on factors such as study length, area of study (some areas of research are generally more interesting than others) and incentives offered. Recruitment techniques include online mailing lists such as the list offered by the Psychology Postgraduate Affairs Group (PsyPAG); internet newsgroups and discussion forums such as *The Psychologist's* own *www.psychforum.org.uk*; submitting your website to search engines and websites listing online studies; and newspaper/magazine adverts. Whichever technique you use, it is imperative that you are aware of the limitations of each technique (e.g. elements of bias introduced by using mailing lists), and that you collect demographic information in order to obtain background information on your sample and screen out 'problematic' participants (e.g. respondents whose native language is not English are problematic when certain questionnaires are designed for native English speakers).

Would I do it again?
During those times when my study website incurred technical difficulties, which neither I nor anyone else knew how to fix, I wondered why I ever turned by back on traditional paper-and-pencil research. IMR has also limited my opportunity to learn broader interpersonal and communication skills that are often acquired whilst collecting data out in the community. However, conducting my PhD via the internet has provided me with a whole range of new technical and research skills; I have also minimised the financial costs of my PhD and have been able to reach members of the general population who I would not otherwise have reached. With this in mind, I look forward to using the World Wide Web for new and exciting research opportunities.

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References
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TABLE 1 Possible advantages and disadvantages of internet-mediated research

Advantages	Disadvantages
Can increase sample heterogeneity	Can also lead to a biased sample of white, middle-class male internet users
Cross-cultural research more easily conducted	Less control over experimental settings, e.g. state of the respondent during testing is not known
Economical e.g. no photocopying or travelling to test respondents from different geographical areas	High drop-out rate
Voluntary motivational nature of participation may reduce factors such as drop-out, dishonesty and careless or deliberately fictitious responding	Technical issues, e.g. varying network connections, internet server slowdown, leading to loss of data
Online studies run around the clock so you never stop collecting data	Multiple submissions of data
Time saved on manually entering data	Extra time designing, developing and maintaining the study
Better generalisability of findings	Difficulties obtaining copyright permission to place instruments on the internet

TABLE 2 Methodological and technical issues in the design and development of internet studies

Methodological or technical issue	Explanation and/or example
Design and implementation: website interface	E.g. One questionnaire per webpage vs. all questionnaires on one webpage; response formats such as radio buttons, text boxes and drop-down menus.
Control of the testing environment	E.g. timing – warn participants that the study will end within X hours, as failure to do so may result in some respondents discontinuing participation in the middle of the study only to complete it hours or days later, possibly in a different mood.
Ethics	Anonymity and confidentiality; obtaining informed consent; 'withdrawal' buttons on every webpage; enabling respondents to skip questions; de-briefing (at the end of the study and when a respondent quits half way through)
Security	Protecting participant privacy – data transmission and data storage issues
Drop-out (discontinuing participation)	Avoiding drop-out and reducing its impact e.g., use of incentives and motivational screens e.g. 'Well done! You are one third of the way through the survey. Please continue as your answers are extremely important'.
Multiple submissions of data	Identifying and dealing with multiple submissions from the same participant
Piloting	Study websites should be rigorously tested prior to going live online for coding errors, data saving etc (most important for manually programmed websites)
Daily monitoring and maintenance of the website	Technical difficulties may need addressing and the effectiveness of recruitment procedures should be continuously monitored