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While an extensive body of literature exists regarding the principles of survey design and the factors influencing response to mail and telephone surveys, the applicability of this literature to electronic surveys is not yet clear. We know, for example, the importance of the first question in mail and telephone surveys, as well as the grouping

and sequencing of questions, establishing a respondent-pleasing vertical flow of items in the survey, and having clear, specific directions. The literature also shows the importance of prenotification of respondents, personalized cover letters, incentives, return postage, and multiple contacts to reach respondents and generate higher response rates. Are these factors also important in electronic surveys?

This Digest summarizes the results of a survey administered to the American Educational Research Association's Survey Research Special Interest Group regarding the use of electronic surveys and discusses their responses within the context of the existing literature base. Topics addressed include conditions under which the use of e-mail or web-based surveys would be most appropriate, sampling issues, weaknesses of the approach, and guidelines for other researchers who plan to use email or the Internet for survey research projects.

RESULTS

Use of Electronic Mail and the Internet
Overall, the sample participants (n=63) reported frequent use of, and a high level of confidence in, using electronic mail and the Internet. Ninety percent reported using email every day, and 78% reported using the Internet at least 5 days per week. They reported being very confident in their ability to compose and respond to messages, send messages to more than one person, and send attachments. They were also confident about their ability to use the Internet to find a web address, use a search engine, and download information. The only area in which these participants expressed a concern was creating and maintaining a web page.

GENERAL PERCEPTIONS OF ELECTRONIC SURVEYS

Each participant was asked to respond to 33 Likert-scale items pertaining to the use of email or web-based surveys. Six of these items were reverse-coded so that a higher score would consistently reflect a more favorable attitude toward the use of email or web-based surveys. Internal consistency reliability (Cronbach's alpha) was estimated at .83. Overall, participants responded favorably to statements regarding the use of email-or web-based surveys.
These survey professionals were most positive about the reduction of costs (e.g., postage, phone charges) associated with electronic surveys, the use of electronic mail for prenotification or follow-up purposes as a complement to other survey delivery methods, and the compatibility of data with existing software programs. They also indicated a belief that the lack of a tangible reward would not prevent individuals from responding and that they would likely respond to a web-based survey if all they had to do was click on the HTML address from an email message.

The bulk of the less favorable responses pertained to concerns about respondents' knowledge of, and experience with, technology. They believed that individuals who were not comfortable with technology would not respond. In addition, they indicated beliefs that electronic surveys are less personalized than traditional mail surveys, that people will make more mistakes when responding, that their responses will be influenced by issues of social desirability, and that they will not complete as many items as they might have in a pencil-and- paper survey. Finally, the survey researchers expressed a need for passwords to access web-based surveys along with concerns that respondents would not be likely to respond to sensitive issues, or might not even respond at all, due to fears about anonymity.

In a few areas, the opinions of the survey professionals were balanced; in other words, they agreed and disagreed in almost equal numbers. These items included the comparability of response rate and reliability estimates for electronic and mail surveys, the extent to which people prefer hard copies of surveys or find electronic surveys more interesting, and the appropriateness of listserves as a sampling source for electronic surveys.

DISCUSSION

Consistent with prior literature (Bowers, 1999; Crawford, Couper & Lamias, 2001; Eaton, 1997; Kaye & Johnson, 1999; Kiessler & Sproull, 1986; Weissbach, 1997), the primary concerns expressed by survey professionals in this study regarded sampling issues. These concerns regarded a sample's access to and ability to use the required technology, their authenticity, and their privacy.
Samples with access to the Internet have not typically represented the general population (GVU, 1998; Sheehan & Hoy, 1999). However, the Internet is becoming increasing more accessible to the general population: approximately 41.5% of U.S. households now have access, an increase of 58% in less than two years (U.S. Department of Commerce, 2000). Access is still more frequent among those who live in urban areas, with higher incomes and higher levels of education. However, the most rapid increases in access are occurring in rural areas, among individuals with some college experience, and individuals over 50 (U.S. Department of Commerce, 2000). The increase in Internet access and reliable e-mail addresses will allow for a greater range in future samples.

Researchers must also recognize that samples will vary a great deal in their technological capability, both in terms of equipment and respondent knowledge and skill. This variation must be kept in mind when designing electronic surveys. Although web-based surveys allow for much more innovative features than plain text e-mail surveys, respondents may have difficulty accessing such a survey. Further, most people are not accustomed to the process used to respond to an electronic survey (e.g., selecting from a pull-down menu, clicking a radial button, scrolling from screen to screen) and will need specific instructions that guide them through each questions and

the manner in which they should respond. Survey professionals recommend that samples be prenotified via e-mail to determine the technological capacity of the sample and their willingness to participate in the study. This will help ensure that the survey will be accessible to members in the sample and help prevent the perceptions of "spamming" that might occur due to continued unsolicited e-mail messages (Mehta & Sivadas, 1995; Sheehan & Hoy, 1999). The communication should be personalized and provide for the essential elements of mailed cover letters, including a clear overview of the study's purpose, motivation to respond, assurances of confidentiality and privacy, and a person to contact with questions. A recent meta-analysis of electronic survey studies found personalized prenotification and number of contacts to influence response rate (Cook, Heath, & Thompson, 2000).

Once samples are identified and prenotified, they nee to be protected in terms of their authenticity, confidentiality, and privacy. Measures should be taken to reduce sampling error. Access to web-based surveys must be limited to the targeted sample; unrestricted sample surveys that allow anyone access are unacceptable. Whereas many unscientific online polls boast large samples, there is often little or no attempt to ensure the quality and validity of such samples. Samples must be clearly defined and authenticated. Researchers should consider using passwords or PIN numbers to control for sampling error and establish credible samples (Bowers, 1999; Bradley, 1999; Dillman, Tortora, & Bowker, 1998). If passwords or PIN numbers are not used, responding samples should be carefully examined. Those not eligible should be eliminated to maintain consistency with the sampling plan and yield credible results.

Additional precautions must be taken to protect respondents' privacy and ensure the confidentiality of their responses. Several researchers have experienced negative feedback from respondents regarding privacy issues (Couper, Blair, & Triplett, 1997; Mehta & Sivadas, 1995; Sheehan & Hoy, 1999). In analyzing server logs from electronic surveys, Jeavons (1998) found that individuals stopped completing surveys when their email address was requested. Minimally, researchers should make assurances of confidentiality in the prenotification e-mail (Couper, Blair, & Triplett, 1997; Kiesler & Sproull, 1986; Schaeffer & Dillman, 1998). Further protection of respondents' privacy can be provided by separating e-mail addresses upon receipt of the completed surveys (Sheehan & Hoy, 1999) or programming the return to include the researcher's email address, not that of the respondent (Shannon & Bradshaw, 2000). Using secure servers and encryption methods affords additional protection of respondents' privacy.

In conclusion, web-based electronic surveys must use principles of sound survey design. Research studies must also focus on the adaptability of such principles for electronic survey formats so that survey professionals can take full advantage of the benefits of such surveys without sacrificing the integrity of their data and placing respondents at risk in terms of confidentiality and privacy.

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