Comparing online and mail survey research methods in longitudinal research

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Introduction

Traditional survey research methods use mail, telephone, and face-to-face communication to recruit, manage and interface with participants. Recently, online survey research methods using the web and email have become popular. Results of research comparing the effectiveness of online and more traditional survey research methods have been mixed. While some studies reported few differences in the quality, validity, and accuracy of responses (e.g., Ritter et al., 2004, Yun & Trumbo, 2000) and others suggested one approach was better than the other (e.g., Backstrom & Nilsson, 2003, MacElroy et al., 2002, McCoy et al., 2004), the research methodologies employed in these studies make the veracity of the results questionable. In this research, we compare traditional and online survey research methods used in a single longitudinal study with respect to (a) initial response rates, (b) long-term involvement of participants, (c) completeness of responses, (d) responses to open-ended questions, and (e) costs.

Methods

The basis for this comparison comes from an ongoing longitudinal study involving youth hockey players and their parent(s). During the recruitment phase, the parents were contacted via the telephone or mail and invited to participate. Those who agreed (n=1132) were given the option of participating via mail or online using identical in content questionnaires consisting of 109 items investigating psychological and hockey related issues. The mail participants (n=485) were sent paper questionnaires along with stamped return envelopes. The online participants (n=647) were sent an email with a username and password to access the questionnaires via a secure web site. Management of the mail participants occurred through telephone contact whereas the online participants were contacted via email.

This design provides the opportunity to directly compare online and traditional survey research methods. In this presentation, we compare responses provided by the two groups over two periods of a longitudinal study (fall 2004 and spring 2005), focusing on a variety of characteristics. Where appropriate, chi-square analysis was used to determine the significance of the differences.

Results & Discussion

In the fall 2004 questionnaire, 61% of the participants who agreed to participate online completed the questionnaires (392 out of 647) and 53% of the participants who agreed to participate via mail completed the questionnaires (256 out of 485) (p = 0.009). The rate at which fall 2004 participants completed the spring 2005 follow-up questionnaire differed between mail participants (63%, 161 out of 256) and online participants (29%, 115 out of 392) (p<0.001). This discrepancy may be a function of online participants

only being informed of the availability of the spring 2005 questionnaire by email, whereas the mail participants received a letter in the mail with the questionnaire. Prior to the fall 2004 questionnaire, both sets of participants were contacted via traditional methods (mail and phone) during the recruitment phase. The traditional methods may be more direct, human, persistent, and/or visible. Moreover, the online questionnaire was only available for a limited amount of time, whereas the mail participants were not disqualified if their material was returned after the suggested deadline. Technical and procedural issues associated with the online system (e.g., lost passwords, lost email, spam filters blocking the email, end-user computer failures) may also explain the reduced response rates.

One of the benefits of the online system was that it did not allow participants to skip questions or miss responses, whereas 15% (39 out of 256) of the mail-in questionnaires had at least one piece of missing data ($p<0.001$). This is an important advantage of online questionnaires since these missing data elements will reduce the statistical power associated with accompanying results.

While there were no perceptible differences in the nature of the open-ended responses (e.g., topics covered, length and quality of responses) between the paper and electronic questionnaires, the online responses required little to no preparation for analysis. However, the enforced structure of online questionnaires limits the ability of participants to add comments in non-commenting sections (compared to paper questionnaires where participants can and did add comments throughout the questionnaire).

Although the development costs of a secure online system for questionnaire research can be rather expensive, there may be a cost saving over traditional methods when participant numbers are high or the research is longitudinal. With traditional delivery methods, the costs of the project increase as the number of participants increase (i.e., the cost of mail, data entry, etc.). For an online system, many of the project costs are largely independent of the number of participants.

Conclusions & Recommendations
The primary differences found in this comparison of the online and mail methods were in the response rates and long-term involvement. We attribute these differences to the methods by which participants were informed about the questionnaires. Although more traditional methods of interfacing with participants (i.e., mail, telephone, etc.) are time consuming and expensive, they appear to be more effective in encouraging people to begin or continue participation.

With respect to the responses, the online questionnaires have a clear benefit in enforcing the completeness of the questionnaires. However, this enforcement of structure restricts the participants from providing further explanations of their responses. In terms of labour and costs, there is a marked benefit to using online methods when the number of participants is sufficiently large or for longitudinal studies.

In this presentation, we will discuss a number of recommendations based on what we have learned in this study, including:

1. In order to address the socio-economic and other barriers to technology use, participants should be allowed to choose their method of participation.
2. If participants find it difficult to participate online, they should be allowed to switch to the traditional method; mail participants should also be given the option to switch to using the online system.
3. Traditional methods for participant management should be used for the online participants (email is not an effective method for participant management). This can take the form of a phone call or a postcard sent in the mail.
4. If there is a large sample or a longitudinal study, researchers should consider using a combination of online and traditional methods for time and cost saving purposes.