Questionnaire Administration: Effects by Mode on Data Quality and Accuracy in Psychological Research

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Social Science research along with psychological research often relies on surveys to glean information from a population. These questionnaires vary in several ways, from how the populations are contacted, to how each instrument is administered, to the way the surveys are presented to the respondents. The effect of these variations can have subtle or dramatic effects on the data generated from them. Much research has gone into the field of survey/questionnaire design and how context, answer choices, and demographics affect the data collected from the instruments. Perhaps one area that deserves further exploration is the mode of administration of these instruments. This paper will attempt to review the available literature to find some conclusions about how mode of administration can affect the quality of the results of surveys or questionnaires.

The modes of collecting the instruments data are increasingly varied and have evolved with the technology of the day. Currently survey and questionnaire data is collected via a traditional pencil and paper method, in person interviews, telephone interviews, self-assessed telephone recordings, and electronic or computer based data collection methods. To confound the issues, many researchers use a variety of these modes of data collection during studies. For example, some researchers choose to initially disseminate surveys via the postal mail with telephone interviews as follow ups. Various other combinations of delivery modes can be seen commonly in the literature. With any mode of data collection there are many influences that can affect the resulting data. Schwarz and Hippler (1995) show a prime example of these influences on the data. The authors compared telephone interviews to mail surveys finding that
considerably related questions affected a target question only when asked before the target question, while the order of questions did not matter in the mail surveys. These differences in mode of administration combined with various other influences within the data collection instrument make it difficult to ascertain the quality of the resulting data.

Bowling (2005) gives the reminder that respondents are required to make cognitive contributions to the process of data collection. This should be taken into account by the researchers in the design of the instrument to lessen the influence of the respondent’s abilities. However they will still have an effect on the resulting data. Perhaps the least cognitively demanding of all the modes of administration is the face to face interview process. This type of instrument administration merely requires the respondent to be able to hear and understand the langue the interviewer uses. Basic verbal and listening skills are very low demanding skills cognitively speaking, since the conversation can be two way and memory does not have to play a large role in the process. Similar but slightly more difficult would be the telephone interview, since not only does the respondent need to have the basic verbal abilities but also must have access or own a telephone. More cognitive requirements are demanded when the instrument is self-administered and take the form of a written or visual method. This necessitates literacy and the ability to write and or articulate answers in written form (Bowling, 2005). Finally, electronic methods are becoming increasingly popular as they aid the researchers by allowing a greater ease of data collection as well as the economic ability to reach more respondents over a greater geographic area. This method however requires the most cognitively out of the respondents, who not only need access to a computer and or internet access, but also the knowledge to use
them. In addition the respondents need to be able to read and understand the instrument
questions and answers much like any other self-administered questionnaire (Tourangeau &
Smith, 1996).

Removing non-measurement errors such as; survey design, sampling errors, and non-
response, and only looking at the mode of survey administration, the literature is inconsistent but
there are trends that appear. Face-to-face (ftfi) interviews are perhaps the oldest form of
questionnaires most likely predating writing. Since the ftfi involves two people interacting, the
ability of the interviewer to engage the respondent can be a motivating effect for the respondent.
This leads to the assumption that a higher response rates could be obtained from the ftfi given
well selected interviewers. However, when following Dillman’s suggestions (Dillman, 2000) for
postal surveys (using at least two reminders and having sponsorship by a respected body)
response rates can be similar to ftfis. Scott (1961) describes how the response rates can be
around 85 percent for both methods. It should be noted that many researchers believe that
response rates have declined across all methods in recent years as seen in the British Household
Surveys (Walker, Maher, Coulthard, 2001). Higher item non-response has been reported for
postal surveys as opposed to ftfi and telephone interviews (Harris, Weinberger, and Tierney,
1997).

Siemiatycki (1979) investigated mail and telephone interviews in addition to home
interviews as either the main or follow-up method of gaining responses. Siemiatycki compared
cost and data quality with varying strategies. In the study the author found that with strategies
that began with mail or telephone contact and followed with the alternate two methods as follow-
up procedures yielded response rates equal to the home interview citing between 80 and 90 percent. Siemiatycki notes that the phone and or mail first strategies cost roughly half that of the home interview process. The author further noted that the telephone interview response rate was higher than the mailed response rate and suggested that home interview be used as a last resort due to its higher cost and equal effectiveness.

In 2003, Midanik and Greenfield compared telephone interview responses with in-person responses for the same population. The responses were separated by two months with the different modes of administration of the same instrument. They used logistic regression to discern differences by mode of administration as well as differences in responses by demographics. They found that there was no difference between the two modes for the alcohol consumption measures and suggested that use of telephone interviewing for large surveys should be supported (Midanik & Greenfield, 2003).

Bowling (2005) points out, that interviews (both in person and telephone) involve interactions between the researcher and the respondent in a social setting. This social interaction can lead to the influence of social norms to creep into the responses. This causes social desirability bias to be a threat to validity in such data collection methods, possibly resulting in reporting higher levels of socially desirable behaviors. There are procedures and methods which try and reduce this issue with assurances of confidentiality and anonymity which can lead to respondents’ to become suspicious and alter/reduce their response (Bowling, 2005). Bowling (2005) cites several studies where more socially favorable responses were found when comparing personal interviews to identical instruments that were self-administered.
Kaplan, Hilton, Park-Tanjasiri, and Perez-Stable (2001) studied the comparability of face-to-face (ftf) and self-administered questionnaires (saq) when assessing smoking related attitudes and behaviors in adolescents. They found that a higher proportion of incomplete questionnaires from the saq group. This agreed with previous research the authors cited. The authors go on to conclude that the ftf may have allowed for greater communication of the questions and allowed for better elicitation of information from the respondents. The interviewer was able to add to the information gathered by deducing when the respondent simply did not know something and eased the difficulty of repetitive questioning (Kaplan, Hilton, Park-Tanjasiri, et al., 2001).

Contrary to the Kaplan, Hilton, Park-Tanjasiri, and Perez-Stable (2001) study is the Tourangeau, Rasinski, Jobe, Smith and Pratt (1997) publication. The authors looked for sources of error in a survey on sexual behavior and found that of the various experimental factors investigated; only one had consistent effect on the results - method of administration of the questions. They found that saq significantly increased the reported numbers of sexual partners, sexually transmitted diseases, and level of condom use when compared to an equivalent population where questions were administered by an interviewer. A small caveat was that computer assistance had an increased item response rate than pencil and paper methods (Tourangeau, Rasinski, Jobe, et al., 1997).

This discrepancy is not wholly a surprise in social science research. As stated before, social acceptance bias is an unpredictable influence and changes with the subject of the questions along with the mode of administration. Distractions to the respondent, including the presence of the interviewer or location of interview, can lead to bias. The human factor for the interviewer,
either face to face or on the telephone, can cause excessively high positive socially desirable responses because of a perception that the interviewer will not endorse the beliefs of the respondent due to the varied abilities of interviewers to come across as neutral, listening skills, ability to probe, or use of techniques to record responses. Bowling (2005) makes the statement that sq’s can for obvious reasons circumvent this situation.

Many researchers have found that electronic methods tend to have increased item response rates as opposed to more traditional pencil and paper methods. Johnson, Copas, Erens, et al. (2001) found that, when computer assisted self interview methods were used to measure sexual HIV risk behavior, internal consistency was greater for the computer assisted methods as opposed to pencil and paper techniques. In both situations the authors administered the questionnaires in a face to face situation. In addition, they found that item non-response was lower with the computer assisted methods. They conclude however, that computer assisted methods affected the reporting of sexual HIV risk behaviors for their sample even though it did result in higher internal consistency with the reduction of missed questions. Tourangeau, Rasinski, Jobe, et al., (1997) agree with the conclusion that electronic methods result in higher item response rates that various pencil and paper techniques. However, Williams, Freeman, Bowen, et al. (2000) found that, after a random assignment of respondents to either audio-computer assisted self interview (acasi) or a ftfi with a random assignment to follow-up methods as well, there was no effect of mode of administration on responses to HIV risk behavior questions.
Another acasi study by Turner, Ku, Rogers, et al. (1998) also measuring risk behaviors, was tested by randomly assigning the sample population to the acasi or a pencil and paper saq. In this study the authors found that respondents in the acasi group were less likely than the saq group to use answers such as “don’t know” or skip the questions. They concluded that in their nationwide study, the respondents were more likely to report risky behaviors when interviewed with the acasi than the paper saq especially when the questions dealt with sensitive, illegal, or stigmatic behaviors. Turner, Ku, Rogers, et al. conclude that using the acasi methods lead to more accurate estimates due to the increased privacy perceived by the electronic methods.

Fouladi, McCarthy, and Moller (2002) assessed two comparable groups of college students using a World Wide Web version as well as a pencil and paper version of the same instrument. Their findings showed significant effects on mode of administration while the magnitude of the effects was very small. They conclude that the Internet is a viable mode of administration but do not find it superior to other methods.

The mode of administration for questionnaire instruments has a marked effect on the data collected. Regardless of the researchers attempts to control for variables in literacy, access, protocols, or the myriad of other factors that have been documented to effect survey results the mere fact that humans are the target of such instruments makes fool-proof instruments and methods impossible. The sometimes conflicting results and recommendations by the literature prove this point. The literature has indeed shown that these instruments place a cognitive burden on the respondents and the mode of administration can positively as well as negatively affect that burden. Based on the limited research presented here, recommendations for telephone or
computer assisted and Internet based instruments tend to yield more complete and perhaps more accurate responses than the more traditional interview process or pencil and paper instruments. It should be noted that due to the confounding factors that separate the research presented, such as instrument topic, sample population demographics, and social norms, one method may still be preferable to another given the circumstances of the study in question.

References


