

Conducting survey research: Part 2: What you need to know about adaptation, administration, and interpretation of instruments

This is the second of two editorials about survey research and the use of instruments. The first of these focused on permission to use instruments that are already developed. In this second part, we explore considerations in using surveys and questionnaires as a means to collect and analyze information, including translation, sample size, distribution, and interpretation.

1 | WHEN SHOULD I USE A SURVEY INSTRUMENT?

Editors look for quality in survey studies, but “the quality of a survey is best judged not by its size, scope, or prominence, but by how much attention is given to [preventing, measuring, and] dealing with the many important problems that can arise” (American Statistical Association, 2018).

Survey research requires the same rigor as any other type of research methodology. Essential for survey research is a substantial research question (Kelley, Clark, Brown, & Sitzia, 2003). The research question determines the methods, and the method should not precede the problem to be studied (Nardi, 2018). The most reliable research answers one question. If a researcher tries to answer too many questions, the research is weakened.

Instruments should be carefully chosen based on the concepts of the research question, characteristics of respondents, and the concepts explored in the tool. Too often, tools are selected inappropriately because the tool was designed for a specific age, condition, or situation and should not be used for other groups. The reliability and validity are based on the characteristics of the individuals for which the tool was designed. Cultural considerations are also crucial when deciding whether an instrument is fit for the intended purpose.

2 | WHAT KINDS OF PROBLEMS DO EDITORS SEE WHEN SURVEY-BASED RESEARCH IS SUBMITTED?

As editors, we look at the overall integrity and logic of the paper as well as the instrument(s) used and unfortunately, we see a number of mistakes including:

- No clear research question, conceptual framework, or coherent research design
- A combination of a lack of research question and the collection of a lot of data to “trawl” for interesting relationships, the result of which produces a weak study and is a common novice error
- Lack of permission for the use of or translation of instrument(s)
- Instrument translation or adaptation has not been adequately described
- Inadequate description of the reason for the use of the instrument(s) as well as their properties
- The recruitment process of participants leads to possible bias/coercion
- The use of too many instruments
- Poor response rate
- Single-site studies
- Manuscripts that do not describe the psychometric properties of reliability (consistency from one measurement to the next) or validity (accurate measurement of the concept) (Kelley et al., 2003)
- Overstating the implications of the results and making unjustified claims about causation

3 | HOW DO I CALCULATE SAMPLE SIZE?

In quantitative survey studies, it is critical to select probability samples so that statistics can be used to provide generalizations to the population from which the sample was drawn (Anderson, 2010). The target sample size depends on several factors: the resources available, the aim of the study, and the statistical quality needed for the survey (Kelley et al., 2003). If statistical analysis is to be performed on the data, then sample size calculations should be conducted. Intended sample size, actual sample size, how sample size was determined, power analysis, or methods used to determine the precision of parameter estimates should all be included in your publication (APA Publications Working Group, 2008).

This site may assist you with sample size calculations: <https://www.statisticssolutions.com/sample-size-calculation-and-sample-size-justification/sampling/>

Although randomized sampling is ideal in quantitative studies, qualitative studies sampling may be purposive, convenience, or

snowball. Characteristically qualitative studies have small sample sizes; sample sizes are not calculated using mathematical rules, and probability statistics are not applied. Qualitative researchers should describe samples in terms of characteristics and relevance to the broader population (Anderson, 2010).

4 | WHAT IS AN ACCEPTABLE RESPONSE RATE?

There is no agreed-on minimum response rate, and response rate alone is insufficient to judge the quality of research (Morton, Bandara, Robinson, & Carr, 2012). However, one journal has stipulated that research that is purporting to be generalizable should have a response rate of at least 80% (Draugalis & Plaza, 2009; Fincham, 2008) in order to reduce nonresponse bias. Nonresponse bias occurs if there is a systematic difference in characteristics between responders and nonresponders (Sedgwick, 2014). It is often the case that the lower the response rate, the higher is the probability of nonresponse error (Eaden, Mayberry, & Mayberry, 1999). For example, nonresponders to patient satisfaction surveys are likely to be less satisfied than responders.

Nonresponse bias can be minimized by ensuring that the response rate for a survey is as high as possible. Key to this is the selection of appropriate and well-designed instruments, restricting the number of questionnaires so not to overtax respondents and not gathering data that do not relate to the research questions or hypotheses. Data should be critical to any analysis, and irrelevant questions should be excluded. For example, if surveying nurses about their use of personal protective equipment, is it relevant to ask them their marital status? The answer, of course, depends on the nature of the research question, but it is unlikely. In addition, potential participants need assurance that information given is completely confidential or anonymous. This is especially pertinent if the topic is sensitive (Kelley et al., 2003). Authors need to include a description of the eligible study population, the settings and locations where data were collected, how participants were contacted and selected (to ascertain external validity), and the participation and refusal rates, and authors of papers with low response rates need to describe what attempts were made to raise the response rate (Morton et al., 2012).

However, editors can also become concerned if response rates are too high. For example, a response rate of 100% in a study of high school or undergraduate students whose teachers conducted the survey would suggest that there was overt or covert coercion to complete the survey. Potential participants should not be disadvantaged by nonparticipation. Offering incentives may also increase participation, but generally, the only incentive you should offer is a sincere thank you and an invitation to share the published research if the participant so chooses. It is also acceptable to give participants light refreshments. In some southeast Asian countries, it is difficult to get people to participate unless they receive a gift, but anything beyond a very small token or reimbursement of travel expenses is likely to be viewed as unethical. Disincentives if participants decline to participate

are unethical. For example, if a student does not wish to respond to a survey, there should be no academic penalties.

5 | WHAT DO I NEED TO BE AWARE OF WHEN TRANSLATING AN INSTRUMENT?

Translation is the transfer of meaning from one language to another, not the transfer of words between languages. An imperfect translation process may lead to an instrument that is not equivalent to the original questionnaire (Beaton, Bombardier, Guillemin, & Ferraz, 2000). If instruments are to be used across cultures, the items “must not only be translated well linguistically, but also adapted culturally to maintain the content validity of the instrument at a conceptual level across different cultures” (Beaton et al., 2000, p. 3186), and a modified instrument can no longer be assumed to have the same reliability and validity as the original instrument (Revicki & Schwartz, 2009).

The translation of an instrument is a difficult and time-consuming process (Weeks, Swerissen, & Belfrage, 2007). The World Health Organization (2015) outlines the steps required to ensure that the translated instrument is conceptually equivalent to the original. These involve forward translation, expert panel, back translation, pretesting, and cognitive interviewing before finalizing the new version. The forward translator, a native speaker of the language into which the instrument will be translated, needs to be a subject matter expert as well as knowledgeable about the source culture (World Health Organization, 2015). Beaton et al. (2000) also provided a helpful guide to cross-cultural adaptation. It is very unusual for students or faculty to have a level of English to enable them to achieve a conceptually accurate translation or for them to be able to convene a panel of experts with this expertise in house.

During the translation process, it is inevitable to find a number of terms or concepts that are difficult to translate because they do not have the same or similar meaning in the target language or intended cultural context as they do in the original (Beaton et al., 2000). For example, the process of translating a swearing impact survey into Chinese was complicated by the lack of a word for swearing in Chinese that was equivalent in meaning to the English word (Sun, Stone, Yang, Petrini, & McMillan, 2017). It is optimal to have a panel of experts discuss the goal or intent of the original item as well as conduct pilot studies to assess the cultural appropriateness of the survey's domains and performance (Beaton et al., 2000).

6 | WHAT DO I NEED TO KNOW ABOUT THE DISTRIBUTION OF QUESTIONNAIRES?

Nursing & Health Sciences require that all participants have properly consented and have had the choice of whether or not to participate. The research also needs to have been approved by a research ethics committee. For example, researchers should be aware of and take steps to avoid coercion or manipulation of potential participants by not directly handing out instruments to their students or staff. Rather

an intermediary should be asked to do this, for example, a student representative or researcher who is not a staff member. In addition, the principal researchers should not be present when the instruments are being completed. Failure to do this not only results in a potentially coercive situation but also may skew the sample results. Under coercive situations, the sample may give false answers because they fear their work or study situations are under threat in some way.

7 | HOW DO I DISCUSS AND INTERPRET SURVEY RESULTS?

Caution should be taken to interpret survey data not as facts but as perceptions (Organisation for Economic Co-operation and Development [OECD], 2012); this is particularly pertinent if your results rely on a self-report survey. Also, take into account the response rate in the interpretation of the results (OECD, 2012). We suggest that all researchers get a scholarly researcher outside the research team to view the results and the interpretation of these before a paper is submitted to a journal. This will provide critical feedback before the study review and help identify any potential interpretative errors.

There has been much discussion about *P* values recently with some journals announcing that they would no longer publish research containing *P* values, because the statistics were too often used to support lower-quality research and because of “*P*-hacking.” *P*-hacking occurs when an analysis is conducted and then re-conducted with minor alterations until a statistically significant finding is obtained (Verhulst, 2016). *P*-hacking can be avoided by having a clear research question and a limited number of hypotheses. Just because a result is statistically significant does not mean that it is real (Gupta, 2015). The assistance of colleagues with statistical expertise is essential in both the design and interpretation stages of research.

8 | WHAT RESOURCES DO YOU RECOMMEND?

The references to this article and the following resources are pertinent: it is always helpful to read the author guidelines of your target journal.

Best practices for survey research reports: A synopsis for authors and reviewers. Concludes with an excellent checklist (Draugalis, Coons, & Plaza, 2008) <https://www.ajpe.org/doi/full/10.5688/aj720111>

“A practical guide to sampling” (UK National Audit Office).

<https://www.nao.org.uk/wp-content/uploads/2001/06/SamplingGuide.pdf>

SamplingGuide.pdf

“Journal Article Reporting Standards (JARS)” (American Psychological Association).

<https://apastyle.apa.org/jars/index>

“Best practices for survey research” (American Association for Public Research Opinion).

<https://www.aapor.org/Standards-Ethics/Best-Practices.aspx>

“Ethical Guidelines for Statistical Practice.” Includes resources translated into Chinese American Statistical Association (ASA):

<https://www.amstat.org/ASA/Your-Career/Ethical-Guidelines-for-Statistical-Practice.aspx>

Tips on how to find information about research instruments such as questionnaires (University of Washington).

<https://guides.lib.uw.edu/friendly.php?s=hsl/measure>

The complexities of survey research are often underestimated, and we hope that these editorials will point you to some useful resources and assist you in conducting quality research which can be shared through publication. Nursing and health science researchers require survey research knowledge for not only conducting quality research but also undertaking quality reviews and translating research into practice.

CONFLICTS OF INTERESTS

The authors have no conflict of interest to declare.

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