Background and Publications

From a scientific point of view, it is essential that we establish a knowledge base about the measurement quality of survey data. For years, survey researchers have argued with their critics about the quality of survey data without any strong factual basis, but new data resources and modeling strategies now make it possible to assess the quality of survey measures. The website contains information focusing on an approach to evaluating one aspect of the quality of survey data—the *reliability* or consistency of measurement. The project draws upon the insights of the burgeoning research literature on survey methodology developed over the past two decades, which has devoted new attention to the information gathering process in surveys.

In recent years, a better understanding has been gained of the sources of measurement error in surveys: specifically, the attributes of survey questions; the cognitive processes of information transmission and retrieval; the motivational context of the interview setting; and the response framework in which the information is then transmitted. Until recently, little effort has been undertaken to systematically quantify the nature and extent of measurement error in the types of measures typically employed in commonly used population surveys, and therein lies the significance of the present research.

This research focuses on the reliability of measurement in social surveys. There has been much written about the sources of measurement errors in surveys and best practices in developing high quality survey questionnaires. The overarching goal of this project is to establish a factual basis for conjectures that exist in the survey methods literature concerning the attributes of good survey questions. The project builds a publicly accessible data base of information for roughly 1,200 questions representative of typical questions used in social science surveys. The data base, developed on the basis of ten nationally (or regionally) representative panel studies, contains estimates of question-specific reliabilities, along with detailed coding of attributes of the questions (e.g. content, response formats, and question length), which can be used to evaluate the optimal properties of survey questions with respect to levels of measurement error. Through an analysis of the reliability information and the attributes of survey questions from several large-scale panel studies, practical suggestions are made about the attributes of survey questions that will improve the quality of survey data. In addition, this reliability database will be posted onto a a publicly available website. This strategy will provide researchers easy access to the data base for purposes of evaluating the reliability of a range of typical questions in common use in survey research.

The broader impact of this research is to significantly increase the social science research infrastructure by providing a publicly available data base on reliability estimates for a representative pool of survey questions. Given that survey measurement is a key ingredient in the majority of social science research, the broader impact of the proposed research lies in its contribution to the uses of virtually all types of survey data, which can be evaluated in terms of the results of this study. The research adds to our current knowledge by making the reliability estimates obtained in the prior NSF-supported research, along with the extension proposed here, available to the public in a manner that allows users to search, filter or query the data base in investigating the question reliability of types of survey questions of interest. Thus, the long-range goal of the proposed project to create a public archive of the levels of reliability for the typical kind information gathering approaches used in surveys can have an impact on the development of survey questions for new surveys, as well as increase our understanding of the quality of existing surveys.

Publications

The following is a complete list of publications and presentations from the project to date.

Alwin, D.F. 1989. Problems in the Estimation and Interpretation of the Reliability of Survey Data. *Quality and Quantity* 23:277-331.

Alwin, D.F. 1991. Research on Survey Quality. *Sociological Methods and Research* 20:3-29.

Alwin, D.F. and Krosnick, J.A. 1991. The Reliability of Survey Attitude Measurement: The Influence of Question and Respondent Attributes. *Sociological Methods and Research* 20:139-181.

Alwin, D.F. 1992. Information Transmission in the Survey Interview: Number of Response Categories and the Reliability of Attitude Measurement. In P.V. Marsden (Ed.), *Sociological Methodology 1992* (Pp. 83-118). Washington D.C.: American Sociological Association.

Alwin, D.F. 1997b. Feeling Thermometers vs. Seven-point Scales: Which are Better? *Sociological Methods & Research*, 25:318-340.

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Alwin, D.F. 2007. *Margins of Error: A Study of Reliability in Survey Measurement*. Hoboken, NJ: John Wiley and Sons.

Alwin, D.F. 2009. Assessing the Reliability and Validity of Time-line and Event History Data. In R.F. Belli, F.P. Stafford, and D.F. Alwin (Eds.). *Calendar and Time Diary Methods in Life Course Research*. Thousand Oaks, CA: Sage Publications.

Alwin, D.F. 2010. How Good is Survey Measurement? Assessing the Reliability and Validity of Survey Measures. In P.V. Marsden and J. Wright (Eds.), *Handbook of Survey Research*. 2nd edition (pages 405-434). London, UK: Emerald Group Publishing Limited.

Alwin, D.F. 2011. Evaluating the Reliability and Validity of Survey Interview Data using the MTMM Approach. In J. Madans, K. Miller, G. Willis and A. Maitland (Eds.), *Question Evaluation Methods: Contributing to the Science of Data Quality* (pages 265-293). Hoboken, NJ: John Wiley and Sons.

Alwin, D.F., Zeiser, K. and Gensimore, D. 2013. Reliability of Self-Reports of Financial Information in Surveys: Results from the Health and Retirement Study. *Sociological Methods and Research.* 43:98-136.

Alwin, D.F. 2015. Reliability and Validity Assessment: New Approaches. Pp. 239-247 in J.D. Wright (Ed.), *International Encyclopedia of the Social & Behavioral Sciences*, 2nd edition, volume 20. Oxford: Elsevier Ltd.

Alwin, D.F. 2016. Survey Data Quality and Measurement Precision. Pp. 527-557 in C. Wolf, D. Joye, T.W. Smith, and Y-C. Fu (Eds), *The SAGE Handbook of Survey Methodology*. Thousand Oaks, CA: SAGE Publications, Inc.

Alwin, D.F., Beattie, B.A. and Baumgartner, E.M. 2015. Assessing the Reliability of Measurement in the General Social Survey: The Content and Context of the GSS Survey Questions. Paper presented at the session on "Measurement Error and Questionnaire Design," the 70th annual conference of the American Association for Public Opinion Research.

Alwin, D.F. and Beattie, B.A. 2016. The KISS Principle in Survey Measurement—Question Length and Data Quality. *Sociological Methodology* 46:121-152.

Alwin, D.F., Baumgartner, E.M. and Beattie, B.A. 2018. Number of Response Categories and Reliability in Attitude Measurement. *Journal of Survey Statistics and Methodology* 6(2):212-239.