

**VALIDITY AND  
RELIABILITY:  
SOUNDINGS IN DATA  
TESTING**

**By**

**Anthony Oliver  
PhD**

*Dr. Oliver is the  
Academic Dean of the  
Caribbean Graduate  
School of Theology*

**Introduction**

In the domain of social science research there have been major debates on the issues of validity and reliability of data. The issues raised are foundational to the entire research enterprise with implications for a variety of theoretical and practical concerns. This essay seeks to discuss the problem of validity and reliability of data as it relates to questionnaires and interviews.

It will be argued that the value of social research is based to a large extent on the validity and reliability of data. The essay will treat the topic under the following sub-headings: Definition of Terms; Relationship Between Validity and Reliability; and Questionnaires and Interviews in the Social Sciences.

**Definition of Terms**

A foundational step in an essay of this sort is to define important terms. The terms that are worth defining in this essay are validity, reliability, data, social sciences, questionnaires, and interviews. These terms will be defined in the sequence listed.

First, the term validity will be defined. John W. Creswell (2005, 599) states validity "means that researchers can draw meaningful and justifiable inferences from scores about a sample or population." Meanwhile, Jurek Kirakowski, ("Frequently Asked Questions") points out that "the validity of a questionnaire is the degree to which the questionnaire is actually measuring or collecting data about what you think it should be measuring or collecting data about." It has been observed that it is valid to employ a

bathroom scale to determine the weight of a person, however, it is invalid to measure intelligence by the size of shoes a person wears.

Some authorities make a subdivision in the concept of validity. For example, Thompson and Nelson refer to external and internal validity. External validity, according to these writers, refers to "the accuracy of scientific results when generalized beyond the laboratory or survey situation to the real world. If it is thought that the researcher could not expect to find confirmation of research results in the ordinary life of the community, the results would be said to be externally invalid." In addition, internal validity refers to "a standard or criteria against which research results are judged. To be internally valid the results of an experiment or of a survey are considered to be accurate indications of the manipulation of an independent variable in the case of an experiment, or of the attitudes or knowledge of respondents in the case of a survey. If the results, however, can be seen as produced by the way the experiment or survey was conducted then the results are internally invalid. Something internal to the research process produced the results, so researchers are no longer measuring what they claim to be measuring. Selection bias in the allocation of subjects to the experimental and control groups may contaminate the results as can questions in a survey which elicit socially desirable answers." These issues will be treated later in dealing with difficulties in the realm of validity as it relates to the social sciences.

Next we focus on the definition of reliability. Creswell states that reliability "means that individual scores from an instrument should be nearly the same or stable on repeated administrations of the instrument and that they should be free from sources of measurement error and consistent" (p. 597). Commenting on reliability, Kirakowski states that "the reliability of a questionnaire is the ability of the questionnaire to give the same results when filled out by like-minded people in similar circumstances. Reliability is usually expressed on a numerical scale from zero (very unreliable) to one (extremely reliable). To use the illustration of the scale, a reliable scale will provide the same accurate reading of the same person should that person weigh two or three consecutive times in short order without changing any variables.

Third the noun "data" and term "social sciences" will be defined. According to the Oxford dictionary, the noun "data" is plural with the singular being "datum". However, it is legitimate to use "data" as a

singular in modern times. The noun refers to information such as “facts and statistics used for reference or analysis.” The phrases social sciences refers to the scientific study of human society and social relationships and the disciplines within this field such as, economics, sociology, psychology, political science, anthropology, criminology, women studies, et cetera.

Next, the nouns “questionnaire” and “interview” beg for explanation. Kirakowski defines the term “questionnaire” as “a method for the elicitation, and recording, and collecting of information.” He then proceeds to elaborate on the terms “method”, “elicitation”, “recording”, and “collecting”. Haralambos and Holborn opine that “a questionnaire consists simply of a list of pre-set questions. In questionnaire research the same questions are usually given to respondents in the same order so that the same information can be collected from every member of the sample” (Haralambos and Holborn 2000, 999).

On the other hand, in the social sciences an interview is basically a verbal questionnaire that has the scope for the interviewer to probe for further information. Usually a well prepared interview in the social sciences possesses an interview protocol. There are three basic interview protocols, namely, structured, semi-structured, and unstructured protocols (“Evaluating Measures Used in Social Science Research”). This explanation of the interview is supported by Haralambos and Holborn (2000, 1003). They state that “interviews take a number of forms depending upon how structured they are. A completely structured interview is simply a questionnaire administered by an interviewer who is not allowed to deviate in any way from the questions provided. The interviewer simply reads out the questions to the respondent. At the other extreme, a totally unstructured interview takes the form of a conversation where the interviewer has no predetermined questions. The majority of interviews falls somewhere between these two extremes” (2000, 1003).

### **Relationship Between Validity and Reliability**

Validity and reliability are two of four characteristics used to evaluate measures in social science research. The other two are appropriateness and objectivity. It is a common view among social scientists that all instruments designed to collect data must possess certain characteristics. They believe that the extent to which an instrument displays these

characteristics determines the strength or weakness of the instrument. Since questionnaires and interviews are instruments for measuring data, validity and reliability should also be applicable to these instruments.

Validity and reliability are distinct but related characteristics which ought to be part of the process in seeking to garner data in the social sciences from which objective conclusions could be deduced. Questionnaires and interviews are considered valid if they measure what they are designed to measure (<http://socrates.tsum.edu/~trenckly/week1b.htm>). On the other hand questionnaires and interviews are considered reliable to the extent that they are free of measurement errors. The less error in the questionnaire and interview instruments, the more consistently they will measure the same attribute time after time.

There is an interrelation between reliability and validity. Let me illustrate with the use of a questionnaire. A questionnaire that is not reliable cannot be valid. But, in order for a questionnaire to be valid, it must be reliable. In other words, just because a questionnaire is reliable does not guarantee that it is valid. But, the instrument must be reliable in order for us to even consider whether it's valid or not. The same applies to the use of an interview.

The matter of the interrelation between reliability and validity can be a challenge for the primary methods used in social research. For instance, there have been many debates about the degree of reliability possible in the social sciences vis-à-vis the natural sciences. In the natural sciences data are deemed reliable if other researchers utilize the same methods of investigation and get the same results. The reliable data can then be generalized about the phenomena observed. Social scientists do not claim the same measure of reliability as is possible in the natural sciences. However, many social scientists, particularly those who restrict themselves to the use of quantitative methods, argue that a high degree of reliability is possible. Results can be verified by repeating the experiments.

Whereas positivists in the field of sociology, for instance, posit a high degree of reliability for quantitative method, they do not espouse this high degree of reliability for qualitative methods. Haralambos and Holborn make the following comment on this issue. They state "Qualitative methods are often criticized for failing to meet the same

standards of reliability because the procedures used to collect data can be unsystematic, the results are rarely quantified, and there is no way of replicating a qualitative study and checking the reliability of its findings” (2000, 993). Positivists will have major doubts about interviews because there are several variables which can affect the outcome of the findings.

When one turns to the matter of validity, researchers whose dominant methodology employ qualitative methods, which include interviews, argue that quantitative methods frequently lack validity. For instance, statistical data may be able to gauge church attendance but not assess religious commitment. Religious commitment, supporters of qualitative data posit, must probe motives and meanings in order to accurately capture social reality (Haralambos and Holborn 2000, 993). It seems that the relationship between reliability and validity is further enhanced by a healthy combination of qualitative and quantitative methods meticulously applied in the design, implementation and evaluation of research instruments such as questionnaires and interviews.

### **Questionnaires and Interviews in the Social Sciences**

Questionnaires and interviews are two of the major methods in the collection of data for social science research. Both these methods are used in qualitative studies; but quantitative studies employ questionnaires more than interviews. There are strengths and weaknesses in both these methods and there are implications for the reliability and validity of the data generated through these instruments. It is therefore advisable to explore some of the issues raised about reliability and validity in the use of questionnaires and interviews.

There are inherent strengths and weaknesses in the use of questionnaires (Haralambos and Holborn 2000, 1001-1003). Among the strengths are the following. First, they allow for the collection of large quantities of data in a short period of time. Second, questionnaires provide a method to collect the data at a manageable financial cost. Third, even if interviews are involved, their involvement in the use of questionnaires could be minimal. Fourth, the data from questionnaires could be easy to quantify. Fifth, questionnaire research has the capacity to use larger samples than a more qualitative method such as interviews. Therefore,

data from a social survey on voting trends is more likely to be applied on a wider scale than in-depth interviews.

The reliability and validity of weaknesses of questionnaires is held suspect by interactionists but especially by phenomenologists. Haralambos and Holborn discuss six methodological assumptions raised by phenomenologists on the use of questionnaires. The weaknesses cited are: (1) it cannot be assumed that different answers to the same question reflect real differences; (2) there are researcher biases embedded in the very design of questionnaires; (3) the operationalization of concepts contributes to a distortion of social reality; (4) respondents may not give full and accurate replies to questions and this to jeopardize the validity of data; (5) postal questionnaire, for instance maintain a great distance between the researcher and the respondents; and (6) open-ended questions lead to the coding of data if it is used for quantitative purposes and researchers can impose their own categories on the findings.

Notwithstanding the disadvantages of questionnaires, most social scientists acknowledge the usefulness of this method of data collection and advocate that validity and reliability could be secured by minimizing bias and distortion.

Let me now review some strengths and weaknesses of interviews. In general, it may be observed that the basic strengths and weaknesses of questionnaires exist to a greater extent in interviews. This is due in part to the reality that "the interview is a verbal questionnaire."

However, there are additional strengths and weaknesses of the interview method. Some strengths of interviews include: (1) the researcher could probe for more information based on the reply of the respondent; (2) open-ended questions provide the opportunity for the respondent's view to be taken seriously into account; (3) the sample size of interviews, though less than that of questionnaires, is greater than that of participant observation; and (4) the responses are not limited to fixed choices as they are in some types of questionnaires. Weaknesses of interviews include: (1) respondents may fabricate information; (2) the presence of the research may influence the interviewee; and (3) the social statuses of the interviewer and interviewee may affect the quality of the data.

## Conclusion

Validity and reliability are two of four indispensable characteristics of social science measures in the quest to produce research that is scientific. Above we started by defining the terms validity, reliability, data, questionnaires and interviews. This was followed by a discussion of the relationship between validity and reliability. Here it was observed that the two concepts are different but related. It was pointed out that if reliability is lacking it is unlikely that one could claim validity. Also, positivists espouse a higher degree of validity for the quantitative methods than the qualitative methods. These researchers therefore prefer questionnaires with a great degree of fixed choices in the quest to keep the variables constant in the data collection process.

On the other hand, interactionists argue that interviews when well designed and professionally administered are able to probe motives and predict certain types of social reality that the purely quantitative approaches are unable to do. Interestingly, the postmodernist have grave doubts about the objectivity of questionnaires and interviews especially when these are highly structured by researchers.

A balanced approach would affirm the high degree of probability that reliability and validity can attain in the use of questionnaires and interviews. The meticulous researcher would bear in mind the pitfalls to be avoided in the noble quest to produce factual data in the social sciences which could be of use in framing policies to address problems in our global village.

## REFERENCE

- Cano, Virginia. *Reliability and Validity in Qualitative Research*.  
[http://www.qmuc.ac.uk/psych/RTrek/study\\_notes/web/sn5.htm](http://www.qmuc.ac.uk/psych/RTrek/study_notes/web/sn5.htm)
- Creswell, John W. 2005. *Educational Research: Planning, Conducting and Evaluating Qualitative and Quantitative Research*, 2<sup>nd</sup>. Columbus, Ohio: Upper Saddle River, Pearson/Merrill Hall.
- “Evaluating Measures Used in Social Science Research”  
<http://socrates.tsum.edu/~trenckly/week1b.htm>
- Haralambos, M., and Holborn, M. 2000. *Sociology: Themes and Perspectives*. 5<sup>th</sup> ed. London: HarperCollins.
- Kirakowski, Jurek. Compiler. “Questionnaires in Usability Engineering: A List of Frequently Asked Questions,” 3<sup>rd</sup> edition. June 2, 2000.  
<http://www.ucc.ie/hfrg/resources/qfaq1.html>
- Macionis, John J. 199-. *Sociology*. 5<sup>th</sup> ed. Prentice Hall.
- Thomas/Nelson. *Online Dictionary of the Social Sciences*.  
<http://socialsciencedictionary.nelson.com/ssd/SocialDict.jsp?alpha=Q>