Chapter 2
Clearly Communicating Conceptions of Validity and Reliability

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ABSTRACT

When embarking on this journey, the author had little expectation of finding the topics of validity and reliability to be so complex and convoluted or so interesting. This chapter helps to clear the air and communicate the concepts of validity and reliability more clearly. The challenges seem to include the wording used to introduce and describe the concepts along with the transformation of statistical equations over time and technology. What remains the same is the importance of knowing whether an instrument is valid and reliable. One of the most basic places to start with conducting a robust quantitative research project is to have valid and reliable instruments. This may involve creating your own instrument, using an established instrument, or modifying an existing instrument. This chapter takes a deep dive into the concepts of validity and reliability uncovering some of the cynicism and myths of these topics along the way. The ultimate goal is to communicate clearly so that future research can use the proper technique(s) and describe the output in a more uniform fashion.

INTRODUCTION

The general purpose of this chapter is to begin the conversation of why and how the topics of reliability and validity became so confusing and to clarify some of the muddy waters by examining the history of these concepts in addition to the current status. In the end, a recommendation is made to all scholars to do better with their rhetoric and selection of tests moving forward. It is important to note that this is not the end-all, be-all chapter on reliability and validity. To accomplish the major feat of an ultimate source for reliability and validity, it will be necessary to collaborate with subject matter experts for each test and develop a complete book or manual to communicate how to do the tests properly and how to communicate the findings in a consistent manner. However, this is the start of that conversation.

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USING AN ESTABLISHED INSTRUMENT

The author teaches Quantitative Research Methods and coaches students through the dissertation process. She is often asked how to find an established instrument. There are several ways to go about finding an instrument to meet the needs of your research. First, go to the academic library and search for keywords of the item(s) of interest along with keywords of "quantitative" and "development." This is because many empirical articles that introduce a new questionnaire to the world have these keywords in the title. Another way to find an instrument is to include keywords of "index," "inventory," "instrument," "questionnaire," "scale," or "survey." When reviewing empirical articles for the literature review, it is also helpful to note the instruments being used to measure the construct(s) of interest, as other scholars may have already used survey(s) that would fit your research needs. And, it is generally helpful to look at published dissertations that have used similar instruments as many of the survey questions will be published in the appendix. Before using an established instrument, reach out to the developer(s) for permission, an updated version of the questionnaire, and the interpretation documents to know how to score the results.

CREATING AN INSTRUMENT

There are several other textbooks available if planning to develop an instrument. This chapter is far too short to include all the information needed for developing a scale. Therefore, consult DeVellis (2017), Kline (2005), and/or Streiner and Norman (2008). DeVellis (2017) wrote that Step 1 of the scale development process is to "determine clearly what it is you want to measure" (p. 105). Step 2 is to "generate an item pool" (p. 109). Step 3 is to "determine the format for measurement" (p. 118). Step 4 is to "have [the] initial item pool reviewed by experts" (p. 134). Step 5 is to "consider inclusion of validation items" (p. 136). Step 6 is to "administer items to a development sample" (p. 137). Step 7 is to "evaluate the items" (p. 139). And, step 8 is to "optimize scale length" (p. 146).

MODIFYING AN INSTRUMENT

Scholars might find a need to modify an instrument for a variety of reasons. Some want to use an existing survey with a different language group and will need to translate the questions. Others will want to modify an instrument used for a particular demographic to use with a different group of participants; for example, a survey designed for teachers may be appropriate to use with healthcare workers if the wording is slightly changed. Creswell (2009) cautioned that when modifying an established instrument, the original validity and reliability may not sustain the changes made; therefore, there is a need to re-establish the validity and reliability of the newly modified instrument. Pergert, Bartholdson, Wenemark, Lutzen, and Sandeberg (2018) wrote that translating an instrument to a different language or adapting the content poses a dilemma. It is important to keep the new version as close to the original version as possible to "achieve a good functional level and trustworthiness" (p. 2).