Validating Research Instruments

Research instruments abound in the literature. Finding an instrument for nursing research is less of an issue today than it was 20 years ago. Finding the right instrument is the challenge. A research instrument must be assessed prior to use for both validity and reliability.

Survey research begins with assessing the validity and reliability of the research instrument selected. A systematic approach to establishing validity and reliability of a research instrument is required. If the tool is in English, the process is simplified. A research instrument from another English speaking country would need to be content-validated. Words, idioms or phases used that are unknown or unfamiliar to a US audience would need modification.

Process for obtaining a validating a tool from another English speaking country

1) Contact the original researchers for permission to use the instrument
2) Review the literature evidence of content validation studies and reported reliability statistics from published studies that have used the instrument
3) If the instrument has only been used outside of the US, hold focus groups to evaluate and reword as needed. The sample for the focus group should be representative of the population to be surveyed. Reword the instrument with feedback from the focus group.
4) Select content experts to review for relevance and clarity. The literature recommends 2 to twenty. Develop a tool to evaluate the content validity of the research instrument such as that recommended by Lynn (1986); send the reworded instrument to content experts with the evaluation tool.
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5) Evaluate the returned survey review tools and calculate a Content Validity Index (CVI) for the instrument (Lynn, 1986; Waltz, Strickland & Lenz, 1991). Eliminate items, or modify the research instrument based on this feedback.

While content validity rarely changes, Polit & Beck (2004, p. 421) cautioned that the “reliability of an instrument is a property not of the instrument but of the instrument when administered to a certain sample under certain conditions” (p. 422). They call for a re-estimate of reliability with each population surveyed. This should be done each time a research instrument is used (Knapp, 1985). Determining reliability requires reliability testing to ascertain both stability and internal consistency of the research instrument. A study population is needed. This will entail an IRB proposal for a pilot research project. Stability, or “test-retest reliability”, is determined by using a reliability coefficient, discovering the consistency of results obtained on more than one administration of the instrument. The usual interval is 2 to 3 weeks. The reliability coefficient is “the correlation coefficient between the two sets of scores” (Polit & Beck, 2004, p. 417).

While attitudes tend to remain stable, be aware that knowledge can change the second administration as a direct result of the first administration.

Scales and tests that involve summing items are evaluated for internal consistency (Polit & Beck, 2004). Internal consistency would be of paramount importance in a tool where the measurement of an attribute such as attitude is desired. The most widely used method is the calculation of the coefficient alpha or Cronbach’s alpha. Criterion related reliability is often used for knowledge-based surveys. This involves validating results against an evidence-based referent.
The need for valid and reliable nursing research instruments is vital. Undertaking validity and reliability studies of new instruments is a suitable research endeavor. Given the scope of nursing science, adequate instruments to assess the cognitive/affective knowledge domain to plan educational interventions are even more critical. A systematic approach to validate the proposed research instrument is the first step in a research project. The imperative to develop evidence-based practice strategies in nursing demands knowledge of the research instrument validation process.


Web-based resources for more information:

http://www.utmem.edu/%7Erarreola/researchdesign.html#nominal

http://www.longwood.edu/staff/kelleyds/Socl345/validity/sld001.htm

http://writing.colostate.edu/guides/research/relval/com2b3.cfm

http://www.socialresearchmethods.net/mb/measval.htm

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