2008-07

N 536 - Utilization of Nursing Research in Advanced Practice, Summer 2008

Tzeng, Huey-Ming

http://hdl.handle.net/2027.42/64943
Unless otherwise noted, the content of this course material is licensed under a Creative Commons 3.0 License.
http://creativecommons.org/licenses/by/3.0/

Copyright 2008, Huey-Ming Tzeng, Sonia A. Duffy, Lisa Kane Low.

The following information is intended to inform and educate and is not a tool for self-diagnosis or a replacement for medical evaluation, advice, diagnosis or treatment by a healthcare professional. You should speak to your physician or make an appointment to be seen if you have questions or concerns about this information or your medical condition. You assume all responsibility for use and potential liability associated with any use of the material.

Material contains copyrighted content, used in accordance with U.S. law. Copyright holders of content included in this material should contact open.michigan@umich.edu with any questions, corrections, or clarifications regarding the use of content. The Regents of the University of Michigan do not license the use of third party content posted to this site unless such a license is specifically granted in connection with particular content objects. Users of content are responsible for their compliance with applicable law. Mention of specific products in this recording solely represents the opinion of the speaker and does not represent an endorsement by the University of Michigan.
Measurements

Contributors
Sonia A. Duffy, PhD, RN
Lisa Kane Low, PhD, CNM, FACNM
Huey-Ming Tzeng, PhD, RN
Levels of Measurement

- Nominal and categorical measurement
  - Example: Male versus female
- Ordinal measurement
  - Ordered from the tallest one to the shortest one
- Interval-equidistant points measurement
  - Example: Age in years old
- Ratio-equidistant points with 0 as an option
  - Example: Income in US dollars
Examples: Different Levels of Measurement

- **How often do you feel in control of your life?**
  1. Never
  2. Seldom
  3. Often
  4. Almost always

- **Ethnic Background**
  1. Anglo
  2. African-American
  3. Hispanic
  4. Asian-American
  5. Other
Reliability

- How consistently does the measurement technique measure the concept of interest?

  - Consistency
  - Reproducibility
Types of Reliability

- Test-retest
- Inter-rater reliability
- Intra-rater reliability
- Statistical measures
  - Spearman-Brown split half
  - Guttman
  - Kuder-Richardson-20
  - Cronbach’s alpha
Test-Retest Stability

- Measure the same thing over and over to see if it always gives you the same result
- Does not work as well with paper and pencil surveys
Inter- and Intra-Rater Reliability

- Inter- and intra-rater reliability equivalence parallel
  - Inter-rater: Two different raters rate the same thing to see if getting similar results
  - Intra-rater: Give the same survey to the same person a week apart to see if getting the same results
Statistical Measures

- See how much the two measures that you are comparing measure the same thing
  - 1.0 is perfect measure of the same thing
  - .7 is less perfect, but pretty good
  - .3 is not so good
Validity

- The extent to which an instrument reflects the concept being examined
Types of Measurement Validity

- Content (face) validity
- Factor analysis
- Readability

- Others things to be aware of
  - Validity from contrasting groups
  - Validity from examining convergence
  - Validity from examining divergence
  - Validity from discriminant analysis
  - Validity from prediction of future events
  - Validity from predicting concurrent events
  - Successive verification of validity
Give the instrument to a group of experts and have them tell you whether it has all the elements of what you are trying to measure
Factor Analysis

- Analyze all the items in the scale and see how much they contribute
Readability

- Test the reading level of an instrument
- Should make the instrument to the 8th grade reading level
  - Example: In Detroit, patients thought smoking “cessation” was smoking “sensation”
Measurement Strategies

- Qualitative research
  - Observations
  - Interviews
  - Focus Groups
  - Diaries

- Quantitative research
  - Physiologic measures
  - Questionnaires
  - Scales
Scales

- Rating scales
- Likert scales
- Visual analog scales
Numeric Rating Scale

No pain | 0  1  2  3  4  5  6  7  8  9  10  | Worst pain possible
Verbal Descriptor Scale

No pain | Mild | Moderate | Severe | Very severe | Worst pain possible
Likert Scale

- 5 or 7 point scale is the best

- Example: How often in the past week have you felt in control of your life?
  - 1 = Never
  - 5 = All the Time
Visual Analog Scale

A 10-cm line

Worst possible pain

No pain
Questionnaire Considerations

- **Length**
- **Pre-testing**
  - For length
  - For accuracy
  - For feedback
- **Remuneration**
- **Include a stamped, addressed envelope**
Questionnaire Follow-Up

• 1 week later
  ○ Postcard: A thank you note to those who responded. A reminder to those who have not

• 3 weeks
  ○ Letter and replacement questionnaire

• 7 weeks
  ○ Replacement questionnaire by, such as, a certified mail