INSTRUMENTS FOR SIMULATION EVALUATION

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A little humor...

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Outline of the hour

- Simulation as a disruptive technology and the importance of measurement
- Complexities of evaluation for experiential teaching/learning
- Validity/ reliability
- Examples of simulation evaluation instruments
- Simulation evaluation exercise
Simulation as a “disruptive innovation”  
(Armstrong, 2009)

- The advent of simulation and other ‘alternatives’ or ‘adjuncts’ to clinical education necessitate evidence for using one or the other

Measurement in nursing education and research

- Valid and reliable measurement tools are essential components of nursing research.
- Poor or inadequate measurement tools limit the scope, potential and quality of research (DeVellis, 2003).
The first step in instrument development

- It is essential to operationally define our construct...
- WHAT are you trying to measure?
  - Clinical judgment
  - Critical thinking
  - Competency
  - Technical skills

HOW are we going to measure?

Unfortunately, it’s not this easy

Unfortunately, it’s not this easy

Clinical Judgment
Knowledge
Attitudes
Behaviors

What are you going to do with these measurements?

- This is important for establishing acceptable validity and reliability standards
- High stakes?
- Ranking students?
- Hiring?
- Just FYI?
Psychometrics 101

- Defining the latent variable that we are trying to measure:

WHAT are we trying to measure?

- Clinical judgment: “the ways in which nurses come to understand the problems, issues, or concerns of clients/patients, to attend to salient information and to respond in concerned involved ways” (Benner, Tanner & Chelsea, 1996, p.2)

The development of an instrument:
Lasater Clinical Judgment Rubric

- The tool is based on:
  - Tanner (2006) Thinking like a nurse: A research-based model of clinical judgment in nursing
WHAT are we trying to measure?

- **Noticing**
  - Context
  - Background
  - Relationship

- **Interpreting**
  - Expectations
  - Initial Grasp
  - Reasoning Patterns
  - Analytic Intuitive Narrative

- **Responding**
  - Action
  - Reflection-on-Action and Clinical Learning
  - Reflection-in-Action

Clinical judgment model (Tanner, 2006)

Bottom line... it’s complex
Let’s talk about validity and reliability

- **Reliable AND valid**
- **Not reliable or valid**
- **Reliable, but not valid**
- **Appears to be somewhat valid, but not highly reliable**

Reliability

- Reliability has to do with consistency-
The reliability of the Rubric refers to the extent to which differences in students’ scores on the rubric are consistent with differences in students’ true clinical judgment abilities and learning (Furr & Bacharach, 2008, p. 82)
Validity

- Content validity: does the Rubric accurately and comprehensively reflect clinical judgment?
- Criterion-related validity: do scores on the Rubric have an empirical (not theoretical) association with students’ true clinical judgment abilities and learning?
- Construct validity: does the Rubric adequately represent the theoretical constructs of clinical judgment?

1999 Standards focus on “validity evidence”

Establish validity

- Ask the experts
  - Conduct an online survey with questions such as...
    Please indicate the degree to which you believe the Lasater Clinical Judgment Rubric adequately reflects Tanner’s (2006) Model of Clinical Judgment in Nursing? (Construct validity)
  - Conduct focus groups to allow participating faculty to express and discuss their expert opinions related to the validity of the Rubric

Establish content validity

- Content validity: do items in the Rubric accurately and comprehensively reflect clinical judgment?
Establish criterion-related validity

- **Criterion-related validity:** do scores on the Rubric have an empirical (not theoretical) association with students' true clinical judgment abilities and learning?
- **WCN study (2009)** We distributed a rubric based on Lasater’s Rubric to be used to assess med-surg students in clinical. Do the students’ scores on the Rubric reflect their actual level of nursing education?

Establish criterion-related validity

- **Concurrent validity**
- Is there a relationship between students’ scores on multiple measures
  - Tool X, tool Y and tool Z
  - Students’ self-reports v. faculty assessment
  - GPA

Establish construct validity

- **Construct validity:** does the Rubric adequately represent the theoretical construct of clinical judgment?
Multi-trait/ multi-method matrix

- Multi-trait: do the items within the subscales of the Rubric “hang together” or have strong correlations?
- Multi-method: do student and faculty assessments match?

These advanced psychometric analyses require large sample sizes for adequate power.

Threats to validity

- Construct-irrelevant content - are any of the items in the Rubric extraneous to what we are trying to measure?
- Construct under-representation - are there elements that are essential to learning outcomes from human patient simulation that are not represented in the Rubric?

Face validity

- Ask faculty who are unfamiliar with the tool to answer the following question (once they have had a chance to see it)
  - What do you think we are trying to measure?
Assessing Reliability

- Inter-rater reliability
- Intra-rater reliability
- Inter-instrument reliability
- Internal consistency (validity)

Examples of simulation evaluation instruments

- Lasater Clinical Judgment Rubric
- Seattle University Evaluation Tool©
- Creighton Simulation Evaluation Instrument™

Simulation evaluation exercise
References


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