On trustworthiness and quality in quantitative research

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1. On trustworthiness
   - General ideas
   - Validity and reliability

2. On quality
   - Approaches to quality

General ideas, trustworthiness

Quantitative research methods (if properly applied) are designed to quarantee that:

- Same data and methods give same conclusions (objectivity).
- Conclusions are correct (deductive methods, e.g. mathematics), mistakes will eventually be found (experimental methods, e.g. physics) or at least one has good idea how trustworthy the conclusions are (statistics).
- The results can be independently verified or reproduced by the scientific community.

General ideas, trustworthiness

On the other hand, no quantitative research method (alone) can quarantee that:

- The assumptions you have made are correct (e.g. the object of your research exists or can be explained within the scope of your research).
- You are measuring what you think you are measuring.
- The setting does not change (e.g. with time, place, culture).
- The research methods and the sample you have chosen are good for the purpose of your research (e.g. not biased).
- Your calculations are correct (mistakes are exist even in research papers of the very best mathematicians).
- You are not overlooking something important.
- The interpretation of the results is correct.

Validity and reliability

Validity and reliability measure trustworthiness of the research.

- **Validity** (usually very hard to study)
- Internal: measure is measuring what it is supposed to measure.
- External: measure holds across different settings, procedures and participants.
- **Reliability** is the consistency of a set of measurements or measuring instrument (usually can be studied quantitatively).
- Test-retest reliability.
- Internal consistency can be estimated with Cronbach α.

Approaches to quality [1]

1. Quality as exceptional
   - Traditional notion of quality
   - Excelence (exceeing high standards)
   - Checking standards

   → Scientific journals, referee systems, prizes, academic degrees?
2. Quality as perfection or consistency
   - Zero defects
   - Quality culture

   → Reliability, referee systems
3. Quality as fitness for purpose

   (1) Meeting requirements

   → Validity (internal)

   (2) Mission
   - Quality assurance

   → Methodology, validity, reliability

[1] Lee Harvey and Diana Green: *Defining Quality*, Assessment and Evaluation in Higher Education, v18 n1 pp.9-34 1993.

Approaches to quality

4. Quality as value for money
   → Performance indicators, e.g. citiation indices, impact factors
5. Quality as transformation
   - Enchancing the participant
   - Value added
   - Empowering the participant

   → Academic degrees and titles (e.g. doctoral degree, docent)?