

## 4. Instrumentation I

### Key Terms:

Conceptual vs. operational definition  
Concurrent validity  
Content validity  
Criterion-related validity  
Cronbach's alpha ( $\alpha$ )  
Face validity  
Instrument/Instrumentation  
Internal consistency-measures/estimates of  
Interobserver reliability  
Judgmental validity  
Parallel-forms reliability  
Predictive validity  
Reliability (of an instrument or operational procedure)  
Reliability coefficient  
Split-half reliability  
Test-retest reliability  
Validity (of an instrument or operational procedure)  
Validity coefficient

### Key Principles:

- 4.1 For every variable in a study, researchers need to define the steps to be followed to create that variable.
- 4.2 An operational definition can never be complete in every detail but must contain enough detail to allow for replication
- 4.3 All operational definitions are imperfect, the same variable might have multiple operational definitions, different methods can lead to different results, and no operational definition is necessarily the "right" one.
- 4.4 An instrument is valid to the extent that it accurately measures what it is designed to measure.
- 4.5 Validity of an instrument can be assessed judgmentally (content or face) or empirically (predictive or concurrent).
- 4.6 Face validity of an instrument will sometimes be kept deliberately low so as to conceal the purpose of the instrument from research participants.

4.7 Empirical validation of an instrument requires that its results be compared to a criterion (a predicted measure or another concurrent measure) through calculation of a validity coefficient.

4.8 Validity coefficients range from 0.00 to 1.00, with higher coefficients indicating better validity, and with acceptable validity usually in the .40 to .90 range

4.9 To be useful, an instrument (or operational procedure) should be reasonably valid and reasonably reliable.

4.10 A reliable instrument (or operational procedure) will not necessarily be valid.

4.11 Validity is more important than reliability but is harder to achieve and assess.

4.12 Instruments in psychology are typically imperfect, and reliability is a matter of degree: “How reliable is this instrument?” rather than “Is this instrument reliable?”

4.13 The reliability of an instrument can be assessed in many ways: interobserver, test-retest, parallel-forms, split-half, and Cronbach’s alpha.

4.14 Reliability coefficients range from 0.00 to 1.00, with higher coefficients indicating better reliability, and with acceptable reliability usually in the .50 to .90 range