Research Methodology Measurement Comprehensive Exam

Study Guide

References

- Anastasi, A. (1988). Psychological testing (6th ed.). New York: MacMillan.
- AERA, APA, NCME (1999). Standards for educational and psychological tests. Washington, DC: American Psychological Association.
- Bloom, B.S., Madaus, G.F., & Hastings, J.T. (1981). Evaluation to improve learning. New York: McGraw- Hill.
- Mehrens, W.A., & Lehman, F.J. (1991). Measurement and Evaluation in Education and Psychology (4th ed.). Fort Worth: Holt, Rinehart and Winston, Inc.
- Nitko, A.J. (1996). Educational tests and measurement: An Introduction. (2nd ed.). San Diego: Harcourt, Brace, Jovanovich.

Outline

- GENERAL CHARACTERISTICS OF TESTS
  - measurement, testing, evaluation
  - objectivity of scoring
  - standardization
  - verbal vs. performance tests
  - power vs. speed tests
  - norm-referencing vs. criterion-referencing
  - attitude scale development
- NORM- REFERENCING
  - percentile ranks
  - linear standard scores
  - grade-equivalent scores
  - norm development procedures
  - types of norm groups
  - interpreting scores using norms
  - limitations of norm-referencing
- CRITERION- REFERENCING
  - concept of criterion-referencing
  - uses of criterion-referenced tests
  - methods for setting passing score
- RELIABILITY
  - true, error, and observed scores
  - sources/types of error in scores
  - reliability coefficients and ways to estimate them
  - factors that increase/decrease reliability
  - interpreting reliability data
  - meaning of, ways of estimating, and interpreting the standard error of measurement

- o forming intervals using the standard error of measurement
- o effects of the Homogeneity/heterogeneity of ability on reliability coefficients
- o percent agreement and decision consistency
- VALIDITY
  - o meaning, use, and interpretation of different types of validity evidence
  - o factors, such as, measurement error, speed and restriction in range, that affect validity and correlation coefficients
  - o standard error of estimate
  - o multiple regression and multiple cutoff procedures for prediction and selection
  - o validity and test bias
  - o ethical procedures for coaching students for tests
- MEASURING ACHIEVEMENT
  - o taxonomies of cognitive educational objectives
  - o nature, purpose, and creation of a test blueprint
  - o characteristics of various types of test items
  - o skills/abilities tested by various item types
  - o rules for writing/scoring various item types
  - o editing/revising items containing flaws
  - o factors to consider when selecting tests
  - o ethical issues (privacy, confidentiality, informed consent, coaching)
- MEASURING COGNITIVE ABILITY
  - o major tests of general mental ability (such as SB, WISC/WAIS, KABC, SOMPA)
  - o factor theories of cognitive ability organization, such as, "g", primary mental abilities, and hierarchical organization
  - o measuring general and specific aptitudes
  - o mental vs. chronological ages
  - o verbal vs. performance IQ scores
- FACTOR ANALYSIS AS USED IN MEASUREMENT
  - o classical factor analysis model
  - o meaning of factor loading
  - o general, group, common, and specific factors
  - o interpretation of factor analysis results in tabular form
  - o correlational patterns and their implied factor structures
- SELECTING,EVALUATING AND USING PUBLISHED TESTS
  - o test specifications/blueprint
  - o test manual(s)
  - o sources of test reviews
  - o test publishers' catalogues
  - o Standards for Educational and Psychological Tests
- USING ITEM DATA TO IMPROVE TESTS
  - o using item analysis to revise test items
  - o using item data to estimate final test characteristics, such as, mean, standard deviation, reliability

- o meaning and interpretation of traditional item statistics, such as, difficulty index, discrimination index, and distractor analyses
- o using item statistics, such as, item-objective congruence pretest-posttest change index for judging the instructional validity of test questions