

Psychological Testing and Measurement - Introduction

Chapter 01

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What is a Test?

- A measurement device or technique used to:
 - Quantify behavior
 - Understand and predict behavior
- Tests can be administered in two ways:
 - Individual
 - Group
- Items:
 - Specific questions or problems that make up a test
 - Specific stimulus to which a person responds overtly
 - They can be scored or evaluated

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Historical Perspective

- 4000 Years ago in China
- Han Dynasty (206 BCE-220 CE)
 - Test Batteries



Types of Tests

- Tests used for our government agencies



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Types of Tests

- Used for assessment of human ability
- Three main areas (highly interrelated)
 - Achievement – Previous learning
 - Aptitude – Potential for learning or acquiring a skill
 - Intelligence – General potential to solve problems, adapt to changing circumstances, think abstractly, and profit from experience.

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Psychological Test

- Measures characteristics of human beings that pertain to behavior
 - As related to psychology
- *Psychological Testing* – process of obtaining information
- *Psychological Assessment* – The gathering and integration of psychology-related data for the purpose of making a psychological evaluation (Cohen et al., 1996, p. 6).
- Made up of:
 - Tests
 - Interviews
 - Case studies
 - Behavioral observations
 - Apparatuses
 - Measurement procedures

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Hypothetical Construct

Processes that are not directly measurable, but which are inferred to have real existence and to give rise to measurable phenomena. Adapted from Chaplin (1985)

Examples

Intelligence	Faith
Resilience	Hope
Toughness	Charity
Test-taking ability	Integrity
Voter Attitudes	Anxiety
Aptitude	Self-esteem
Delinquency	Love

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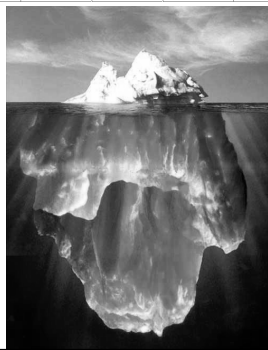
Operational Definitions

- Defining a way to measure a hypothetical construct
- Always one degree removed from the actual hypothetical construct
- Measuring (with imprecision and error) the “measurable phenomena” to which the construct gives rise – but never the actual construct
- Example – Measure vocabulary but cannot directly measure IQ
 - Operational definition for intelligence could be “number of words identified correctly in a 50-word vocabulary list.”
- LOVE group discussion

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Measurable Phenomena: “Tip of the Iceberg”

- Measurable Phenomena
- Veil of Measurability
- Underlying Construct



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Constructs, Measurable Phenomena, and Operational Definitions

Operational Definition:

- Sample of the measurable phenomena, such as: “Total number of chocolate boxes, flowers, thoughtful note cards, and plates of goodies exchanged during the week preceding St. Valentine’s Day”
- Precisely defined, measurable, replicable, reliable, valid, and unbiased

Measurable Phenomena:

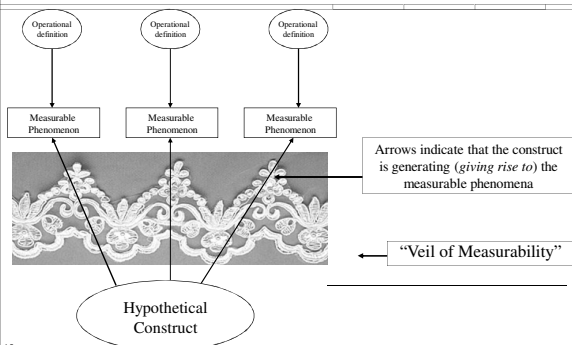
- All phenomena the construct generates (gives rise)
- Includes “indicators” of romantic love such as:
 - PDA’s
 - Moonlight walks
 - Manifestations of cooking prowess

Hypothetical Construct:

- Romantic Love

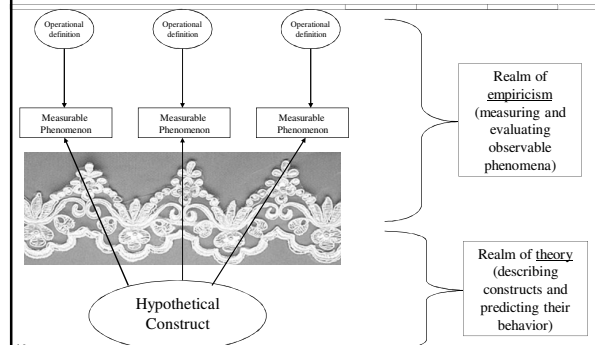


Constructs, Measurable Phenomena, and Operational Definitions



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Constructs, Measurable Phenomena, and Operational Definitions



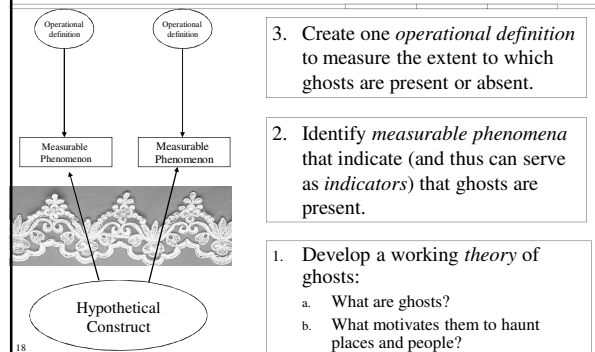
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Constructs, Measurable Phenomena, and Operational Definitions

- Since constructs are *measured* by operational definitions, they are, by extension, *defined* by those operations
- Evaluating how *well* a set of operational definitions “defines” (measures) a construct is one psychometrics most important tasks
- In this process we ask, are these operational definitions:
 - *reliable*?
 - *valid*?
 - *relevant*?
 - *useful*?
 - *free from bias*?

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Application Activity: Measuring Ghosts



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Evaluating the “Goodness” of a Test

- **Psychometry**: the branch of psychology dealing with the properties of psychological tests
- **Psychometric properties** include:
 - **Reliability**:
 - Accuracy, dependability, consistency, or repeatability of the test results (measuring tool)
 - **Validity**:
 - Does a test measure what it purports to measure?

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Norm-Referenced Tests

- Compare a test-taker’s performance with others
- The question can be answered many ways:
 - Class standing
 - Ranking
 - Percentile Rank
- Is the norm group an *appropriate* comparison group for *this* individual? How similar are they?

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Criterion-Referenced Tests

- Measures performance against an established criterion
 - E.g., 70% score is a passing criterion—see whether or not the material was learned
- Predicts performance outcome *outside of the test*.
- Examples of criterion-referenced predictions:
 - How well will this student do in college?
 - Will this juvenile offender return to a life of crime after release?
 - Will this applicant succeed at this job?
- Is the criterion measuring performance a *good criterion*?
 - Is the criterion relevant? reliable? valid?
- Does the criterion *relate well to the objectives* of testing?
 - Will it yield valuable information?

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Questions Answered by Psychologists

- Diagnosis and Treatment Planning
- Monitor Treatment Progress
- Help clients make more effective life choices/changes
 - Career planning,
 - Deciding to seek therapy or to work harder in therapy
- Program evaluation
- Helping third parties make informed decisions
 - Custody evaluations,
 - Employers,
 - Police academies

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Where Psychologists Assess

- Inpatient
 - Hospitals and clinics.
 - Diagnosis of pathology
- Schools
 - Diagnosis of learning disabilities, mental retardation, ADHD, "giftedness", behavioral problems
- Forensic (legal) settings
 - Insanity defenses
 - Competency to stand trial
 - Psychopathology & need for treatment
 - Justification for lawsuits
 - Court-ordered evaluations (e.g., child custody, child abuse or neglect)
- Employment settings, such as corporations and law firms.
 - Primary assessment question: applicant a good match for a job? How well is this person performing on the job? Whom should we promote or give a raise to?
- Career counseling
 - Primary assessment questions: interests, abilities, "aptitudes" (what career paths should you pursue?)
- Pre-marital counseling
 - Primary assessment questions: is a couple compatible? Should they get married?

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