

# Psychological Testing and Measurement - Introduction

## Chapter 01

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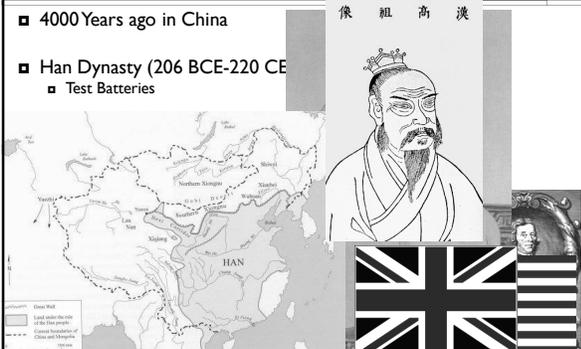
## What is a Test?

- 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:

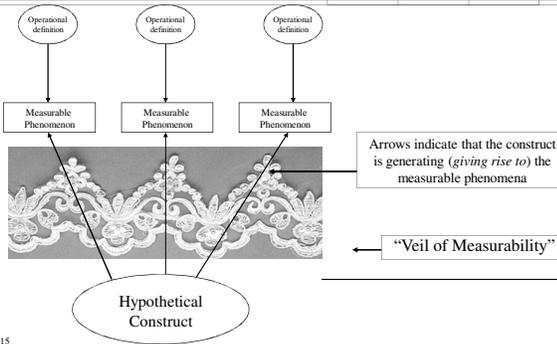
- All phenomena the construct generates (gives rise)
- Includes “indicators” of romantic love such as:
  - PDA’s
  - Moonlight walks
  - Manifestations of cooking prowess

### Hypothetical Construct:

- Romantic Love

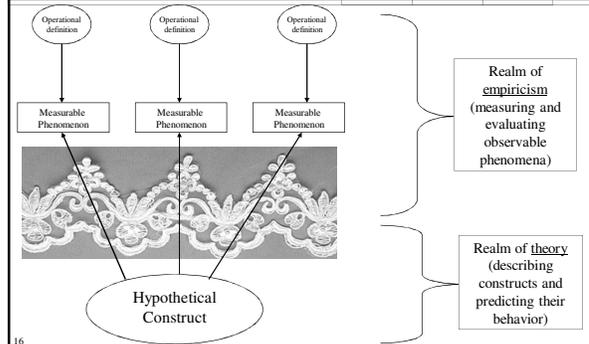


## Constructs, Measurable Phenomena, and Operational Definitions



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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

1. Develop a working *theory* of ghosts:

- a. What are ghosts?
- b. What motivates them to haunt places and people?

2. Identify *measurable phenomena* that indicate (and thus can serve as *indicators*) that ghosts are present.

3. Create one *operational definition* to measure the extent to which ghosts are present or absent.

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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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