Measurement: Concepts in Practice

Department of Government
London School of Economics and Political Science

Concept Definition

- Classical approach (minimal, maximal, ordinal)
- Family resemblance approach

Family Resemblance

- Necessary and sufficient:

  Rule of Law $\wedge$ Equality

- Unnecessary and sufficient:

  Rule of Law $\vee$ Equality

- Necessary and insufficient:

  Rule of Law $\wedge$ Equality $\wedge$ *Elections*

- Unnecessary and insufficient:

  (**Rule of Law** $\vee$ Equality) $\wedge$ *Elections*

Gerring's Criteria

1. Resonance (face validity)
2. Domain/scope
3. Consistency
4. Fecundity
5. Differentiation
6. Causal utility
7. Operationalization

An Example: Opinion

- *Opinion* is a summary evaluation of a particular object
- Only one necessary feature: evaluation/favorability
- How do we measure this?

Operationalization I

- To study concepts, we need to be able to observe those concepts

Operationalization I

- To study concepts, we need to be able to observe those concepts
- *Operationalization* is the process of creating measures for concepts

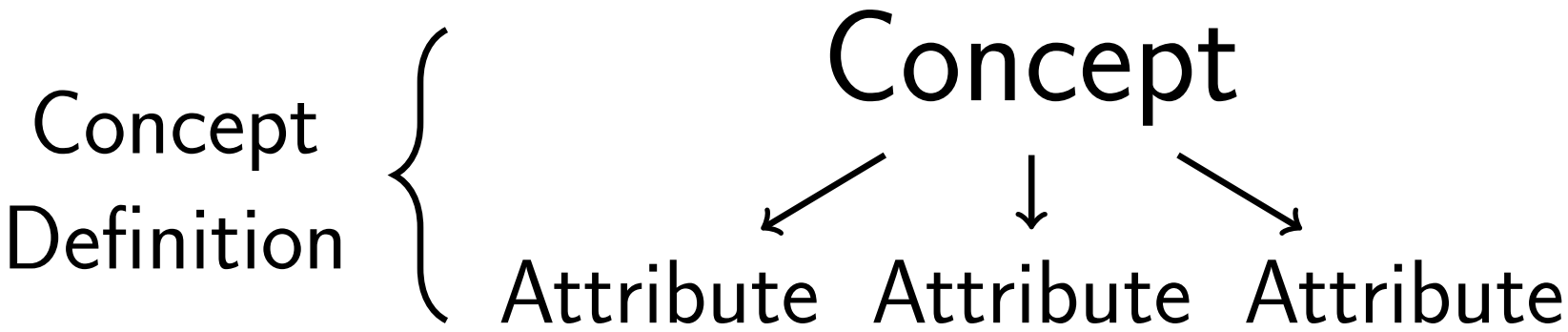
Operationalization I

- To study concepts, we need to be able to observe those concepts
- *Operationalization* is the process of creating measures for concepts
- Recall the definition of *variable*:
  - A dimension that describes an observation

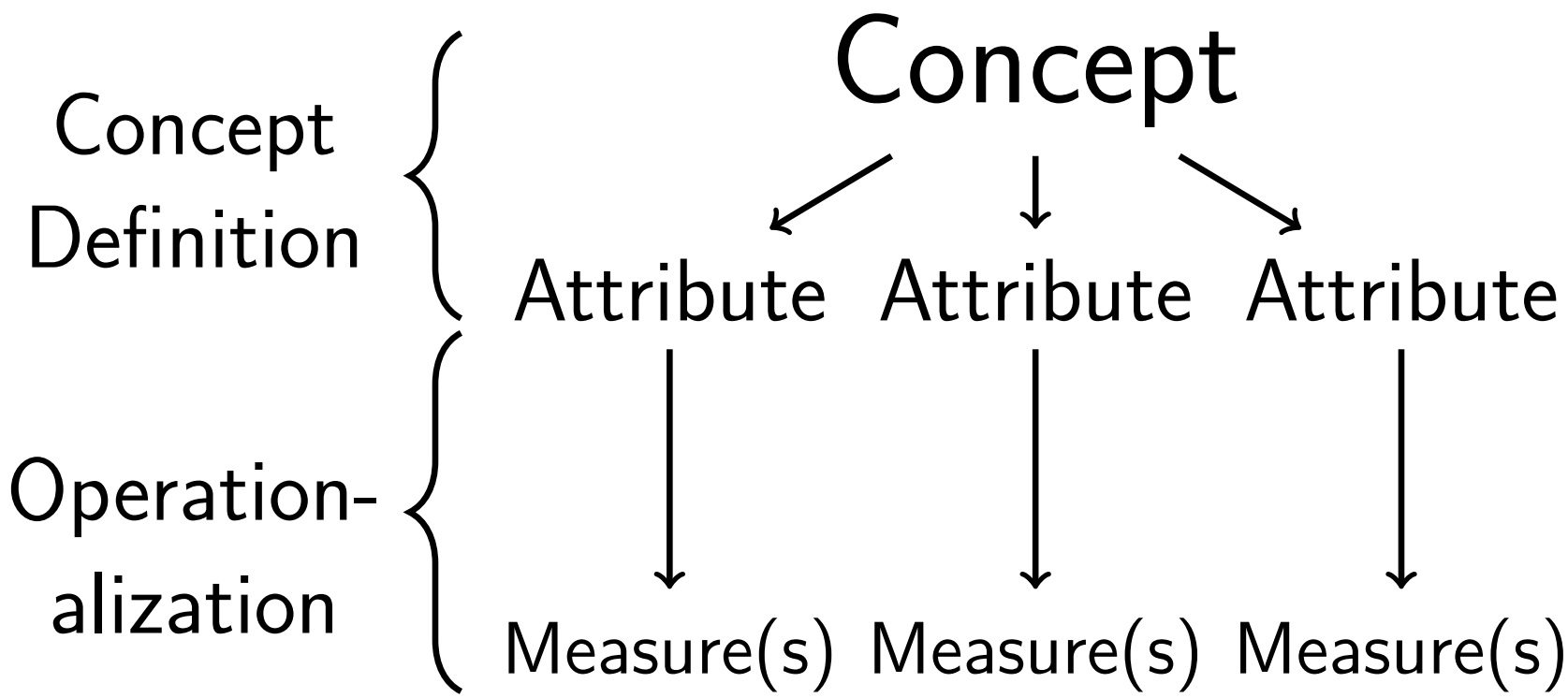
Operationalization I

- To study concepts, we need to be able to observe those concepts
- *Operationalization* is the process of creating measures for concepts
- Recall the definition of *variable*:
  - A dimension that describes an observation
  - The operationalization of a concept

Operationalization II



Operationalization II



Operationalization III

Definition

Operationalization III

Definition

$\rightarrow$ Feature

Operationalization III

Definition

→ Feature

→ Indicator(s)

Operationalization III

Definition

$\rightarrow$ Feature

$\rightarrow$ Indicator(s)

Indicators might be scaled or potential alternatives

Operationalization III

Definition

$\rightarrow$ Feature

$\rightarrow$ Indicator(s)

Indicators might be scaled or potential alternatives

Example: Democracy

Democracy

How do we operationalize this concept?

Example: Democracy

Democracy

$\rightarrow$ Free and fair elections

How do we operationalize this concept?

Example: Democracy

Democracy

$\rightarrow$ Free and fair elections

$\rightarrow$?

How do we operationalize this concept?

Questions?

Types of Measures

1. Categorical
   - Binary
2. Ordinal
3. Interval

Qualitative: Categorical, Ordinal

Quantitative: Ordinal, Interval

Note: *Ratio* scale measures are interval measures with a non-arbitrary zero value

Activity

- Concept: Democracy
- Attribute: Free and fair elections
- Measure:
  1. Categorical
  2. Ordinal
  3. Numeric

Coding

- Variable: A dimension that describes an observation
- Coding: Assigning a score for a variable to an observation

Coding

- Variable: A dimension that describes an observation
- Coding: Assigning a score for a variable to an observation
  - Manual or hand coding
  - Automated coding

Using Multiple Indicators

- Choose the "best" one
- Apply an AND operator
  - Must have all indicators to be coded 1
  - Treat indicators as "ordinal" in Gerring's sense
- Scale the indicators (e.g., sum or mean)

Questions?

Assessing Measurement Quality

1. Conceptual clarity
2. Construct validity
   - Convergent validity
   - Divergent validity
3. Accuracy and precision

Assessing Measures I

- Conceptual clarity is about knowing what we want to measure
- Sloppy concepts make for bad measures
  - Ambiguity
  - Vagueness

Assessing Measures I

- Conceptual clarity is about knowing what we want to measure
- Sloppy concepts make for bad measures
  - Ambiguity
  - Vagueness
- Revise concept definition as needed

Assessing Measures II

- Construct validity is the degree to which a variable measures a concept[1]

[1] Note: Kellstedt and Whitten call this "content validity". They use "construct validity" to mean whether a measure has predictive validity (i.e., that the measure is related to measures of other concepts that are theorized to be related).

Assessing Measures II

- Construct validity is the degree to which a variable measures a concept[1]
- Construct validity is **high** if a variable is a measure of the concept we care about

[1] Note: Kellstedt and Whitten call this "content validity". They use "construct validity" to mean whether a measure has predictive validity (i.e., that the measure is related to measures of other concepts that are theorized to be related).

Assessing Measures II

- Construct validity is the degree to which a variable measures a concept[1]
- Construct validity is **high** if a variable is a measure of the concept we care about
- Construct validity is **low** if a variable is actually a measure of something else

[1] Note: Kellstedt and Whitten call this "content validity". They use "construct validity" to mean whether a measure has predictive validity (i.e., that the measure is related to measures of other concepts that are theorized to be related).

Assessing Construct Validity

- Multiple measures!
- Look for:
  - Convergence (Convergent validity)
  - Discrimination (Discriminant validity)

Assessing Construct Validity

- Multiple measures!
- Look for:
  - Convergence (Convergent validity)
  - Discrimination (Discriminant validity)
- For example, the multi-trait, multi-method matrix

Assessing Measures II

- Construct validity

Assessing Measures III

Assessing Measures III

- Accuracy

Accurate

Synonyms: true, correct, unbiased, valid

Image Source: Wikimedia, Public Domain

Assessing Measures III

- Accuracy

Assessing Measures III

- Accuracy
- Precision

Precise

Synonyms: certain, exact, specific, low variance

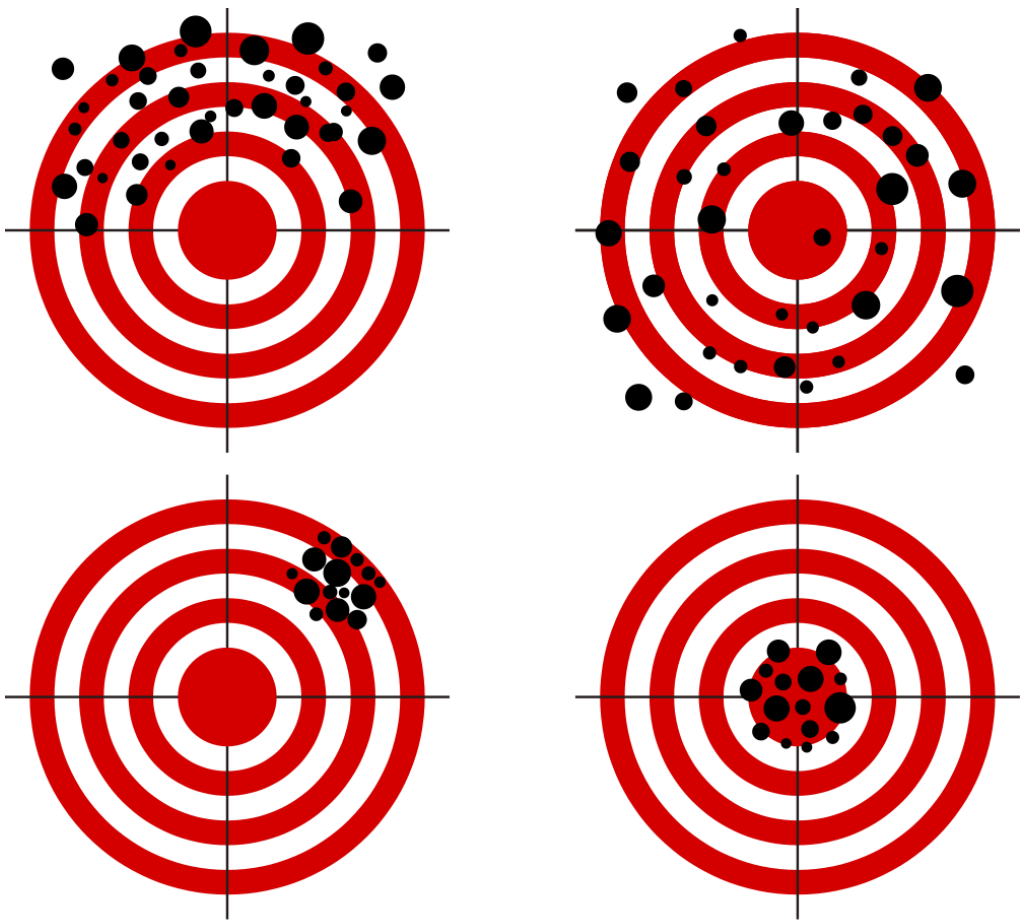


Image Source: Wikimedia, Nevit Dilmen

Assessing Measures III

- Accuracy
- Precision

Assessing Measures III

- Accuracy
- Precision
- Reliability

Reliable

Synonyms: dependable, replicable, repeatable, consistent

Typically used in the context of:

- Multiple measures used in a scale
- Multiple scores at different times
- Multiple individuals coding using one method

Questions?

Key Points

1. Theory is about concepts
2. Analysis is about measured variables
3. So our task as scientists is to:
   - Find observable implications of theory
   - Draw theoretical implications from measures