Lab 5
Validity

Picking a Topic for Your Paper

• The most important first step is finding a topic in psychology that interests you. You can choose a topic from any area of psychology (e.g., biological, cognitive, clinical, community, developmental, educational, personality, social).
• The question must be one that can be addressed with empirical research.
• Write down 3 possible research topics and indicate why you are interested in these questions. You will discuss these in lab next week.

Outline

• Content validity
• Criterion validity
  – Restriction of Range
• Multitrait-Multimethod Matrix
• Homework #5
Content Validity

• Do the items adequately represent all the domains of the construct?
• **Measure contamination**: Measure includes items that are irrelevant to the construct of interest.
• **Measure deficiency**: Measure fails to include items relevant to all aspects of the construct.

A well-defined construct

• Let’s say that the construct of narcissism consists of:
  – “a grandiose, yet fragile, sense of self and entitlement”
  – “a preoccupation with success”
  – “demands of admiration”


Content valid items?

1. I am an extraordinary person.
2. I insist upon getting the respect that is due me.
3. It's fun to see how far you can push people before they get upset.
4. I often act without thinking through all the alternatives.
Criterion Validity

• Criterion-related evidence examines correlations between the measure of interest and outcomes or behaviors (criteria) that should be predictable from the measure.
• The strength of the observed correlation is used to support the validity of the measure.

Criterion Validity

• For example, a person’s Agreeableness ought to be related (negatively) to counterproductive school behaviors.
• Agreeableness measures interpersonal orientation. Higher scorers are seen as helpful, trusting, and kind.
• We have such data in the SPSS file for lab.
• What is this validity coefficient?

Agreeableness Items

• I feel little concern for others. (Reverse)
• I sympathize with others' feelings.
• I am not interested in other people's problems. (Reverse)
Counterproductive School Behaviors – Interpersonal Domain

- Made fun of someone at school.
- Cursed at someone at school.
- Publicly embarrassed someone at school.
- Made a derogatory ethnic, religious, or racial remark at school.

Criterion Validity

- Examine the distributions of Agreeableness scores (IPIPA) and Counterproductive School Behaviors (Counter).
- Calculate the means, medians and SDs for these variables. Look at the Scatterplot.
- Calculate the correlation coefficient. (IPIPA with Counter). This is the validity coefficient.

Restriction of Range

- What happens when the variability of the predictor or the criterion is limited?
- For example, the Graduate Record Exam (GRE) is designed to predict success in graduate school. What happens when we look for evidence of criterion validity of the GRE?
Restriction of Range

- How does restriction of range affect criterion validity estimates?
- Restrict the sample on Agreeableness (.5 SD or above the mean) and recalculate the descriptive statistics, scatterplot, and validity coefficient.
- What happened?

Convergent Validity

- Convergent validity – the measure is related to other measures of the same construct
  - Different types of thermometers all give similar estimates of air temperature.

Discriminant Validity

- Discriminant validity – the measure is unrelated to measures of different constructs in theoretical predicted ways.
  - Measures of barometric pressure are not related to measures of temperature.
The multitrait-multimethod (MTMM) matrix is a table of correlation coefficients that enables us to simultaneously evaluate the convergent and discriminant validity of a construct.

If our measures are valid, we should see a pattern emerge between the correlations of our measures.

Assume you measure three constructs (or traits) using three different methods.

- **Traits**: Anger, Guilt, Depression
- **Measures**: Test, Clinical Rating, Self-report

The main diagonal is the correlation of the variable with itself and is by definition 1.0.

It is common practice to replace the main diagonal entries with estimates of reliability, such as alpha or other estimates as appropriate.
Multitrait Multimethod Matrix

- The Blue diagonals are heteromethod-monotrait correlations (trait effects).
- **Convergent validity diagonals** (different measures of the same construct converge and provide the same measurement)
- They should be very high (~ 0.5)

Multitrait Multimethod Matrix

- The Green blocks are monomethod, heterotrait correlations (method effects).
- **Discriminant validity** (measures of different traits should not be highly correlated)
- They should be low (~ 0.2).

Multitrait Multimethod Matrix

- The Purple blocks are heteromethod, heterotrait correlations (nonsense correlations).
- They should be very close to zero.
MTMM for Homework

• Published in Campbell & Fiske (1959) from this original paper:

What you need to turn in for HW #5

• Report descriptive statistics (mean, median, and standard deviation) for Agreeableness and Counter Productive Behaviors. Calculate the correlation between these variables. Interpret this score in terms of the criterion validity of the Agreeableness Measure. (2 points)
• Restrict scores on Agreeableness to 0.5 SD above the mean and higher. Find the correlation between Agreeableness and Counter Productive Behaviors. What happened and why? (2 points)
• Examine the attached MTMM. Identify the 3 convergent validity correlations for each of the 5 traits. Make a table of these correlations. (3 points)
• Identify the patterns of discriminant validity for self-ratings and teammate ratings. Make a table for both sets. Which set appears to have a higher degree of discriminant validity? (3 points)