

Measurement Validity

- Measurement error → bad data → worthless results
- Is the IV properly manipulated?
- Is the DV properly measured?
- Are the values we have for **every** measure/behavior correct?
- Observational, Self-report or Trace?
- Primary or Archival data?

Every Characteristic/behavior/Procedure is either...

| | Constant | Variable |
|-------------|----------|----------|
| Measured | 1 | 2 |
| Manipulated | 3 | 4 |

IV → causes DV

- **Temporal Precedence**
- **Reliable statistical relationship**
- **No alternative hypotheses/confounds**

types & their "roles" in a design

Statistical Conclusion Validity

- IV & DV can't be causally related if not statistically related
- **Statistical significance tests**
- **Programmatic Research** – novel RH tests, replication & convergence





Characteristic/Behavior/Procedure Plays a "Role" in a Study

Causal Variable (IV) 4 -- Ongoing Eq
 Effect Variable (DV) 2 -- Ongoing Eq

Control Constant 1 -- Initial Eq 3 -- Ongoing Eq
Control Variable 2 -- Initial Eq 4 -- Ongoing Eq
Confounding Variable 2 -- Initial Eq 4 -- Ongoing Eq

External Validity

Population -- Participant Sampling

| | | |
|-------------------|---|--------------------------------------|
| Target population |  | Complete or Purposive |
| Sampling Frame |  | Researcher-selected or Self-selected |
| Selected Sample |  | Simple or Stratified |
| Data Sample |  | Attrition |

Setting

- Laboratory, Structured or Field ?

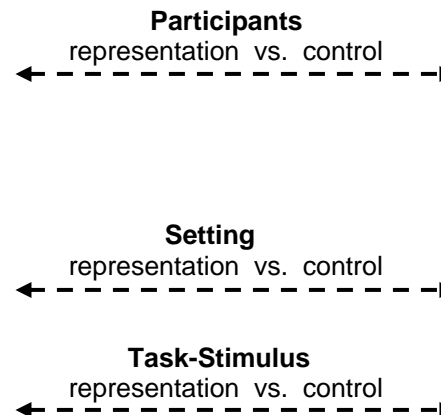
Task/Stimulus

- Familiar/Representative or Unfamiliar/Control ?

Societal/Temporal

- Relationships among variables change over time in a society

Choices we make influence Internal and External Validity !!



Internal Validity

| | Design | |
|-----------------|--------|----|
| | BG | WG |
| True Experiment | ☺ | ☺ |
| Non-experiment | ☹ | ☹ |

Initial Equivalence – Participant Assignment

- RA of individual participants by the researcher before manipulation of the IV -- best but not a guarantee
- Without proper RA all subject variables are potential confounds
- Subject constants can't be confounding variables
- Subject variables that are equivalent across IV conditions are control variables
- Subject variables that are nonequivalent across IV conditions are confounding variables – even if RA was used (remember RA doesn't always work)

Ongoing Equivalence – Procedural Standardization

- Only the IV is different across IV conditions
- Procedural constants can not be confounding variables
- Procedural variables that are equivalent across IV conditions are control variables
- Procedural variables that are nonequivalent across IV conditions are confounding variables
- Ongoing equivalence is harder to maintain in field settings
- Ongoing equivalence is harder to maintain during longer procedures