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 Measure/Behavior is either…

	Constant	Variable
Measured	1	2
Manipulated	3	4

IV —causes→ DV

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

Statistical Conclusion Validity

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

Measure/behavior types & their "roles" in a design

Every Measure/Behavior 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 !!

Participants
representation vs. control

Setting
representation vs. control

Task-Stimulus
representation vs. control

Internal Validity

	Design BG	Design 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