MMM Paradigm Measures

paradigms always have a within-subjects manipulation

when the paradigm measure is a change score, the "manipulation" is before vs after when the paradigm measure is a difference score, the order of conditions should not be constant

- + we often measure many times and keep the mean in order to reduce "unreliability" or "noise" ($1/\sqrt{N}$ rule)
- = we often inter-mix the repetitions of conditions (when using a difference-score paradigm) such that the two sets of raw data are effectively collected at the same time

Field/Efficacy Experiment Issues

if you use non-equivalent groups,

- you need something to remove (the effects of) any pre-existing differences ... covariates
- you need something to remove (the effects of) any confounds <u>during</u> the expt ... control measure
- if you can't counter-balance order (e.g., because you are using a change-score paradigm measure),
 - you must do something to get a measure of the effect of time ... time series and/or control group

Choosing a Change-score Design

- if you can run the Ss run one at a time (at lab or clinic), then use a two-group, pre-test/post-test design
- if you only have access to one population, then run a time-series (with a control measure)
- if you are in a hurry,
 - then use non-equivalent-groups (with a control measure)

otherwise,

use the ultimate time-series design (i.e., a staggered time-series with a control measure)

Internal Validity External Validity

homogeneous vs representative sample controlled vs realistic setting
Construct Validity

External Validity

Internal Validity Construct Validity within- vs between-subjects design power vs fewer demand characteristic Statistical Conclusion Validity

Internal

Validity

External Validity

Construct Validity selectivity vs sensitivity most accurate vs least unreliable

External Validity





Construct Validity

External Validity

selectivity... subject-specific? exhaustiveness ... subject-specific?

Internal Validity

Construct Validity

Validity Diamond – threat "locations"

lack of mundane realism External Validity *unique/atypical sample*

reactivity

Internal confounds Validity Construct *lack of specificity* Validity

violated assumptions Statistical Conclusion Validity uncontrolled variability

Validity Diamond – threat "locations"

External Validity

evaluation apprehension

Internal exp'ter & observer bias Validity Construct **systematic error** Validity

random error

Validity Diamond – threat "locations"







External Validity





External Validity

2+1 threats 1 counter

Internal ^{1 threat} Validity ^{3 points}

2+1 threats
validation &
trade-off
Construct
Validity

1 ½ threats verification & 1/√N rule