

Quasi Experimental Design: When you can't do controlled and randomized experiments

Reading:

Donald T. Campbell. "Reforms as Experiments." *American Psychologist*. (1969) 24:409-429.
<http://www.cem.org/attachments/publications/CEMWeb027%20Reforms%20As%20Experiments.pdf>

Advanced reading for those that want more detail:

William R. Shadish, Thomas D. Cook, Donald T. Campbell. *Experimental and quasi-experimental designs for generalized causal inference*. Boston: Houghton Mifflin Co.
<http://depts.washington.edu/methods/readings/Shadish.pdf>

The Research Design Validity

1. Construct validity

Basically are you measuring what you want to measure?

The theoretical contrast versus how you are approximating it.

Also important for a randomized experiment.

2. External validity

How generalizable are the results?

Do they pertain just to this context or can it be broader?

May require studies in different contexts to determine

2.1 Pretesting may cause learning that would not happen otherwise

2.2 Selection if based on a small group or a particular characteristic

2.3 Respondent reaction to the experiment—try to give the experimenter what they think the experimenter wants or may try to “wreck” the experiment.

This can also happen in a randomized experiment.

2.4 Multiple treatment interference

3. Internal validity

Does the action cause the effect or can it be some other cause?

Enumerate alternative explanations

3.1 Decide which are **plausible** (does not have to be all possible)

Some things that do not seem plausible given accepted knowledge may in fact be the explanation, so the researcher must be careful to be very open.

May be context specific

3.2 Use logic, design and measurement to assess whether each alternative might explain the observed effect.

May need to be context specific

3.3. Ruling out the alternatives

Confirmation may be logically difficult

3.4 Factors threatening internal validity

3.4.1 History—did something else happen between the action and the outcome that could explain it?

Can also happen in a randomized experiment, but is likely to have happened to all groups.

3.4.2 Maturation—process of change in the individual during the experiment—learning, getting tired, growing older.

Can also happen in a randomized experiment.

3.4.3 Pre-testing—May cause learning

3.4.4 Measurement instruments—changes in calibration, interviewers, carefulness.

Can also happen in a randomized experiment

3.4.5 Statistical regression—extreme scores or measurements will tend toward the mean if retested. Poor test results will get better and excellent test results will get worse.

3.4.6 Differential selection—how similar were the groups at the beginning?

3.4.7 Experimental mortality—More drop out of one group than the other or they drop out of the 2 groups for different reasons.

Can also happen in a randomized experiment.

3.4.8 Interaction of 2 or more of the above factors

Weak designs:

1. One group post-test only
History
2. Post-test only with non-equivalent groups
Differential selection
3. One group pre and post test
History
Learning
Statistical regression

Designs:

1. Natural experiment
Pre-event/post-event—time series
Before and after or interrupted time series
True interrupted time series—the smoking ban example
2. With and without versus before and after
Matched pairs—instead of random assignment
3. Proxy pre-test—what other information available from another source?
4. Multiple replications or multiple ways of measuring.