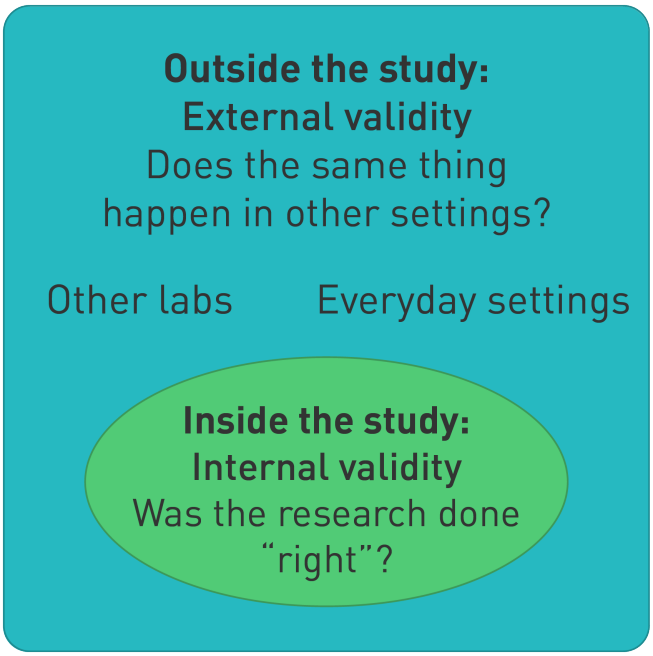
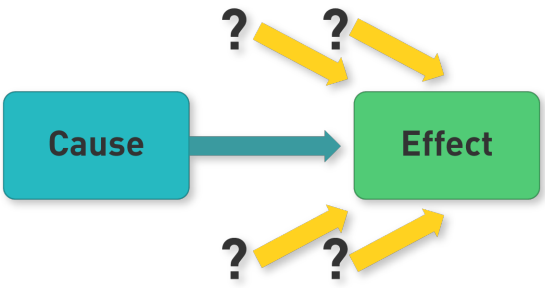


Internal Validity

- Internal validity deals with questions about whether changes in the dependent variable were *caused* by the treatment.



Threats to Internal Validity

- History
  - Additional independent variable occurs between pretest and posttest.
- Maturation
  - Subjects simply get older and change during experiment.
- Testing
  - Subjects "get used" to being tested.
- Regression to the mean
  - Issue with studies of "high and low extremes" on some key variable.

Demand Characteristics: Key Types

Demand characteristics are *anything* in the experiment that could guide subjects to the expected outcome.

1. Evaluation apprehension
   - Subjects *know* they are being evaluated, which changes their behavior, causes anxiety, and can interfere with task performance.
2. Social desirability
   - Subjects act how they think the experimenter wants them to act, or what they think would be proper behavior.
3. Placebo effect
   - Simply being treated or given anything at all can lead to measurable improvement over nothing at all.

Solutions to Demand Characteristics

- Double-blind experiments
  - Neither the experimenter nor the subject know what condition the subject is in.
- Experiments in natural setting
  - Subjects do not know they are in an experiment.
- Hidden measurements
  - Subjects don't know what is being observed.
- Cover stories
  - Provide a reasonably believable story that explains what the researcher is doing while concealing the actual intention of the study.

Reducing Expectancy Effects

Experimenter expectancy: researcher behavior that guides subjects to an expected outcome (a self-fulfilling prophecy)

- Blind
  - Researcher is unaware of the experiment condition that he/she is administering.
- Naïve experimenter
  - Those conducting study are not aware of theory or hypotheses in the experiment.
- Standardization
  - Experimenter follows a script, and only the script.
- "Canned" experimenter
  - Experimenter uses audio, video, or print material to give explicit instructions.

Potential Problems With Experiments

- Selection bias
  - Issue with nonrandom selection of subjects (e.g., using sample by convenience and mistaking this as random)
- Mortality/attrition
  - Departure of subjects in the experiment
- Diffusion (sharing of treatments)
  - Control group unexpectedly obtains treatment
- Other social threats
  - "Compensatory rivalry" and "resentful demoralization"

Review

- Be aware that conducting good experiments absolutely depends on our ability to stamp out sources of bias.
- It is challenging to design clear, tight experiments that are not biased.
- You should be "dangerous enough" to know what is important and what you should pay attention to with regard to methodology and analysis.