Correlational Designs vs. Experiments

- An experiment is a study in which a treatment is introduced.
- The type of experiment is dictated by the elements of design.
- Nonexperimental research: responses from natural groups, e.g., most surveys.

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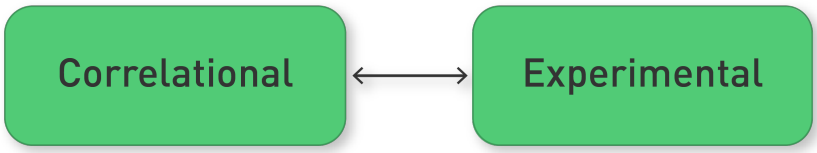

- Variation observed but not manipulated.
- Researcher draws conclusions from hands-off observations.
- Researcher manipulates variables directly.
- In a pure experiment, conditions are randomly assigned.

Why Experiments?

- Because we want to test specific, directional hypotheses
- Because we want to isolate cause from effect
- Because experiments can be useful for exploration, but only when we want to isolate and explore specific mechanisms
- Because we want tight control of conditions to rule out spurious relationships
- Because we need carefully constructed designs that can be replicated to verify findings across environments or situations

A Hypothetical Smoking Experiment

- There are decades of observational research on the link between smoking and health outcomes such as cancer.
- Despite overwhelming correlational evidence, it is not possible to establish a causal relationship through observation alone.
- What would a "true experiment" of smoking and health look like?
    - Randomly assign people from the population to be smokers or nonsmokers (principle of random assignment).
    - Conduct a long-term (lifetime) study.
    - Withhold treatments to get good data on negative health outcomes.
- A true smoking experiment would be ethically impossible to conduct.
- The correlational research is accepted even though no true experimental design has been employed.