

III. Types of Research

A. Experiment

Hypothesis

- A testable prediction of the outcome of the experiment or research

Operational Definitions

- A specification of the exact procedures used to make a variable specific and measurable for research purposes
- In evaluating others' research, first determine if you agree with the researchers' operational definitions.

Experiments: Independent and Dependent Variables

Independent Variable

- The experimental variable which causes something to happen
- The "cause variable"
- The variable manipulated by the experimenter
- The variable which should change the dependent variable

Dependent Variable

- The experimental variable which is affected by the independent variable
- The “effect variable”
- The outcome of the experiment
- The variable being measured

Experiments: Groups, Random Assignment, and Confounding Variables

Experimental Group

- The subjects in an experiment who are exposed to the treatment (independent variable)
- Also called the experimental condition
- The group being studied and compared to the control group

Control Group

- Are not exposed to the independent variable
- Results are compared to those of the experimental group

Confounding Variables

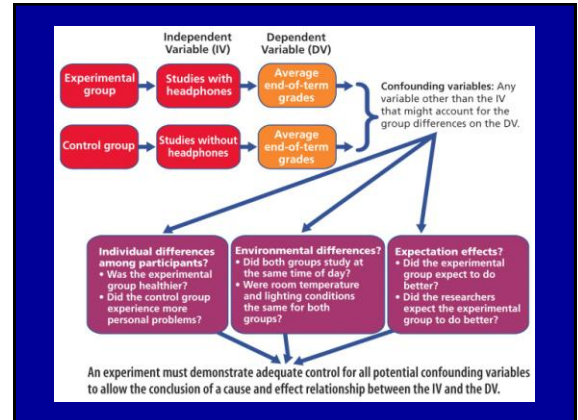
- Variables, other than the independent variable, which could inadvertently influence the dependent variable
- These variables should be controlled for in order to draw a true, cause-effect relationship in the experiment.
- Many confounding variables can be eliminated through random assignment.

Random Assignment

- Assigning participants to the control and experimental groups by chance
- Each participant should have an equal chance of being assigned into either group.

Using Random Assignment to Control Confounding Variables

- Card activity



Blind procedure

- An experimental procedure where the research participants are ignorant (blind) to the expected outcome of the experiment
- Sometimes called single blind procedure

Double Blind Procedure

- An experimental procedure where both the research participants and those collecting the data are ignorant (blind) to the expected outcome of the experiment

Placebo

- A non-active substance or condition administered instead of a drug or active agent
- Given to the control group

Experiments: Data Analysis

Statistically Significant

- Possibility that the differences in results between the experimental and control groups could have occurred by chance is no more than 5 percent
- Must be at least 95% certain the differences between the groups is due to the independent variable

Experiments: Replication

Replication

- Repeating the experiment to determine if similar results are found
- If so, the research is considered reliable.