Methods: Experiments

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Learning Goals

- Describe what an experiment is.
- Explain the difference between a between-subjects design and a within-subjects design.
- Explain the experimenter expectancy effect.
- Explain what a confounded variable is.
- Explain what a quasi-experiment is and why a psychologist might use such a design.

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The experimenter designs two or more conditions under which the subject will be tested.

Experiments

For example, if I wanted to investigate if cats prefer to eat birds vs. mice, I could take a group of cats and randomly assign them to one of two conditions: the mouse-eating group and the bird-eating group. Then I would count how many mice and birds were eaten by each group, respectively.

Experiments

Between-Subjects vs. Within-Subjects

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Example: If I wanted to investigate the effects of an antidepressant medication, I would randomly assign one group of depressed participants to receive a drug and a second group to receive a placebo.

Between-Subjects vs. Within-Subjects

Within-Subjects Design: The same group of subjects is tested under each condition.

Experiments

Between-Subjects vs. Within-Subjects

Within-Subjects Design: The same group of subjects is tested under each condition.

Example: If I wanted to investigate the effects of study location on exam performance, I would get a group of students to study in the library and then take an exam. Then, I would get the same group of students to study at home and take a different exam. I would have to counterbalance the participants.

Experiments

Confounded Variables

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An experimental setup in which the experimenter does not know which subjects are receiving which treatment, and the participants do not know which group they are in, is called a double-blind design. Both the subjects and experimenters are kept blind about which group each subject is in, until the experiment is over.

Experiments

Confounded Variables

An example: On day 1, an experimenter gives a group of subjects a list of words to memorize and then tests their retention on day 2. On day 3, the same group of subjects is given a memory-enhancing drug while studying the same word list as on day 1. Their retention for that word list is tested on day 4. Their memory is better when studying under the influence of the drug!

What is the independent variable?
What is the dependent variable?
What is the confounded variable?

Experiments

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What is the independent variable? drug vs. no drug
What is the dependent variable? memory
What is the confounded variable? practice effects

Experiments

Experiments vs. Non-Experiments

There are several sorts of non-experimental studies. We covered some of these in a previous lecture: descriptive/ correlational methods.

Experiments

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Quasiexperiments

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For example, what are the effects of alcoholism on the brain?

Experiments

Quasiexperiments

Example of a quasiexperiment: A team of researchers compared 100 detoxified male alcoholics from an alcoholism treatment unit with 100 male nondrinkers from various sources (Acker et al., 1984). The alcoholics performed more poorly on various tests of perceptual, motor, and cognitive ability, and their brain scans revealed extensive brain damage.

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Besides the alcohol, what other explanations might account for this difference?

Alcoholics tend to be more prone to accidental head injuries, are more likely to use other drugs, and are more likely to have poor diets, etc.

Experiments