What is the definition of a Pretest-Posttest Design and what are some examples?

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A Pretest-Posttest Design is a research method used to evaluate the effectiveness of a treatment or intervention by comparing the outcomes before and after its implementation. This design involves administering a pretest to measure the initial level of a variable of interest, followed by administering the treatment, and then conducting a posttest to measure the change in the variable post-treatment. This design allows for the comparison of the same participants' results before and after the treatment, eliminating the influence of individual differences. Examples of a Pretest-Posttest Design include conducting a survey before and after a training program to assess the impact of the training on knowledge or administering a test before and after a medication to measure its effectiveness in reducing symptoms.

Pretest-Posttest Design: Definition & Examples

A pretest-posttest design is an experiment in which measurements are taken on individuals both *before* and *after* they're involved in some treatment.

Pretest-posttest designs can be used in both experimental and quasi-experimental research and may or may not include control groups. The process for each research approach is as follows:

Quasi-Experimental Research

1. Administer a pre-test to a group of individuals and record their scores.

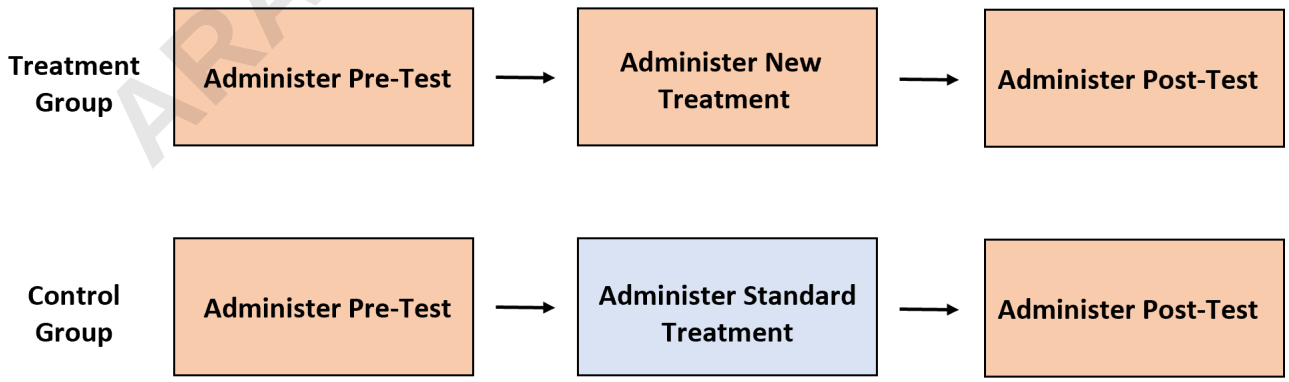
2. Administer some treatment designed to change the score of individuals.

3. Administer a post-test to the same group of individuals and record their scores.

4. Analyze the difference between pre-test and post-test scores.

Example: All students in a certain class take a pre-test. The teacher then uses a certain teaching technique for one week and administers a post-test of similar difficulty. She then analyzes the differences between the pre-test and post-test scores to see if the teaching technique had a significant effect on scores.

Experimental Research



1. Randomly assign individuals to a treatment group or

control group.

2. Administer the same pre-test to all individuals and record their scores.

3. Administer some treatment procedure to individuals in the treatment group and administer some standard procedure to individuals in the control group.

4. Administer the same post-test to individuals in both groups.

5. Analyze the difference between pre-test and post-test scores between the treatment group and control group.

Example: A teacher splits randomly assigns half of her class to a control group and the other half to a treatment group. She then uses a standard teaching technique and a new teaching technique with each group respectively for one week and then administers a post-test of similar difficulty to all students. She then analyzes the differences between the pre-test and post-test scores to see if the teaching technique had a significant effect on scores between the two groups.

Potential Issues with Internal Validity

Internal validity refers to the extent in which a study establishes a reliable cause-and-effect relationship between a treatment and an outcome.

In a pretest-posttest design experiment, there are several factors that could affect internal validity, including:

History - Individuals experience some event outside of the study that affects the measurements before and after a treatment.Maturity - Biological changes in participants affect the measurements before and after a treatment.Attrition - An individual leaves the study before a post-measurement can be taken.Regression to the mean - People who score extremely high or low on some measurement have a tendency to score closer to the average next time, despite the treatment they partake in. Selection bias - The individuals in the treatment group and control group are not actually comparable.

Often random selection and of individuals to groups can minimize these threats to internal validity, but not in

all cases.

The following tutorials provide additional information about different types of experimental designs: