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**Online
Learning**

Quantitative Research Design: Experimental Research

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Experimental Research

Objectives:

Briefly state the purpose of experimental research

Identify and brief the types of experimental design

Explain the advantages and disadvantage of the type of experimental design

Experimental Research Design

Experimental research is the only type of research that can test hypotheses to establish **cause-effect relations**.

The researcher manipulates at least one independent variable and controls other relevant variables, and observes the effect on one or more dependent variables.

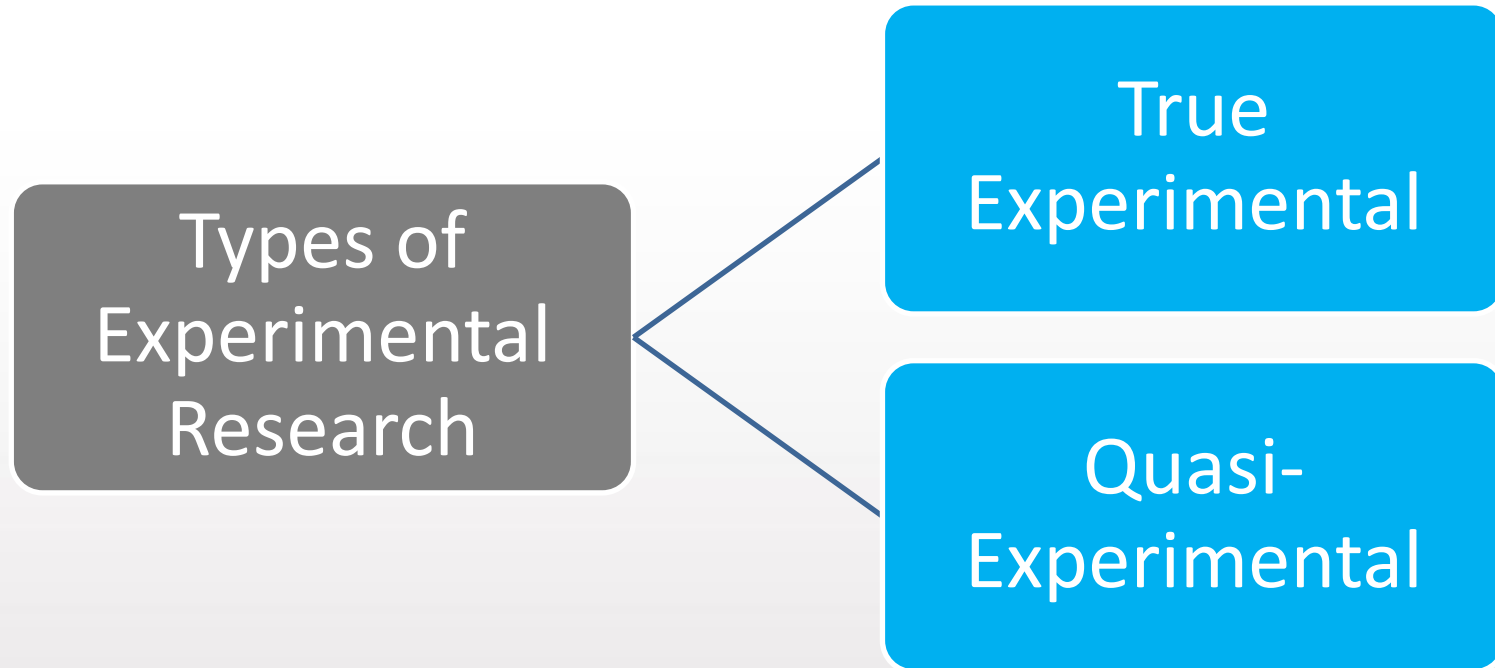
The researcher manipulates the treatment.

The Purpose of Experimental Research Design

Causation

Control

Variability



True Experimental Design

Post-test only control

Pretest post-test only control

Solomon 4 group only

Factorial

Randomized block

Crossover

Types of Quasi-Experimental Design

Nonrandomized Control Group design

Time-series Design

The Concept

True experimental research designs are those where researchers have complete control over the variables & can predict confidently that the observed effect on the dependable variable is only due to the manipulation of the independent variable

Characteristics

Manipulation

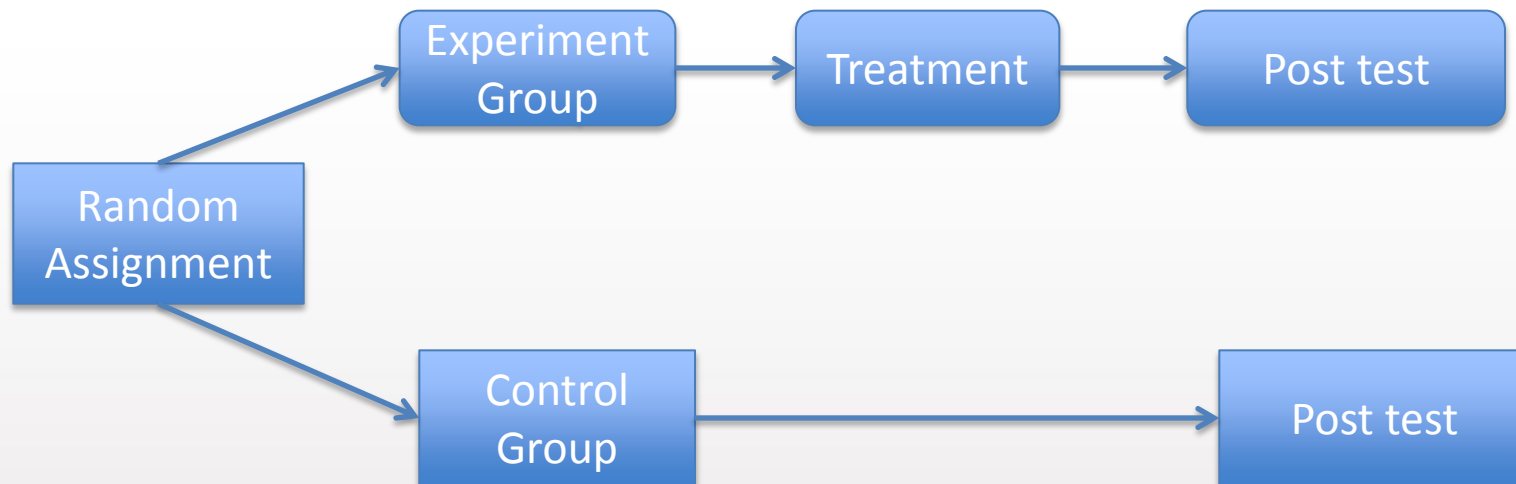
Control

Randomization

Post-Test Only Control Design

Composed of two randomly assigned group, experimental & control, but neither of which is pretested before the implementation of treatment on the experimental group.

Post-Test Control Only Design

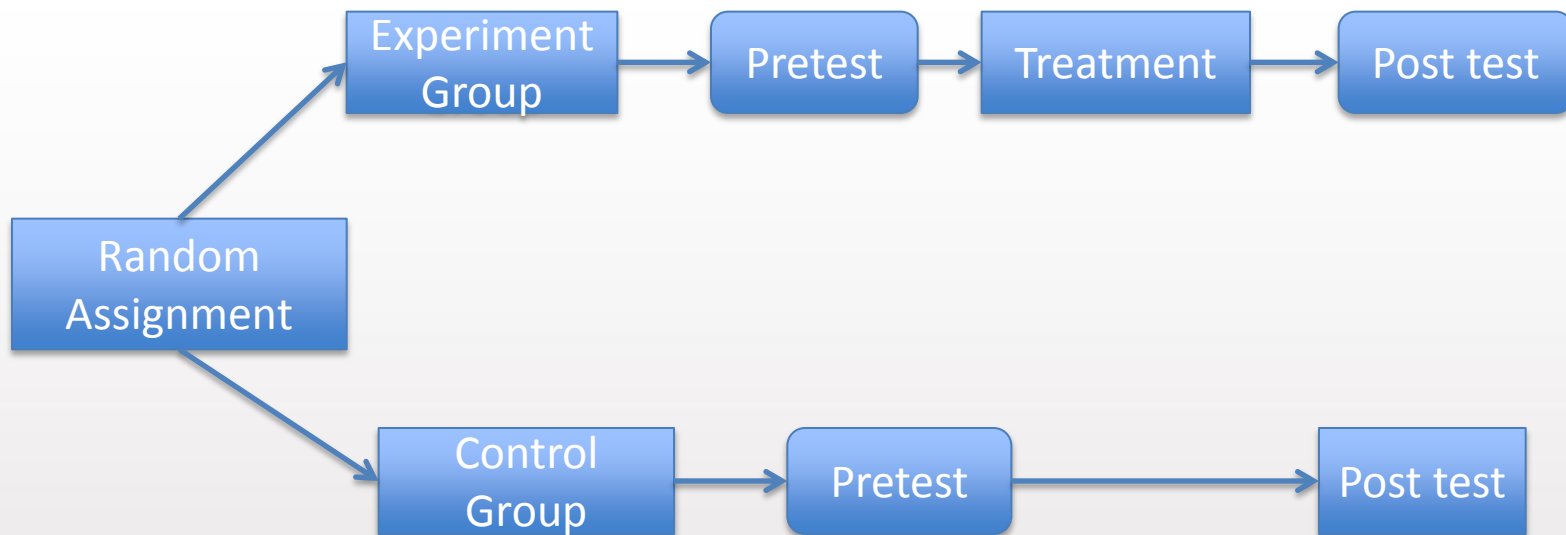


Pretest-Post-Test Control Only Design

Subjects are randomly assigned to either the experimental or the control group.

The effect of the dependent variable on both the groups is seen before the treatment (pretest).

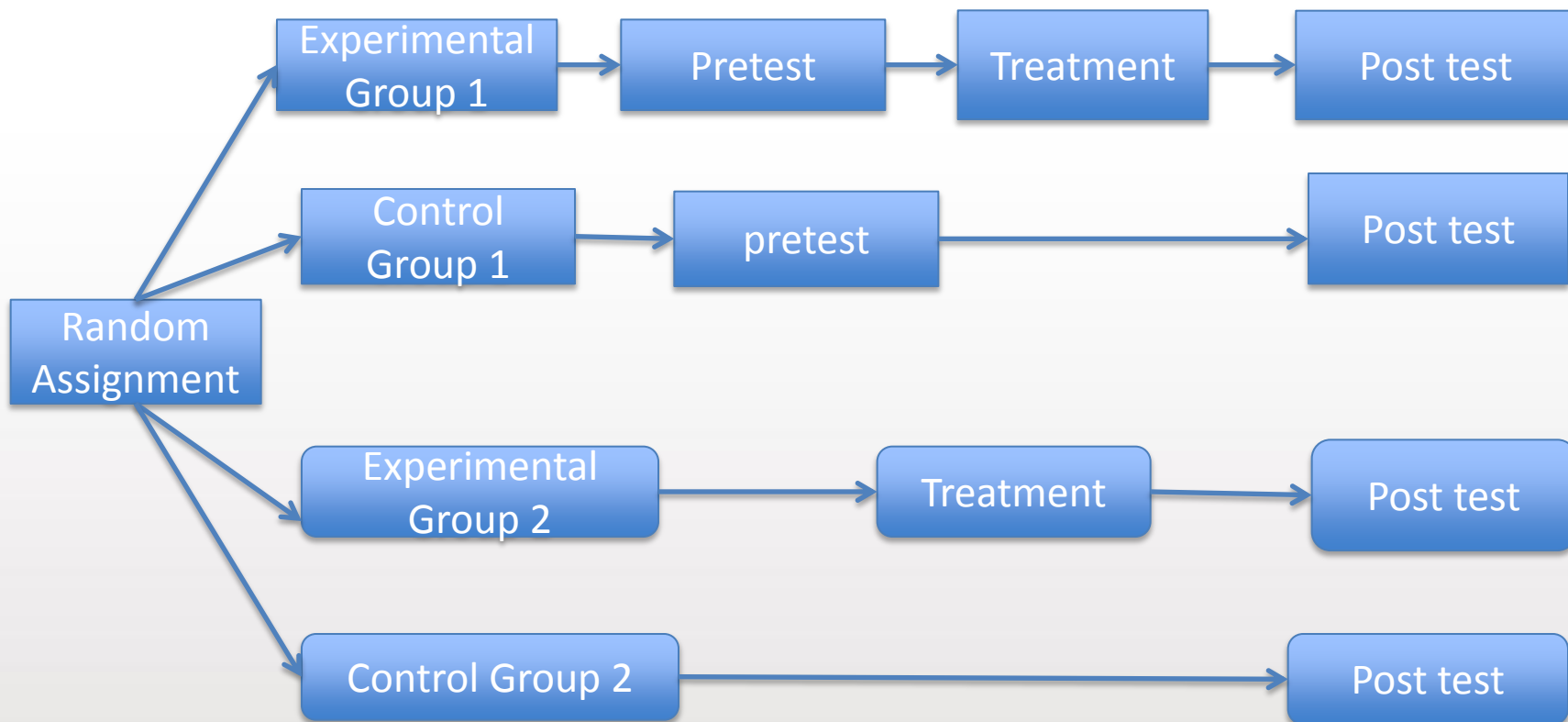
Pretest-Post-Test Only Control Design



Solomon Four Group Design

The Solomon four group design is considered to be most prestigious experimental research design, because it minimizes the threat to internal and external validity

Solomon Four Group Design



Advantage of True Experimental Design

The most powerful designs to establish the causal relationship between independent & dependent variables.

Conditions not found in a natural setting can be created in an experimental setting, where the independent variable is manipulated by investigator.

Disadvantage of True Experimental Design

Most of the times, the results of experimental research designs cannot be replicated in studies conducted on human beings due to ethical problems.

That it is very difficult to get cooperation from the study participants, because it may involve medical or surgical treatment or intervention, which may make the prospective subjects reluctant to participate in research study

Quasi-Experimental Design

Quasi-experimental research design involves the manipulation of independent variable to observe to effect on dependent variable, but it lacks at least one of the two characteristics of the true experimental design; randomization or a control group

Characteristics

Manipulation of the independent variables to observe the effects on the dependent variables.

Lack of at least one of the two other essential characteristics of the true experiment,

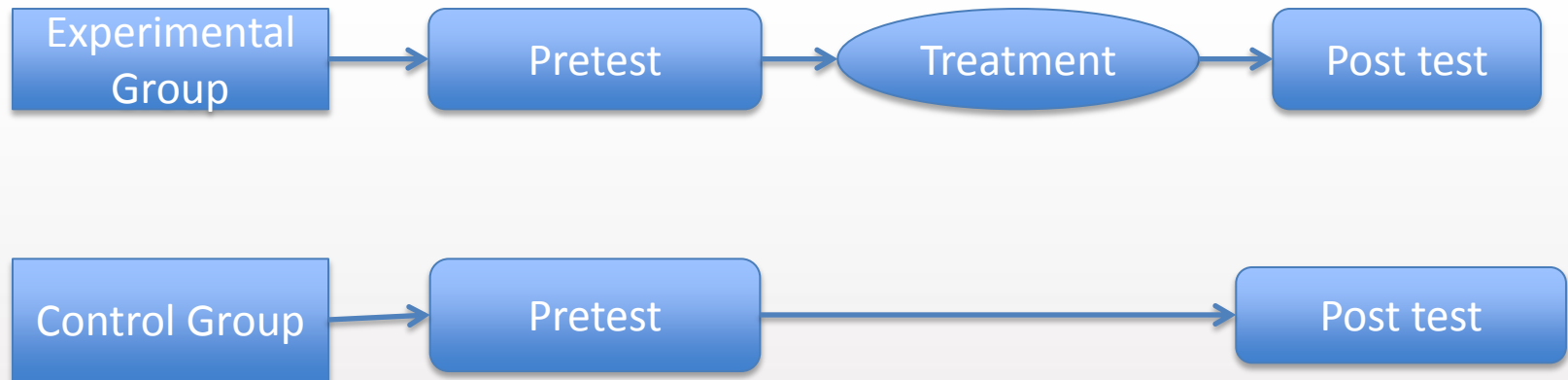
Quasi-independent variables are used instead of true independent variables. Where independent variable is not manipulated in incomplete controller situation

Non Randomized Control Group Design

It is also known as the 'nonequivalent control group design'

This design is identical to the pretest-posttest control group design, except there is no random assignment of subjects in experimental & control groups

NonRandomized Control Group Design



Time Series Design

- This design is useful when the experimenter wants to measure the effects of a treatment over a long period of time.
- The experimenter would continue to administer the treatment & measure the effects a number of times during the course of the experiment

Advantages of Quasi-Experimental Design

Quasi-experimental designs are more frequently used because they are more practical & feasible to conduct research studies

This design is more suitable for real-world natural setting than true experimental research designs

It may be able to establishing casual relationship.

Disadvantages of Quasi-Experimental Design

There is no control over extraneous variables influencing the dependent variables

Thank You