**Experimental Research**

**Experiment**

Experiments are conducted to be able to predict phenomenon. Typically, an experiment is constructed to be able to explain some kind of causation. Experimentalresearch is important to society - it helps us to improve our everyday lives.

An experiment is test of cause and effect with the independent variable (IV) being treatments or stimuli, and dependent variable (DV) some observation of changes in behavior , attitude, opinion, or other variables. The IV is assumed to be the cause, the DV is assumed to be the effect. The IV can be manipulated, and the DV is observed (Wimmer and Dominic, 2015).

**Definitions**

* Experimental research design is centrally concerned with constructing research that is high in causal (internal) validity. Randomized experimental designs provide the highest levels of causal validity. Quasi‐experimental designs have a number of potential threats to their causal validity (Mitchell, 2015).
* Experimental study is “study in which conditions are under the direct control of the investigator.” It is employed to test the efficacy of a preventive or therapeutic measure. Experimental studies can provide the strongest evidence about the existence of a cause-effect relationship (Last 2001).
* The experimenter begins with a causal hypothesis that states that one variable (iv) causes changes in second variable (DV). The next steps are to (a) measure the independent variable (pretest); (b) introduce the dependent variable (posttest) to see whether there is a resultant change in its value (Campbell and Stanley, 1963).

You can demonstrate this by satisfying the below three conditions of the cause and effect.

* **Time order**: One variable must precede another variable in time
* **Relationship**: :The two variables are statistically related or correlated
* **Experiment of other variable:** The IV selected is responsible cause for the correlation with the DV instead of other IVs (ibid).

Relationships are demonstrated by conducting a quantitative study, and usually using a test demonstrates statistical significance, there is a relation correlation which shows there is relation or correlation. Eliminating other possible causes is often difficult, because it requires controlling people and their requirements. Experiments provide the best control, but in situation in which you can’t conduct an experiment, you can use longitudinal design to account for other variables

**Two Groups Design**

The Group, to which the test stimulus is administered, is called the experimental group. The group that does not receive the test stimulus is call control group.

The portion of the difference between pretest and posttest scores that is caused by extraneous factors is the same in each group. This assumption holds one pretest both groups but administers the causal stimulus to only one (see the following design.)

 **Diagram for Basic Experimental Design Two Groups**

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Experimental Group Pretest Control Group

|  |
| --- |
| Measure dependent variable  |

|  |
| --- |
| Measure dependent variable |

 --------compare:-------

 Same?
 ↓

|  |
| --- |
| Administer Experimental stimulus |

 ↓

|  |
| --- |
| Administer experimental stimulus |

 ↓ Posttest

|  |
| --- |
| Re-measure dependent variable |

|  |
| --- |
| Re-measure dependent variable |

 **------** Compare-------

 difference

In the simplest experiment design, subjects are measured in terms of a dependent variable (pretest), exposed to a stimulus representing an independent variable, and then re-measured in terms of the dependent variable (posttest) . Differences noted between the first and last measurements on the dependent variable are then attributed to the influence of the independent variable (ibid).

**Experiment with No Control Group**

The simplest experimental design includes a single experimental group and is called a

before and after experiment with no control group. This design includes the following steps:

|  |
| --- |
| Comparison |

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Pretest Stimulus Post test →

 Time

Measure the dependent variable in a single group, administer the experimental stimulus, and then re-measure the dependent variable. Compare posttest result.

**For example**

Experiment on a concept of **mass:** mass media, mass communication, mass market, mass production, mass distribution. If a teacher before to deliver a lecture (stimuli) administers questionnaire consists of the mentioned concepts and collects the responses of the students for scoring their knowledge level. Then deliver a class (stimuli, tanning) using possible definitions and examples of the same concepts, and the end again distributes the same questionnaire among the students for checking to check the difference in their knowledge after stimuli. This process is called one group experiment or experiment with no control group. If the difference is found then it is because of stimuli given the students.

**Closure**

 The extent to which the investigator can control the relevant variables is called the degree of ‘’closure’’. The researcher first to specify the effect variables, then specify all other variables that might affect the relationship. In such process the experimenter attempts to identify independent, dependent, and extraneous factors. Extraneous factors are those independent and dependent factors which are specified during experiment as irrelevant to both cause and effect (Seltman, 2018).

In short the experimenter lists the cause variables, the effect variables, and variables that need to be controlled, ‘’closes’’ them off from the remainder of the world, and assumes the rest of the world away.

**Factorial Studies**

 Research studies involving the simultaneous analysis of two or more independent variables are called factorial design. Each independent variable is called factor. Two-factors design indicates two independent variables manipulated, a three-factors indicate three independent variables and so on. A factorial design for a study must have at least two factors or independent variables (ibid)

**Field Experiment**

The main difference between the two approaches-- laboratory experiments and field experiments-- is the setting. As Westly (1989) pointed out: the laboratory experiment is carried out on the experimenters own turf; the subjects come into the laboratory. In the field experiment, the experimenter goes to the subject turf. In general the physical controls available in the laboratory are greater than those found in the field. For that reason, statistical controls are often substituted for physical control in the field.

**Advantages Disadvantages**

Establishing causal link Complex phenomena

Control of environment Expensive

Control stimulus Planning time required

Control of extraneous factors Requires more expertise than survey

**Summary**

Experimental research studies media effects under carefully controlled conditions. Typically, a small group sees a media presentation that emphasizes one particular type of content. For example, preschool children are shown violent cartoon shows, and their responses are compared with those of preschoolers exposed to media that lack the ‘active ingredient (e.g., non violent cartoons. Experimental subjects must be randomly divided between these groups to minimize the impact of individual differences among subjects.

The value of such a carefully controlled design is that it rules out competing explanations for the results (such as the possibility that subjects who saw the violent endings were more violent children to begin with). Only the endings of the film (also known as the experimental treatments) were varied among groups, so that any subsequent differences among them (such as the beatings the subjects inflicted on their own Bobo dolls) could be attributed to the differences in the media content. Basically it involves the following process: treatment group versus control group: pre-test, after stimulation of treatment group then the comparison of both groups by post-test.