INTRODUCTION TO PSYCHOLOGY

Lecture #4

METHODS OF PSYCHOLOGY

Experimental Method

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Experimental Method

This is most scientific and widely used method to describe the behavior of the subject. The basic idea behind the experimental method is straightforward. The Experimenter formulates a testable hypothesis in terms of observable events.

Experimental Method

THE EXPERIMENTER

- Changes or varies the events which are hypothesized to have an effect
- Keeps other conditions constant
- Looks for an effect of the change or variation on the system under observation.

Experimental Method

Step - 1
HYPOTHESIS

Hypothesis is a tentative statement. Some are universally true but some are testable statements.

Experimental Method

EXAMPLE:

- Rash driving causes accidents.
- Playing games waste your time.
- Playing games increase your IQ.

These are all testable statements and we can test them by applying in a practical scenario.

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EXAMPLE:

The statements could be right or wrong because Rash driving may not be the only reason for accident, playing games may not waste your time and playing games may not increase your IQ but waste your time.

Experimental Method

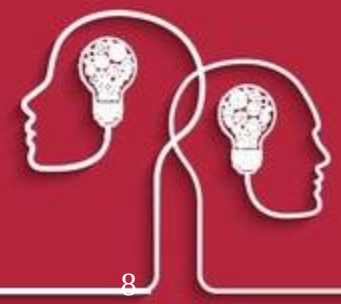
VARIABLES

As the term implies, a variable is an event or condition which can have different values. Ideally, it is an event or condition which can be measured and which varies quantitatively.

Experimental Method

VARIABLES MAY BE EITHER INDEPENDENT OR DEPENDENT.

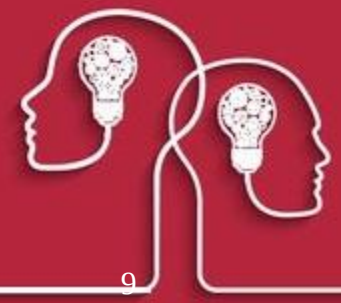
- Independent Variable
- Dependent Variable



Experimental Method

INDEPENDENT VARIABLE:

Condition set or selected by an experimenter to see whether it will have an effect on behavior; it might be a stimulus presented, a drug administered, and a new method of training business managers, and so on.



Experimental Method

DEPENDENT VARIABLE:

Having effects of independent variable. Change in independent variable cause to change in the behavior or dependent variable

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Experimental Method

VARIABLES

Independent	Dependent
Cause	Effect
Stimulus	Response
Testing	Results

Experimental Method

In our example “Rash driving causes accidents”, Rash driving is independent variable and accidents are dependent variable because accident rate is increasing due to the rash driving. Likewise in hypothesis “Providing toys to children increase their I.Q”, here toys are independent variable and I.Q is dependent on the availability of toys

Experimental Method

EXTRANEOUS VARIABLE:

A variable which is not an independent or dependent one.

Experimental Method

EXAMPLE

In hypothesis “Rash driving causes accidents”

Independent variable is Rash driving Dependent variable is Accidents. Other thing which can cause accidents are Extraneous variables, in this case vehicle condition, Roads condition, Driver’s health, Natural hazards etc are extraneous variables.

Experimental Method

STEP - 2 MAKE AN EXPERIMENTAL ENVIRONMENT

Making an experimental environment is a technical step.

"Providing toys to children increase their I.Q".

To do an experiment on that we cannot observe the increase or decrease in I.Q of children by providing toys. We must have certain children who are not provided with toys so that we can compare the I.Q of both after providing toys to one group of children.

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THERE ARE TWO GROUPS IN AN EXPERIMENTAL ENVIRONMENT

1. Treatment Group

2. Control Group

Experimental Method

GROUPS IN EXPERIMENTAL ENVIRONMENT

Treatment Group	Control Group
Provided with independent variable	They are not provided with independent variable
They can have change in their dependent variable after providing independent variable	There must not be any change in dependent variable if hypothesis is true

Experimental Method

STEP - 3
CONTROLLING EXTRANEOUS VARIABLES

There are two ways to control extraneous variables.

- Control Group Method
- Base Line Method

Experimental Method

CONTROL GROUP METHOD

In control group method the first step is subject matching. All the subjects should be equally matched or they must be similar. It is impossible to find people who are equally matched but you can find people having similar qualities.

Experimental Method

CONTROL GROUP METHOD

- Only one thing lacking in both groups should be availability of independent variable.

- Randomly divide people into control and treatment group.

Experimental Method

EXAMPLE

If we are making a hypothesis “Light increases reading speed”. Then we must select the people who have same reading speed in a certain room where light is constant. Then divided them into equal numbers, 5 in treatment group and 5 in control group. Then provide good light to treatment group and ask them to read. Don’t provide good light to control group and ask them to read. If there is a difference in the average of their reading speed then your hypothesis is true..

Experimental Method

BASELINE METHOD

In base line method we observe for consistency of subjects. In our experiment we setup a base line behavior. This behavior is the behavior of subject without availability of independent variable.

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Experimental Method

EXAMPLE:

Reading speed without proper light is the base line behavior of the subjects. We don't divide subjects into groups here and observe for their base line behavior.

Experimental Method

EXAMPLE:

The table shows that baseline behavior of the subjects was 15 minutes/Page but after providing proper light, the baseline behavior increased to 10 minutes/page.

LIGHT INCREASE READING SPEED

Average reading speed with light (Independent Variable)	Average reading speed without light
10 minutes / page	15 minutes / page

Experimental Method

A-B-A TECHNIQUE

When we remove independent variable, the subjects come down to their baseline behavior again. This technique is also called A-B-A Technique

Experimental Method

A - Baseline behavior

B - Introduction of Independent variable

A - Removal of Independent variable

A-B-A technique is not applicable where Independent variable has long-lasting or permanent effect.

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STEP – 4:
REPETITION OF EXPERIMENT

We should repeat our experiment many times. Rotate people from control group to treatment group or have new groups for new experiments to have solid results

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Experimental Method

DISADVANTAGES OF EXPERIMENTAL METHOD

- We cannot find 100% matched people for our groups
- We cannot apply A-B-A technique in all hypothesis because some independent variables have long lasting effects.

Experimental Method

DISADVANTAGES OF EXPERIMENTAL METHOD

- Experimental method is sometime dangerous and risky
- Artificial experimental environment increase your baseline behavior

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