

Variables in Research

by Sophia Tutorial



WHAT'S COVERED

This tutorial will define variables, as well as discuss the different types of variables seen in a psychological experiment and their impact. Our discussion breaks down as follows:

1. Variables in Research
2. Types of Variables
 - a. Independent
 - b. Dependent
 - c. Extraneous

1. Variables in Research

In an experiment, a psychologist has to consider all the **variables** that are involved that can affect the results, either intentionally or unintentionally, within the experiment.

A variable is something that can change and potentially affect the results of an experiment. These are the causes and effects that are being manipulated and measured inside the experiment.

🔗 **EXAMPLE** For example, suppose an experiment is measuring the effect of sleep on intelligence, as measured by test scores. The variables would be the amount of sleep that the subjects get and their intelligence as measured on the test score. These are the two variables to consider within that experiment.



TERM TO KNOW

Variable

Any condition that can change and might have an effect on the experiment

2. Types of Variables

There are different types of variables that a scientist needs to consider to determine the accuracy of an experiment itself:

- Independent variables

- Dependent variables
- Extraneous variables

2a. Independent

An **independent variable** is any variable that is changed and controlled by the experimenter themselves. In other words, the independent variables are the causes that are being researched. These are the changes that are going to be made in the experimental group--the condition or conditions that are being tested. They represent the things being left out completely in the control groups within an experiment.

➞ **EXAMPLE** Going back to the example above of the experiment measuring sleep and its effect on intelligence, the independent variable would be the amount of sleep. This is the variable that can be changed, to see what the results would be.



TERM TO KNOW

Independent Variable

Condition altered by the experimenter; experimenter sets their size, amount, or value. These are the predicted cause for behavioral differences.

2b. Dependent

On the other hand, the **dependent variable** is a variable that results from the experiment and from the independent variables themselves. In other words, these are the results or effects that are being researched. Remember, cause and effect is behind all experiments.

➞ **EXAMPLE** Recall, in the sleep experiment, sleep was the independent variable, which would mean the dependent variable--the result of the amount of sleep--would be the intelligence of the subjects that is tested.

Typically, dependent variables are measured by something very specific or concrete--like intelligence measured by test scores--because research relies on scientific measures.



TERM TO KNOW

Dependent Variable

Measures the results of the experiment; condition that is affected by independent variable

2c. Extraneous

Lastly, there are **extraneous variables**, which are any outside variables or conditions that might affect the results of the experiment.

Therefore, the experimenter needs to recognize that these different extraneous variables might have an effect and design their experiment to control for them, so they don't influence the experiment.

➞ **EXAMPLE** The experimenter in the sleep study might choose people that are at a similar level of intelligence, so there aren't any differences in their test scores. Or, they might give everybody participating

in the experiment the same thing to eat the night before, so that this variable doesn't affect the true results of the experiment.

It is also important to consider extraneous variables when analyzing the data and recognize when there are different or outlying results that might be the effect of extraneous variables.



TERM TO KNOW

Extraneous Variable

Condition that a researcher wants to prevent from affecting the outcome of the experiment



SUMMARY

Today, we learned about the function of **variables** in a psychological experiment. A variable is any condition that can change and potentially affect the outcome of an experiment. There are three **types of variables**: independent variables, dependent variables, and extraneous variables.

An independent variable is any variable that is changed or controlled by the experimenter themselves, representing the condition being tested. A dependent variable is the condition that is affected by the independent variable--the variable that results from the experiment. An extraneous variable is any outside variable or condition that might affect the results of the experiment.

Good luck!

Source: THIS WORK IS ADAPTED FROM SOPHIA AUTHOR ERICK TAGGART.



TERMS TO KNOW

Dependent Variable

Measures the results of the experiment; condition is affected by independent variable

Extraneous Variable

Condition that a researcher wants to prevent from affecting the outcome of the experiment

Independent Variable

Condition altered by the experimenter; experimenter sets their size, amount, or value. These are predicted cause for behavioral differences.

Variable

Any condition that can change and might have an effect on the experiment