

Research Design in Psychology

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WHAT'S COVERED

This tutorial will cover some of the major considerations that go into developing psychological research. You will consider how skill in problem solving can help when it comes to this kind of research. Our discussion breaks down as follows:

1. Prediction

We do scientific research because we want to know what is happening in the world around us. The understanding we get from this research helps us make **predictions**. These predictions can turn into hypotheses. This is closely connected to the **problem solving skill** where you gather information in order to make informed decisions.

→ **EXAMPLE** For example, you might want to know when an animal might attack or if somebody will get sick so that you can prevent it in the future.



TERM TO KNOW

Predictions

Forecasted outcomes; hypotheses.

2. Control

Anything that can change or be measured or can affect research is called a variable. In scientific research, these variables need to be controlled. We want to focus on specific things so we can understand them better. When we **control** variables, this allows us to concentrate on just the thing we're testing.

You may be aware that when an experiment is done, people are placed in different groups, called a control group and an experimental group. A control group is a group of people who receive all of the conditions of an experiment *except* the variable that's being tested. The experimental group, on the other hand, would be the people who receive *all* of the conditions of the experiment, including the experimental condition or the variable that's being studied.

IN CONTEXT

Suppose you are testing out a new drug. You would take a group of people, split them into two groups, and put each group into the exact same type of room. In the control group, you would give the people a glass of water and something relatively benign, like a sugar pill, which is a pill that wouldn't cause any effect on its own. In the experimental group, you would also give the people a glass of water, but you'd give them the pill that's being studied.

Notice the importance of controlling all of the other conditions in the experiment to make sure nothing else is causing the effects that you measure. You make sure the rooms are the same and that both groups are being given water. The only thing that you change is the pill that you want to study.



TERM TO KNOW

Control

Accounting for variables so that only the selected effect is tested.

3. Correlation

A correlational study examines data from different sources and draws conclusions about how different psychological phenomena are related, or related to outside factors.

→ EXAMPLE Researchers might study stress and yoga, and yoga's effect on reducing stress. Or, another example would be a correlational study on teens and their use of social media.

Essentially, a correlation study takes different factors and tries to examine the relationship between them. This is commonly used in media, as well as in psychology itself, so it's an important concept to know.

Now, a **correlation** in the correlational study refers to how closely related different events, behaviors, or variables are to each other. Remember, a variable is anything that can be changed and can be measured, that can have an effect on research.

→ EXAMPLE Variables that we might study in an experiment are the amount of sleep, age, or test scores.



TERM TO KNOW

Correlation

How closely related different events, behaviors, or variables are to each other

4. 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

4a. Independent Variables

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.

→ EXAMPLE In an 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 causes for behavioral differences.

4b. Dependent Variables

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 are behind all experiments.

→ EXAMPLE In the sleep experiment, sleep is 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.

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; a condition that is affected by the independent variable.

5. Population and Samples

When doing psychological research, it's important to identify exactly what **population** is being studied within that research. A population is a category of people who are being studied.

Often, the population being discussed within psychological research is the generalized idea of all human beings and their mental processes. However, sometimes psychological research is more specific so that those populations would be a bit smaller.

→ EXAMPLE For example, certain research might target infant girls; this would be one population. Or, it might focus on middle-aged men or businessmen between 20 and 24 years of age, which is a different population.

Realistically, though, you can't test everybody, especially if you're talking about everyone in the entire world, so you take a **sample**, which is a small selection of people from a population. It is important that the sample is "representative." This means that the sample accurately reflects the characteristics of the population being studied.

Sampling in research is part of the problem solving skill. You can't test every human being on the planet, so you work with a smaller group to represent the whole.



TERMS TO KNOW

Population

All of the members of a category of people (or things).

Sample

A small selection of people from a population.



SUMMARY

In this lesson, we examined how **prediction** and **control** can influence scientific research. Then we dove into types of variables—those that are controlled and those that are measured. Finally, we learned about sampling in research and the importance of identifying the **population** that is being studied. Because psychological research tends to be more specific—and it's unrealistic to test everyone in the whole population—researchers select a smaller **sample** of people from the population to study, then use those results to make a statement about the population as a whole. Strong problem solving skills are important when sampling a group like this.

Good luck!

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TERMS TO KNOW

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How closely related different events, behaviors, or variables are to each other.

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Population

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Predictions

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Sample

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