Introduction to Psychology: An Overview

Psychology

is the <u>scientific study</u> of <u>behavior</u> and <u>mental processes</u>. It deals with behavior and mental processes in **scientific ways**. **Behavior** is an observable action emitted by an organism. **Mental processes**, though more difficult to observe directly, include thoughts, feelings, and beliefs. If our ways of studying something are **scientific**, they are based on **systematic observation**, and their goals are **to describe, explain, predict, and change**.

We can label the **scientific method** as the set of **assumptions, rules, and procedures** that scientists use to conduct **empirical research**. **Empirical research** methods include collecting, analyzing, and interpreting data, reaching conclusions, and sharing information.

Statements that cannot be **objectively measured** or **objectively determined** to be true or false are not within the domain of scientific inquiry. Scientists generally do not attempt to prove **values, beliefs, or opinions to be true or false**. Because values cannot be either true or false, science cannot prove or disprove them. Nevertheless, research can sometimes provide **facts** that can help people develop their values. For instance, scientists may be able to objectively measure the effect of capital punishment on the crime rate in the United States. This factual information can and should be made available to help people formulate their values about capital punishment.

Personal value	Scientific fact
Handguns should be outlawed.	There were 33,599 deaths caused by handguns in the United States in 2014.
It is important to quit smoking.	Smoking increases the incidence of cancer and heart disease.

Scientific Method

Describe. To describe something scientifically, it must first be observed. In Psychology, **we describe behavior and mental processes, i.e., we convey their characteristics using words**. **Complete, reliable, and accurate** descriptions allow us to address the *what* of behavior. What am I observing? What is he doing? What am I thinking? What are those kids doing to that other kid?

Explain. To explain behavior and mental processes, we build on observation and description to address the *how* and *why* of behavior. In other words, we are stating what we believe to be **the mechanisms and/or the causes**. Why is this happening? Why is he doing that? Why are those kids doing that?

Predict. To predict behavior and mental processes, we are drawing upon our observations, descriptions, and explanations to state **what we think will happen in the future**. This is the essence of **hypothesis testing** in experiments as well as projected outcomes based on previous knowledge. Our predictions are only as good as our science. Prediction addresses the *what if* of behavior. What is likely to happen if we don't change a thing? What is likely to happen if we intervene?

Change. To change (or control) behavior and mental processes, we must first have the knowledge and ability to predict behavioral outcomes, and then we **must make a decision to apply our knowledge**—whether under the more controlled conditions of the laboratory or the less controlled conditions of the real world.

Research Methods in Psychology

Although more than half of psychologists are engaged in applied practice (i.e., changing behavior), the evidence that guides their interventions is the result of behavioral research. Psychologists are scientists searching for answers to questions and solutions to problems. Research methods are the indispensable tools of their investigations.

1. Methods:

1.1. Descriptive Methods. There are three common descriptive methods: naturalistic observation, case study, and survey.

• *Naturalistic observation* is a research method that places the researcher/observer in the natural habitat of the observed, which provides an opportunity to witness and record the behavior directly, without interacting with the observed. It is, however, difficult to observe behavior without actually affecting the behavior by your very presence.

• *Case study* is a research method whereby the researcher gathers a great deal of information about one person through a combination of techniques, including interview, history, and review of records. Usually, the subject of the case study is a person who exhibits behaviors that are of interest to the researcher. Though much can be learned about the behavior of one individual through case study, the findings cannot be extended or applied to other individuals.

• *Survey* methods are able to gather a lot of information about a lot of people by asking them to respond to questions about their behavioral practices, beliefs, or opinions. Surveys conducted on samples of a population have the ability to make predictions about the larger group, but only if the survey items are well constructed and the sample is representative.

1.2. Correlational Methods. Whenever we go beyond the first goal of science, which is to describe behavior, we are venturing into the realm of explanation, wherein we can focus on *how* something works or even *why* it happens. Descriptive methods shed light on the *what* of behavior, and in the process, may lead the researcher to seek additional information that would explain *how* two things are related. If these "things" vary along some dimension, scientists refer to them as variables. **Correlational research methods allow us to answer this important question—how are two variables related?**

Example:

Say you chose drinking coffee and tardiness. Each of these variables varies along many dimensions, so we'll use just one for each—drinking coffee varies in frequency of use, and tardiness varies on how often it occurs. Let's say we conducted a research project to investigate the relation between drinking coffee and tardiness. We asked hundreds of college students to record their frequency of drinking coffee over the course of several weeks. During the same period, they also recorded their tardiness to class and work. We found that, as drinking coffee increased, tardiness also increased. This is known as a *positive correlation*— the variables are changing together *in the same direction.*

1.3. Experimental Methods. Experiments explain. They do so because they contain elements of control that do not exist in any other research method. *Experimental methods* **attempt to isolate cause by manipulating a variable that is hypothesized to be the cause of another variable.** Psychologists who use experimental methods have built upon previous descriptive

and correlational research in their areas of interest. The purpose of an experiment is to answer a basic question: **What is the effect of one variable on another variable?**

Example:

The theory predicts that the people who play violent video games will behave more aggressively than people who do not. This prediction is also referred to as the *hypothesis*. An experiment could be designed where some people played violent video games and some people played non-violent video games. All participants would then be observed for aggressive behavior.

2. Statistics

Descriptive Statistics. Descriptive statistics do just that—describe observed information. When we describe an entire data set, we are looking for a way to efficiently and clearly express what we have. Numbers do this better than words.

Inferential Statistics. Inferential statistics do just that—allow inferences about the real world to be made based on the observed information. When we make an inference, we are making a judgment about whether our research findings are due to chance or are due to the manipulation of the independent variable.