Hello, class. So in later lessons, we'll talk a bit about how psychological research is actually conducted. But in this lesson, we're going to give just a general overview of some of the reasons and the rationale behind scientific research and psychological research, as well as the different methods that we use in psychology.

So the first term that we want to know is the scientific method. Scientific method is the method that underlies psychology, as well as any other kinds of science-- biology, chemistry, and the like. Scientific method means the way of discovering and modifying information on the world around us based on scientific principles and processes. And this distinguishes psychology from other sorts of disciplines, like philosophy, which doesn't necessarily use scientific methods.

So all of these terms are related to the scientific method. And we're going to go over each one in turn and understand what those principles and processes of science are. The first one is that scientific research is empirical, which is to say it's taken from observations or experimentation. It's not taken from somebody's subjective experience or from reports given by other people. And this gives us the difference between objective and subjective information.

The next term is that scientific research is measurable. We're able to measure in some kind of way. That doesn't necessarily mean that it's physically measurable, like with a ruler. But we can put some amount or degree to something that we're talking about here. And in mental states, oftentimes, it's something that isn't actually able to be measured physically. So we have to understand how much or how little of something we might have.

The third thing is that scientific information is reasonable. It's rational. It just makes sense. There's a term that's used in science called Occam's razor, which is to say that the simplest possible explanation is generally correct. We should have to make the fewest possible assumptions about something we're studying to understand what's going on. If we have to postulate that this and this and this is happening to understand what's going on in the brain, then that's probably too complicated, and chances are that's incorrect from a scientific point of view.

Another term that we want to point at is the fact that scientific research is replicable. You can duplicate it, or you can see again in another instance. Or other scientists should be able to do the same research and come up with similar results. In other words, scientific research isn't unique to specific situations. It's something that's generally true to most things.

And finally, and probably the most difficult or tricky out of these terms, is that scientific research is falsifiable. In other words, you can prove it to be false. You have to be able to determine if something is true or false. And if it's neither of those or if you can't figure it out, then chances are it doesn't fall under the realm of science.

I'll give you an easier example to explain this. The existence of a God or gods is something that's not necessarily scientific because it's not something that you could prove in any kind of way, or the existence of an afterlife. Both of these things require somewhat of a leap of faith. It isn't something you can experiment on or observe. So we would call that unscientific.

So there are several different ways that we apply the scientific method to psychology to gather information. So we'll go over each one of these in turn. The first one is experimentation, which is to say, we use some activity that can either confirm or disconfirm a hypothesis that we have about causes and effects in the world around us.

So a hypothesis is some proposed explanation about something that's happening. In other words, it's kind of an educated guess about what's occurring that we're viewing. And it can either be proven or disproven through the experiment that we're doing.

For example, if I wanted to know the effect that sugar has on children, I might do an experiment showing that sugar makes children more hyperactive. That would be my hypothesis. And I would either confirm or deny that through the use of my experiment.

Another way that we gather information is through naturalistic observation. And these two are probably the most commonly used in all of psychology. Sometimes, we can't experiment on things that are going on around us in psychology. Instead, we need to look at them within their natural setting.

We need to watch them and gather information from what we see. And that's what observation is. For example, if we wanted to know about the effects of sugar on children, we might go to a school and watch children after lunch time to see the children that had more sugar and whether they had more activity than the children that didn't.

Another way we gather information is through a correlation study, where we measure the degree of a relationship between two or more events or things that we're attempting to measure in some way. For example, if we wanted to know about the effect of sugar on children, we might look at the sales of sugary products during lunch time or at a certain convenience store and then look at instances of detention at the school. Again, we're trying to figure out whether the sugary snacks have an effect on the children's behavior, whether it makes them act out more.

The important thing to remember with this and with a lot of other psychological methods is that correlation doesn't necessarily equal causation, which is to say, just because we know about two variables doesn't mean that one of them makes another one occur. We can't assume that sugar makes children more hyperactive if we see detention. There might be something else that's affecting them outside of the environment.

Another way that we gather information is a case study, which is to say we look at one or a small group of children

in full detail. And this is as opposed to experiment, where we might look at a broad range of children. So that focus on specific children and detailing specifically what they're doing and all of their actions gives us more depth versus the breadth of a lot of other of these research methods.

And the final way we gather information is through surveys. And this is probably something you're familiar with in your daily lives. A survey is when we use some kind of public polling technique.

We send out questionnaires. We call people on the phone, give them internet questionnaires as well. And we try to figure out information about whatever our psychological questions might be. So, for example, when we're studying sugar and its effects on children, we might pull their parents to ask which children are eating more or less sugar so that way we can gather a lot of information about our subject, as opposed to maybe a case study, where we gather a very small data set where we could only make very limited conclusions about the subject we're studying.