Psychological Methods

**Section 1 Conducting Research**

**Focus – What are the five basic steps in scientific research? What are two further steps involved in scientific research?**

Psychology is an experimental science so any assumptions must be supported by evidence. Although there are different methods to experiments, most follow the same general procedure.

Forming a research question - They are generally directed toward behavior not psychological constructs since they can’t be seen. For example if you want to study aggression, you might look at the behavior of fighting fish. By setting the right conditions, you can see what changes in their environment cause the aggression and how the aggression shows it self.

Forming a Hypothesis - this is an educated guess. This can be tested by research. These are generally in if then statements. IF this THEN that.

Testing the Hypothesis - they do not rely on people’s opinions, but they examine the evidence and draw their own conclusions based upon that evidence.

Analyzing the Results - what do their findings mean.

Drawing Conclusions - they have to determine if their observations prove their hypothesis or not. Sometimes they have to change their theory or beliefs as a result of the observation.

Further Steps in Research - besides just the five steps to the scientific methods, there are two additional steps that must be completed to make sure the information is valid.

Replication - they must be able to replicate the experiment and have the same outcome. Sometimes it is with the same participants, sometimes with other participants particularly when it is with humans - they might look at people of different gender and age.

New Questions - this is the result of the research. Often times questions of why develop once the research has been completed which might lead to new experiments.

**Section 2 - Surveys, Samples and Populations**

**Focus – What is the survey method? How do populations and samples affect research? How do psychologists select samples? Why must researches be carful in generalizing results? What is volunteer bias?**

Surveys - this is the easiest way to gather information from people. They are asked a series of questions about a particular topic. Sometimes these are done by completing written questionnaires or through an oral interview. One has to be careful to believe the surveys at face value. Some people are not honest, some fear their answers won’t be confidential, or they answer the way they think the interviewer wants them to so they answer only what they want to reveal, not necessarily what they really feel.

Populations and Samples

To predict the outcome, you need to have study a group that represents the target population - the whole group that you want to study or describe. Since it is too costly and time consuming to poll the entire target population, you need to take a sample. which is just a part of the target group.

Samples are selected scientifically. It needs to be as similar to the target population as possible - otherwise it will be impossible to make accurate predictions. Samples are obtained in two ways. The first is the random sample. - individuals are selected by chance from the target population. The sample needs to be big enough so that it will accurately reflect the target population. The second way is the stratified sample - subgroups are represented proportionally in the sample. If the sample is large enough, it is usually stratified without any extra effort.

Generalizing Results - at times researchers don’t use a sample that represents the entire population so they have to be careful to not generalize their findings to people they did not study. You can’t learn about the preferences of all people, but studying only one group.

Volunteer Bias - Researchers have little control over who answers the questionnaires. They have to be careful about bias which is a predisposition to a certain point of view despite what the facts suggest. sometimes people bring with them a volunteer bias. They may have different points of view than people who don’t answer surveys. People who volunteer are generally more open about personal feelings, they also may be more interested in research than people who don not volunteer. They may have more spare time to complete the survey. These may all skew the answers they give.

**Section 3 - Using Observation for research**

**Focus – What are some of the methods of observation in psychological research? And How do researchers analyze their observations?**

- There are a variety of methods of observation.

The testing Method -

intelligence measure general learning ability

aptitude test measure specific abilities and special talents

personality tests measure people’s character traits and temperament.

The Case Study method - an in depth investigation of an individual or small group. This generally involves observation, speaking to them, interviews with others and finding out more info about their backgrounds. Psychoanalysis is based on case studies. Case studies are often hard to be replicated so generalizations are made, but you have to be careful about them. Also many of the same problems that occur with surveys also occur with case studies. Their memories are filled with gaps, some time they intentionally distort their pasts to impress the researcher and sometimes researchers encourage people to answer in certain ways to fulfill their expectations.

The longitudinal method - like a case study, but they study them over a long period of time. They can see how people change over time. They usually look at them at intervals or different time periods -say once a year or once every six months. They are time consuming, costly and some times risky. Sometimes participants decide to no longer participate.

Cross Sectional method - instead of following a set of individuals over a number of years, researchers select a sample that includes people of different ages. They then compare the behavior of the participants in the different age groups. It is less reliable than information from longitudinal studies. This is because they are not sure if it is developmental or environment that is causing the changes.

Naturalistic Observation this is when you observe someone in their natural setting. This is also called field studies. The researcher tries not to interfere with the subject that is being studied.

Laboratory-Observation method - this is observing in a lab. This is not always the sterile lab you think of, but a place where conditions can be controlled and where observation and experimentation can take place. Skinner created a skinner box - special enclosed environment to study the behavior of rats.

Analyzing the Observation - To do this they use correlation - which is a measure of how closely things are related to one another. The stronger the correlation, the more closely related they are.

Positive and negative correlation - positive correlations is when one goes up the other does too. There are also negative correlations - that is when one goes up the other goes down. Exercise and stress.

limits of correlations - they only show relationships, not cause and effect.

**Section 4 - Experimental and Ethical Issues**

**Focus – How would you describe the primary purpose of the experimental method? What is the purpose of single and double blind studies? Why do researches measure central tendency and dispersion? What are the three overriding ethical issues in psychology? Why do scientists sometimes conduct research with animals.**

To answer questions regarding cause and effect psychologists use experiments. Participants receive what is called at treatment such as a change in room temperature. They then observe the participants to determine how the treatment influences their behavior.

variables are factors that can vary or change.

* Independent variable - the factor that researchers manipulate
* dependent variable is dependent on the independent variable and is what is being measured.
* experimental group - receive the treatment
* control group - do not receive the treatment.

participants are randomly assigned to one group or the other. They need to make sure all outside factors are the same for the two groups then they sit back and watch what happens. If an experiment uses both groups, its called a controlled experiment. One problem is the placebo effect. People who seek help often expect it to work. The placebo effect is when someone feels better even though they received no treatment, but just think they did.

Single and double blind studies - expectations can effect the outcome of a study. So often times studies are done either single or double blind. Single blind studies are ones in which the participants don’t know fi they are receiving the treatment or not. In a double blind neither the participant or the doctor knows who is receiving the treatment. In a single blind study if the people receiving a placebo feel better than it is based on their expectations, not because the medicine actually worked. Double blind studies are done so the doctors expectations don’t effect the treatment of the patient. They are required by the Food and Drug Admin before new drugs are sold. Everyone can remain impartial and unbiased.

Central tendency and dispersion

data is organized to make generalizations. One way they do this is by measuring the central tendency - a number that describes the average score of a distribution. This can be found different ways:

finding the mean or average

finding the median and the mode - Median is the middle score and the mode is the most frequent score.

To understand the distribution or dispersion of data, researchers must document the range of scores or how variable the scores are. This is done in two ways:

range - the lowest score in the date is subverted from the highest score

standard deviation - is a measure of distance of every score to the mean. The larger the standard deviation the more spread out the scores are. To compute you subtract eh mean from each score. Its positive if the score is above the mean and negative if its is below. Test score with a large range have a higher standard deviation than those that are bunched together.

Ethical Issues

Ethics are standards for proper and responsible behavior. They are followed to promote the dignity of the individual, foster human welfare, and maintain scientific integrity. One of the main aspects of a psychologists life is to lessen human suffering. So the ethical standards are done to keep from doing harm. Ethical guidelines have been done by the APA. These standards limit the type of research can be done with people.

* can’t intentionally harm someone
* confidentiality - records of participants are private
* informed consent - the participants agree to participate, even though they might now know the entire purpose or process of the environment
* deception - can only be used when the benefits of the experiment will outweigh the harm
* Using data - researchers must be objective and also willing to change and or accept that their hypothesis might be wrong.

Research with animals - at times harm does come to animals. This normally happens in experiments when humans can’t be used for ethical reasons. (separating the young from their parents) other experiments are done to avoid harming humans. They destroy certain parts of the brain to see how it affects the rest of you. They only use animals when there is no alternative.