

Chapter 2 Psychology Notes

Science

How scientific Psychologist do research?

Why Study psychology scientifically?

Bad Psychology has ruined lives

- People have gone to prison because of facilitated communication
- Untested treatments for mental illness can be expensive, yet ineffective
- Poor educational practices can make it hard for children to get adequately prepared for college and the work force.
- Bad relationship advice on T.V., radio, and even among licensed counselors routinely ruins marriages

Science Can be Wrong, But...

- Science can be corrected when new research comes out
- You cannot correct pseudoscience
- Bad practices and theories survive because you can't prove they are bad

Types of Scientific Research

1. Naturalistic observation
2. Case Studies
3. Correlation Designs
4. Experimental Designs

Naturalistic Observation

- You go out among people or animals, and record and describe behaviors you are interested in
- You observe your subjects in their natural habit and try to interfere as little as possible
- It is usually an early step in the research process because you can only describe recorded behaviors, but it is impossible to be sure what is causing a behavior
- If people or animals notice their being watched, they will often change their behavior in response
- Often used to generate hypothesis you will test more rigorously later.

Case Studies

- Used in psychiatry and clinical psychology
- Some disorders and brain injuries are rare. In order to understand them, you have to study patients when you get them.
- Usually case studies can involve at least one of the components below:
 1. The patient preforms a battery of cognitive tests
 2. The patient's symptoms are described in detail
 3. The patient's treatment is described in detail
 4. The patient's progress is tracked overtime

- Since case studies only involve one person, you have to be careful not to overgeneralize findings

Correlational Studies

- A correlation is a relationship between two variables.
- A variable is something that can be measured
- Examples of variables are height, weight, test scores, temperatures, scores on questionnaires, basketball scores, number of libraries in a city, number of dogs you own. Essentially, you can find out if any two things that are measurable are related.

Correlation

- Relationship Between Two Quantities such that when one changes, the other does
 - a. Negative- negative slope
 - b. Zero- nothing there
 - c. Positive- upward slope

Correlational Studies

- A correlation coefficient is a numerical representation of a correlation, it can have a value between -1 and +1
- Two variables can be correlated without one causing the other. For example, the average global temperature has risen over the last 100 years. So has the proportion of college graduates who are female. So women going to college causes global warming! Actually, it's a coincidence.
- Correlation is necessary to determine if two variables have a causal relationship. But its not sufficient.

Experiments

You do an experiment if you think one variable causes another. It is easier to give an example of an experiment than it is to describe what an experiment is in the abstract. So, imagine researchers find that the number of pushups people do every day correlates with how much weight they can lift. They think pushups may cause strength increases. How can they test this idea?

Experiments: Terms

- Independent Variable: Number of pushups
- Dependent Variable: Number of pounds you can bench press
- Experimental Groups: The 25 pushup a day group, the 50 pushups a day group, and the 100 pushups a day group
- Control Group: The group that does no pushups
- Baseline: The amount of weight people can press before the experiment begins

Experiment: Procedure

- 400 college students sign up for the experiment. They are then randomly assigned to the groups, so there are 100 people per group. If assignment was truly random, then average strength should be the same on the first day.
- On the first day, of the study, every bench presses their max and it is recorded.

- The participants do their assigned number of pushups every day.
- At the end of the experiments, everyone benches their max again
- The scientists then do statistics in order to figure out if any of the groups got significantly stronger on average and if any of the groups differ in terms of average strength.

Experiment: Confounds

- Let's say that a bunch of football players sign up for the experiment. Even if they are randomly assigned across the four groups, they still go to practice and lift weights during the 30 day period. If all of the groups get a little stronger on average, how do we know it isn't the footballers weightlifting that caused the increase? How would you fix the experiment to eliminate this possibility?

Experiments: Double Blind Experiment

- Sometimes, when you test new medicines and treatments, you have to be worried about the placebo effect.
- The placebo effect is when someone's health improves because they believe it will improve. This is very real and surprisingly powerful! Still, a good medicine will help people improve more than the placebo effect does by itself.
- In order to be sure a medicine is causing improvement beyond just the placebo effect, scientist must employ the double blind procedure.
- Half of the subjects get the real medicine and half get a placebo. The subjects and the doctors administering the medicine and recording their patients' progress don't find out until after the experiment.

Being a Subject? Participant

- Most of you will participate in psychological research as subjects (participants). What can you expect?
 1. Surveys
 2. Memory tasks
 3. Games
 4. Decisions about hypothetical situations
 5. Interviews
 6. Product evaluations

You're Rights as Participants

- A committee of faculty members at UT must approve all research to ensure it is safe. This Internal Review Board ensures your safety and rights.
- You can quit at any time if a study makes you uncomfortable or causes pain. You will not be penalized.
- Your results will be kept confidential unless you provide your express permission to have your results shared.
- You can report adverse effects to the experimenter and the IRB.

Statistics and Sampling