Chapter 2

Psychology as a Science
In addition to the information in the textbook on sources of knowledge, goals of research, methods of research, statistics and ethics, after reviewing this slide show you should be able to answer the following questions.

1. What are the 6 characteristics that make psychology scientific?
2. What are the general goals of research?
3. What are the important research methods?
4. What is a correlation study?
5. What is an experiment?
6. What is qualitative research?
7. What are multi-methods and why are they important?
8. How can I think critically about psychological research?
What makes psychology scientific?

Six Characteristics

1. Systematic and Orderly
2. Comprehensive
3. Skepticism
4. Empirical Evidence
5. Precision
6. Public Enterprise
Systematic and Orderly

- Psychologists make the basic assumption that the universe is not random.
- They assume that the world operates according to general laws.
- They believe in determinism, that every event has a physical and measurable cause.
Comprehensive

- Psychologists want to discover general laws of behavior.
- The goal is to be able to generalize to a larger group, not just to an individual.
Skepticism

- Ideas are not accepted based on faith or authority.
- Psychologists use the scientific method and critical thinking.
Objective

- Psychologists rely on empirical evidence.
- Empirical evidence is evidence gathered through observation, experiment, or measurement.
- It is evidence that is gathered through the senses.
Precision

- Psychologists generate theories. A **theory** is a conceptual framework that organizes assumptions, and findings, and helps explain how psychological phenomena are related. It also identifies ideas for future research.
- **Hypotheses** are derived from theories. A hypothesis is a precise statement that attempts to predict or describe behavior.
- For example, we might have a theory that aggression is learned through modeling (watching others be aggressive).
- What hypothesis could we derive from this theory?
Our hypothesis might be:

- Children who observe an adult hit a Bobo doll and received a reward will hit the Bobo doll more often than children who observe an adult hit the doll and receive punishment.
- This research was actually done by Albert Bandura and you will learn more about it in chapter 7. Click on this link if you want to peek ahead.
- [https://www.youtube.com/watch?v=wf3-tRpmGmY](https://www.youtube.com/watch?v=wf3-tRpmGmY)
Precision continued

- Operational definitions specify precisely how the terms in a hypothesis will be observed and measured.
- For example, Bandura defined aggression as hitting, kicking, and biting the Bobo doll.
Public Enterprise

- Scientific observations must be communicated to others.
- The way the study was run, the way the terms were defined and measured, and what the results were all need to be shared.
- It is a communal affair. Results are presented at conferences and printed in scholarly journals.
- Why should it be public?
Four Reasons why Communication of Research is Important

1. Other researchers need to be able to understand the results to evaluate the study.
2. Replicable. Other scientists must be able to redo the study and get similar results. This is how theories are supported.
3. Refutable. Hypotheses and theories must be stated in a such a way that they can be disproved.
4. Ethical. The APA has a code of ethics that researchers must follow to protect research participants. This includes both humans and animals.
Ethical Principles

1. Informed Consent
2. Confidentiality
3. Right to withdraw from a study without penalty
4. Deception should not be used unless necessary, approved by an IRB board, and debriefing occurs after the study is completed.
5. Animals are to be treated humanely.
Goals of Psychological Research

1. Describe
2. Understand or explain
3. Predict
4. Control or Modify

Researchers use different types of studies to address each goal.
Types of Studies

1. Descriptive
2. Correlational
3. Experimental
4. Quasi-Experimental
5. Qualitative
6. Multi-method
Descriptive Studies

- Descriptive studies gather data that allows us to describe behavior.
- Such studies do not allow us to explain the cause of behavior or make predictions.
Types of Descriptive Studies

1. Case History
2. Observational Studies – Naturalistic and Laboratory
3. Survey
4. Tests
Correlational Study

- Studies which tell us about the relationship between variables.
- Does not allow us to determine causation.
- Because studying human behavior is difficult a lot of psychological research is based on correlational studies.
- When findings are reported in the media it’s easy to be fooled into thinking the findings indicate causation.
- Please watch this video so that you can understand this important concept.

https://www.youtube.com/watch?v=ROpbdO-gRUo
Experiments

- A controlled test of a hypothesis in which the researcher manipulates one variable to discover its effect on another.
- Experiments allow us to determine causation
Terms Associated with Experiments

- Independent Variable
- Dependent Variable
- Experimental Group
- Control Group
- Random Assignment
- Experimenter and Participant Bias
- Please watch this video to learn more about experiments.
  
  https://www.youtube.com/watch?v=tK2mBsSb3uw
Quantitative Research and Statistics

- Most of the studies mentioned in the previous slides gather data that is represented in numbers.
- Researchers do statistics to analyze this number data and to draw conclusions about the results of their studies.
Qualitative Studies

- Qualitative research does not gather data that is in number form. It is not quantitative research.
- Usually observations or interviews are done and the data is written out and then analyzed for themes.
- Qualitative research is more concerned with meaning, quality, and the texture of experience, not cause and effect.
- For example a qualitative researcher would ask: What is it like to be treated with cognitive behavioral therapy vs. how much improvement is there when being treated with cognitive behavioral therapy?
Multi-Method Research

- There are pros and cons to each of the studies mentioned above.
- Generally theories are supported using many different kinds of methods or multi-methods.
- Using multi-methods helps us understand the bigger picture.
- There is a poem that illustrates this point called The Blind Men and The Elephant by American poet John Godfrey Saxe (1816-1887). The poem is based on a fable that was told in India many years ago.
The Blind Men and the Elephant

The Elephant and the 6 Blind Men

It’s a Fan!

It’s a Spear!

It’s a Snake!

It’s a Wall!

It’s a Tree!

It’s a Rope!
- Using multi-methods helps us see the entire elephant!
- It helps us to think more critically about our findings.
Thinking Critically About Research Findings

1. Avoid over-generalizing. The sample used in one study may not mean the study generalizes to everyone.
2. Distinguish group results from individual results.
3. Look for answers beyond a single study.
4. Avoid attributing cause where there is none.
5. Consider the sources of the information (a scholarly article vs. the National Inquirer).
Sum

- In addition to the material in the text you should now be familiar with:
  1. The characteristics that make psychology scientific
  2. The general goals of psychological research
  3. Research Designs
  4. How to think critically about research

You should now be ready to tackle the applied assignment for Chapter 2.