

## Unit 1: Scientific Foundations of Psychology

### Topic 1.1 – Introducing Psychology

1. Define psychology. **The scientific study of mental processes and behavior.**
2. Describe how the following individuals contributed to the field of psychology.

Wihelm Wundt	Known as the father of psychology. Wundt created the first laboratory that was dedicated exclusively to psychology research. Wundt studied the senses, reaction time, attention spans, and emotions. Eventually one of his students, Edward Tichener would create structuralism.
William James	Taught the first psychology course at Harvard University, wrote the first psychology textbook, and created the theoretical approach known as functionalism. Also helped more women get into psychology, for example Mary Whiton Calkins.
G. Stanley Hall	Was one of Wundt’s students who became the first American to earn a PH.D. in psychology. He also opened the first psychology lab in the United States of America and became the first president of the American Psychological Association (APA).
Mary Whiton Calkins	Was admitted into William James graduate seminar, despite the objections of many. Harvard denied Calkins a degree and offered her one from Radcliffe College instead. Calkins denied the degree, due to the unequal treatment of women. She went on to make significant contributions in memory research and became the first woman president of the APA.
Margaret Floy Washburn	She is the first woman to earn a psychology degree and became the second female president of the APA. She also made a variety of contributions to animal research.
Charles Darwin	Proposed the idea of natural selection. He argued that our behaviors and bodies were shaped through natural selection. Supported the theoretical approach known as evolutionary psychology.
Dorothea Dix	Helped reshape the medical field by highlighting the unfair and inhumane treatment of mentally ill people. She sought to reform insane asylums.
Sigmund Freud	Created the psychoanalytic theory, which was later changed to the psychodynamic approach. He focused on studying the unconscious and believed that people’s personalities are shaped by unconscious motives.
Ivan Pavlov	Pavlov was most known for his experiment with dogs and their digestion. He found that dogs would salivate at something besides food, if the stimulus was continuously presented before the food. Originally known as reflex conditioning, but would later be known as classical conditioning
Jean Piaget	Was the first psychologist to conduct a systematic study of cognitive development. He would eventually create a stage theory of child cognitive development.
Carl Rogers	Is one of the founders of humanistic psychology. Made significant contributions to the research and understanding of people’s personalities.
B.F. Skinner	Expanded the theoretical approach of Behaviorism. He was known for operant conditioning which focuses on behaviors and consequences both positive and negative.
John B. Watson	Known as the official founder of Behaviorism when he explained behaviorism in 1913 in a Psychological Review article, “ <i>Psychology as the behaviorist Views It.</i> ” He believed that psychology should be scientific and observable.

**Topic 1.1- Introducing Psychology (Continued)**

3. Describe the different schools of thought in the table below.

Historical Schools Of Thought	
Structuralism	Observes the mind's different structures of consciousness through individual parts. (Uses introspection)
Functionalism	Seeks to understand mental & behavioral processes, operates as evolved functions. (Not looking at them as individual structures)
Gestalt	Studies the whole consciousness that included the study of perception, sensation, learning, & problem-solving. (Focus is on organizational process, instead of content of behavior)
Psychoanalytic/ Psychodynamic	Behaviors and mental processes are influenced by the ego managing the conflict between the id and superego. Focuses on processes that are unconscious. (Uses free association)

4. What is the difference between introspection and free association? Introspection is the process of looking inward to observe yourself think. (Structuralism) While free association is when a word or image triggers another idea, word, or picture inside a person's head and uncovers unconscious thoughts (Psychoanalytic/Psychodynamic)

5. Describe the different perspectives in the table below.

Modern Perspectives	
Early Behaviorism	Behaviors are learned through experiences and are observable. Broken into two parts, reflex conditioning, later known as classical conditioning, and operant conditioning.
Humanistic	Believes humans are naturally good and seek to reach their potential through free will. The goal is to reach self-actualization.
Sociocultural	Studies the impact of a person's culture, nationality, gender, religion, social norms, and other cultural aspects on their behavior/ mental processes.
Evolutionary Approach	Studies how behaviors and mental processes of today exist due to natural selection
Biological Approach	Studies the different structures of the brain and nervous system. Seeks to understand the link between our biological and psychological processes
Cognitive Approach	Attitudes, memories, perceptions, and expectations, all influence behaviors and mental processes of individuals. Focuses on how individuals process and remember information
Biopsychosocial Approaches	Studies a person's thoughts, feelings, and behaviors and their impact on a person's health. Combines the sociocultural approach and the biological approach.

6. What are the different psychological domains that would be classified as basic research? Biological, developmental, cognitive, educational, personality, social, positive, and psychometric.

7. What are the different psychological domains that would be classified as applied research? Industrial-organizational, counseling, and clinical

8. Explain the difference between a counselor and a psychiatrist. A counselor helps individuals cope with challenges in life like school or work. While a psychiatrist provides psychotherapy and are medical doctors who can prescribe drugs and treat physical psychological disorders.

**Topic 1.1- Introducing Psychology (Continued)**

9. Identify the subfields of Psychology in the descriptions below.

Scenario	Subfield	Explanation
When looking to expand your company you seek help to better understanding the specific skills needed for new employees	Psychometric	The psychometric domain measures a person's knowledge, skills, and problem-solving abilities needed to work in a specific field
When considering how to treat a disorder you determine you should focus on the brain and nervous system	Biological	Biological psychologists study the connections between the body and mind
Conducting research to identify traits that individuals have that shape their identity	Personality	Personality psychologists study individuals feelings, actions, and overall characteristics
Works with victims of domestic abuse that have been experiencing Post-Traumatic Stress disorder	Clinical	Clinical psychologists help treat people with psychological disorders
Conducts a study that focuses on how people remember dates and key historical events.	Cognitive	Cognitive psychologists study how people think, solve problems, and perceive the world
Studies the emotional changes that occur throughout a person's life	Developmental	Developmental psychologists study how people's physical, cognitive, and social changes throughout their lifespan
Works with companies to help improve productivity and worker morale at different companies	Industrial-organizational	Industrial-organizational psychology focuses understanding how to optimize human behavior in the workplace
Studies the impact of the school bullying on students who are on food stamps	Social	Social psychologists look at how individuals, society, and culture impact individuals
Studies which workplace environments create the most happy employees	Positive	The positive domain focuses on studying what makes life most worth living.
Works with individuals to provide them with different strategies they can use to help navigate the struggles of the patients daily life.	Counseling	Counseling seeks to help people overcome and cope with different life challenges
Conducting research into different learning styles	Educational	Educational psychology focuses on understanding how people learn in different settings and with different instructional methods.
Using an independent variable in a controlled environment to see the impact on the dependent variable.	Experimental	Experimental psychology uses IV and DP to study both humans and animals.

## Topic 1.2- Research Methods in Psychology

1. Define operational definition. A description of something in terms of procedures, actions, or processes by which it could be observed and measured.
2. Why is it important to set operational definitions in an experiment? It allows for the experiment to be replicated by others. It also shows what each variable in the experiment means and how they will be measured.
3. What is the difference between a sample and population? Population is all of the individuals in the group being studied. A sample is a selected group of people from the population which will represent the entire population
4. Why do researchers often use samples for their studies instead of the entire population? It can be difficult to get every person in a group to participate in a study and also expensive
5. How is a random sample different from a stratified sample? Random sampling is when each individual in a population has an equal chance of participating. Stratified sampling is when the population is divided into different subcategories and a random sample is taken from each subcategory.
6. Explain why many studies will want to have a representative sample. Representative samples ensure that all of the different people in a population are represented in the study, which often allows the results of the study to apply to the population as a whole.
7. Explain how sampling bias can impact a study. Sampling bias is when the group representing the population in the survey does not represent the population. This causes the results to be skewed and prevents them from being used with the larger population.
8. Complete the table below

Research Method	Description	Strengths	Weaknesses
Experiments	Observations conducted under controlled conditions to study a relationship between an independent variable and dependent variable	Controlled experiments can show cause and effect	Bias in the experiment's methodology or researchers' theories could skew results. There is also the third variable problem
Correlational studies	Studies that allow researchers to predict the relationship between two variables	Shows strength and direction of a relationship	Does not show cause and effect. There is also the third variable problem
Survey research	Self-reported data from questions that often ask for an individual's opinions, thoughts, or information on what they have done	Cheap, collects lots of data, can study data that is hard to observe, relatively easy to execute	Participants might desire to look good in answers, wording of questions can create leading questions and skew data (wording effect)
Naturalistic Observations	Research that observes behaviors as they happen in a real world setting, no lab or staged study	Real world setting can get authentic data	Lack of proper context. If subjects find out about observation they may change their behaviors
Case Studies	Research that analyzes different perspectives of a topic or subject, often provides information in chronological order	Can observe rare behaviors	Data can not be used to generalize population, participants may drop out, expensive, Hawthorne effect
Longitudinal Studies	Studies that follow one particular group over a long period of time	Shows changes over a longer period of time	Difficult to have participants stay in for the entire study, expensive, requires a lot of time
Cross-Sectional Studies	Compares different groups at the same time (example studying different ages at the same time)	Inexpensive and can be completed in a short amount of time	Only provides a snapshot of a group and does not show a complete picture

### Topic 1.3- Defining Psychological Science: The Experimental Method

1. Explain how a hypothesis differs from a theory. A hypothesis is an assumption that is created before research is done. A theory is supported by data from research and explains a question, thought, or phenomena.
2. Which type of study shows cause and effect? The only experiment that can show cause and effect is a controlled experiment.
3. What is the difference between the independent variable (IV) and the dependent variable (DV) The independent variable is the cause and the dependent variable is the effect. The IV is what is going to be manipulated in the experiment to see what effect it has on the DV.
4. Explain the third variable problem and how it could impact an experiment. This is when in an experiment there is a third variable that is impacting the participant and therefore possibly impacting the IV and DV. This would mean that a correlation found in an experiment would not mean that one variable caused the other.
5. How do confounding variables impact a controlled experiment? These are variables other than the IV that could impact the DV. These are variables that researchers could not remove from the experiment.
6. How does random assignment differ from random sample? Random sample is when each person in the population has an equal chance of being chosen for the study. Random assignment is when each participant of a study has an equal chance of being put into the control group or the experimental group.
7. Why does the placebo effect happen in experiments? Participants may act differently because they expect a certain outcome from a study, experiment, or IV.
8. What is one way researchers can prevent the placebo effect from occurring in their experiment/study? Researchers can use random assignment in their study, create a control and experimental group, could use a single-blind study, or double blind study.
9. What is the difference between the control group in a study and the experimental group? The control group, also known as the placebo group, is given a placebo. The experimental group is given the IV. This allows researchers to see if the placebo effect is impacting the results, or if the IV is possibly causing the DV.
10. Explain how a quasi-experiment differs from an experiment. Quasi-experiments are used in situations where controlled experiments would be impossible to do. Quasi-experiments do not include random assignment of participants, while a controlled experiment does.

### Topic 1.4- Selecting a Research Method

1. What is the difference between reliability and validity? Reliability refers to the repeatability of a test or study, while validity is how well a test measures what it claims to measure.
2. What is the difference between a single-blind study and a double blind study? A single blind procedure is when subjects are not aware if they are in the control group or experimental group, but the researcher knows. A double blind procedure is when both the researcher in the room with the subjects and the subjects do not know who is in the control group or experimental group.
3. How can conducting a single-blind study or double blind study counter bias in a study? A single-blind study stops participants from having their own bias based on what group they are in. A double blind study stops both the subjects from knowing their group and having bias, but also the researcher conducting the experiment from treating any subjects differently based on the group the subjects are in.

### Topic 1.4- Selecting a Research Method (Continued)

4. Complete the table below.

Type of Bias	Description of Bias	Prevention Measures	Example
Hindsight Bias	The tendency to think that one could have anticipated the outcome of an event or experiment after it already occurred.	Use pre-assessments that have participants answer questions ahead of time, and utilize the scientific method	After the horse race was over you told your friend you knew the horse was going to win the whole time
False Consensus Effect	This is when individuals overestimate how many others share their opinions or ideas	Use the scientific method, and present participants with alternative viewpoints	When examining the political breakdown of a high school student 1 states that all students support party X
Confirmation Bias	Individuals focus on only specific information that is consistent with their viewpoint, and ignore conflicting information	Seek out information that counters your own hypothesis, make sure your experiment can be replicated, and use the scientific method	When researching who gets in more accidents men or women the researcher focuses on the women in accidents over men, which fits with their original hypothesis that women get in more accidents

5. Complete the table below.

Type of Bias	Description of Bias	Prevention Measures
Experimenter Bias/ Researcher Bias	When a researcher unknowingly influence the outcome of the research	Use a double blind for the study, make sure the study can be replicated, and have the study published
Social Desirability Bias/ Participant Bias	When the participant skew their answers to create a more favorable impression of them	Give participants anonymity, prevent participants from knowing the hypothesis, and use placebos
Hawthorne Effect	When a participant alters their behavior because they know they are being observed	Use a placebo, use random assignment, or use a single or double blind

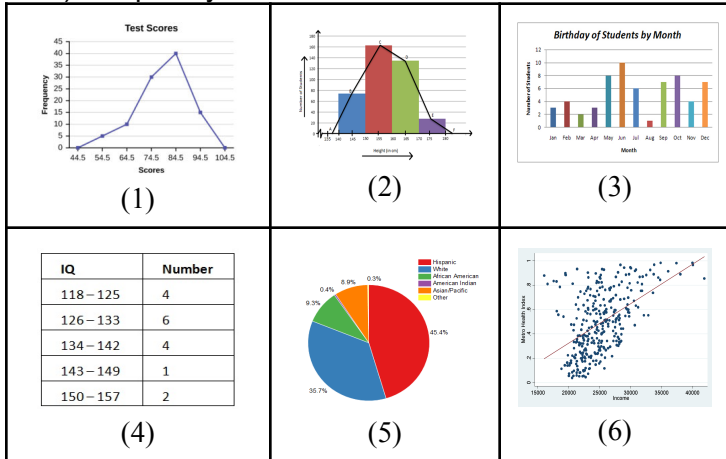
### Topic 1.5- Statistical Analysis in Psychology

1. What is the difference between qualitative and quantitative data? Quantitative data is numbers, facts, and it is not up for interpretation. Qualitative data is often in word form and is up for interpretation.
2. Explain the purpose of descriptive statistics and inferential statistics. Researchers use descriptive statistics to organize and describe data. Inferential statistics are used by researchers to make predictions about their data to better determine if the data from a sample can be applied to the population.

## Topic 1.5- Statistical Analysis in Psychology (Continued)

3. Use the table below to match with the following graphic organizers.

- A) Histogram: 2
- B) Frequency polygon: 1
- C) Pie chart: 5
- D) Scatter plot: 6
- E) Bar graph: 3
- F) Frequency distribution table: 4



4. Explain how you know if an experiment's results are statistically significant. **Data is statistically significant if the probability value is at or below .05. Meaning there is less than a 5% chance that the results were due to chance**

5. What does a p value of .80 mean? **That the results are not statistically relevant and there is a 80 percent chance that the results were due to chance.**

6. What are the three main measures of central tendency?  
**Mean, median, & mode**

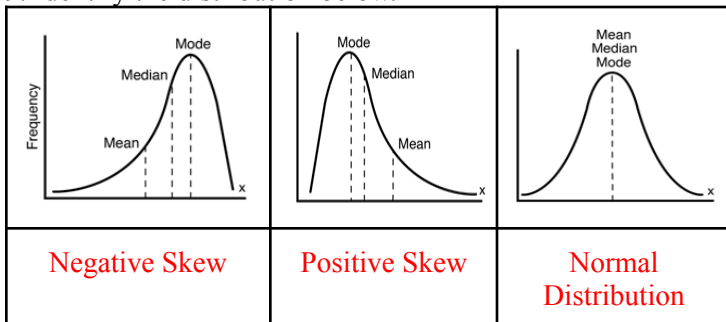
5, 5, 9, 12, 15, 22, 30

7. Use the data set above to answer the following questions.

- A. What is the mode? 5
- B. What is the mean?  $5+5+9+12+15+22+30 = 98/7 = 14$
- C. What is the median? 12
- D. What is the range?  $30-5=25$

8. What are the two measures of variability? **Standard deviation & range**

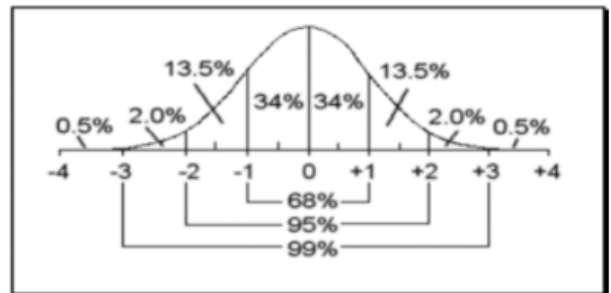
9. Identify the distribution below.



10. What does it mean to have a bimodal skew? **That the data has two peaks, which means there are two modes.**

11. Explain what it means to have a positive z score and what it means to have a negative z score in a normal distribution. **A positive z score means that the data is higher than the mean and a negative z score indicates the data is lower than the mean.**

12. When talking with your doctor you find out that you are in the 80 percentile for height. Explain what this means. **This means that you are taller than or the same height as 80% of people your age.**



Use the table above to answer questions 13-16.

13. The mean is 50 and the standard deviation is 15. What percent of the population falls between 80 and 95? **99%**

14. The mean is 50 and the standard deviation is 15. What is the percentile rank for 65? **(50%+34%)=84%**

15. The mean is 200 and the standard deviation is 10. What is the percentile rank for 180? **(.5%+2%)=2.5%**

16. The mean is 200 and the standard deviation is 20. What percent of the population falls between 180 and 220? **68%**

17. What does it mean if the results of a correlational study are between 0 and 1? **The variables are either increasing/decreasing together (Positive relationship)**

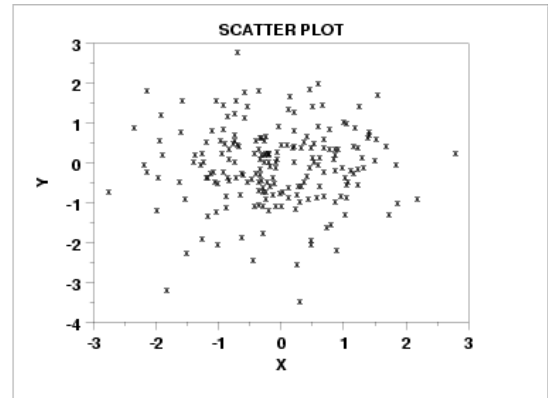
18. What does it mean if the results of a correlational study are between 0 and negative 1? **The variables have an inverse relationship (Negative relationship)**

### Topic 1.5- Statistical Analysis in Psychology (Continued)

19. Identify the type of correlation in the graph on the right. **There is no correlation depicted in the graph on the right.**

20. What do correlational studies allow researchers to do? **Make predictions on what will happen in a study, and understand if there might be a relationship between two variables.**

21. True or false. Correlational studies show researchers if there is a cause and effect between an independent variable and dependent variable. Explain your answer. **False. There could be confounding variables resulting in the third variable problem. Since it is not a controlled experiment there may be outside factors impacting the study.**



### Topic 1.6- Ethical Guidelines in Psychology

1. What is the role of the American Psychological Association with ethical guidelines in psychology? **It is the governing board to study behavior. The APA has a set standard of ethical principles of psychologists and code of conduct to ensure ethical standards in psychology.**

2. How does the Institutional Review Board make psychology research safer in colleges and universities around the United States? **1) Makes sure research is not unnecessarily risky 2) Ensures participants have adequate protection 3) Verifies that participants have privacy and confidentiality 4) Makes sure participants have informed consent**

3. Explain what informed consent is. **Informed consent is when participants have been given adequate information so that they understand the risks of a study and can make a rational decision on whether or not they want to participate in the study**

4. What are three things an experiment can have to make sure participants are protected? **Answers will vary. Examples: 1) Informed consent 2) Positive, trustworthy environment 3) No unnecessary risk 4) Take precautions to prevent physical or psychological harm.**

5. Identify two ways in which the Stanford Prison experiment failed to protect the participants in the study. **Answers will vary. Examples: 1) Experiment did not protect participants from harm 2) Researchers played a double role in the experiment without oversight**

6. Identify two changes that could have been made to the Stanford Prison experiment that would have protected participants in the study. **1) Researchers could have had a third party oversee the experiment to make sure the experiment does not harm participants 2) Rules could have also been put in place and enforced that prevented the guards from creating a harmful physical and psychological environment for prisoners.**

7. What is the role of the IACUC? **The IACUC is responsible for overseeing the protection of animals in studies.**