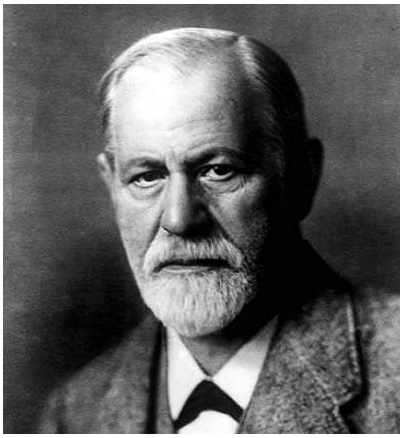
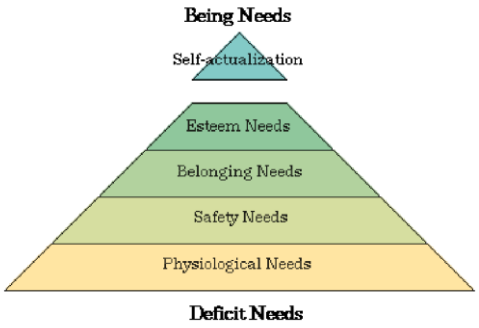
UNIT 1: HISTORY, APPROACHES, & RESEARCH



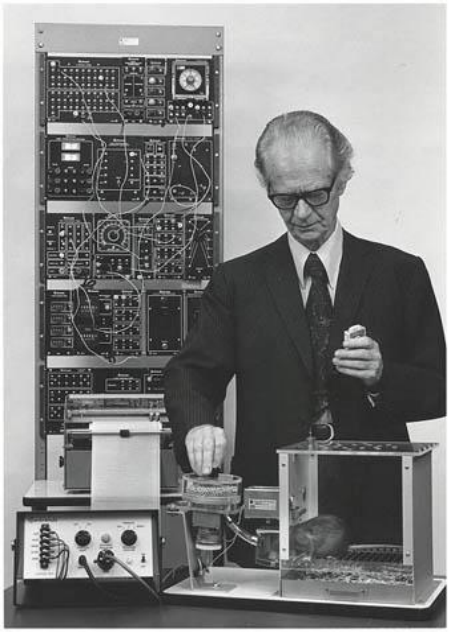
Sigmund Freud

Wilhelm Wundt

William James



Maslow's Heirarchy of Needs



B.F. Skinner

METEA VALLEY

PSYCHOLOGY

History, Approaches & Research Unit Guide

Essential Questions

- How has psychology developed into a scientific discipline?
- How do both nature and nurture influence behavior and mental processes?
- Who are the important scientists and thinkers who have been influential in the development of psychology as a science?
- What are the levels of scientific analysis that psychologists use to answer questions and explore issues?
- What are the subfields of psychology?
- What is the value of basic research?
- How can we use the scientific method to observe, describe, and explain behavior?
- What is the difference between correlational and experimental methods?
- What statistical measures can be used in psychological research?
- What are the ethical guidelines for human and non-human research?

Key Terms, Concepts and Contributors

MODULE 1:
Empiricism
Structuralism
Introspection
Functionalism
Experimental psychology
Behaviorism
Humanistic psychology
Cognitive neuroscience
Psychology

MODULE 2:
Nature-nurture issue
Natural selection
Biopsychosocial approach
Behavioral psychology
Biological psychology
Cognitive psychology
Evolutionary psychology
Psychodynamic psychology
Social-cultural psychology
Psychometrics
Basic research
Developmental psychology
Educational psychology
Personality psychology
Social psychology
Applied research
I/O psychology
Human factors psychology
Counseling psychology
Clinical psychology
Psychiatry
Positive psychology
Community psychology

MODULE 5:
Theory
Hypothesis
Operational definition
Replication
Scientific method
Case study
Naturalistic observation
Hawthorne effect
Survey
Sampling bias
Population
Random sample

MODULE 6:
Correlation
Positive correlation
Negative correlation
Correlation coefficient [*r*]
Scatter plot
Illusory correlation
Experiment
Experimental group
Control group
Random sampling
Random assignment
Double-blind procedure
Placebo effect
Independent variable
Confounding variable
Dependent variable
Confounding variable
Experimenter bias
Sample bias
Demand characteristics
Validity

MODULE 7:
Descriptive statistics
Histogram
Measures of central tendency
Mode
Mean
Median
Skewed distribution
Range
Standard deviation
Normal [bell] curve
Inferential statistics
Statistical significance
T-test
Anova
P-value

MODULE 8:
Ethics
Informed consent
Confidentiality
Debriefing

KEY CONTRIBUTORS:
Wilhelm Wundt
Edward Titchener
G. Stanley Hall
William James
Mary Whiton Calkins
Margaret Floy Washburn
Sigmund Freud
John B. Watson
B.F. Skinner
Carl Rogers
Ivan Pavlov
Jean Piaget
Charles Darwin
Dorothea Dix

Psychology Scavenger Hunt

Welcome to Psychology class. Your first job is to find someone in class that has either done, experienced, or fits each one of the qualities listed below. You may not use the same person for more than one item on the list. Once you've found someone for an item, ask them to sign their name on the line next to it. Good Luck!

Someone who…

1. **Has had an MRI or a CAT scan**

   _____

2. **Sleeps more than 8 ½ hours a night**

   _____

3. **Has suffered a concussion**

   _____

4. **Has had a dream that their teeth fell out**

   _____

5. **Is afraid of spiders**

   _____

6. **Remembers something that happened to them before they were three**

   _____

7. **Has already taken their ACT or SAT**

   _____

8. **Knows their IQ score or has taken an intelligence test**

   _____

9. **Is an only child**

   _____

10. **Is the oldest child**

    _____

11. **Is the youngest child**

    _____

12. **Learned to ride a bike before age 5**

    _____

13. **Trained their dog or cat to do a trick**

    _____

14. **Knows the names of all the planets (and can prove it)**

    _____

15. **Has had a role in a play or musical**

    _____

16. **Is a starter on an athletic team**

_____

17. **Wants to pursue a career in medicine or science**

_____

18. **Enjoys working with young children**

_____

19. **Is a dancer**

_____

20. **Plays an instrument in a band**

_____

21. **Can quote a famous line from Napoleon Dynamite**

_____

22. **Resembles a famous person (who is it? _____)**

_____

23. **Has a Type A personality**

_____

24. **Enjoys solving crossword puzzles**

_____

25. **Has taken a yoga class or meditated**

_____

Psychology Perspectives

Structuralism Perspective

This is the oldest Psychological Perspective. It was originally suggested by Wilhelm Wundt, (the founder of Psychology). Wundt believed that experimental methods should be applied to the study of fundamental psychological processes. For example, he tried to measure precisely how long it took to consciously detect the sight and sound of a bell being struck.

This perspective was originally founded by Edward B. Titchener, (a student of Wilhelm Wundt). The primary belief of Structuralism is that even our most complex conscious experiences can be broken down into elemental *structures*, or component parts, of sensations and feelings. To identify these structures of conscious thought, Wundt and Titchener trained subjects in a procedure called *introspection*. The subjects would view a simple stimulus, such as an apple, then try to reconstruct their sensations and feelings immediately after viewing it. They might first report on the colors they saw, then the smells, and so onto create a total description of their experience.

This was the first school of thought in early psychology, and the first school to disappear. Structuralism disappeared because introspection had many limitations. First, even a subject who was well trained in introspection varied in his responses to the same stimulus from trial to trial. Different subjects often provided very different introspective reports about the same stimulus. Introspection was not very reliable.

Second, introspection could not be used to study children or animals. And third, complex topics such as learning, development, mental disorders, and personality did not lend themselves to be investigated using introspection. Structuralism was simply too limited to accommodate the rapidly growing field of Psychology.

Summary of Structuralism Perspective:
Psychologists from this school believe…

_____

_____

_____

Gestalt Perspective

German psychologists Max Wertheimer, Kurt Koffka, and Wolfgang Kohler were fascinated by the ways in which context influences people's interpretation of information. In the 1920's, they founded the school of Gestalt psychology. The psychology of *Gestalt,* which means "shape" or "form" in German is based on the idea that perceptions are more than the sums of their parts. Rather, they are wholes that give shape, or meaning, to the parts. As such, Gestalt psychology rejects the Structuralist idea that experience can be broken down into individual parts or elements.

Gestalt psychologists also believe learning is purposeful. Kohler and the other founders of Gestalt psychology demonstrated that much learning, especially problem solving is accomplished by insight, not by mechanical repetition. Insight is the reorganization of perceptions that enables an individual to solve a problem. This occurs in a sudden moment, such as "Here's the solution!!".

Summary of Gestalt Perspective:
Psychologists from this school believe…

_____

_____

_____

Functionalism Perspective

This perspective was first established by a Harvard professor named William James.

Functionalism stressed the importance of how behavior *functions* to allow people and animals to adapt to their environment. The functionalists did not limit their methods to introspection. They expanded the scope of psychology research to include direct observation of living creatures in natural settings. Functionalists also examined how psychology could be applied to areas such as education, child rearing, and the work environment.

Like the structuralists, the functionalists thought that psychology should focus on conscious experiences. But rather than trying to identify the fundamental "structures" of consciousness, William James saw consciousness as an ongoing "stream" of mental activity. James stressed that, "Psychology, the study of the mind, is based on the fact that in each of us, when awake and often when asleep, some kind of consciousness is always going on." From Talks to Teachers in 1899

Functionalism no longer exists as a school of thought. This perspective influenced current psychology by stressing the importance of studying human behavior and the adaptive role of this behavior.

Summary of Functionalism Perspective:
Psychologists from this school believe…

_____

_____

_____

Psychoanalytical / Psychodynamic Perspective

The Psychoanalytical Perspective was officially founded by a Austrian medical doctor named Sigmund Freud. Freud believed that unconscious desires and conflicts were the root of an individual's psychological problems. He felt that dreams could be interpreted to uncover some of these unconscious conflicts. Freud's view has had a profound impact on Psychology.

Freud believed that much of our behavior is governed by hidden motives and unconscious desires. He is best known for psychoanalysis, which refers to a system of therapy in which the patient lies on a couch and freely says whatever comes to mind. The purpose of psychoanalysis is to uncover the unconscious desires and motivations that affect the patient's behavior. Freud also used dream analysis as well as hypnosis to explore the unconscious.

Freud proposed that an individual's personality developed through a series of critical stages that occurred during the first 5 years of life. To avoid psychological problems later on, you had to successfully resolve the conflicts that you met at each stage. If you became "fixated" in a stage, you were unable to move on to the next stage. This caused you to carry feelings of anxiety or fears into adulthood.

Freud felt that many unconscious desires and conflicts were sexual. Some of his more controversial views include the "Oedipus Complex," where a boy wants to marry someone like his mother, and "Penis Envy," where women want to be as powerful as men. Freud's theories were also criticized for their emphasis of sex and male superiority.

Other psychologists expanded Freud's views and created the *Psychodynamic* Perspective. These psychologists included Carl Jung, Alfred Adler and Karen Horney. Carl Jung felt that individuals have 2 unconscious, one personal and one shared with all humans, an "archetype". Alfred Adler felt all people are born with an "Inferiority Complex" and strive to be superior. Karen Horney felt basic security was more important than an individual's sexual drive and that most people suffer from anxiety due to this lack of security. These 3 psychologists all shared the view that one's personality and problems are attributed to unconscious conflicts and that only through the confrontation of these unconscious conflicts can one be helped.

This perspective is impossible to measure since no one truly knows what is found in the unconscious. Another criticism of this perspective is that it uses "Hindsight," ie. looks at the data and then forms a hypothesis to support this data. It is very unscientific.

Summary of Psychodynamic Perspective:
Psychologists from this school believe…

_____
_____
_____

Biological Perspective

The biological perspective emphasizes the influence of biology on our behavior. Biological psychologists assume that our mental processes, (our thoughts, fantasies, and dreams) are made possible by the nervous system. They point especially to its key component, the *brain*. Biologically oriented psychologists look for the connections between events in the brain, such as the *activity of brain cells*, and behavior, and mental processes. They use several techniques, such as CAT scans and PET scans, to show which parts of the brain are involved in various mental processes. Biological psychologists have found that certain areas of the brain are active when particular behaviors are performed such as reading, talking, and solving math problems. They have also learned that certain chemicals in the brain are connected with the storage of new memories.

The biological perspective is especially interested in the influences of hormones and genes. Hormones are chemicals that glands release into the bloodstream to create various functions, such as growth and digestion. Genes are the basic units of heredity. Biological psychologists study the influences of genes on personality traits. They are especially interested in their relationship to one's intelligence, psychological health and various behavior patterns.

The key to the biological perspective is that its views individual's abilities and mental difficulties to be the result of problems with the brain and neurological functions. Biological psychiatrists are strong proponents of the use of drug therapy. They may use surgery and electroconvulsive treatment (shock therapy) as well.

Summary of Biological Perspective:
Psychologists from this school believe…

_____
_____
_____

Cognitive Perspective

In the 1960's the Cognitive perspective emerged. The cognitive perspective emphasizes the role played by thoughts in determining behavior. Cognitive psychologists view *mental processes* as a key to understanding why people behave in certain ways. They investigate the ways in which people *perceive* information, *solve* problems, *dream, develop language, daydream, solve problems and think*.

Many psychological theories have roots in the cognitive perspective. Jean Piaget, a Swiss developmental psychologist based his theory on this perspective. His theory showed how a mental picture of the world grows more sophisticated as the child matures.

Another aspect of the cognitive perspective involves information processing. Many cognitive psychologists have been influenced by computer science. Cognitive psychologists sometimes refer to our strategies for solving problems as our "mental programs" or "software." Our brains are the hardware that runs our mental processing and learning, just as a hard drive may run a computer.

Cognitive psychologists believe that people's behavior is influenced by their values, their interpretations and their choices. For example, an individual who interprets a casual remark as an insult may react with hostility. But the same remark directed at another person might be perceived very differently by that person and thus may meet with a different reaction. A person's response varies with their cognitive thought process.

Summary of Cognitive Perspective:
Psychologists from this school believe…

_____

_____

_____

Humanistic Perspective

In the 1950's a new school of thought emerged, called humanistic psychology. Humanist Psychology considers people's personal experiences to be the most important aspect of Psychology. Humanist Psychology believes that self – awareness, experience, and choice permit us to "invent ourselves". Unlike the behaviorists, who assume that behavior is caused largely by stimuli that act on us, humanist psychologists believe that we are free to choose our own behavior.

The Humanistic Perspective was largely founded by American psychologist, Carl Rogers. Rogers emphasized the conscious experiences of his patients, including each person's *unique potential* for psychological growth and self-direction. He also emphasized *self-determination*, *free will*, and the importance of *choice* in human behavior.

Abraham Maslow, another humanist psychologist, developed a theory of motivation that emphasized psychological growth. His theory is based on a *Hierarchy of Needs*. This hierarchy is composed of 5 levels: Physiological Needs (food, water, warmth, rest); Safety Needs (security, safety); Belongingness and Love Needs (intimate relationships and friends); Esteem Needs (prestige and feelings of accomplishment) and Self – Actualization (achieving one's full potential, including creative activities). Maslow felt that in order to achieve Self – Actualization one must progress through the other 4 levels of the Hierarchy. This must occur in order. Maslow also felt that at any time one can drop to a lower level of the Hierarchy. At this point one must again strive to reach the top of the hierarchy. Maslow felt individuals are not stagnant; instead they continuously move up and down the Hierarchy, striving for Self–Actualization.

Rogers and Maslow both agreed that the key to one's Psychological well-being is found in the person himself. He or she has the power to create, change and truly controls their own destiny. Free choice is the key. In summary, they felt that anyone can be anything or do anything if they feel they can. You create your own destiny.

The humanistic perspective views people as basically good and helpful to others. Humanistic psychologists help people get in touch with their feelings, manage their negative impulses, and realize their potential.

Critics of the humanistic perspective, especially behaviorists insist that psychology should be scientific and address only observable events. They argue that people's inner experiences are unsuited to scientific observation and measurement. Humanistic psychologists, however, insist that inner experience is vital to the understanding of human behavior.

Summary of Humanistic Perspective:
Psychologists from this school believe…

_____

_____

_____

Sociocultural Perspective

The sociocultural perspective addresses many issues relating to the individual and the society or culture she / he lives in. These issues include: ethnicity, gender, culture, and socioeconomic status. The sociocultural perspective is based on the idea that all of these factors have a significant impact on human behavior and mental processes.

Studies of the experiences of various ethnic groups in the United States highlight the influences of these social forces on the individual. Some issues that relate to ethnicity include: bilingualism, its relationship to academic abilities, prejudice, and its relationship to individuals who suffer from psychological problems and the treatment they receive. The study of these topics enables people to appreciate the *cultural heritage* of various ethnic groups and understand the challenges they face.

Sociocultural theorists also examine gender. Gender involves not only being male or female but also the cultural expectations of each gender in one's society. These relate to one's self concept, social roles and one's behavior. An example of this is that Americans may see females that are outspoken as being assertive whereas Asians may view this same behavior as brazen.

People differ in many ways. The sociocultural perspective feels the key to one's uniqueness is defined and influenced by the culture one lives in.

Summary of Sociocultural Perspective:
Psychologists from this school believe…

_____

_____

_____

Evolutionary Perspective

Evolutionary Psychology is the newest perspective of Psychology. This perspective (school) refers to the application of the principles of evolution to explain psychological processes and phenomena. The evolutionary perspective is based on the work of Charles Darwin. His book, *On the Origin of Species by Means of Natural Selection* was published in 1859.

The premise of the evolutionary school is that individual members of a species compete for survival and that only the fittest survive. Their survival depends on the individual's ability to adapt to the environment. The individuals who possess this adaptive ability reproduce and pass on their genes to their children. Their children survive because of their inherited genes and pass on this ability to adapt to the environment to their children. This process continues from generation to generation indefinitely.

This school influenced psychology because it stresses the importance of genes which have been passed on to help an individual solve problems and adapt to their environment. This perspective explains why many people have arachnophobia (fear of spiders). This fear may exist because many spiders were poisonous to our ancestors. Our ancestors that evaded these poisonous spiders survived and passed on their genes to their children and eventually to us.

This evolutionary perspective may explain our behavior towards other humans, mate selections, eating behaviors and emotional responses.

Summary of Evolutionary Perspective:
Psychologists from this school believe…

_____

_____

_____

Behaviorism Perspective

Behaviorism emerged in the early 1900's. Behaviorism feels Psychology should focus its scientific observations on observable behavior that can be objectively measured and verified.

Behaviorism grew out of the work of a Russian physiologist named Ivan Pavlov. Pavlov demonstrated that dogs could learn to associate a neutral stimulus, such as the sound of a bell, with an automatic behavior, such as salivating to food. Once the association was formed, the sound of the bell alone would make the dog salivate.

John Watson, an American psychologist also supported the behaviorist approach. He performed additional experiments using Ivan Pavlov's view of *Classical Conditioning*. His most famous experiment involved an 11 month old child named "Albert". Watson taught Albert to associate furry animals with a loud noise. Eventually "Albert" associated any furry animals with fear.

B.F. Skinner, another American psychologist expanded the Behaviorism Perspective by establishing the concept of *Operant Conditioning*. This concept is based on the premise that all creatures, including humans behave due to the consequences they receive for their actions. Skinner felt that individuals continue to perform behaviors when they are reinforced and that they stop performing behaviors in when they are punished for the behavior.

Behaviorism focuses on the view that all behavior is learned through the environment and that the key to changing one's behavior is by changing one's environment. They also stress the use of measurement and experimentation involving **only** observable behaviors. Behaviorists often use laboratory experiments involving animals in their studies. Often behaviorists are seen as pessimists since they believe that man has no free will and merely responds to the environment. Yet, the behaviorist perspective is strongly supported as the most scientific of all perspectives.

Summary of Behavioral Perspective:
Psychologists from this school believe…

_____
_____
_____

Eclectic Perspective

The eclectic perspective feels that a person's mental abilities, personalities, psychological problems and uniqueness must be attributed to a combination of all of the above perspectives. They feel no one perspective is the sole determinant for one's make up. Instead all of the perspectives: Biological, Cognitive, Behavioral, Humanistic, Psychodynamic, Gestalt and Sociocultural interact and create one's uniqueness. The eclectic perspective stresses that no one type of treatment is best, instead all of the perspectives must be combined for effectiveness.

Summary of Eclectic Perspective:
Psychologists from this school believe…

_____
_____
_____

Addiction—Biologically or Behaviorally Caused?

Are drug addiction and abuse inherited diseases? Or are they the result of environmental factors such as upbringing, education, and economic status?

The Biological Element
By: Kevin T. McCauley, M.D.

People often disagree with the idea of calling addiction a disease in the same way we call conditions like diabetes a disease. The behavior of addicts is frustrating, ugly - even criminal. How can driving drunk be a symptom of a disease?

The best argument against calling addiction a disease states that addicts make the choice to use drugs and that their inability to stop is simply immature and irresponsible behavior. Type I Diabetics, for instance, do not have a choice about whether or not to have a high blood sugar. These arguments make sense, and are often embraced for their intuitive appeal alone.

With *brain disorders,* however, it is not that simple.

Our understanding of brain disorders has not kept pace with our understanding of other diseases - like diabetes. A big part of our difficulty in calling addiction a "disease" stems from the fact that no one could ever find the defect in the brain that caused addiction. Without a physical brain defect to point to, addiction never earned the status of "disease" like diabetes did. The addict's symptoms were assumed to be due to their intrinsic badness – their immaturity, their irresponsibility, or worse.

But guess what? In the last ten years, we have learned a lot more about the brain. We know what the physical defect of addiction is and where in the brain it is. Addiction is a defect in the hedonic system, or the system that perceives pleasure, which is deep in the part of the brain that handles basic survival. Because of this defect, the addict unconsciously thinks of the drug as life itself. A beer is not just a beer anymore – the addict needs the beer to get through life and when the beer is unavailable they *crave* it.

While it is true that the addict may have a choice in whether or not to use drugs, they do not have the choice over whether or not to crave. If craving gets bad enough, even the strongest-willed, most mature and most responsible person will return to using drugs. No brain can ignore that survival imperative.

If you are in medical school and you write, "addiction is not a disease" on one of your exams – you will flunk. In medicine, we now know that the addict's brain really is different than normal brains, and from a physiologic standpoint we now know *how* it is different. This explains a lot of the symptoms we see in full-blown addiction and helps us develop better, more effective treatments to help the addict recover. It also means that addiction fits the Disease Model of illness as well - if not better - than many other diseases.

Like say, diabetes.

Biological Theories
By: R.J Craig

In the 1950s, the American Medical Association declared alcoholism to be a disease without offering scientific arguments or evident to explain the designation. Other social behaviors also have been considered diseases. For example, in the antebellum South, a runaway salve was considered afflicted with a disease for which the treatment, on return, was lashing. Whether alcoholism is or is not a disease hinges on the definition of alcoholism.

American Psychiatric Association definition: Alcoholism is a disease typified by impaired control over drinking, preoccupation with alcohol, continued use of alcohol in the face of adverse consequences, and distorted thinking.

The essential sign of alcoholism is loss of control, and until the biological mechanism has been discovered that results in loss of control, this will remain a theory and not a fact. The following is evidence for the biological cause of alcoholism:

1. Animal studies demonstrate that a strain of rats can become physically alcohol dependent; their offspring over time and successive generations are born with an apparent predisposition to physical dependence on alcohol

upon exposure. Researchers can also breed a strain of rats that are averse to alcohol. This suggests that physical dependence on alcohol can be genetically transmitted and inherited.

2. In studies of the familial incidence of alcoholism, alcoholics were more likely to have a near relative who was alcoholic than any population of non-alcoholics. From 2% to 50% had fathers who were alcoholics and 5% had mothers who were alcoholics. The rates of sibling alcoholics consistently were higher than all types of other relationships and all types of non-alcoholics. Studies show a persistent low frequency of parental alcoholism in families of non-alcoholics. Alcoholism is more prevalent among near than distant relatives. However, 47% to 82% of alcoholics do not come from families in which one or both parents were alcoholic. These studies demonstrate that alcoholism tends to run in families.
3. In general, identical twins show greater similarities in alcoholism rates than fraternal twins. However, twin studies have not been consistent in determining the relative contribution of genetics and environmental influences.

The Environmental Element
Source: Neuroanthropology.net

A careful study of the genetic causes of addiction can provide a wealth of knowledge about the subject; however, one must not forget about environmental triggers and experiences. Many social scientists have made the case that social conditions matter, that is to say, that addiction "runs along the fault lines of society." In an experiment, scientists showed that monkeys who were regularly dominated by other monkeys were much more likely to self-medicate with cocaine than those monkeys at the top of the social ladder. Therefore, they theorized that the "derived stress from being dominated" played a significant role in the likelihood of drug abuse and addiction. In the case of an addict, his constant urge to use could be a direct result of his low status within the social structure. Also, the very fact that he is on the fringes of "accepted society" may actually be both a cause as well as a result of his addiction.

Additionally, a great amount of research has been dedicated to environmental triggers of abusive behavior. In the case of alcoholics, "one of the signs…is a difficulty inhibiting responses for alcohol related stimuli." For example, even though a recovering alcoholic may have no problem controlling their addiction in the comfort of their own home, the overwhelming urge to use when they walk by a favorite bar may simply be too much for them to handle. The same is also true of addicts to other drugs. The stimuli from a smell, taste or place commonly attributed to an environment of drug use can often set off strong memories of drug abuse for the addict. This process ultimately results in a powerful desire to use, even if they have been away from drugs for a considerable amount of time.

Furthermore, consider the environment in which an addict first experiences the substance(s) they have become addicted to. The use of drugs and alcohol is most certainly a learned behavior, as demonstrated by the cultural emphasis on learning "how" to drink. Therefore, the environment in which a person acquires the knowledge of how to use must be important to the formation of an addiction.

As one website dedicated to the genetics and environmental causes of addiction puts it, "the biggest contributing factor to drug abuse risk is having friends who engage in the problem behavior." In the case of the addict introduced to the drug earlier in life, it is quite likely that his first experience with drugs occurred with his peers. In this situation, the mutual support of using as a group became a benefit in itself. Also, having friends that use drugs serves as a powerful cultural force for continued experimentation. Thus, the combination of positive reinforcement and a receptive environment for drug use ultimately results in an increased likelihood for addiction.

Behavioral Theories

By: R.J Craig

Learning and conditioning unquestionably play a role in the development of substance abuse. The issue is the degree of importance of these variables in the final pathway to being addicted. Wikler (1973) argues that drug use initially is socially reinforced and that this reinforcement eventually is replaced by biological reinforcement through suppression of withdrawal symptoms. The desire for positive feedback from peers begins to be replaced by using drugs to avoid the punishment (withdrawal symptoms). The following are some of the ways that behavior and reward systems encourage drug issue:

Reinforcement theory—Drugs are powerful reinforcers of behavior. Alcohol and drugs produce pleasurable sensations. According to the laws of reinforcement, whenever a stimulus (e.g., using alcohol or drugs) is followed by a reward (e.g., feeling good), that connection is reinforced, increasing the probability of repeating that behavior next time.

Primary reinforcers—food, water, sex—strengthen behavior independently. Secondary reinforcers are learned. Money, for example, has no natural value. It is merely paper or metal. Money has no inherent reinforcing properties. Drugs and alcohol are primary reinforcers.

Negative reinforcers—is a stimulus is followed by a response that is punishing, the probability of that response upon presentation of that simulates should decrease. This is a principle behind the use of Antabuse. Alcoholics who take Antabuse experience no ill effects. If, however, they drink alcohol when Antabuse is in their system they become violently ill. Thus, alcohol use should decrease in frequency because of the connection between taking alcohol and being negatively reinforced.

Reflect: After the discussions with your group, do you believe drug abuse and addiction is caused by biology or environmental factors? Support your claim with *at least 3 pieces* of evidence from the above readings.

CATEGORIZING RESEARCH STUDIES

Various studies are described briefly below. Your task is to judge the type of design, the data-collection method, and the settings of each study. To do this, read each description carefully and use the following coding system to record your judgements in the blanks to the left of each item.

Design	(E= experiment, C= correlational study, D= descriptive study)
Data-Collection Method	(SR= self-report, O= observational)
Setting	(L= laboratory, F=field)

For those studies with an "E", UNDERLINE the Independent Variable and CIRCLE the Dependent Variable.

DESIGN DATA SETTING

_____ _____ _____1. Subjects are randomly assigned to watch either a violent or a nonviolent video, then are observed for aggression while playing with a large inflated Bobo doll in the lab.

_____ _____ _____2. The responses of children to a Bobo doll in the lab are observed and the amount of aggression is recorded.

_____ _____ _____3. The relation between birth order and amount of aggression against a Bobo doll in the lab is assessed.

_____ _____ _____4. The relation between birth order and the amount of aggression on the school playground is assessed during recess.

_____ _____ _____5. At a camp, subjects are randomly assigned to watch either a violent or a nonviolent video. Then their level of aggression is monitored at athletic events.

_____ _____ _____6. The amount of aggression on the school playground is observed during recess.

_____ _____ _____7. Subjects are randomly assigned to watch either a violent or nonviolent video in the lab, then complete a questionnaire designed to assess their level of aggression.

_____ _____ _____8. The relation between birth order and level of aggression reported on a questionnaire completed in the lab is assessed.

_____ _____ _____9. Children are interviewed in the lab regarding their opinions about aggression.

_____ _____ _____10. The relation between birth order and a self-report tally of aggressive incidents occurring at home is assessed.

_____ _____ _____11. Children are interviewed for their reaction after seeing a fight on the playground.

_____ _____ _____12. At a camp, subjects are randomly assigned to watch either a violent or a nonviolent video, then their level of aggression is assessed by questionnaire.

Descriptive Research Methods: Overview

Sometimes an individual wants to know something about a group of people. Maybe the individual is a would-be senator and wants to know who they're representing or a surveyor who is looking to see if there is a need for a mental health program.

Descriptive research is a study designed to depict the participants in an accurate way. More simply put, descriptive research is all about describing people who take part in the study.

There are three ways a researcher can go about doing a descriptive research project, and they are:

- Naturalistic Observation
- Case study
- Survey

Naturalistic Observation

If I say 'chimpanzees,' what do you think? Okay, after you think of bananas. Okay, after you remember that their babies are adorable. Yes! Jane Goodall - the researcher who spent years observing chimpanzees in the wild.

Naturalistic observations are all about watching people, where a researcher observes the subject in its natural environment. This is basically what Jane Goodall did; she observed the chimpanzees in their natural environment and drew conclusions from this.

Survey

A survey comes in different flavors, be it interviewing people face to face or handing out questionnaires to fill out. The main difference between surveys and naturalistic observation is that in a survey, you don't watch people; you ask them about themselves.

Case Study

Case studies are a little more in-depth than an observation and typically a little more holistic. So instead of just watching chimps frolic in the field, you may be interested in a particular chimp that was born an albino or a troop of chimps that are interacting with people. You are attempting to study something more in depth. If you have people involved in the study, it is a combination of the observation and survey method.

The Pros + Cons of Descriptive Research Methods in Psychology

1. What is the purpose of descriptive research?

2. Provide a short overview of each type of research method AND give an example of research that would appropriately use each method.

   - Case Study:

   - Naturalistic Observation:

   - Survey:

3. Complete the table. Be thorough! You may use complete sentences or detailed bullet points.

	Pros of Research Method	Cons of Research Method
Case Study		
Naturalistic Observation		
Survey Method		

4. BONUS… If time, watch the video clip (see link below) and answer the question with your group.

   - https://tinyurl.com/y7f3megm

   - While watching the clip, which psychological concept do you believe plays a greater role in Goodall's observations and findings: *OBSERVER EFFECT [HAWTHORNE EFFECT]* – subjects altering their behavior when they are aware that an observer is present – OR – *OBSERVER BIAS* – researcher's cognitive bias causes them to subconsciously influence the participants of an experiment. Explain your answer.

Correlational Research: Definition, Purpose & Examples

Your brain can do some really cool things. For instance, you learn that a particular jingle means the ice cream trucks are nearby. The louder the jingle, the closer it is. And if you were lucky enough to have several types of ice cream trucks, you will recognize which jingle goes with which ice cream truck.

The world is full of things where if thing A happens, then there is a good chance that thing B will happen. If thing A is the jingle, then there is a good chance that thing B, the ice cream truck, is close by. We can also make things more complicated by thing A being the loudness of the jingle and thing B being the distance to the ice cream truck. As the loudness increases, the distance shrinks. As the distance increases, the loudness goes down.

This is kind of a silly example, but it's an example of how you naturally correlate one event with another.

A correlation is simply defined as a relationship between two variables. The whole purpose of using correlations in research is to figure out which variables are connected. I'm also going to start referring to the things as variables; it's a more scientific name. This simple definition is the basis of several statistical tests that result in a correlation coefficient, defined as a numerical representation of the strength and direction of a relationship.

Correlation research is looking for variables that seem to interact with each other, so that when you can see one changing, you have an idea of how the other will change. This often entails the researcher using variables that they can't control. For example, a researcher may be interested in studying the preference for ice cream based on age. If we cannot assign age, does that mean we have to scrap the whole correlation? Nope!

Since the researcher cannot assign certain variables, this would mean the researcher is performing a quasi-experimental study. A quasi-experimental study is defined as an experiment in which participants are not randomly assigned. There are different techniques for how we might overcome this, and I encourage you to explore this in other lessons.

While we focus on correlation in research, we must also note that the correlation can be positive or negative. Positive correlations mean that as variable A increases, so does variable B. A negative correlation is defined as when variable A increases, variable B will decrease. Please note that I did not say how much the other variable moves when the first variable changes.

Example 1

When looking for correlations, a researcher will look for patterns what they have seen happen again and again. A simple pattern known to every teacher, but unfortunately not every student, is the link between studying and grades. The studious student who studies is more likely to score a higher score on their test. Students who don't study much are less likely to score as high as those who do.

You may be sitting there doubting what I've said because you've taken tests before where you didn't study and did just fine. And there are others who do study and still don't get good grades. This is because there isn't a perfect correlation, or a perfect 1:1 relationship, between the items. There is just too much going on in the real world for this to be a perfect connection. Things like personal talents, distractions, familiarity with the subject and brain stuff make everyone a little different.

This interference in a correlation is known as an extraneous variable, which is simply defined as a variable that is influencing the study. They are something to watch out for when you're looking at correlations because nothing in the math or experiment will say, “Here it is; this is messing up your experiment.”

Example 2

The previous example was a good example for a positive correlation, but what about a negative correlation? Sticking with the grades and people, did you ever know that person who did nothing but watch TV? The person who watches too much television usually doesn't do well on their tests. This means as they watch more television, their grades go down. 10 hours of television gets a C, while 30 hours of television gets an F.

However, one issue with this is it's not always clear which caused which. Maybe the person who watches a lot of television got a bad grade on the last test. It is with this in mind that we also have to introduce the idea that correlations do not indicate direction. In this example, we don't know if the bad grade caused the TV watching or the TV watching caused the bad grades.

Lesson Summary

A correlation is simply defined as…

This relationship is represented by a…

Which is defined as a ...

This relationship can be represented by a positive correlation, meaning that…

Or a negative correlation, defined as…

One of the issues of the correlation is that it is not always clear when there is an extraneous variable, which is simply defined as …

Lastly, correlations do not indicate a direction of effect, so you don't know…

CORRELATION

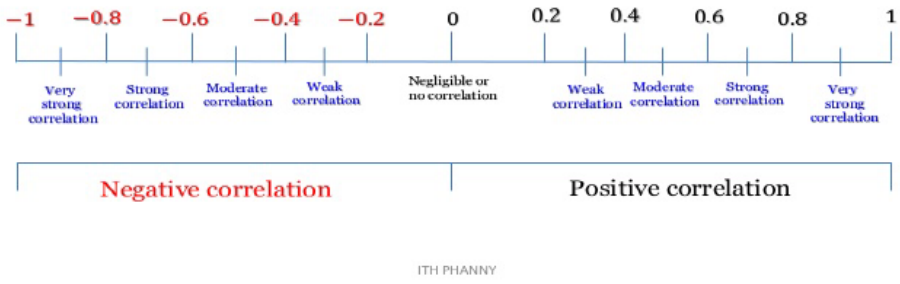
Correlation is a statistical technique psychologists use to determine the relationship between two variables. If a strong correlation is found, we can use one variable to predict the other.

To calculate a correlation just use Excel to line up your data in two columns like this:

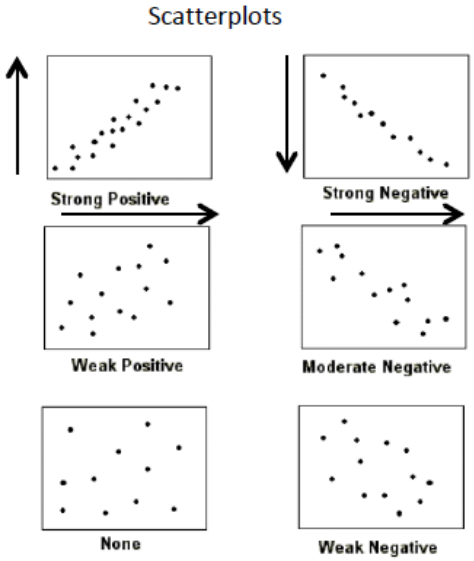
	A	B	
1	Attendance	GPA	Then just pick another cell and type the formula: =correl(A1:A8,B1:B8) The number you get is called a *correlation coefficient* and is represented by the letter ***r***.
2	45	4.0	
3	43	3.8	
4	34	3.5	
5	40	3.7	
6	45	3.87	
7	44	3.9	
8	20	1.7	

Correlation Coefficient Interpretation Guideline

The correlation coefficient (r) ranges from -1 (a perfect negative correlation) to 1 (a perfect positive correlation). In short, $-1 \leq r \leq 1$.



ITH PHANNY



Helpful Correlations
- SATs and College Graduation Rate
- Self-esteem and depression
- Breast feeding and IQ
- Stress and health

CORRELATION IS NOT CAUSATION!!!!!!!!!!

Just because two variables are related, does not mean one CAUSES the other to change. You may not make any claims about causations because you did not study (or control) other variables. Since the variable(s) you didn't study may have caused the change, you can't make any claims about causation.

Examples of correlations that illustrate this:

US spending on science and suicide rates r=.997

Per capita cheese consumption and dying by getting tangled in bed sheets. r=.947

Arcade revenue and computer science doctorates r=.985

Conducting Your Own Correlational Research

Group Members:

Step 1: Choose two variables that you believe may be correlated. See the back of this sheet for possible ideas.

What are your variables?

Variable 1:_____

Variable 2:_____

Step 2: Create a two-question survey that you can verbally administer to your classmates. Note: Some variables are easy to turn into questions, while some require very precise parameters.

What are your survey questions?

1:_____

2:_____

Step 3: Survey members from other groups + record their answers to your two questions in the chart below.

	Variable 1:	Variable 2:
Student 1		
Student 2		
Student 3		
Student 4		
Student 5		

Step 4 : Open Google Sheets and create a new doc, entering your group's data in two columns.

- Calculate the correlation coefficient using the following formula: =CORREL(array 1, array 2)
- Create a scatter plot from your data.

Step 5: Answer the following questions. BE THOROUGH!

1. What field of psychology would study the relationship between these two variables?

2. Using the chart to the right, your scatter plots, and the correlation coefficient you calculated, reflect on your findings. What did you find?

Correlation	r=
Weak	0.10 to 0.29
Moderate	0.30 to 0.49
Strong	0.50 to .75
Very Strong	0.76 to 1.00

3. If you did find a correlation between your variables (and even if you didn't… let's just pretend you did for a moment) what might have been a confounding/extraneous variable that could explain why the correlation was NOT causation?

Correlation Variable Suggestions

Amount of exercise
How often you eat out
Amount of coffee you drink
Shoe size
Number of AP classes
Number of siblings
Amount of daily calories
GPA
Hours of work per week
Time spent doing homework
Number of extracurriculars
Time spent driving to school
Test scores/SAT scores/ACT scores
Colleges applied to/accepted into
Number of absences or tardies
Number of close friends
Size of family
Days spent on vacation
Average hours slept
Pairs of shoes you own
How often you cut your hair
Trips taken outside country
How often you have dessert/weekly
Number of hours spent on electronics/on-line/watching TV/on social media
Rankings using Likert scale [ex. On a scale from one to ten…]: Happiness, sense of accomplishment, feeling of control, independence, dependence, freedom, Satisfaction, disappointment, etc.
Years playing a sport/instrument/on a team/in an activity
Number of jobs
Amount of money spent on…
Amount of money saved…
Allowance
Chores or household responsibilities
Books read in a school year/summer/month…
Number of TVs/computers/cars/houses/etc. you or your family owns
How long it takes you to run the mile/type a text/get ready for school/brush your teeth…
Years you've lived here
How often you've moved

What is Sampling in Research?

Brooke is a psychologist who is interested in studying how much stress college students face during finals. She works at a university, so she is planning to send out a survey around finals time and ask some students to rank on a scale of 1 to 5 how stressed out they are.

But which students should she survey? All of the students at the university? Only the students in the psychology department? Only freshmen? There are a lot of possibilities for Brooke's sample. The sample of a study is simply the participants in a study. In Brooke's case, her sample will be the students who fill out her survey.

Sampling is the process whereby a researcher chooses her sample. This might seem pretty straightforward: just get some people together, right? But how does Brooke do that? Should she just stand on a corner and start asking people to take her survey? Should she send out an email to every college student in the world? Where does she even begin? Because sampling isn't as straightforward as it initially seems, there is a set process to help researchers choose a good sample.

Process

So Brooke wants to choose a group of college students to take part in her study. To select her sample, she goes through the basic steps of sampling.

1. Identify the population of interest. A population is the group of people that you want to make assumptions about. Brooke wants to know how much stress college students experience during finals. Her population is every college student in the world. Of course, there's no way that Brooke can feasibly study every college student in the world, so she moves on to the next step.

2. Specify a sampling frame. A sampling frame is the group of people from which you will draw your sample. For example, Brooke might decide that her sampling frame is every student at the university where she works. Notice that a sampling frame is not as large as the population, but it's still a pretty big group of people.

3. Specify a sampling method. There are basically two ways to choose a sample from a sampling frame: randomly or non-randomly. There are benefits to both. Basically, if your sampling frame is approximately the same demographic makeup as your population, you probably want to randomly select your sample, perhaps by flipping a coin or drawing names out of a hat.

   But what if your sampling frame does not really represent your population? For example, what if the school where Brooke works has a lot more whites than minority races? In the population of every college student in the world, there might be more of a balance, but Brooke's sampling frame (her school) doesn't really represent that well. In that case, she might want to non-randomly select her sample in order to get a demographic makeup that is closer to that of her population.

4. Determine the sample size. In general, larger samples are better, but they also require more time and effort to manage. If Brooke ends up having to go through 1,000 surveys, it will take her more time than if she only has to go through 10 surveys. But the results of her study will be stronger with 1,000 surveys.

5. Implement the plan. Once you know your population, sampling frame, sampling method, and sample size, you can use all that information to choose your sample.

Importance

As you can see, choosing a sample is a complicated process. You might be wondering why it has to be that complicated. Why bother going through all those steps? Why not just go to a class and pull some students out and have them fill out the survey?
Why is sampling so important to research?

To answer those questions, let's look at an example of an actual study that was done in the mid1970s. A researcher mailed out surveys to a bunch of married women and asked them questions about their marriage. Only 4% of people responded, and of those who did, 98% said they were dissatisfied in their marriage and 75% said they had or were having an extramarital affair.

As you can imagine, this study sent shockwaves through America as husbands looked at their wives and calculated the probability of dissatisfaction or affairs. But the sample (the 4% who responded) didn't reflect the population of married

women. Those who got the survey, filled it out, and returned it were much more likely to be dissatisfied than those who didn't return it. Maybe those who were happy in their marriage were too busy having fun with their spouse to cheat. Whatever the case, further research on samples reflecting that population showed that, in reality, about 93% of women, at that time, were satisfied in their marriage and only about 7% had extramarital affairs.

That's why sampling is so important to research. If a sample isn't chosen carefully and systematically, it might not represent the population. And if it doesn't represent the population, then the study can't be generalized to the world beyond the study.

Let's go back to Brooke for a moment. She wants to know, in general, how much stress college students experience during finals. Let's say that she decides to save some time and bypass the normal sampling method. Instead, she just sets up a table outside the mental health office on campus where students go to see counselors. As students go in or out of the office, she gives them the survey.

But in this example, Brooke's sample might end up being only college students who are seeing counselors. They might be more anxious or depressed or high-strung in general, so the stress of finals might hit them particularly hard. As a result, Brooke's sample doesn't represent the population, and she might end up thinking that college students experience more stress than they actually do.

Lesson Summary

The sample of a study is…

Sampling is the process whereby…

The five steps to sampling are…

It is important for researchers to follow these steps so that their sample…

If not, the results of the study could be...

Random Assignment in Research

Charlene is a psychologist. She's interested in whether sitting on a jury will increase the level of patriotism that people feel. She goes to her local courthouse and gives jury members from several trials a short questionnaire that tells her how patriotic they feel. After they've served on a jury, Charlene gives them the same questionnaire and then compares their answers to see if they are feeling any more patriotic than before.

Now, there are a lot of things that can affect how patriotic a person feels. They could be hit with a high tax bill and feel less patriotic, or they could talk to a veteran and feel more patriotic. How does Charlene know that the results of her study are because people served on a jury and not because something else happened to influence her results?

The truth is that Charlene can't ever be 100% sure that her results are only the result of serving on a jury. However, one thing that she can do to increase the chances that they are is randomization, or the process of randomly selecting or assigning subjects.

Why does randomization work? Let's look at a specific example. Let's say that Charlene has evidence that tall people feel more patriotic than short people. When she goes to pick out her subjects, she notices a lot of tall people there. If she selects mostly tall people, will that make a difference to her results? If height is related to feelings of patriotism, then it might.

But what if Charlene didn't choose the tall people? What if she just randomly chose people of all different heights? In that case, she's more likely to get a good mix of people that represent the population at large. Because there's a mix of people, height is not as likely to affect her results. Let's look closer at two types of randomization: random assignment and random selection.

Random Selection

Imagine that Charlene goes to her courthouse, and there are 10 trials going on. She only needs to poll the juries from seven of the ten trials. How does she choose?

Charlene knows that three of the trials involve cases that will more than likely make people feel frustrated or disgusted with the government. As a result, they might not feel patriotic after sitting on those trials. So Charlene decides to ignore those trials and just choose the jurors who are in the other seven trials.

Uh-oh.

Charlene hasn't used randomization, and her results might be biased. Instead, she should have used random selection, or the process of randomly choosing which subjects to include in a study. It's easy to remember because of the word “selection.” You are selecting which people to include in your study, and you are selecting them randomly. In Charlene's case, she should have flipped a coin or drawn names out of a hat in order to choose which trials to include.

Another way that Charlene could randomly select subjects is by randomly selecting actual jurors from each of the 10 trials. Again, she could flip a coin or draw names out of a hat, or she could use an online randomizer tool to help her make sure that she was actually randomly selecting which jurors to poll.

Random Assignment

Let's say that Charlene decides that she wants to compare the people who sit on juries to the people who just sit in the juror room but are never selected for an actual trial. She goes to the courthouse and gives everyone her patriotism poll at the beginning. Through a special (and probably illegal) arrangement, Charlene gets to decide which people are put on juries and which people are not selected for a trial. She picks out the people whose polls show that they are patriotic and sends them to serve in a trial.

But wait! She hasn't randomized, so her results might not be accurate. By choosing people who are already patriotic, she might get results that are skewed in one direction or the other. But she could use random assignment instead.

Random assignment is when a researcher randomly decides which subjects go in which groups. The word “assignment” is key here. You are assigning subjects to groups in a random manner.

Of course, in real life, Charlene can't control who gets chosen for a jury and who sits in a jury room reading. But if she could, she would want to flip a coin, draw names or use another randomizing method to choose who is put on a jury and who isn't.

Lesson Summary

Randomization is...

There are two major types of randomization:

Random selection involves...

Random assignment involves ...

Experimental & Confounding Variables Exercise

For each selection identify the independent variable and dependent variable. Then look for one serious confounding variable that threatens the experiment's validity. Last, suggest how the confounding variable could be controlled to "clean up" the study.

Selection One:
Fred Rogers wanted to test a new "sing-a-long" method to teach math to fourth graders (e.g., "I Love to Multiply" to the tune of God Bless America). He used the sing-a-long method in his first period class. His sixth period students continued solving math problems with the old method. The end of the term, Mr. Rogers found that the first period class scored significantly lower than the sixth period class on a math achievement test. He concluded that his sing-a-long method was a total failure.

Define the term independent variable in your own words:

Identify independent variable from the experiment:

Define the term dependent variable in your own words:

Identify the dependent variable from the experiment:

Define the term confounding variable in your own words:

Identify the confounding variable(s) in the experiment:

What is one method to control for the confounding variable(s)?

Selection Two:
Karsh (1983) designed an experiment on the relationships between early handling and friendliness on cats. She randomly assigned kittens to one of three groups, which differed according to the age of first handling. The first group was handled daily from 3 to 14 weeks, the second from 7 to 14 weeks, and the third received no handling from birth to 14 weeks. "Handling" was defined as an experimenter holding a kitten on his or her lap, while petting for 15 minutes. "Friendliness" was measured by how long each kitten stayed with the experimenter when not restrained, and by how long it took each kitten to reach the experimenter. Karsh found that the kittens handled from 3 to 14 weeks stayed longer with the experimenter and ran more quickly to the experimenter than kittens handled from 7 to 14 weeks. Also kittens handled from 7 to 14 weeks were more "friendly" than kittens who received no handling at all. Karsh concluded that kittens should be handled as early as possible, to ensure life-long friendliness toward humans.

Are the researcher's conclusions warranted (yes or no)? _____

Identify the independent variable(s):

Identify the dependent variable(s):

Identify the confounding variable(s):

What is one method to control for the confounding variable(s)?

Selection Three

A drug company developed a new medication to control the manic phase of manic-depression. The firm hired a hospital psychiatrist to test the effectiveness of the drug. He identified the group of manic-phase patients and randomly assigned them to a drug or placebo group. Nurse Ratchet was told to administer the drug, while Nurse Johnson was told to administer the placebo. Each made daily observations of their patients during treatment. A month later the observations were compared: In general, patients in the drug group behaved more "normally" than patients in the placebo group. The drug company publicized the effectiveness of the product and received a million orders for the new drug in a few weeks.

Are the researcher's conclusions warranted (yes or no)? _____

Identify the independent variable(s):

Identify the dependent variable(s):

Identify the confounding variable(s):

What is one method to control for the confounding variable(s)?

Selection Four

Create an experiment of your own in 5 sentences or less. Then define and identify the following terms.

Experiment:

_____

_____

_____

_____

_____

_____

Define the term control group in your own words:

Identify the control group:

Define the term experimental group in your own words:

Identify the experimental group:

Define the term subjects in your own words:

Identify your subjects:

Define the term correlation in your own words:

Identify a (possible) correlation you are looking for:

The Davidson Clinic Experiment

You are the personnel director of the Davidson Pediatric Clinic, a rather large facility which employs over 50 persons, including pediatricians, nurses, secretaries, receptionists, and housekeeping and maintenance personnel.

At the center of the clinic is a large waiting room where the parents and babies wait to see the doctors. The babies in that waiting room cry so much that many employees are unable to concentrate on their work. As a result, morale among the employees is very low, and several persons have reported headaches and other stress-related symptoms. The executive director of the clinic has come to you with this problem and has asked you to do something about it.

You have observed the interactions among all persons in the waiting room and have determined that the crying almost always begins when the babies first see a nurse. The nurses in the clinic always wear white caps, white uniforms, white hose, and white shoes. You wonder if the sight of a nurse dressed this way is frightening to the babies. Perhaps the babies would cry less at the sight of a woman wearing more colorful clothes. You decide to do an experiment to determine if that is indeed the case.

Identify the problem.

_____
_____
_____
_____

What past research would you want to review?

_____
_____
_____
_____

Formulate the **hypothesis**.

_____
_____
_____
_____

Design your study. Identify the variables in your experiment.

Independent Variable

_____

Dependent Variable

_____

Identify the groups in your experiment.

Experimental Group

_____

Control Group

_____

Collect your data. How would you conduct this experiment. Write out your procedure & BE SPECIFIC !!!

Analyze the data. When examining the relevance of your data, what psychological statistical measures will you use and why? What specific data will you need to look at?

Draw **conclusions** and **report** your findings. What will you do with your information? How is it useful to the field of psychology?

PsychSim 5: DESCRIPTIVE STATISTICS

This activity introduces you to the basic statistics that researchers use to summarize their sets of data.

Go to the following site on a computer or Chromebook (not your phone) to complete the activity:
http://tinyurl.com/hljhfpp

The numbers below represent the scores of a group of students on a math test. Use them to per~ form the required calculations.

10, 13, 10, 12, 11, 7, 12, 11, 6, 11, 12, 11, 8, 10, 9

Distribution of Scores

- Sort the scores; that is, arrange them in order from lowest to highest.
- Create a frequency histogram.

Measures of Central Tendency

- What is a mode?
- What is the mode of your distribution?
- What is a median?
- What is the median of your distribution?
- What is a mean?
- How is a mean calculated?
- What is the mean of your distribution?

Skewed Distributions

- Draw what a positively skewed graph would look like

- How does data become "positively skewed"?

- Draw what a negatively skewed graph would look like

- How does data become "negatively skewed"?

- Which measure of central tendency would be the best "average" to describe a skewed distribution? Why?

Measures of Variability

- How is a range calculated?
- What is the range of your distribution?

- What is standard deviation?

Inferential Statistics for Psychology Studies

Psychology is a science, which means that in order to understand people's thoughts and behaviors, a basic understanding of statistics is necessary. Most psychology studies use inferential statistics. This lesson covers basic types of inferential statistics, as well as how to decide whether a hypothesis was supported by the results.

Inferential Statistics

Imagine a teacher is interested in studying several aspects of her class, such as the personality of her students, whether boys are different from girls or whether different teaching styles lead to different results in her students. In order to understand any of these aspects of the children in her class, the teacher must understand some basic statistics so that she can quantify her understanding, or, in other words, put it into numerical form.

Inferential statistics are ways of analyzing data that allow the researcher to make conclusions about whether a hypothesis was supported by the results. You can remember the term *inferential* because it comes from the word "inference," meaning "to draw a conclusion from clues in the environment.' How do inferential statistics work?

Two Types of Inferential Statistics

To make things easier, let's think about an example from a classroom. Imagine a teacher suspects that the boys in her class are more extroverted or more talkative, energetic and social than the girls in her class. The teacher'" guess about the difference between boys and girls is what we call a hypothesis. In psychology, a hypothesis is an educated guess about a trend, group difference or association believed to exist. Her hypothesis is that boys are more extroverted than girls. How would she test this hypothesis? The teacher would probably do something to measure extroversion, such as give the students a personality survey to complete, or simply observe them and keep track of extroverted behaviors. Either way, she can measure the level of extroversion in every boy and every girl. Then, she can compare the scores across the two groups.

The first type of inferential statistic we need to discuss is called a t-test. A t-test is used to compare the average scores between two different groups in a study to see if the groups are different from each other. In our example, the teacher would use a t-test to compare the average level of extroversion in the group of boys versus the group of girls. T-tests are very common in psychology because they can be used to compare any two groups in an experiment. If you do an experiment where you ask some people to eat healthy food and some people to eat unhealthy food, such as candy, you could then test them on some variable, such as whether they get a stomachache. A t-test would again be used here, because you are comparing the two different groups. You can use t-tests to compare two groups that occur naturally, such as boys versus girls, or you can compare two groups that you have created in an experiment.

So a t-test compares two groups. You can remember the term *t-test* by pretending that the letter "t" stands for the word "two," meaning the two groups you are comparing. But what if you want to compare more than two groups?
Imagine that the teacher thinks that as children age, they become more extroverted. Now she might give personality tests to children in each grade level in the school, such as all the way from kindergarten to sixth grade. How could she compare all of these different groups, now that we have more than two?

The second basic type of inferential statistics is called an analysis of variance. Researchers usually use the nickname ANOVA for this test. An analysis of variance is a test that compares the average scores between three or more different groups in a study to see if the groups are different from each other. In other words, an ANOVA is exactly the same as a t-test, but it can analyze multiple groups at once. The difference is simply how the equation works to analyze the groups, which you can learn more about in a statistics class if you're interested. For now, all you need to know is that the ANOVA compares multiple groups, while a t-test can only compare two groups.

Let's go through one more example of when you might use each test. Imagine a teacher believes that different teaching styles result in different scores when children take a test over the material. He might try lecturing for one group of students, versus worksheets with a second group of students. He then gives everyone the same test, and wants to compare the results. If he only had these two groups, he would use a t-test to compare the scores. However, now let's say that he wanted to add a third teaching style, which was having the students

learn the material on their own and then teach it to each other. If he now wants to compare all three teaching styles to each other, he would use an analysis of variance, or an ANOVA test.

P-Values

Now you know about two types of inferential statistics, the t-test and the ANOVA. But how do you know if your hypothesis was supported by the data? Let's go back to the example of the hypothesis that boys are more extroverted than girls. Imagine the teacher scores the surveys and finds that on a scale of 0-100, the average score for boys is 51, while the average for girls is 49. There's only a difference of two points here. Is that enough for him to decide that boys are more extroverted? What if there's a particularly energetic boy in the class, and a particularly shy girl, and those two students are primarily responsible for the difference in means? What if the scores were 5 points apart from each other? Would 10 points be enough?

Psychologists have decided that we need a way to decide whether any group differences are large enough to make a safe conclusion that the two groups really are different and that the results aren't simply due to chance or to participants who contribute extreme scores that affect the averages. How do we do this? The answer is something called a p-value. Whenever we do any statistical test in psychology, including a correlation, a t-test, or an ANOVA, the calculation produces a second number, which is the p-value. The p-value tells you the likelihood that the results in the study would have happened simply by random chance.

The number you get with a p-value will always range between 0.00 (which means a zero percent chance that the results happened randomly) and 1.00, which indicates a 100% chance that the results were random. In order for us to make a solid conclusion, we want that number to be as low as possible, or as close to zero. Let's go back to the example. If a teacher found that the average boy score was 51, and the average girl score was 49, those numbers are very close to each other. So it's possible that a random boy or girl in the class affected the averages and that if he had used a different group of boys and girls, the numbers would have been different. Because of the high amount of uncertainty in these results, our p-value would probably be very high, such as around 90%. This means our p-value would be 0.90.

However, if the scores were very different from each other, we could be more confident. If the average boy score was around 85, and the average girl score was around 15, then we can be very confident that most boys are more extroverted than most girls. So, the possibility that these scores occurred by chance would be very low maybe around 4%. That means our p-value would be 0.04.

How sure do we need to be before we can decide if a hypothesis is supported? As a general rule, most psychologists have decided that we should only accept a maximum of a 5% chance that the scores happened at random in other words, we should be 95% sure that our group differences really aren't due to chance. That means that we want a p-value between 0% and 5% chance, which would look like a number between 0.00 and 0.05. Any p-value of 0.05 or less means that we can be very sure that our results are valid, and not simply due to chance factors in the study – what we call statistical significance.

Lesson Summary

Inferential statistics are what psychologists use to...

T-tests compare…

Analysis of variance, or ANOVA, tests compare...

In order to make sure our results didn't happen due to random chance, we look for a p-value somewhere between…

Which tells us that ...

Roll the Dice

This activity will enable your group to apply the concepts of last night's homework to the Las Vegas game of Craps. Craps is a dice game of chance in which players wage money on the outcome of rolled dice. You will roll dice to gather data and gain a better understanding of how data is organized and how we find the typical score.

Step 1: Discussion of homework

With your group, please discuss your answer to the Descriptive Statistics assignment. Be thorough and if you have questions, be sure to call me over.

Step 2: Come get your materials

1. One piece of butcher paper
2. A pair of dice
3. A few markers. Please use a variety of colors on your poster and be organized.

Step 3: Prepare your butcher paper

Please label your butcher paper as follows:

- DO NOT write your title of name very largely. You will need space on your paper for your work.

<table>
<tr><td colspan="3">"Las Vegas Dice Lab"
Team members first and last name
(thin header)</td></tr>
<tr><td>Frequency Distribution Chart</td><td>Frequency Histogram</td><td>Answers to questions</td></tr>
<tr><td colspan="3">Raw data
(thin at bottom of paper)</td></tr>
</table>

Step 4: Roll the dice to find raw data and create a frequency distribution chart

- One person in your group should be assigned the role of "roller". The roller will roll the dice 30 time.
- A second person observes the roller and adds up the sum of both dice. Then they will report the total to the group.
- These sums are your RAW SCORES and go at the bottom of your chart.
- The remaining members of your group are responsible for recording the frequency of each score on the butcher paper in the FREQUENCY DISTRIBUTION CHART like the one below:

Sum of Dice	2	3	4	5	6	7	8	9	10	11	12
Frequency	III	II	IIIIII								

Reproduce this chart on your butcher paper, but do it vertically so you use space effectively. I did it horizontally on this assignment sheet simply to save paper.

Step 5: Frequency histogram

As a team, create a FREQUENCY HISTOGRAM using your RAW DICE DATA. Make sure to incorporate numbers 2-12 (even if you did NOT have any data that fell within that number). Use the "X" axis for the score and the "Y" axis for the frequency. Be neat and organized.

Step 6: Questions

Please write the answers to these questions on the space provided on your butcher paper.

1. What is the mean score in your data set?
2. What is the mode score in your data set?
3. What is the median score in your data set?
4. In this case, what measure of central tendency do you think is the most reliable? Why?
5. If you were to play and bet craps, what numbers are you "most likely" to win?
6. Is your distribution positively skewed, negatively skewed or a normal "bell curve?" Explain your answer by using data from the measures of central tendency.

UNETHICAL STUDIES IN PSYCHOLOGY

Project MK-ULTRA: The CIA's Program of Research in Behavioral Modification

From 1953 until the early 1970's, Project MK-ULTRA was the CIA's code name for a mind-control research program run by the Office of Scientific Intelligence. Their purpose was to study mind-control, interrogation methods and behavior modification. In order to manipulate mental states and alter brain function, doctors administered various types of drugs such as LSD, mescaline, heroin, morphine, psilocybin, scopolamine, marijuana, alcohol, and sodium pentothal, usually without the subject's awareness or consent.

Experiments were tested on CIA employees, military personnel, doctors, government agents, prostitutes, members of the public and mentally ill patients.

Research and goals for the project included:
• Substances which would enhance the ability of individuals to withstand privation, torture and coercion during interrogation and so-called "brain-washing".
• Substances which would promote illogical thinking and impulsiveness to the point where the recipient would be discredited in public.
• Materials and physical methods which would produce amnesia for events preceding and during their use.
• Substances which would produce physical disablement such as paralysis of the legs, acute anemia, etc.
• A material which would cause mental confusion of such a type that the individual under its influence would find it difficult to maintain a fabrication under questioning.

In 1964, the project was renamed MK-SEARCH. This project attempted to create a "perfect truth drug" which could then be used to interrogate suspected Soviet spies during the Cold War.

In 1973, CIA Director Richard Helms ordered all MK-ULTRA files be destroyed. A full investigation of MK-ULTRA will therefore never be possible.

The Stanford Prison Experiment

Led by famous psychologist Philip Zimbardo, the Stanford Prison Experiment, conducted in 1971, was executed in order to show how roles define behavior. Zimbardo tried to demonstrate that prison guards and convicts would behave in ways they thought was required. Participants were offered $15 per day and the study was to last two weeks.

Twenty-four male subjects, considered to be most mentally and emotionally stable, were chosen. Zimbardo divided the participants evenly into guards and prisoners, at random. He himself was going to take on the role of prison warden. The guards were given one rule: no physical punishment allowed, but other than that, they were able to run the prison as they see fit. The guards were outfitted in military attire and sunglasses and also provided batons. The prisoners, in contrast, were dressed in smocks and refused permission to wear underwear.

Prisoners were only to be addressed by their identity numbers and also had a small chain around one ankle. On the first day of the experiment, prisoners were instructed to stay at home and wait to be 'called' for the start of the experiment. Their homes were raided by the real Paolo Alto police, they were charged with armed-robbery, read their rights and had their fingerprints and mug shots taken. They were strip-searched and taken to the basement of Stanford: 'the mock prison'.

The guards were brutal, humiliating and demoralizing to the prisoners. By the second day prisoners were already revolting, wanting to be let out. Zimbardo and his colleagues were also beginning to be affected by the experiment, trying to keep the revolting prisoner subjects in detention and siding with guards.

On the sixth day, Christina Maslach, a recent Stanford Ph.D., (also the fiancée of Zimbardo), was brought in to interview the guards and prisoners. She was stunned by what she saw and demanded that the experiment be terminated. Apparently, Maslach was the only person to even raise any concerns out of the fifty external visitors that had come to examine the experiment.

The Monster Study

Dubbed the "monster study," the experiment was conducted by speech expert Wendell Johnson, led in part by graduate student Mary Tudor Jacobs in 1939. Johnson believed that stuttering was a learned behavior, attributed to outside factors such as constant criticism from a parent to its child for even the slightest speech imperfections. 22 orphan children with no prior speech impediment were chosen for the experiment. Wendell's goal was to induce the disorder in orphans.

One group of orphans received praise for positive speech therapy whereas the other group was belittled, badgered and told they were stutterers. By the end of the study, none of the test subjects in the negative therapy group became stutterers, but the experience caused them low self-esteem and irreparable damage.

The Well of Despair

Dr. Harry Harlow was an unsympathetic person, using terms like the "rape rack" and "iron maiden" in his experiments. He is most well-known for the experiments he conducted on rhesus monkeys concerning social isolation. Dr. Harlow took infant rhesus monkeys who had already bonded with their mothers and placed them in a stainless steel vertical chamber device alone with no contact in order to sever those bonds. They were kept in the chambers for up to one year. Many of these monkeys came out of the chamber psychotic, and many did not recover. Dr. Harlow concluded that even a happy, normal childhood was no defense against depression, while science writer Deborah Blum called these "common sense results."

Little Albert

In order to determine whether fear was innate or a conditioned response, father of behaviorism, John Watson, used a nine month old orphan he nicknamed Little Albert to test his theory. Watson began the experiment by placing Little Albert in the middle of a room. A white laboratory rat was placed near Albert, who was allowed to play with it. Albert was not scared.

For two months he was exposed to various things without any sort of conditioning; a white rabbit, a monkey, masks etc. Watson placed Albert in a room again with the rat, however this time, when Albert would touch the rat, Watson would make loud sounds behind him, such as the striking of a steel bar with a hammer. When this occurred, Albert would get frightened and begin to cry. Watson continued to do this until eventually, Albert became very distressed whenever exposed to the rat. Eventually, Albert associated anything fluffy or white with the loud noise. Little Albert was never desensitized to his fear and was released from the hospital before Watson was able to do so.

Learned Helplessness

In 1965, psychologists Mark Seligman and Steve Maier conducted an experiment in which three groups of dogs were placed in harnesses. Dogs from group one were released after a certain amount of time, with no harm done. Dogs from group two were paired up and leashed together, and one from each pair was given electrical shocks that could be ended by pressing a lever. Dogs from group three were also paired up and leashed together, one receiving shocks, but the shocks didn't end when the lever was pressed. Shocks came randomly and seemed inevitable, which caused "learned helplessness," the dogs assuming that nothing could be done about the shocks. The dogs in group three ended up displaying symptoms of clinical depression.

Later, group three dogs were placed in a box with by themselves. They were again shocked, but they could easily end the shocks by jumping out of the box. These dogs simply "gave up," again displaying learned helplessness.

Obedience to Authority

The notorious Milgram Study is one of the most well-known of psychology experiments. Stanley Milgram, a social psychologist at Yale University, wanted to test obedience to authority. He set up an experiment with "teachers" who were the actual participants, and a "learner," who was an actor. Both the teacher and the learner were told that the study was about memory and learning.

Both the learner and the teacher received slips that they were told were given to them randomly, when in fact, both had been given slips that read "teacher." The actor claimed to receive a "learner" slip, so the teacher was deceived. Both were separated into separate rooms and could only hear each other. The teacher read a pair of words, following by four possible answers to the question. If the learner was incorrect with his answer, the teacher was to administer a shock with voltage that increased with every wrong answer. If correct, there would be no shock, and the teacher would advance to the next question.

In reality, no one was being shocked. A tape recorder with pre-recorded screams was hooked up to play each time the teacher administered a shock. When the shocks got to a higher voltage, the actor/learner would bang on the wall and ask the teacher to stop. Eventually all screams and banging would stop and silence would ensue. This was the point when many of the teachers exhibited extreme distress and would ask to stop the experiment. Some questioned the experiment, but many were encouraged to go on and told they would not be responsible for any results.

If at any time the subject indicated his desire to halt the experiment, he was told by the experimenter, "Please continue;" "The experiment requires that you continue;" "It is absolutely essential that you continue;" "You have no other choice, you must go on." If after all four orders the teacher still wished to stop the experiment, it was ended. Only 14 out of 40 teachers halted the experiment before administering a 450 volt shock, though every participant questioned the experiment, and no teacher firmly refused to stop the shocks before 300 volts.

Terms for Extra Credit Flashcards

Unit 1: History, Approaches, & Research

Hypothesis	Operational Definitions	Independent Variable
Dependent Variable	Control Group	Experimental Group
Subjects	Population	Demand Characteristics
Random Sample	Representative Sample	Random Assignment
Natural Selection	Naturalistic Observation	Case Study
Experiment	Survey	Placebo
Sociocultural Perspective	Double Blind Procedure	Ethical Standards
Illusionary Correlation	Correlation	Range
Median	Mean	Wilhelm Wundt
Social Psychology	Mode	Psychiatrist
Sampling Bias	Replication	Standard Deviation
Positive Skew	Negative Skew	Normal Curve
Statistical Significance	Informed Consent	Debriefing
Experimenter Bias	Developmental Psychology	Clinical/Counseling Psychology
Evolutionary Perspective	Humanistic Perspective	Behaviorism
Gestalt	Scientific Method	Structuralism
Psychoanalytic/Psychodynamic	Cognitive Perspective	Neuroscience/Biological
Functionalism	Extraneous Variables	Correlation Coefficient

Pick 15 terms from the above list (or from the unit guide on the back of the packet cover) that you are least familiar/comfortable with and construct a flashcard including the following information:

1. On one side, **define** the term IN YOUR OWN WORDS. Try and keep the definition short, meaningful, and something that you can remember.

2. On the other side, **draw** a picture that demonstrates the term OR **describe** a personal example.

You may earn up to 5 points of extra credit for your 15 flashcards!

All flashcards must be turned in by the day of the unit assessment – no late flashcards will be accepted!