

Unit 1

Intro to Psychology & Research

THE SCIENTIFIC METHOD... FOR TEN-YEAR OLDS



* THIS IS SURPRISINGLY CLOSE TO HOW REAL SCIENTISTS ACT AT CONFERENCES.



Wilhelm Wundt



William James



AMERICAN
PSYCHOLOGICAL
ASSOCIATION



Essential Questions:

- How did psychology evolve as a science?
- What are the leading perspectives of psychology?
- How do psychologists scientifically study behavior?
- How do psychologists make ethical decisions about research and behavior of human and animal subjects?

<p><u>1-1</u> Psychology, basic research, applied research</p> <p><u>1-3</u> Psychoanalysis, behaviorism, humanistic psychology</p> <p><u>1-5</u> Psychological perspectives, psychodynamic perspectives, behavioral perspective, humanistic perspective, cognitive perspective, biological perspective, social-cultural perspective</p> <p><u>1-6</u> Behavior genetics, evolutionary perspective, positive psychology nature-nurture, natural selection</p> <p><u>2-1</u> Scientific method</p> <p><u>2-2</u> Confirmation bias, critical thinking, participant bias, naturalistic observation</p>	<p><u>2-3</u> Case study</p> <p><u>2-4</u> Correlational study, positive correlation, negative correlation</p> <p><u>2-5</u> Survey method, population, sample, random sample</p> <p><u>2-6</u> Longitudinal study, cross-sectional study</p> <p><u>2-7</u> Experiment, hypothesis, operational definition, independent variable, dependent variable, experimental group, control group, random assignment, confounding variable, double-blind procedure, placebo, statistically significant, replicate</p> <p><u>2-8</u> Ethics, animal research</p>	<p><u>Names to know:</u></p> <p>Wundt James Rogers Freud Darwin Pavlov Watson Skinner Maslow Piaget</p>
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PSYCHOLOGY'S PERSPECTIVES

<p style="text-align: center;"><u>BEHAVIORISM</u></p> <p>Description:</p> <p>Famous Names:</p>	<p style="text-align: center;"><u>SOCIAL-CULTURAL</u></p> <p>Description:</p> <p>Famous Names:</p>
<p style="text-align: center;"><u>PSYCHOANALYSIS</u></p> <p>Description:</p> <p>Famous Names:</p>	<p style="text-align: center;"><u>HUMANISTIC</u></p> <p>Description:</p> <p>Famous Names:</p>
<p style="text-align: center;"><u>COGNITIVE</u></p> <p>Description:</p> <p>Famous Names:</p>	<p style="text-align: center;"><u>BIOLOGICAL</u></p> <p>Description:</p> <p>Famous Names:</p>

Perspectives in Psychology

I. Match each statement to the correct psychological perspective.

- | | |
|--|----------------------|
| _____ 1. How the body and brain enable emotions and sensory experience. | A. Cognitive |
| _____ 2. How the natural selection of traits promotes the perpetuation of one's genes. | B. Behavioral |
| _____ 3. How thinking and behavior vary across situations and cultures. | C. Biological |
| _____ 4. How much our genes and environment influence our individual differences. | D. Humanistic |
| _____ 5. How our thought process works and how we store and remember information. | E. Psychodynamic |
| _____ 6. How behavior springs from unconscious drives and childhood conflicts. | F. Social-Cultural |
| _____ 7. How each individual has great freedom of choice and a large capacity for personal growth. | G. Evolutionary |
| _____ 8. How we learn observable responses. | H. Behavior Genetics |

II. Match each question to the correct psychological perspective.

- | | |
|--|----------------------|
| _____ 1. How can someone's personality traits and disorders be explained in terms of sexual or aggressive drives or unfulfilled wishes and childhood trauma? | A. Cognitive |
| _____ 2. How does a human being reach their full potential as a person? | B. Behavioral |
| _____ 3. How is our society different from other societies in the world? | C. Biological |
| _____ 4. How is blood chemistry linked with moods and motives? | D. Humanistic |
| _____ 5. Does nature or nurture play a more prominent role in our development? | E. Psychodynamic |
| _____ 6. How does evolution influence behavior tendencies? | F. Social-Cultural |
| _____ 7. How do we use information in remembering, problem solving, and reasoning? | G. Evolutionary |
| _____ 8. How do we learn to do things or not to do things through rewards and punishment? | H. Behavior Genetics |

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 slave 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 use:

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 stimulus 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.

Psychology vs. Psychiatry: What's the Difference, and Which Is Better?

By John Cloud Friday, October 1, 2010

Prediction: Based on the title of this article and your previous knowledge, which do you expect the author to identify as the better field, psychology or psychiatry, and why?

Potential challenging vocabulary has been highlighted. Make sure you understand their meanings.

Psychologists and psychiatrists tend to hate each other. The reasons are historical: beginning even before Freud, psychologists held enormous power over the cultural imagination. The whole idea of psychiatry — an explicitly chemical rather than behavioral treatment of the mind — didn't start until the industrial age, and for a long time afterward, psychiatrists were held in disregard.

Friday morning, psychiatrists take a bit of revenge. Even after years of symposia and papers designed to reconnect the two tendrils branches of mental-health treatment, the American Psychiatric Association has released new guidelines for treatment of depression that still denigrate the cognitive and behavioral approaches of the American Psychological Association. (Both organizations are called A.P.A., and neither will relinquish the shortened form to the other. Yeah, it turns out the nation's mental-health leaders act like children.)

According to the new guidelines — which will govern treatment for the 200,000 in-patient psychiatric patients in the U.S., as well as the 20 million or so who get out-patient treatment — the No.-1 preferred approach is drugs. Just drugs. The guidelines don't mention psychological approaches like cognitive-behavioral therapy until No. 3, just after electroshock therapy. Ouch.

The new guidelines underplay an enormous body of data from the past decade showing that even the best psychiatric drugs work better than sugar pills only when the drugs are used in conjunction with psychological therapies that help patients change how they behave and how they form their thoughts. Neither a strictly psychiatric approach (just drugs) nor a strictly psychological approach (just talk therapy) works much better than a placebo pill on its own. But when used in combination, the psychiatric and psychological treatments help a majority of people get better.

So why can't A.P.A. and A.P.A. get along?

One reason is a problem of data. The new American *Psychiatric* guidelines released today **conflate** several psychotherapy approaches equally because at least one or two randomized trials has shown them to be effective. But cognitive-behavioral therapy has a huge base of evidence compared to rather obscure approaches such as interpersonal therapy. In the context of national guidelines that will shape the treatment of millions, it borders on **quackery** to include cognitive-behavioral therapy in the same sentence that the A.P.A. (American *Psychiatric*, ugh) calls “problem-solving therapy.”

When I spoke with an A.P.A. (American *Psychiatric*, ugh again) official Thursday night, he declined to speak on the record. He referred me to an official statement the organization released, which says it “reviewed more than 10,000 studies,” revealed all ties to pharmaceutical companies, and will consider any comments to revise the guidelines. I only have one comment: the A.P.A. and the A.P.A. should start with becoming Facebook friends. Psychology and psychiatry shouldn't be enemies.

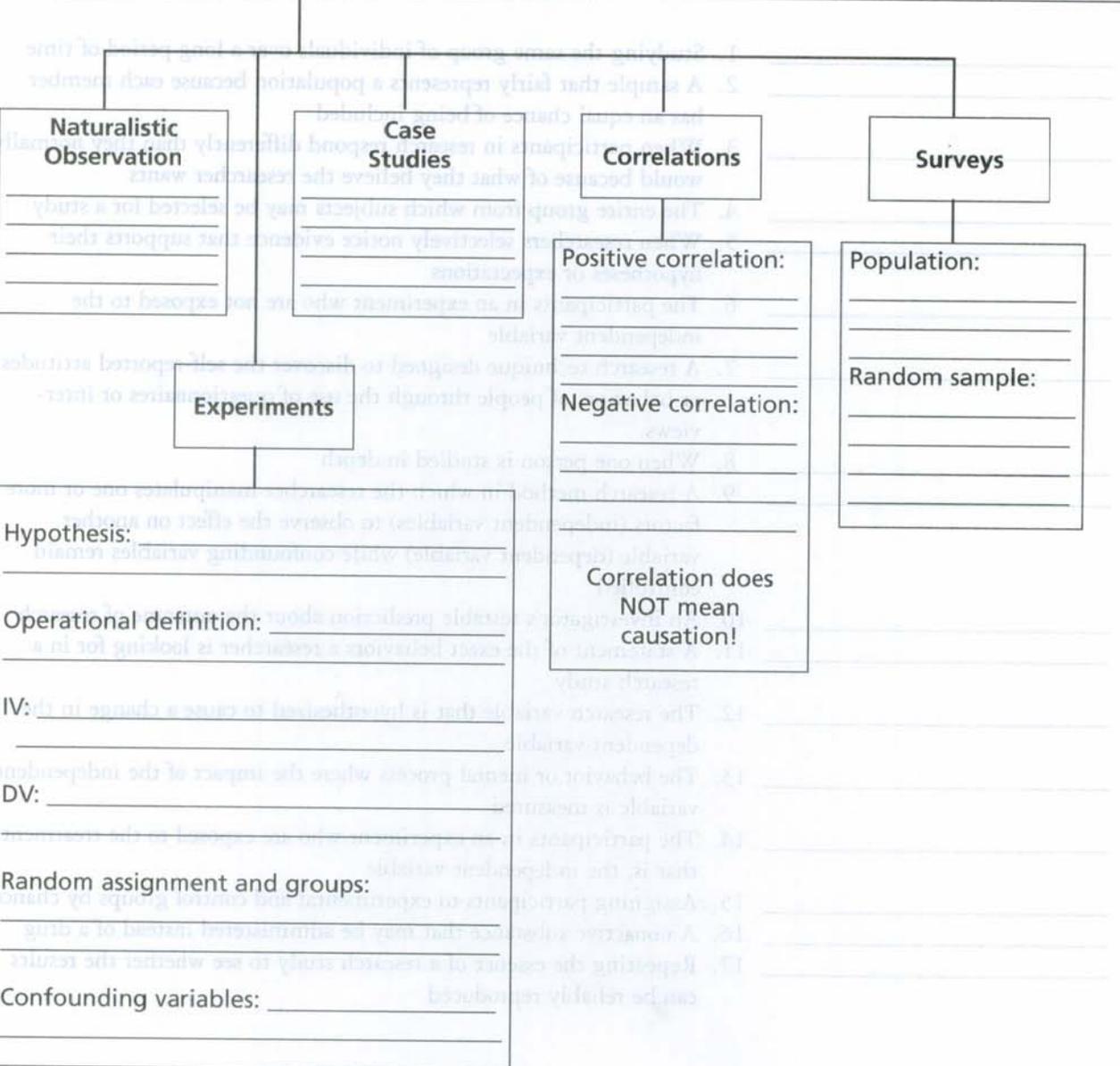
In 2-3 sentences summarize the main idea of this article.

HANDOUT 2-4

Making Sense of Research Methods

On the lines provided, write definitions of the module terms related to research methods.

<p style="text-align: center;">Research Methods</p> <p>Critical thinking: _____</p> <p>Researcher bias: _____</p> <p>Participant bias: _____</p>	<p style="text-align: center;">Ethics</p> <p>Four basic principles: _____</p> <p>_____</p> <p>_____</p> <p>_____</p>
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Name _____

Correlational Research

What is the purpose of correlational research? _____

What is the difference between a positive correlation and a negative correlation? _____

What is the main difference between correlational research and experimentation? _____

For each article, explain why it is an example of correlational research and not experimentation. Then decide if there is a negative or positive correlation and explain why.

#1 "Aging: Moderate Drinking May Help the Brain"

#2 "Excessive internet use linked to depression, research shows"

#3 "Kids' Smiles Predict Their Future Marriage Success"

#4 "Sugar Rush...to Prison? Study Says Lots of Candy Could Lead to Violence

#5 "Unhappy people watch much more tv"

#6 "Wash. Report: Health and grades related"

Now brainstorm your own examples of correlational research:

Positive correlation:

Negative correlation:

HANDOUT 2-10

Writing Experimental Hypotheses

Directions: For the following scenarios, write an experimental hypothesis.

1. A psychologist takes two groups: one that is given a painkiller for migraine headaches and one that is given a placebo. Neither group knows about the presence of the placebo. The psychologist tests the patients after two hours to see if the headache still remains.
2. Researchers compared mental hospital admission rates for 10 days before and after a full moon.
3. One group of subjects flies across five time zones. Another group flies a long distance, but through only one time zone. Researchers examine both groups for symptoms of jet lag.
4. Researchers use a cross-sectional design method using four groups of people, each differing in age by 10 years. Each group is given a test to measure political and social attitudes.
5. A psychologist takes a group of serial killers and gives them personality tests to see if a pattern of childhood behavior is evident.

HANDOUT 2-12

Identifying Independent and Dependent Variables

Directions: For each of the following experiments, identify the independent and dependent variables.

1. Developmental psychologists want to know if exposing children to public television improves their reading skills.		Color
2. Behavioral psychologists want to know whether reinforcing comments will make people work harder on an assembly line.		Brown
3. Comparative psychologists study whether a young monkey will prefer to spend time with a pretend monkey made of wire that also provides milk or a pretend monkey that is covered with cloth but provides no milk.		Yellow
4. A clinical psychologist wants to know whether people who have psychotherapy are more or less likely to have problems in the future.		Red
5. A social psychologist wants to know whether being polite or rude to people tends to make them more cooperative.		Blue
6. A personality psychologist explores whether extroverted people have more fun at parties.		Green
		Orange
		New Color

Practice with Research Methods

Provide your own example for each of the research methods below. Your examples must be realistic. If you were a researcher, what would you want to research?

Survey:

Naturalistic Observation:

Case Study:

Experiment:

What's Wrong With These Studies?

Instructions: Below are five scenarios that describe different kinds of research studies. Each study contains a flaw, either in its methodology or in the conclusions that might be drawn from it. Your task is to identify the flaw or flaws in the space provided below each scenario.

Study #1:

Marcie and Sean are students in an introductory psychology course. As an assignment, their instructor has asked students in the class to "pair up" and to "gather some real life descriptive data and calculate the mean, median, mode, and range of those data." Sean tells Marci that this will be an easy assignment since he is a student-manager of the school's basketball team, the members of which he is sure will let him take their height measurements. He asks Marci to meet him at 2:00 in the gymnasium where they will measure the height of each of the team's 15 members. The members of the basketball team gladly cooperate with Marci and Sean. In their report to the class, Marci and Sean write: "The mean height of the basketball team is 6' 7," the median height is 6' 5," the modal height is 6" 8," and the range of heights is 6'2" to 7'1." In conclusion, the average height of male students at our school is very tall."

What is wrong with Marcie and Sean's report?

Study #2:

Ani has long been interested in dating relationships. One issue that she has wondered about was whether the length of a couple's courtship affects how happy the couple is in their marriage. She decides to carry out a brief research project to examine this issue. She randomly selects ten married couples to participate. She independently asks each partner in each couple to answer two questions: First, how long did they date prior to their marriage, and second, on a scale of 1 to 10, how happy are they in their marriage. After collecting and analyzing her data, she concludes that people who date each other for long periods of time prior to their marriage, are happier in their marriage. Thus, longer periods of courtship cause happier marriages."

Is Ani's conclusion correct?

Study #3:

Antonio has just completed a paper for his introductory psychology course. His work is based on his personal account of a high school classmate and friend of his that was recently convicted in a serial murder case. His paper is a biographical account of this person's early youth and adolescence and the factors during these times that may have contributed to his killing sprees. Near the end of his paper, Antonio concludes, "Thus factors such as these, which occur during a person's early youth and teenage years, seem to play a major role in contributing to people becoming serial murderers."

Is Antonio's statement correct?

Study #4:

Dr. Lizzie Taylor is a psychopharmacologist who believes that she has developed a safe drug to enhance memory. To test her new drug, she gives a single dose of the compound to each of 15 volunteers. She allows the drug 30 minutes to take effect prior to asking her subjects to memorize a list of 50 Hebrew nouns. She then records how many nouns each subject memorized correctly. She finds that all of her subjects correctly recalled about 75 percent of the nouns. She concludes that her drug did indeed enhance their memories. (To her credit, Dr. Taylor made sure that her subjects were of average intelligence, were taking no other drugs or medications immediately prior to her study, and were not familiar with the Hebrew language.)

Is Dr. Taylor's conclusion justified by her experimental procedure?

Study #5:

Mrs. Smith is a high school English teacher who wants to investigate whether listening to music while taking a test will help improve her students' test scores. Mrs. Smith has half of her 5th hour class wear headphones and listen to music of their choice, while the other half the class does not wear headphones and does not listen to music. Mrs. Smith then passes out an ICE (in-class essay) for all of the students to take on *The Great Gatsby*. Mrs. Smith grades each ICE and finds that the students who wore the headphones and listened to the music wrote better essays than the students who did not listen to music.

What are some of the extraneous variables and demand characteristics in Mrs. Smith's study? How could she fix these problems?

Research Ethics

For each of the following studies, please indicate whether you personally consider it to be ethical or unethical, given your reading of your textbook and the Lesko reader.

1. A social psychologist sits in a crowded bar all evening and records the number of people who come into the bar alone, and who either leave alone or with someone else. The researcher also records the time they come in and the time they leave.

ethical unethical cannot decide
2. A researcher wants to administer a new drug hypothesized to affect aggressive behavior. He chooses prison inmates to be his participants, reasoning that aggression is more common in prisons. In order to persuade prisoners to participate, he promises them favorable letters to their parole boards; these letters might well facilitate earlier release.

ethical unethical cannot decide
3. A team of researchers is interested in studying helping behavior. They stage a scene in a subway in which a confederate falls off his seat and bleeds from the mouth. The dependent variable is how quickly bystanders help the “victim.” The bystanders are never told that they were part of an experiment.

ethical unethical cannot decide
4. A psychologist is interested in studying discrimination against gays as a consequence of the AIDS epidemic. She carefully trains a confederate to portray stereotypical “masculine” and “effeminate” behavior. In the laboratory, participants interview the confederate for a hypothetical job. Without their knowledge, the experimenter observes and records their initial nonverbal gestures, eye contact with the confederate, and so on. To ensure that participants do not talk with their friends about the study, the psychologist never reveals to them that the true purpose of the study was to document subtle discrimination against gays.

ethical unethical cannot decide
5. Deception was employed in a study examining the relation between task performance and defensiveness. Prior to participation, participants were informed of the requirements and purpose of the experiment to the extent possible, given the deception component of the study; they were also told that they could withdraw from the experiment at any time without prejudice. Some participants were given false feedback on a test of intellectual ability and were told that their scores were well *above* average; other participants were told that their performance was well *below* average. After the false feedback, participants completed measures of defensiveness, so that researchers could determine if failure makes people more defensive. After collecting the measures, the experimenter thanked participants for their efforts, and promised a detailed report of the study results. Two months later, participants received the report, which fully described the deception used.

ethical unethical cannot decide

HANDOUT 2-17

Animal Care and Use Committee

Directions: Your group is the Animal Care Committee for a university. It is the committee's responsibility to evaluate and either approve or reject research proposals submitted by faculty members who want to use animals for research or instructional purposes in psychology, biology, or medicine. The proposals describe the experiments, including the goals and potential benefits of the research as well as any discomfort or injury that they may cause the animal subjects. You must either approve the research or deny permission for the experiments. It is not your job to suggest improvements on technical aspects of the projects, such as the experimental design. You should make your decision based on the information given in the proposal.

CASE 1

Professor King is a psychobiologist working on the frontiers of a new and exciting research area of neuroscience called brain grafting. Research has shown that neural tissue can be removed from the brains of monkey fetuses and implanted into the brains of monkeys that have suffered brain damage. The neurons seem to make the proper connections and are sometimes effective in improving performance in brain-damaged animals. These experiments offer important animal models for human degenerative diseases such as Parkinson's and Alzheimer's. Professor King wants to transplant tissue from fetal monkey brains into the entorhinal cortex of adult monkeys; this is the area of the human brain that is involved with Alzheimer's disease.

The experiment will use 20 adult rhesus monkeys. First, the monkeys will be subjected to ablation surgery in the entorhinal cortex. This procedure will involve anesthetizing the animals, opening their skulls, and making lesions using a surgical instrument. After they recover, the monkeys will be tested on a learning task to make sure their memory is impaired. Three months later, half of the animals will be given transplant surgery. Tissue taken from the cortex of monkey fetuses will be implanted into the area of the brain damage. Control animals will be subjected to sham surgery, and all animals will be allowed to recover for two months. They will then learn a task to test the hypothesis that the animals having brain grafts will show better memory than the control group.

Professor King argues that this research is in the exploratory stages and can only be done using animals. She further states that by the year 2000 about 2 million Americans will have Alzheimer's disease and that her research could lead to a treatment for the devastating memory loss that Alzheimer's victims suffer.

CASE 2

Dr. Fine is a developmental psychobiologist. His research concerns the genetic control of complex behaviors. One of the major debates in his field concerns how behavior develops when an animal has no opportunity to learn a response. He hypothesizes that the complex grooming sequence of mice might be a behavior pattern that is built into the brain at birth, even though it is not expressed until weeks later. To investigate whether the motor patterns involved in grooming are acquired or innate, he wants to

raise animals with no opportunity to learn the response. Rearing animals in social isolation is insufficient because the mice could teach themselves the response. Certain random movements could accidentally result in the removal of debris. These would then be repeated and could be coordinated into the complex sequence that would appear to be instinctive but would actually be learned. To show that the behaviors are truly innate, he needs to demonstrate that animals raised with no opportunity to perform any grooming-like movements make the proper movements when they are old enough to exhibit the behavior.

Dr. Fine proposes to conduct the experiment on 10 newborn mice. As soon as the animals are born, they will be anesthetized and their front limbs amputated. This procedure will ensure that they will not be reinforced for making random grooming movements that remove debris from their bodies. The mice will then be returned to their mothers. The animals will be observed on a regular schedule using standard observation techniques. Limb movements will be filmed and analyzed. If grooming is a learned behavior, then the mice should not make grooming movements with their stumps as the movements will not remove dirt. If, however, grooming movements are innately organized in the brain, then the animals should eventually show grooming-like movement with the stumps.

In his proposal, Dr. Fine notes that experimental results cannot be directly applied to human behavior. He argues, however, that the experiment will shed light on an important theoretical debate in the field of developmental psychobiology. He also stresses that the amputations are painless and the animals will be well treated after the operation.

CASE 3

Your university includes a college of veterinary medicine. In the past, the veterinary students have practiced surgical techniques on dogs procured from a local animal shelter. However, there have been some objections to this practice, and the veterinary school wants the approval of your committee to continue this practice. They make the following points.

1. Almost all of these animals will eventually be killed at the animal shelter. It is wasteful of life to breed animals for the vet school when there is an ample supply of animals that are going to be killed anyway, either because their owners do not want them or because they are homeless.
2. It costs at least 10 times as much to raise purebred animals for research purposes; this money could be better used to fund research that would benefit many animals.
3. Research with dogs from animal shelters and the practice surgeries will, in the long run, aid the lives of animals by training veterinarians and producing treatments for diseases that afflict animals.

A local group of animal welfare activists has urged your committee to deny the veterinary school's request. They argue that the majority of these animals are lost or stolen pets, and it is tragic to think that the dog you have grown to love will wind up on a surgical table or in an experiment. Furthermore, they claim that as people become aware that animals taken to shelters may end up in research laboratories, they will stop using the shelters. Finally, the activists point out that in countries such as England, veterinary students do not perform practice surgery; they learn surgical techniques in an extensive apprenticeship.

Exploring Root Words

CASE 4

The Psychology Department is requesting permission from your committee to use 10 rats per semester for demonstration experiments in a physiological psychology course. The students will work in groups of three; each group will be given a rat. The students will first perform surgery on the rats. Each animal will be anesthetized. Following standard surgical procedures, an incision will be made in the scalp and two holes drilled in the animal's skull. Electrodes will be lowered into the brain to create lesions on each side. The animals will then be allowed to recover. Several weeks later, the effects of destroying this part of the animal's brain will be tested in a shuttle avoidance task in which the animals will learn when to cross over an electrified grid.

The instructor acknowledges that the procedure is a common demonstration and that no new scientific information will be gained from the experiment. He argues, however, that students taking a course in physiological psychology must have the opportunity to engage in small animal surgery and to see firsthand the effects of brain lesions.

Source: Herzog, H. A. (1990). Discussing animal rights and animal research in the classroom. *Teaching of psychology, 17*, 90-94. Reprinted by permission of Lawrence Erlbaum Associates, Inc., and the author.