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2/ RESEARCH METHODS

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▼CHAPTER 2 SUMMARY

WHY are research methods important to the study of psychology? P.18
• Psychologists use scientific methods to carry out research, reducing the problems of hindsight bias and the false consensus effect.
• When carrying out empirical research, psychologists use existing facts and theories to come up with new hypotheses.
WHAT ARE SOME TYPES OF RESEARCH STRATEGIES? p.20
• Experiments, correlational studies, and descriptive studies (naturalistic observation, laboratory observation, case studies, and surveys) are used to conduct different types of research.
• Research can take place in a laboratory or in the field.
• Data collection may be self-reported or observational.
HOW CAN STATISTICAL METHODS HELP US GATHER AND ANALYZE DATA? p.24
• Descriptive statistics are used to summarize data sets and provide information about measures of central tendency, measures of variability, and frequency distribution.
• Inferential statistics are used to provide information about the statistical significance of data.
HOW CAN WE MINIMIZE BIAS? p.27
• A degree of error is inevitable in any psychological research and is taken into account during statistical analysis.
• Researchers can minimize bias by using representative samples, taking reliable measurements, and avoiding subject and observer expectancy effects.
WHAT ETHICAL ISSUES DO PSYCHOLOGISTS FACE? p.29
• When conducting a study, a psychologist needs to consider three issues: a person's right to privacy, the possibility of harm or discomfort, and the use of deception.
• Researchers must follow the American Psychological Association's code of ethics if they wish to publish their work in APA journals.

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▼CHAPTER 2 KEY TERMS

Hindsight bias describes a person's erroneous belief that he or she knew something all along after an event has occurred.
False consensus effect describes a person's tendency to overestimate the extent to which others share his or her beliefs and behaviors.
Dogmatism describes a belief that requires people to accept information as irrefutable and to refrain from questioning authority.
Method are rules or techniques that provide a framework for our observations.
Facts are objective statements made using direct observations.
Theories are ideas that help explain existing facts.
Hypotheses are predictions about new facts, based on existing theories.
Variable is a characteristic that can vary, such as age, weight, or height.
Participant is a person who takes part in an experiment as a subject.
Confederate is a person who takes part in an experiment who is seemingly a subject but is really working with the researcher.
Independent variable is a variable that a researcher can manipulate in an experiment.
Dependent variable is a variable that is affected by the independent variable in an experiment.
Within-subject experiment describes a study in which each participant is exposed to several different independent variables.
Between-group experiment describes a study in which different groups of participants are exposed to different independent variables.
Experimental group is a group of participants in an experiment who are subject to an independent variable.
Control group is a group of participants in an experiment who are either given no treatment or who are given treatment that should have no effect.
Random assignment is the process by which participants in an experiment are randomly placed into groups.
Matched sample is a group of participants in an experiment that is identical to at least one other group in terms of a particular variable or set of variables.
Matched pair is a set of participants in an experiment, one from one group and the other from another group, who are identical in terms of a particular variable or set of variables.
Naturalistic observation is the study of people or animals in their own environment.
Observer bias describes a situation in which an observer expects to see a particular behavior and notices only actions that support that expectation.
Blind observers are observers who do not know what the research is about and are thus not subject to observer bias.
Laboratory observation is the study of people or animals in a controlled setting.
Case study is an in-depth study of one individual or a few individuals.
Survey is a series of questions about people's behavior or opinions, in the form of a questionnaire or interview.
Random sampling is a technique in which the participants in a survey are chosen randomly so as to get a fair representation of a population.
Laboratory study is a study in which participants are taken to a location that has been specifically set up to facilitate collection of data and allow control over environmental conditions.
Field study is a study that is conducted in a setting other than a laboratory.
Self-report method is a form of data collection in which people are asked to rate or describe their own behavior or mental state.
Questionnaire is a series of questions with a strict purpose that has been developed using careful controls such as precise wording, carefully constructed questions, and random sampling.
Interview is a form of data collection in which people provide oral descriptions of themselves; this can be strictly structured, with a set list of questions, or loosely structured and more conversational.
Observational methods are the processes of observing and recording a subject's behavior.
Testing is a type of observational method in which participants are provided with stimuli or problems to respond to and researchers collect data about how the participants perform a certain task.
Descriptive statistics are statistics researchers use to summarize data sets.
Inferential statistics are statistics that use probability laws to help researchers decide how likely it is that their results are due to chance and, as a result, how likely it is that the observed results apply to a broader population.
Measures of central tendency are the three most typical scores in a set of data: mean, median, and mode.
Mean is the arithmetic average of the scores in a data set, or the sum of all the scores divided by the number of

scores.
Median is the middle score in a data set.
Mode is the most frequently occurring score in a data set.
Variability is the degree to which the numbers in a set of data differ from one another and the mean.
Range is the difference between the highest and lowest values in a data set.
Standard deviation is a measure of the dispersion of a set of values using information from each individual score.
Deviation score is the difference between an individual data point's actual value and the mean value of the whole data set.
Frequency distribution is a summary of how frequently each of the scores in a set of data occurs.
Bar graph is a representation of a frequency distribution in which vertical or horizontal bars are proportional in length to the value they represent.
Histogram is a representation of a frequency distribution using rectangles in which the width of a rectangle represents an interval and the area of a rectangle is proportional to the corresponding frequency.
Normal curve is a graphical representation of an evenly distributed data set in which the curve is symmetrical and bell-shaped due to the even distribution of results and the tendency of data to accumulate around the center of a set in an even distribution.
Skewed distribution is a graphical representation of an unevenly distributed data set in which scores cluster together on one end rather than in the middle.
Statistical significance is an indication that the difference between the average scores from two reliable samples is not simply due to chance.
Level of significance is a statistic that identifies the probability that the results of a study could have occurred by chance.
Error is random variability that is accidentally introduced into an experiment.
Bias is a personal and sometimes unreasonable judgment that a researcher may make that could affect the results of an experiment.
Demand characteristics are aspects of a setting that can cause participants in a study to behave as they believe the researcher wants them to.
Reliability is the degree to which a measurement yields similar results every time it is used with a particular subject under particular conditions.
Validity is the degree to which a measurement measures what it is intended to measure.
Face validity is the extent to which a study superficially measures what it is intended to measure.
Criterion validity is an indication of how closely a measurement correlates with another criterion of the characteristic being studied.
Predictive validity is a type of criterion validity in which you can use the results of a test to predict a person's score or performance in another area.
Construct validity is a type of validity that uses a specific procedure that measures or correlates with a theoretical or intangible concept.
Internal validity is a type of validity indicating that a researcher is able to control all extraneous values in a test so that the only variable influencing the results it of the study is the independent variable.
External validity is a type of validity indicating that a test can be generalized to the rest of the population.
Observer-expectancy effect see observer bias
Subject-expectancy effect is an occurrence where participants in a study expect to behave in a certain way as a result of their treatment, causing them to adjust their behavior.
Double-blind experiment is an experiment in which both the subject and the observer are kept blind, thus negating the observer-expectancy effect and the subject-expectancy effect.
Placebo is a substance or procedure which resembles medical therapy but has no intrinsic therapeutic value.
Placebo effect is a phenomenon in which participants taking a placebo react as if they were receiving treatment, simply because they believe they are actually receiving treatment.
Debrief is to give a verbal description of the true nature and purpose of a study before the study occurs.
American Psychological Association (APA) is a scientific and professional organization that represents psychologists in the United States.
Institutional Review Board (IRB) is an ethics review panel established by a publicly funded research institution to evaluate all proposed research by that institution.

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▼LECTURE LAUNCHERS AND DISCUSSIONS TOPICS

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Lecture/Discussion: Correlations and Causal Relationships

There seems to be a general human tendency to attribute causality to correlated events. The lay person, like the psychologist, often imposes patterns of (apparently) lawful regularity on observed events. Given what is perceived as an "effect," we search for causes. Events are more likely to be singled out for attention and analysis when they are unusual, anomalous, and discontinuous with our prior experience. When such events are natural phenomena, they are typically relegated to the status of "cause" and then the search is directed toward their aftereffects.

One of the most persistent instances in which pseudo-correlations of behavior consequences are reported to flow from salient natural and human events is the "baby boom" syndrome. For example, the allegation of increased births nine months after a major power blackout in New York is well known. So too, is the baby boom in Israel nine months after their war with Egypt.

Invariably, when base rate data are used to compare the assumed "increase in births," the effect vanishes. That is, when seasonal fluctuations in births are taken into account, there is no unusual effect left to relate to the nine-months-earlier unusual event. But that does not deter the correlation seekers. Three University of North Carolina sociologists attributed a 1955 drop in Southern birth rates to the Supreme Court's 1954 school desegregation decision (Rindfuss, Reed, & St. John, 1978). They theorized that uncertain prospects for the future "demoralize"' prospective parents (both whites and, to a lesser extent, blacks), causing them to postpone any children they might otherwise have conceived in the three- or four-month period immediately following the decision. The subsequent recovery in the birth rate is attributed to the realization that desegregation would in fact proceed slowly.

And on it goes. Less than a week after Chicago's "Blizzard of '79," at least one newspaper columnist was speculating on the possibility of a baby boom in the coming autumn (Kup's column, *Chicago Sun-Times*, January 17, 1979, p. 52).

Another example of the temptation to confuse correlation with a causal connection is in the area of extramarital sexual affairs. Biracree (1984) found that for men there was an almost perfect positive correlation between annual income and the percentage of men who had been unfaithful to their wives. This relationship was not true for married women. If this finding is valid, what are the possible explanations for these relationships? Is there any strong evidence to support any of these explanations, or are they, at the moment, speculations?

References:

Biracree, T. (1984). *How you rate: Men* and *How you rate: Women*. New York: Dell.
Rindfuss, R. R., Reed, J. S., & St. John, C. A. (1978). A fertility reaction to a historical event: Southern white birthrates and the 1954 desegregation ruling. *Science, 201*, 178-180.

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Lecture/Discussion: Independent and Dependent Variables

In the cereal and fruit example, the cereal and the fruit are independent variables and the rash is the dependent variable. One useful way of thinking about and identifying independent and dependent variables is to remember that the basic hypothesis underlying any experiment is "X causes Y" (coloring a movie [X] changes the way people respond to it [Y]; a cereal [X] caused a rash [Y]; a fruit [X] caused a rash [Y]). To test such hypotheses, X is manipulated in order to determine its effect on Y. Thus, X is the independent variable and Y is the dependent variable. Advise students that, when trying to identify independent and dependent variables (as might happen in the context of an exam question), they should put the variables in the scenario into an "X causes Y" statement.

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Lecture/Discussion: The Placebo Effect

The power of suggestion is powerful indeed. Consider the example of the placebo effect. During the 1950s, surgeons routinely performed a simple operation to relieve chest pain suffered by patients with angina pectoris. An amazing number of the patients—nearly 90 percent—reported relief from pain. An experimental study divided angina patients into two groups and informed them that they were going to have an operation that had a very high success rate in relieving angina pain. The actual surgery was performed on only half the patients. What was done with the other half would no longer be allowed according to ethical medical standards? The surgeons took the remaining half of the patients, put them under anesthesia, made the surgical incision in their chests, and then simply sewed them up again. When the patients awakened in the recovery room, they were told that the operation had been performed (Cherry, 1981). The patients who had the sham surgery did even better than the patients who had undergone the actual operation! Their pain had been relieved simply by the power of suggestion. Remind students of the aspirin study and ask why the researcher included a placebo.

Reference:

Cherry, L. (1981, September). Power of the empty pill. *Science Digest*, 116, 60–67.

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Lecture/Discussion: The Road from Hypothesis to Conclusion

How do we know that cigarette smoking is dangerous to your health?

Cigarette smoking became common in Europe after French and British soldiers picked up the habit from Turkish soldiers in the Crimean War of 1854 to 1856. The habit was adopted by a few Americans in the next 30 or 40 years. The tobacco was strong and they rolled their own. More American males began to smoke after the automatic cigarette-making machine was perfected in North Carolina in the 1880s. Very few women smoked, at least in public, until after World War I when U.S. tobacco companies began to target women with their advertising.

People must have suspected that cigarettes are dangerous to health long before any research was done. The slang term for cigarettes, “coffin nails,” was used during the first half of the century. The conjecture became a hypothesis when doctors noticed that many people who died of lung cancer had been heavy smokers, and it was also suspected that nicotine affects the circulatory system. Early studies produced high negative correlations between cigarette smoking and age at death: the more people smoked, the younger they were when they died.

This correlational data resulted in the first warning labels on cigarettes in the 1960s: “Caution: The Surgeon General has determined that cigarette smoking may be hazardous to your health.” Notice that the warning reads “may be hazardous,” rather than “is hazardous.” The conservative warning is all that is justified by correlational data. A

relationship between variables does not imply that the variables are causally related. The earlier death of smokers could be for reasons other than cigarette smoking. Perhaps smokers live more stressful lives, and both the smoking and their illness are the result of stress. Also, it is possible that smokers are not as careful of their health in other ways as nonsmokers; maybe they don't exercise or have nutritious diets. Or perhaps both the smoking and the mortality have a genetic basis.

To do a definitive experiment on the effects of smoking, one would need to get a sample of 100 or so young people who have never smoked and assign them randomly to a smoking group and nonsmoking group. The smokers would smoke at least one package of cigarettes a day for life, beginning at age 16 or 18, and the nonsmokers would not smoke at all. The dependent variable is age at death, and the successors of the original researchers could not analyze the data until all the subjects died. If the nonsmokers lived significantly longer, the researchers would be justified in concluding that cigarette smoking is hazardous to health.

An experiment like this has not been done, and probably never will be done. In the 1970s the label on cigarette packages was changed to read, "Cigarette smoking is dangerous to your health." The evidence that prompted this change came from several sources. One source was studies that tried to match smokers and nonsmokers on various alternative causes, such as stress, and thus to control for its effects on health. Another source of evidence came from animal studies. The conclusions that cigarettes are truly "coffin nails" is based on large amounts of data and a multitude of studies.

Many studies were required to get from a hypothesis to a firm conclusion in the establishment of a causal link between smoking and disease and death. The reason is that there are humane and ethical constraints that rule out certain types of research. Because humans are the primary focus in psychology, it is often difficult for us to get answers to important questions. As just one example of this, we would like to know if child abuse has permanent effects on personality, and if so, what these effects are. But we cannot assign infants at birth to be abused or not abused, so to study this question we must try to tease out these effects from the mass of environmental variables that affect the development of human personality.

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Lecture/Discussion: An Experimental Example

Can vitamins increase IQ?

Suppose you hear about a retarded boy who did better schoolwork after being given a dose of a vitamin-mineral supplement, and you decide to conduct an experiment to see if intellectual functioning of retarded children can really be improved by such a diet supplement. You start with the hypothesis, "A vitamin-mineral supplement (independent variable) added to the diet of mentally retarded children will improve their intellectual functioning (dependent variable)."

Your first task is to define your variables more precisely. What vitamins and minerals will you use, and at what strength? How many times a day and for how many months? You may decide to use an IQ test score as a numerical measure of your dependent variable; you may also decide that you will require a minimum increase in the number of points as acceptable evidence of improvement, because many chance factors can influence test scores.

You draw your subjects from a group of children who have all been tested and diagnosed as mentally retarded, and you randomly assign them to either the experimental group, who will get the supplement, or the control group, who will be given a placebo (some inert substance) instead of the supplement.

There are several precautions you will need to take to avoid bias in your results. Besides controlling for similarity of your two groups at the start, you will want to be sure that the subjects in both groups are exposed to all the same conditions during the experiment except for the exposure to the independent variable, the nutritional supplement.

Temperature, timing, instructions, conditions of testing, and other events during the time of the experiment should be as similar as possible for the two groups. Your own desires to prove or disprove the idea that vitamins may increase school performance may be a possible source of bias. To reduce this bias, would you conduct a single-blind or double-blind experiment?

For a fixed period of time, say four months, the children in the experimental group receive the supplements in tablets at each meal. The control-group children also receive tablets, but they contain nothing of biological value (a placebo). Neither the children nor those working with them or testing them know which child is getting which kind of tablet. At the end of the four months, intelligence tests are given again to see if the groups now differ.

You may find that both groups have higher scores than originally, perhaps from all the extra attention they have been receiving or from some natural development over this period. So you use the control group's scores as a baseline and compare the experimental group's scores with that baseline.

If you find no difference, the study may end there, or you may try variations, perhaps a stronger supplement or a longer time period or subjects who are less retarded.

If you do find a difference in your original study, you will evaluate the probability that your obtained difference could have occurred by chance alone, even without the independent variable. If it is unlikely that it is a chance finding, your confidence in the hypothesis is increased.

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Lecture/Discussion: Applied Experimental Psychology in the Real World

Students often have difficulty wondering how general research results can be applied to the real world. In other words, "How does this relate to me?" The following example provides connections between basic research in sensation and perception and possible military or medical errors.

A number of devices use sound (beeps, clicks, etc) to provide feedback regarding bodies, structures or machines. These sounds are designed to provide people with information about changes in the current situation. For example, in medicine, drops in heart rate or blood pressure are signalled with beeps. Jet pilots receive information regarding positioning in the form of sounds as well. The pupose of these devices is to provide immediate auditory feedback that signals potential problems. The auditory nature allows the surgeon or pilot to be visually focused on something else at the time.

Unfortunately, results of recent research (Neuhoff, Kramer, and Wayand, 2002) suggest that people often misperceive how sounds change when both their pitch and loudness change. Rather than noticing the changes immediately and accurately noting the meaning of the changes, individuals may miss the changes entirely or misinterpret them. Because of this misperception, people can't accurately judge the intended meanings of the sounds. Real-world complications that could arise from this problem range from medical mistakes to serious pilot errors. For example, if a pilot does not accurately identify the sounds of the flight system that are designed to alert him/her of possible mechanical issues, the chances of mechanical failure or crashes may be increased. This result is contrary to the purposes of those feedback systems which are designed to enhance safety. It appears that the initial assumptions of inventors/creators of these systems regarding the accuracy of human interpretations of the sounds may have been incorrect.

Reference:

http://www.apa.org/releases/auditory.html
Neuhoff, J. G., Kramer, G., & Wayand, J. (2002). Pitch and Loudness Interact in Auditory Displays: Can the Data Get Lost in the Map? *Journal of Experimental Psychology—Applied*, Vol. 8. No.1

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Lecture/Discussion: Animals in Psychological Research

Should animals be used in psychological research?

A controversial issue in psychology, and in many other fields of study, involves the use of animals in research. Is it ethical to subject animals to unnatural and/or painful situations in the pursuit of knowledge about the human condition? You might present students with some additional information about the use of animals in psychological research and the nature of the debate.

Psychologists who study animals are sometimes interested in comparing different species or hope to learn more about a particular species. Their work generally falls into the area of basic science, but often it produces practical benefits. For example, using behavioral principles, farmers have been able to reduce crop destruction by birds and deer without resorting to their traditional method – shooting the animals. Other psychologists are primarily interested in principles that apply to both animals and people. Because many animals have biological systems or behavioral patterns similar to those of human beings, using animals often allows more control over variables than would otherwise be possible. In some cases, practical or ethical considerations prevent the use of human beings as subjects. By studying animals, we can also clarify important theoretical issues. For example, we might not attribute the greater life expectancy of women solely to "lifestyle" factors and health practices if we find that a male-female difference exists in other mammals as well.

As the text points out, those who support the use of animals in research argue that animal studies have led to many improvements in human health and well-being. In recent years, however, animal research has provoked angry disputes over the welfare of animals and even over whether to do any animal research at all. Much of the criticism has centered on the medical and commercial use of animals, but psychologists have also come under fire. Critics of animal research have pointed to studies that produce no benefits for human beings but involve substantial harm to the animals being studied. A few years ago, for instance, a Maryland psychologist studying the nervous system was convicted of cruelty to animals after he cut the nerve fibers controlling limb sensation in 17 monkeys. The purpose of his research was to find ways to restore the use of crippled limbs in stroke victims. The charges alleged abusive treatment of the animals. The psychologist's conviction was eventually reversed on appeal, but by then the government had withdrawn its funding of the project.

People have staked out extreme positions on both sides of this debate. The controversy has often degenerated into vicious name-calling by extremists on both sides. Some animal rights activists have vandalized laboratories, and threatened and harassed researchers and their families; some scientists have unfairly branded all animal welfare activists as terrorists (Blum, 1994). A more positive result of the debate has been the close examination of the American Psychological Association ethical code for the humane treatment of animals and the passage of stricter federal animal welfare regulations governing the housing and care of research animals. Most psychological organizations, however, oppose proposals to ban or greatly reduce animal research. The APA and other organizations feel that protective legislation for animals is desirable but must not jeopardize productive research that increases scientific understanding and improves human welfare.

References:

http://www.rgs.uky.edu/ori/univet/resources/Handbook/hb-ethics-history.htm
http://www.the-aps.org/publications/tphys/legacy/1983/issue5/271.pdf

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Lecture /Discussion: A Historical Perspective on Research Ethics

When discussing the ethical treatment of human research participants several "classic" studies, which would be ethically questionable by today's standards, serve as examples. For instance, many instructors discuss Stanley Milgram's studies of obedience, Philip Zimbardo's prison simulation, or Stanley Schachter's studies of autonomic arousal and attribution. Students often have mixed reactions to these examples. Some find them relatively innocuous, whereas others have strong reactions to the treatments participants were asked to endure. The fact that such studies took place within relatively recent times compounds the issue. Some students see these 1960s experiments as "long ago and of a different time," whereas others see them as examples of the "unethical treatment psychologists still foist on people to this day."

To provide a context for these types of issues, your students might be interested in hearing about older examples of ethically questionable research. For example, Carney Landis, a noted psychologist of the 1920s and 1930s, conducted a series of studies dealing with the experience and expression of emotion. In one set of studies he was particularly interested in capturing facial expressions of emotion, and used strong elicitors of emotion to produce them. For example, one situation involved dropping a lit firecracker underneath an unsuspecting subject's chair, whereas another involved showing participants pornographic (for their day) photographs and photos of horribly disfiguring skin diseases.

Although these manipulations may seem harsh, Landis used stronger ones as well. For example, participants were instructed in one situation to plunge their hand into a pail of shallow water that, unbeknownst to them, contained 3 live frogs. (This manipulation was presumably used to evoke disgust.) To quote Landis, however..."After the subject had reacted to the frogs the experimenter said, 'Yes, but you have not felt everything yet, feel around again.' While the subject was doing so he received a strong...shock from an induction coil, attached to the pail by concealed wiring."

And for the *coup de grâce*:

> "The table in front of the subject was covered with a cloth. A flat tray and a butcher's knife were placed on the cloth. A live white rat was given to the subject. He (sic) was instructed, 'Hold this rat with your left hand and then cut off its head with the knife.'...In five cases where the subjects could not be persuaded to follow directions the experimenter cut off the head while the subject looked on."

Mention is also made of a final experiment involving shock which "...varied from a just noticeable intensity to a strength which caused the subject to jump from the chair," as well as other studies. Landis' participants, in passing, included graduate students, a stenographer, a school teacher, and a thirteen-year-old boy with high blood pressure.

Although Landis has been singled out for examination here, there certainly are no lack of experiments from the 1920s through the 1960s work mentioned above that can provide examples of ethically dubious research. Discussing such studies, especially in light of current APA standards, should produce spirited discussion among your students.

Reference:

Landis, C. (1924). Studies of emotional reactions II: General behavior and facial expression. *Comparative Psychology*, *4*, 447-509.

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Lecture/Discussion: Pseudopsychology and the Mozart Effect

Before discussing pseudoscience, ask students about their impression of the so-called Mozart effect. Most students have heard of the general phenomenon and have seen advertisements and CDs of music "designed to increase your children's IQ." Bring in a magazine advertisement and read from it, touting the merits of the product. Ask students if

they believe it, and if they would buy the product. Probe them by asking what "proof" they would need that the product actually works. Usually, students will begin to question the merits of the product, at which point you can discuss the actual psychological findings of this moneymaking gimmick by summarizing the work of Steele, Bass, and Crook (1999).

Pseudoscience quite literally means "false science." Its "claims [are] presented so that they appear scientific even though they lack the supporting evidence and plausibility" (Shermer, 1997, p. 33). Furthermore, pseudoscience appears to use scientific methods and tries to give that "science-y" impression. Some characteristics of Pseudoscience include the following: (http://www.pseudoscience.org)

1. associates itself with true science
2. relies on and accepts anectdotal evidence
3. sidesteps disproof
   - any possible outcome is explained away
   - a theory is not a good theory if it can explain everything because it can never make specific predictions
4. dangerously reduces complexity to simplicity (to a consumer society)

Ask students why the Mozart effect would be considered pseudoscience based on the 4 aforementioned characteristics. Have students give other examples of possible pseudoscience such as graphology, palmistry, aromatherapy, and quite arguable Eye-Movement Desensitization and Reprocessing (EMDR).

There is an excellent video clip entitled "Paper Personality" by *Scientific American Frontiers* that shows the downfalls of graphology, and a companion website for teaching activities related to graphology:

http://www.pbs.org/safarchive/4_class/45_pguides/pguide_802/4482_paper.html

"Paper Personality" (Running time: 8:46). Chedd-Angier Productions (1997). Scientific American Frontiers: Season VIII: Beyond Science? Episode 2 of 5. [Television series episode].

Available to purchase: http://www.shop.pbs.org
View online: http://www.pbs.org/saf/archive.htm (Keyword: paper personality)

References:

Steele, K.M., & Bass, K. E., & Crook, M. D. (1999). The mystery of the Mozart effect: Failure to replicate. Psychological Science, 10, 366–369.

Shermer, M. (1997). Why people believe weird things: Pseudoscience, superstition, and other confusions of our time. New York: W. H. Freeman & Co.

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▼CLASSROOM ACTIVITIES, DEMONSTRATIONS, AND EXERCISES

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Activity: Experimental Design

The overarching goals of the following exercise are to demonstrate how psychology and the scientific method can be used to address issues that interest your students, to teach them how the concepts they are learning influence experimental design, and to impress on them an appreciation for the challenges faced by experimental psychologists. Lead your class through the process of designing an experiment. Start with a hypothesis generated through brainstorming by the class. Allowing your students to provide the hypothesis ensures that it will interest them and that they will stay engaged. Students may start with topics such as alien abduction, crop circles, and the Loch Ness monster. Welcome this, as it gives you a terrific opportunity to talk about alternative explanations, existence proofs, and the fact that some topics, such as the proof of the existence of God, remain firmly outside the boundaries of science. The scientific method is not a panacea; it is a highly structured method for testing measurable factors and relationships. After your class has agreed on an issue to test, lead them toward a consensus and a testable hypothesis about the issue. Once your class has clearly defined a hypothesis, lead them through a discussion of possible alternative explanations. Challenge their hypothesis and their beliefs. Are there other possible explanations that are simpler and more likely? What assumptions and possible biases underlie their hypothesis? How would the hypothesis (and their assumptions and biases) generated by your class be different than explanations put forward by people from different cultures and different times? You might want to mention that spirit possession was a widely held explanation for mental illness until relatively recently. After listing a number of possible alternative explanations, allow your class to suggest a very basic methodology for testing the hypothesis and eliminating the alternative explanations. You might want to give them a head start by suggesting the kind of data that they would need to collect to measure the variables of interest. Depending on the hypothesis chosen and the sophistication of your class, outlining a reasonable experiment may be a difficult process. If the class begins to show signs of overload, you can quickly switch gears and use the exercise to demonstrate the difficulty in designing and executing well-controlled experiments.

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Assignment: Observational Research in the Dining Hall

Koschmann and Wesp (2001) provide several research activities for observational research, correlational research, and experimental research. One way to introduce students to research methods is to allow them to become more cognizant of their everyday surroundings and fellow classmates' behaviors. Koschmann and Wesp suggest that the college or university dining hall is an excellent "laboratory" to observe human behavior. Merely ask students to observe others during meals in the cafeteria, such as seat selection or food choices. You might encourage student research teams to decide which behaviors they wish to observe. Ask students to record their observations, maintain

confidentiality, and "debrief" anyone who asked them what they were doing. During the next scheduled class, ask students to share their findings and to generate discussion about potential hypotheses that may provide a better understanding of the behaviors they observed.

Reference:

Koschmann, N. & Wesp, R. (2001). Using a dining facility as an introductory psychology research laboratory. *Teaching of Psychology, 28,* 105–108.

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Assignment: Naturalistic Observation

Objective: To collect data on spatial relationships
Materials: None
Procedure: Assign students to small groups of four or five individuals. Ask each to collect data on personal space in two distinct social situations, perhaps the student union building or other public areas on campus and a situation such as a party, a bar, or another area where individuals are talking. Ask the students to estimate the distance that individuals stand apart when they talk in this public area, noting any differences between same sex and opposite sex individuals. Encourage students to be creative in their data collection; for example, they could approach the participants with a yardstick, or they could count the number of tiles on the floor. Students will come up with their own ideas on the best methods of data collection. When students bring their data to class, summarize each group's findings in terms of the mean distances individuals stand apart while talking and put the results on the overhead or chalkboard. Break out the data by sex and situation. Discuss any problems the students encountered with this type of data collection.

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Activity: Understanding Correlations

This exercise on correlations can be used as a classroom demonstration or as a take-home assignment following a lecture on the nature and uses of correlations. The student handout for this exercise is included as **Handout Master 2.3.** Suggested answers are provided below; however, there are other reasonable explanations.

1. *Positive*. Mutual influence. Similar life experiences.
2. *Negative*. Orphanage environment has an adverse effect on cognitive development. Intelligent children are more likely to be adopted.
3. *Positive*. Violent pornography stimulates violent behavior. Both the violent crime and the number of stores are related to the size of cities. Violent criminals are attracted to violent pornography.
4. *Negative*. Absent students miss pearls of wisdom from the mouth of the instructor. Students with jobs or other responsibilities find it difficult both to get to class and to find time to study.
5. *Positive*. The money appropriated to control crime was poorly spent. The city grew during the eight years, resulting in more crime and more tax revenues.
6. *Positive*. Both variables are related to socioeconomic factors; children from affluent homes have both intellectual and physical advantages over children from substandard home environments. Age is the third variable that accounts for scores on both variables; older children have bigger vocabularies and are also stronger and better coordinated.

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Activity: Correlational and Experimental Research

Many students have difficulty understanding the difference between correlational research and experimental research. It might be useful to walk the class through an example where both kinds of research are illustrated with the same variables. Two examples that could be used this way are the relationship between violent television viewing and aggression, and the relationship between similarity and liking. In both examples either variable could plausibly be caused by the other (or by some third factor); so the step up from correlational to experimental research, where causality can be determined, can be seen as useful. Spend some time discussing how psychologists must be ingenious to turn concepts such as "liking" into measurable variables (this will help students appreciate the scientific process). As examples, you can present actual studies that have been done in these two areas. Byrne (1971) discusses extensive research on the influence of similarity on attraction, and Liebert and Sprafkin (1988) discuss the effects of television on children.

References:

Byrne, D. (1971). *The attraction paradigm.* New York: Academic Press.
Liebert, R., & Sprafkin, J. (1988). *The early window: Effects of television on children and youth.* New York: Pergamon Press.

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Activity: Testing Random Assignment (Group activity)

Students are often distrustful of random assignment, thinking that the people with the best memory or the worst sense of smell will all end up in the same group and make the results of research undependable. This demonstration is designed to show that random assignment does produce equivalent groups.

Provide students with small cards and have them record their height in inches on the card. If the class is small, ask them to record the height of their best friend on a second card. Collect the cards and then randomly assign them to several groups of 20. Have students calculate means for the groups.

The means should be quite close, illustrating that random assignment has produced equivalent groups. You might also explain that random assignment is not infallible and can be a source of experimental error.

This activity can be extended by using groups of different sizes, such as 2, 5, 10, 20, and 50, to show that the probability of getting groups that are not equivalent decreases as group size increases.

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Activity: Small Samples

Objective: To discover if small samples can really be representative
Materials: A coin, copies of the chart in Handout 1.10
Procedure: Sometimes students have a hard time believing that 1,000 people or so can represent the entire population of the United States. This activity will help them see that small samples can be representative. Divide students into small groups and instruct them as follows:

Point out to students that, as *n* gets bigger, the more balanced the percentage of heads and tails becomes. However, they should notice too that *n*=20 isn't much better than *n*=15. And it took a lot longer to collect 5 samples of 20 coin tosses each. In other words, there wasn't much gain in representativeness for the extra cost in time and energy. So, small samples can be representative, and increasing the size of a sample doesn't always pay off when costs are balanced against benefits.

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Activity: Which Method Would You Use?

The following examples can be used to generate a class discussion on the research methods used by psychologists. Write the methods on the board: case histories, naturalistic observation, laboratory observation, surveys, tests, correlational studies, and experiments. Then, for each situation, ask students to decide which method is appropriate and briefly describe why.

1. Determining the favorite food of adolescents.
   Method: Survey
   Explanation: Adolescents constitute a large population and the information sought should be accessible through questionnaires or interviews. Care will be needed to construct a sample that is representative of the population under consideration.
2. Determining whether a person is introverted or extroverted.
   Method: Psychological test
   Explanation: The goal is to measure psychological qualities within an individual. Other methods (e.g., case history, naturalistic observation) might be employed, but they are more time-consuming and do not offer the degree of standardization, reliability, and validity found in a well-constructed test.
3. Determining if frustration causes aggression.
   Method: Experiment
   Explanation: Cause-and-effect information is being sought. In science this information is obtained through experimentation in which the proposed causal variable is manipulated under controlled conditions.
4. Determining if level of education is associated with crime.
   Method: Correlation
   Explanation: This technique is used to determine if and how strongly two variables are related. Establishing that a correlation exists, however, does not address the problem of why two things are related.
5. Determining how teenagers behave on their first date.
   Method: Naturalistic observation
   Explanation: A description of behavior as it occurs in a real-life situation is being sought. Making the observations without arousing suspicion in subjects could be problematic, and the investigator will need to be careful to prevent "guinea-pig" reaction.
6. Determining the behavior of subjects who are anxious about participating in research.
   Method: Laboratory observation
   Explanation: The goal here can be readily achieved within an environment artificially set up by the experimenter. The advantage of this approach is that the investigator has greater control over the situation being studied.
7. Determining why a housewife gave up a flourishing career.
   Method: Case history
   Explanation: Making this determination requires in-depth information about the way a variety of psychological factors, expectations, values, motives, past experiences, and so forth, blend together within the person. This kind of information is unique to the person and could not be assessed through standardized tests.

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Activity: Name That Research Method

In this exercise, students are asked to match brief descriptions of research with the name of the method being used. Copy **Handout Master 2.4** and distribute to students as a basis for this exercise.

Answers: 1-c, 2-a, 3-e, 4-f, 5-d, 6-b.

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Activity: Using Memory to Demonstrate Methodology

This demonstration introduces the concept of the experimental method; however, it is equally applicable to the material in the memory chapter. Students are given the question "Can we improve memory by using a mnemonic technique?" and are asked to design an experiment to test the hypothesis. The experiment is then conducted using procedures summarized below. Through this procedure, students are guided through a typical psychological experiment and are introduced to the concepts of independent variable, dependent variable, experimental and control groups, and control procedures.

Prepare a mnemonic technique and write it on small slips of paper to hand to some of the students (half of the class). Construct a list of common words to use in conjunction with the mnemonic. Here is one of many mnemonic techniques:

PRESIDENTIAL

Word List: Pet, Road, Eagle, Screen, Ink, Dog, Envelope, Number, Target, Income, Alley, Library

Begin a discussion of the experimental method by asking for definitions of a hypothesis. After discussing the students' definitions tell them that they are going to conduct an experiment in class and provide them with the question above as the hypothesis. After defining mnemonic techniques, inform the class that you have a mnemonic technique but need to know how to proceed from this point. Students are asked for input as to how to test the hypothesis. Usually someone proposes that the class be divided into two groups: one that receives the mnemonic and one that does not. Ask how the students should be assigned to each group. This leads us to a discussion of random assignment.

The experiment begins by passing out the slips of paper with the mnemonic to the "experimental" group. All students are then given the following instructions: "I am going to read a list of words; when I'm finished I want you to recall as many words as you can IN THE SAME ORDER AS THEY WERE READ." Tell the experimental group how to use the mnemonic: "The letters of the word correspond to the first letter of each word in the list, so you can use the word to help you remember the order of the words in the list."

Read the list of words, pausing about 4 seconds between words. Then tell the students to write down as many words as they can remember in the same sequence as they were read. Allow about three minutes of recall time, then ask the students to correct their own paper and tabulate the results on the board. This demonstration typically yields a large difference between the two groups. If desired, you can initiate a discussion of statistical inference and perhaps conduct some preliminary analyses. Discuss how the results pertain to the original hypothesis.

Reference:

Adapted from Davis, S. F., & Palladino, J. J. (1994) *Interactions: A newsletter to accompany Psychology*, *1(Win)*, 1.

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Activity: Give the Doctor Some Advice

This exercise describes research on the effects of drinking and driving. However, this study is flawed and students are asked to suggest ways to correct the errors. Copy **Handout Master 2.5** and distribute to students as a basis for this exercise.

Suggested answers:
1. e

2. Possible confounding variables:
   The vodka and the placebo should be mixed in equal amounts of orange juice.
   Subjects should be chosen randomly and also assigned randomly to the different groups. (The same amount of alcohol affects males and females differently.)
   The researcher should not select friends, colleagues, or his own students as the subjects for this research, or any research, because of possible experimenter expectancy and demand characteristics.
   The subjects should participate at the same time of day since their last meal can determine how potent the effects of alcohol can be.
   Informed consent should be obtained before the research, not after.

Given these many possible confounding variables, Dr. Moesteller should be more cautious in his conclusions.

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Activity: Wonder Horse Dials 911 to Save Boy's Life

Jane Halonen suggests a fun class exercise that tests students' understanding of experimental methodology principles. Once you have covered the basics of correlation, experimentation, and causal inference, challenge your students to apply these principles by examining the outrageous claims made in tabloid headlines, many of which imply a causal relationship (e.g., dreaming in black-and-white improves your sex life; garlic diet improves memory...but not breath; large gopher presence precedes volcano eruptions). For this exercise, bring in a variety of headlines from the *Star*, *National Enquirer*, *Weekly World News*, *Globe*, etc. that are psychology-related and causal-sounding (or ask students to bring in examples). Challenge students to design simple studies that will accurately test whether or not the relationship claimed in the headline is a valid one. Halonen reports that students enjoy the opportunity to "think like scientists" in response to humorous and outrageous claims and that this exercise helps stimulate them to scrutinize causal claims from all sources and to design experiments more carefully and creatively (and, if that isn't enough, they can practice their newfound skills in line at the grocery store)!

Reference:

Halonen, J. S. (1986). *Teaching critical thinking in psychology*. Milwaukee: Alverno Productions.

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Activity: Softens Hands While You Do Dishes

A variation of the tabloid exercise suggested above encourages students to apply experimental principles to claims they are bombarded with on a daily basis—television and magazine advertising. For this exercise, bring in (or have your students bring in) samples of advertising and have students critique the product claims of success according to principles of experimental methodology. Ads can be critiques on several grounds, including the problem of personal testimony as unreliable, the absence of a control or comparison group, the presence of extraneous variables, the presence of plausible alternative explanations, unclear or undefined variables, and a lack of supporting statistics. Jane Halonen reports that students become enthusiastic about the usually dreaded topic of experimental methodology when they realize it has the potential to make them smarter consumers.

Reference:

Halonen, J. S. (1986). *Teaching critical thinking in psychology*. Milwaukee: Alverno Productions.

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▼Handout Masters

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Handout Master 2.1

Can Science Answer This Question?

Psychology is an empirical science; that is, its knowledge is obtained through observation, experimentation, and measurement. Some questions cannot be answered empirically and are, therefore, outside the realm of science.

Decide whether scientific research can answer the questions below and respond "yes" or "no" to each question. Do not try to answer the question itself. Just say whether or not scientific research can, in principle, address the question. Briefly explain why each question is, or is not, a good candidate for scientific inquiry.

For the questions that can be studied scientifically, identify what the independent and dependent variables would be in the experiment.

1. Is abortion on demand bad for society?

2. Do people talk more after they have eaten than they do when they are hungry?

3. Does jogging lead to a positive mental attitude?

4. Are the incomes of doctors related to the grades they make in medical school?

5. Which emotion is stronger, love or anger?

6. Are breast-fed babies more alert than bottle-fed babies?

7. Will people be more moral in the year 2020 than they are now?

8. Are people who commit suicide sorry after they have done it?

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Handout Master 2.2

Critical Thinking Exercise: Perspectives in Psychology

Step 1.
Pick one of the perspectives listed below. Each group, working together, is responsible for teaching the class about its viewpoint. Prepare a transparency or poster that summarizes the important points about your theory. Be sure to include the **names** of people who were most important in developing your theory and **key terms** and **concepts** associated with your theory. Be prepared to present your theory to the class.

Biological Learning Cognitive Sociocultural Psychodynamic

Step 2.
Read the following case history. Working with your group, decide how a psychologist using your perspective would explain the CAUSE of Andrea's problem. *Do not rely on common sense and intuition in discussing this case. Imagine that you are a dyed-in-the-wool advocate of this particular viewpoint and make your arguments from that point of view.* Write your ideas on your transparency or poster and be prepared to present them to the whole class.

> Andrea is a 19-year-old college student. She has requested counseling from her college counseling center at the urging of her friends. Andrea's friends believe that she may have an eating disorder. Andrea sees herself as fat, but to her friends she is startlingly thin. In fact, she is so thin that they are afraid that she will become seriously ill. Andrea maintains this low weight mainly by eating practically nothing and drinking two quarts of water a day. She says that she thinks about food "all the time" when she is restricting her food intake, but that she does not want to eat because she is afraid of getting fat. At other times, however, her hunger is so intense that she feels like she has to give in to the cravings. At those times she "binges" and eats huge amounts of food. For example, she once ate a half gallon of ice cream in a little over one hour. After her "binges" she works to get rid of the excess calories she has consumed by vomiting. She says she is starting to agree that she may have an eating problem. After interviewing Andrea, you are convinced that she meets criteria for a diagnoses of both anorexia and bulimia.
>
> You are also interested in obtaining some background information about Andrea, to aid in understanding her. You find out that Andrea is 19 years old and a freshman at your college. She says that she started really worrying about her weight two years ago, when she was a junior in high school. At that time her parents were quarreling a lot and had even talked about divorce. She says that managing her eating made her feel more in control. She also noticed that, even though she still felt fat, people seemed to pay more attention to her and to respond to her better as she got thinner. She indicates that she likes having a more "boyish," more athletic figure.

Step 3.
Present your perspective and your analysis of the case history to the class.

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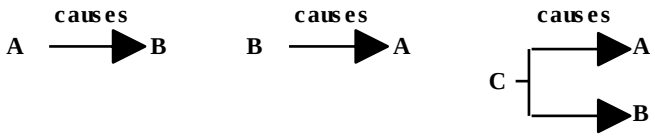
Handout Master 2.3

Critical Thinking Exercise: Understanding Correlations

Correlational studies show relationships between variables. If high scores on one variable predict high scores on the other variable, the correlation is *positive*. If high scores on one variable predict low scores on the other variable, the correlation is *negative*.

Showing that two variables are related does not justify claiming that a causal relationship exists. There may be a causal relationship, but other explanations usually exist. For example, the variables may be related because both have a causal relationship with a third variable.



For each of the correlational studies described below, decide whether the correlation is positive or negative and give two alternative explanations for each finding.

1. A study of married couples showed that the longer they had been married, the more similar their opinions on social and political issues were.
   Positive or negative?

   Explanation 1:

   Explanation 2:

2. An intelligence test was given to all the children in an orphanage. The results showed that the longer children had lived in the orphanage, the lower their IQ scores.
   Positive or negative?

   Explanation 1:

   Explanation 2:

3. In a study of American cities, a relationship was found between the number of violent crimes and the number of stores selling violence-depicting pornography.
   Positive or negative?

   Explanation 1:

   Explanation 2:

4. A college professor found that the more class absences students have, the lower their grade in the course tends to be.
   Positive or negative?

   Explanation 1:

   Explanation 2:

5. A politician running against a candidate who had been in office for eight years pointed out that violent crime had increased steadily during those eight years even though the administration appropriated more and more money to fight crime.
   Positive or negative?

   Explanation 1:

   Explanation 2:

6. It was found that elementary-school children who made high scores on a vocabulary test also tended to make high scores on a test of physical strength and muscular coordination.
   Positive or negative?

   Explanation 1:

   Explanation 2:

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Handout Master 2.4

Name That Research Method

Here are the major research methods used by psychologists. Match each with one of the following examples of research.

a. case history
b. naturalistic observation
c. laboratory observation
d. survey
e. psychological tests
f. experiment

1. Frank is a full professor who is interested in the factors that affect the performance of rats who are learning to find their way through a complex maze. Every afternoon he gives each of his 50 rats ten trials in the maze, counting the number of wrong turns each rat makes on its way through the maze.

2. Ben is counseling with Fennimore Jones in a small room in the neuropsychiatric hospital. Ben is a graduate student in clinical psychology and Fennimore is his client. Fennimore was admitted to the neuropsychiatric hospital when he came to the student health clinic complaining that he hears voices shouting obscenities at him, and confiding that he thinks he is going through a spontaneous sex change. After each session with Fennimore, Ben writes a report describing Fennimore's verbal and nonverbal behavior and his interpretations of the behavior.

3. Carl is a graduate student who plans to become a psychometrician. He, like Ben, is working at the neuropsychiatric hospital. His job is to administer a battery of tests to new patients. He will send the test results, along with his summary and interpretation of them, to the patient's clinical psychologist or psychiatrist.

4. Ada is testing the hypothesis that color preference can be influenced by associating a color with a pleasant experience, such as eating. This afternoon she is delivering a supply of red, yellow, blue, green, and white nursing bottles to the mothers of newborns who have consented to let their infants be subjects in her research.

5. Dee is an assistant professor who will teach introductory psychology for the first time next term. She has chosen some films to show to her class of more than 200 students, and is now preparing a questionnaire to administer to her students after each film. She thinks getting student reactions to the films will be helpful next time she teaches the class.

6. Ed is an undergraduate psychology major. For his senior thesis he is investigating the nature of the audience for pornography. This afternoon he is sitting in his car across the street from one of the pornographic bookstores in the area. He is taking notes on the sex, approximate age, and ethnicity of the patrons as they enter and leave the store.

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Handout Master 2.5

Give the Doctor Some Advice

Dr. Moesteller has long been interested in the effects of alcohol on human behavior. His latest experiment involved giving college students one of three kinds of drinks:

3 oz. of 100 proof vodka mixed with a standard size glass of orange juice,
2 oz. of 100 proof vodka mixed with a small glass of orange juice, or
3 oz. of a nonalcoholic but vodka-flavored substance mixed with a standard size glass of orange juice.

Dr. Moesteller recruited some of his subjects from the school's track team, which was easy because he is the assistant coach. He recruited the rest of his subjects from his introductory psychology class. Dr. Moesteller assigned the women on the track team to the 2 oz. vodka group, the men from his class to the 3 oz. vodka group, and the women from his class to the nonalcoholic group.

The women on the track team participated right after they finished practicing, and students from his class participated at various times during the day. After each group had a chance to drink the beverage, he had them sit in an automobile simulator where their task was to step on the brake every time they saw a red light.

Much to his surprise, the 2 oz. group showed slower reaction times to the red light than the 3 oz. group. The nonalcoholic group was the quickest to react. As soon as the experiment was over, he explained to the subjects the true purpose of the experiment and had them sign an informed consent form. From his analysis of the results, Dr. Moesteller concluded that drinking alcoholic beverages can slow reaction time for braking in college students who drive after drinking.

1. Based on his experiment, was Dr. Moesteller's conclusion correct?
   a. No, because he did not randomly select his subjects.
   b. No, because he knew some of his subjects better than others.
   c. Yes, because subjects in both experimental groups had slower reaction times than the control group.
   d. Yes, because his results agree with what we all know from our experience with those who drink and drive.
   e. No, because there were too many confounding variables in his experiment, including both a and b.

2. On the other side of this page, give Dr. Moesteller some advice on how he might improve his research on drinking.

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▼NEW Edition

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This new and exciting American Psychological Reader includes timely, cutting-edge articles, giving readers a real-world perspective from a reliable source *Current Directions in Psychological Science* journal. This reader includes over 20 articles that have been carefully selected and taken from the very accessible *Current Directions in Psychological Science* journal. Articles discuss today's most current and pressing issues in introductory psychology and are broken down into these main sections: Scientific Thinking; Nature/Nurture; Consciousness; Individual Differences; and Applications.

Morton Ann Gernsbacher, Michelle Dawson, H. Hill Goldsmith

Three Reasons Not to Believe in an Autism Epidemic.(Vol. 14, No. 2, 2005, pp. 55—58) p. 136 in the APS reader

According to some lay groups, the nation is experiencing an autism epidemic—a rapid escalation in the prevalence of autism for unknown reasons. However, no sound scientific evidence indicates that the increasing number of diagnosed cases of autism arises from anything other than purposely broadened diagnostic criteria, coupled with deliberately greater public awareness and intentionally improved case finding. Why is the public perception so disconnected from the scientific evidence? In this article we review three primary sources of misunderstanding: lack of awareness about the changing diagnostic criteria, uncritical acceptance of a conclusion illogically drawn in a California-based study, and inattention to a crucial feature of the "child count" data reported annually by the U.S. Department of Education.

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Suniya S. Luthar, Shawn J. Latendresse

Children of the Affluent. Challenges to Well-Being. (Vol. 14, No. 1, 2005, pp. 49—53) p. 21 in the APS reader

Growing up in the culture of affluence can connote various psychosocial risks. Studies have shown that upper-class children can manifest elevated disturbance in several areas-such as substance use, anxiety, and depression-and that two sets of factors seem to be implicated, that is, excessive pressures to achieve and isolation from parents (both literal and emotional). Whereas stereotypically, affluent youth and poor youth are respectively thought of as being at "low risk" and "high risk," comparative studies have revealed more similarities than differences in their adjustment patterns and socialization processes. In the years ahead, psychologists must correct the long-standing neglect of a group of youngsters treated, thus far, as not needing their attention. Family wealth does not automatically confer either wisdom in parenting or equanimity of spirit; whereas children rendered atypical by virtue of their parents' wealth are undoubtedly privileged in many respects, there is also, clearly, the potential for some nontrivial threats to their psychological well-being.

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Kate Sweeny, Patrick J. Carroll, James A. Shepperd

Is Optimism Always Best?: Future Outlooks and Preparedness. (Vol. 15, No. 6, 2006, pp. 302—306) p. 169 in the APS reader

Although people generally appear optimistic about the future, they shift from optimism under certain circumstances. Drawing from a recent review of the literature, we describe how both optimism and shifts from optimism serve the common goal of preparedness, which includes a readiness to deal with setbacks and a readiness to take advantage of opportunities. Shifts from optimism occur in response to available information and to the possibility that things may not turn out as hoped. People tend to shift from optimism when feedback is anticipated in the near future, when the outcome is important, when negative outcomes are easily imagined, and when the outcomes are uncontrollable. In addition, people with low self-esteem shift from optimism more readily than do people with high self-esteem. Finally, both optimism and shifts from optimism have unique benefits in terms of preparedness.

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Watch Out For The Visual Cliff!

Gibson, E. J., & Walk, R. D. (1960). The "visual cliff." *Scientific American, 202*(4), 67—71.

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▼WEB RESOURCES

Ethics

APA Code of Ethics: http://www.apa.org/ethics/code.html
American Psychological Association's Ethical Principles of Psychologists and Code of Conduct. Your students may be required to participate in experiments as part of their introductory course. Introduce them to this website either at the start of the semester (to allay their fears about participating in studies) or at the end (as a "wrap-up" paper comparing their research experiences with the ethical guidelines stated by APA).

Cloning (msnbc.com): http://www.msnbc.com/news/CLONING_front.asp
Articles on the pros and cons of cloning are available.

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Research/Statistics

Rice Virtual Lab in Statistics: http://onlinestatbook.com/rvls.html
Includes links to an online statistics textbook, simulations and demonstrations, case studies, and basic statistical analysis tools.

VassarStats: http://faculty.vassar.edu/lowry/VassarStats.html
Richard Lowry from Vassar College maintains this excellent site for statistical calculations.

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Lecture Launcher Video for Introductory Psychology (ISBN 013048640X)
This 60-minute videotape includes twenty-five segments covering all of the major topics in introductory psychology. All of the segments have been selected from videotapes in the Films for Humanities & Sciences collection. The segments are intended to provide brief illustrations of concepts, and to serve as a starting point for classroom discussions.

FILMS FOR HUMANITIES AND SCIENCES VIDEO LIBRARY (http://www.films.com) Qualified adopters can select videos on various topics in psychology from the extensive library of *Films for the Humanities and Sciences*. Contact your local sales representative for a list of videos and ISBN's.

Other video series are available, ask your Pearson sales representative for more details.

VIDEO CLIPS AVAILABLE FOR RESEARCH METHODS:

- Theories and Hypotheses (1:37)
- Carl Jung on Alchemy and Symbolism (3:22)
- Talking to Heaven (14:43)
- Gun Control Makes Us Safer (4.27)
- The Secret (2:06)
- Magical Thinking Children (4:55)
- Magical Thinking Adults (2:52)
- "Straightening Out" Homosexuals (4:55)
- Carlos: A Channeler (4:14)
- Talking to Popular Heaven Medium James Van Praagh (13:59)

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▼DESCRIPTION OF VIDEO CLIPS:

▼From Introductory Psychology Teaching Films Boxed Set ISBN (0131754327)

Carl Jung on Alchemy and Symbolism
Source: *Films for Humanities & Sciences*
Video Title: *Passions of the Soul - Symbolism*
Run Time: *3:22*

Description: Among the many things he believed, Carl Jung believed that the drawings and writings of alchemists were a rich source of information about symbols and the collective unconscious. Here he describes some of his views on the importance of embracing alchemy as a source of inspiration for modern psychology.

Uses: Unlike many other pioneers of psychology, there is substantial video footage of Jung explaining his ideas. This clip presents a black-and-white interview with Jung on the subject of alchemy. Because his accent is somewhat thick, you might want to precede the presentation of this clip with a discussion of Jung's basic ideas, or consider transcribing parts of his interview for students to read.

Theories and Hypotheses

Source: *Films for Humanities & Sciences*
Video: *The Scientific Method*
Run Time: *1:37*

Description: The difference between theories and hypotheses is explained. Two applied scientists provide examples of how theories become revised in light of new information, and how this process furthers the accumulation of knowledge in a science.
Uses: This segment provides a good starting point for helping students understand the scientific method. Whereas most students believe that scientific results either "prove" or "disprove" a hypothesis, in fact scientific explanations are in constant revision as new evidence emerges.

Human Cloning - The Ethics
Source: ***ScienCentral***
Run Time: ***1:37***

Description: Scientist and ethicist are generally against the cloning of humans, but most scientists support cloning cells that can be used to treat disorders and the effects of old age. Here they express the need for laws to guide cloning procedures.
Use: This clip provides a good starting point for a discussion of cloning, especially the laws that some states have passed concerning reproductive and therapeutic cloning.

Talking to Heaven
Source: *ABC News – 20/20 (6/21/1999)*
Run Time: *14:43*

Description: This segment highlights the tendency of many to believe in psychics and engage in magical thinking by showing a psychic who claims to be able to communicate with the dead.
Uses: Why it is important to learn and practice critical thinking skills? This clip would be a good introduction to psychology, its methods, as well as the value of empirical evidence and the reasons for the scientific method. It could also be used to start a discussion about motivation. For example, why do people believe in the absence of empirical evidence?

▼From: Introductory Psychology Teaching Films, 2009, Science and Pseudoscience (ISBN 0205652808)

Before Informed Consent: Robert Guthrie
Run: *2:59*

Description: Interview with Robert Guthrie—through his research, his writing and his ground-breaking career as an educator, he helped put a new face on psychology.

Even the Rat was White: Robert Guthrie
Run: *2:01*

Description: Interview with Robert Guthrie. Guthrie's book, "Even the Rat Was White: A Historical View of Psychology," illuminated the contributions of pioneering black psychologists while challenging dubious studies that reinforced racial stereotypes.

Gun Control Makes Us Safer
Source: *ABC News*
Run Time: *4:27*

Description: Examination of the idea guns make us safer: interviews with individuals representing both sides of the discussion and background on some of the US laws around gun control.
Uses: Good critical thinking/debate discussion for the classroom.

Animal Rights Terrorists
Source: Pearson Education
Run:1:31

Uses: Good critical thinking/debate discussion for the classroom.

The Secret
Source: *ABC News*

Run Time: *2:06*
Description: Review of positive thinking as depicted in Rhonda Byrne's popular book.
Uses: Good critical thinking/debate discussion for the classroom.

Magical Thinking: Children
Source: *ABC News*
Run Time: *4:55*
Description: Children exhibit forms of magical thinking around 18 months. To learn more about "magical thinking," Professor Robert Kavanaugh (ph) at Williams College in Massachusetts devised a test that involves an imaginary animal and a box.
Uses: Good

Magical Thinking: Adults
Source: *ABC News*
Run Time: *2:52*
Description The Growing Faith in the 'The Secret' Power of Positive Thoughts
Uses: Good critical thinking/debate discussion for the classroom.

"Straightening Out" Homosexuals
Source: *ABC News*
Run Time: *4:55*
Description: A ministry tries to change homosexuals into heterosexuals through prayer.
Uses: Good critical thinking/debate discussion for the classroom.

Carlos: A Channeler
Source: *ABC News*
Run Time: *4:14*
Description: Carlos is really Jose Alvarez, a Florida artist coached by James Randi on how to fake being a channeler—interview and report by John Stossel.
Uses: Good critical thinking/debate discussion for the classroom.

Cold Reading: Talking to Popular Heaven Medium James Van Praagh
Run Time: *13:59*
Description: Interview with James Van Praagh, who claims he can communicate with the deceased and charges $150 to anyone wanting to contact a dead relative. Skeptics Society founder Michael Schermer asserts Van Praagh is merely engaging in parlor games.
Uses: Good critical thinking/debate discussion for the classroom.

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▼ACCESSING RESOURCES for *THINK Psychology 2e*:

Students can access chapter summaries, quizzes and audio files of the complete chapter at **www.theTHINKspot.com.**

For access to the instructor supplements, simply go to http://pearsonhighered.com/irc and follow the directions to register (or log in if you already have a Pearson user name and password).

Once you have registered and your status as an instructor is verified, you will be e-mailed a login name and password. Use your login name and password to access the catalogue. Click on the "online catalogue" link, click on "psychology" followed by "introductory psychology" and then the Baird *THINK Psychology 2e*, text. Under the description of each supplement is a link that allows you to download and save the supplement to your desktop.

For technical support for any of your Pearson products, you and your students can contact **http://247.pearsoned.com**.

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