

Chapter 2: The Research Enterprise in Psychology

**Looking for Laws:
The Scientific Approach to Behavior**

- Basic assumption: events are governed by some _____
- Goals:
 - _____
 - _____
 - _____

Why Do Research?

Common sense... Common sense is the collection of prejudices acquired by age eighteen.
Albert Einstein

- Is not enough
- _____ bias
 - Tendency to believe, after learning an outcome, that one would have _____ it
 - Example: effects of absence on love
- _____
 - We tend to think _____ than we do
 - Prediction of our own behavior

Examples of overconfidence

- Word search
 - In reality, most participants took 3+ minutes
- Prediction of social behavior (Vallone, 1990)
 - Students who felt that they could predict their behavior with 84% confidence were correct only 71% of the time
- Prediction of your behavior...
 - _____ is the only way to really know!!!

Features of Psychology Research

_____ (hopefully)

- Research questions based on _____, with specific, refutable _____ (more on this later)
 - _____
 - System of _____ used to explain a series of observations
 - _____
 - Specifies relationships among _____, and are _____
- _____ definitions
 - define terms in hypotheses by specifying the _____ for observing and measuring the process or phenomenon.
 - Clarifies exactly what is being studied.

Problem with Precision

- Often, very difficult to achieve!
 - Especially with "applied" research
 - Lots of extraneous variables that are difficult to control
- Example
 - _____:
 - Positive interactions with peer improves self-esteem
 - Potential _____

- Scientists do not accept ideas on faith or authority.
- _____ means treating conclusions, both old and new with caution.
- Example
 - Claim: People emit auras, which can be seen by those trained to do so.
 - Test:???

Skepticism: Science v.

- _____ = "false science"
- Characteristics:
 - associates itself with _____
 - relies on and accepts _____
 - sidesteps _____
 - Does not make refutable, testable predictions
 - dangerously reduces complexity to _____ (to a consumer society)

Critical Thinking: Zodiac Signs

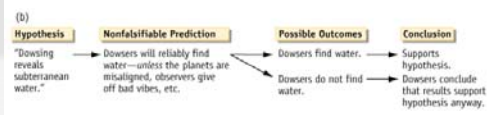
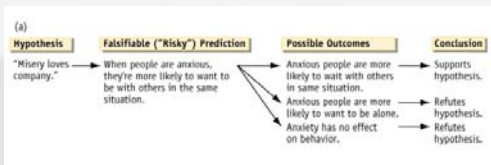
- Astrologers say that behavior can be predicted by zodiac sign
- Testable hypotheses?
- Zodiac Personality Characteristics
- Correspondence?

Reliance on _____ evidence

- A scientist relies on _____ evidence to determine whether a _____ is true.
- Evidence is evaluated based on accepted standards.
 - _____
 - _____

Willingness to make “risky”

- Principle of _____.
 – A scientific theory must make predictions _____ enough to confirm and or disconfirm the theory; that is,
 – the theory must predict not only what will happen, but also _____.
- _____ bias.
 – Tendency to look for or pay attention only to information that _____.



- Scientists must be willing to tell others where they got their ideas, how they tested them and what the results were.
- Peer review, publishing and replicating research gives science a built in system of _____.
- Be willing to let go of a _____ that you have worked very hard on when it is _____ by empirical evidence.

General Research Process

- Find a topic of interest
- Review _____
 - Allows generation of better hypotheses
 - Make sure no one has done what you're interested in
- Develop your _____ and procedures
 - Formulate _____
 - Design the study
- Undergo _____
 - Human – Institutional Review Board (IRB)
 - Animal – Institutional Animal Care and Use Committees
- Collect and analyze _____
- Write _____, submit, & publish

Scientific Method in Psychology

- Careful _____ of behavior
- _____
 - Can't observe everybody (whole _____)
 - Select an unbiased _____
- Conduct _____
 - Ask everybody the same questions...
 - Same experiment, etc.
- Critical thinking

Focus of Studies:

- _____
- Measurable conditions, events, characteristics, or behaviors;
- Manipulated and assessed in scientific studies
 - Question:
 - What is the effect of _____ on _____?

Table 2.1 Key Data Collection Techniques in Psychology

Technique	Description
Direct observation	Observers are trained to watch and record behavior as objectively and precisely as possible. They may use some instrumentation, such as a stopwatch or video recorder.
Questionnaire	Subjects are administered a series of written questions designed to obtain information about attitudes, opinions, and specific aspects of their behavior.
Interview	A face-to-face dialogue is conducted to obtain information about specific aspects of a subject's behavior.
Psychological test	Subjects are administered a standardized measure to obtain a sample of their behavior. Tests are usually used to assess mental abilities or personality traits.
Physiological recording	An instrument is used to monitor and record a specific physiological process in a subject. Examples include measures of blood pressure, heart rate, muscle tension, and brain activity.
Examination of archival records	The researcher analyzes existing institutional records (the archives), such as census, economic, medical, legal, educational, and business records.

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Table 2.1 Key Data Collection Techniques in Psychology

**Looking for Causes: _____
Research**

- _____ = manipulation of one _____ under _____ conditions so that resulting changes in another _____ can be observed
 - Detection of _____
- _____ = variable manipulated
- _____ = variable affected by manipulation
 - How does X affect Y?
 - X = _____ Variable, and Y = _____ Variable

Identifying IVs & DVs

- Which is the best method of treatment for depression: cognitive-behavioral therapy, drug treatment, or no treatment control?
- Is it better to “cram” for a test (massed practice) or better to “space-out” our studying (distributed practice) when trying to remember information for an exam?
- Does the number of people present affect the likelihood that someone will help another person in need?
- Is overall health influenced by one’s deepest thoughts, feelings, and attitudes about coming to college?

Quick Quiz

Professor Zappy wants to study the effects of shock on student learning. The dependent variable is:

- A. Shock
- B. Student learning
- C. Professor Zappy
- D. None of the above

Experimental and Control Groups: The Logic of the Scientific Method

- _____ group
- _____ group
 - _____ assignment
 - Manipulate _____ variable for one group only
 - Resulting differences in the two groups **must** be due to the independent variable
- _____ and _____ variables

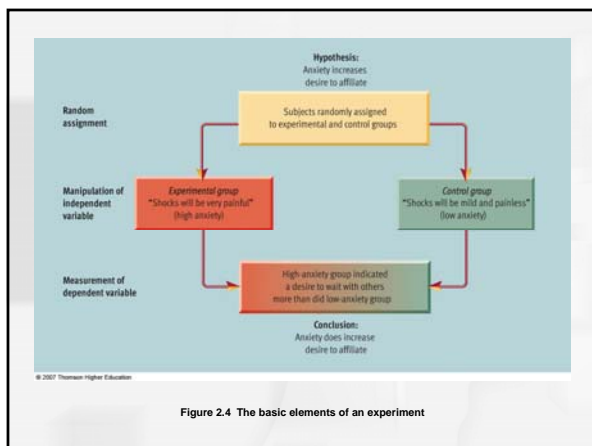


Figure 2.4 The basic elements of an experiment

Experimental Designs: _____

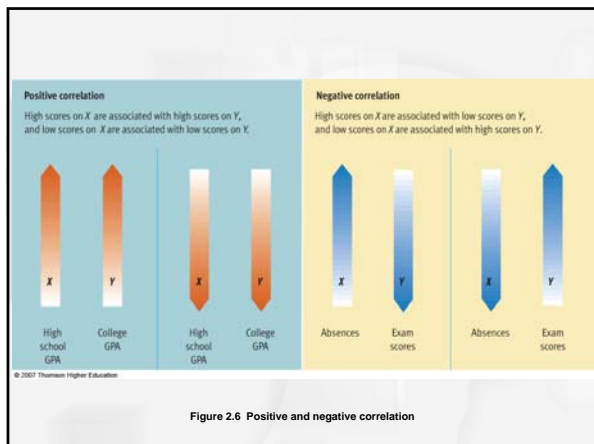
- Expose a _____ group to two _____ conditions
 - Reduces _____ variables
- Manipulate more than one _____ variable
 - Allows for study of interactions between variables
- Use more than one _____ variable
 - Obtains a more complete picture of effect of the independent variable

Strengths and Weaknesses of Experimental Research

- _____ :
 - conclusions about _____ can be drawn
- _____ :
 - _____ nature of experiments
 - _____ and _____ issues

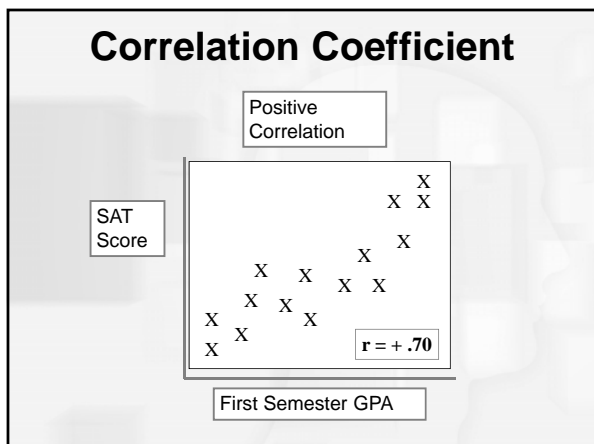
The Concept of Correlation

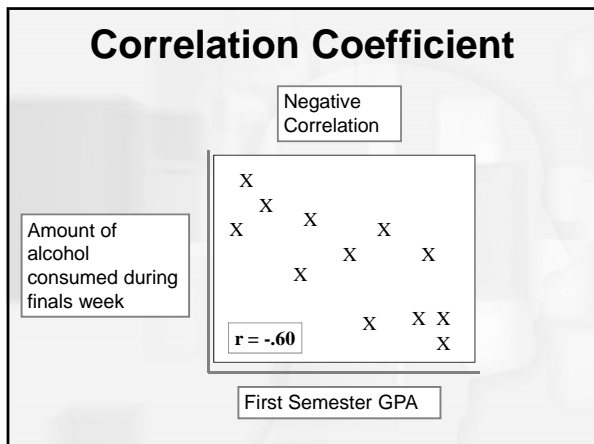
- _____ of relationship
- _____ of relationship
 - Correlation _____
- Correlation and _____
- Correlation and _____

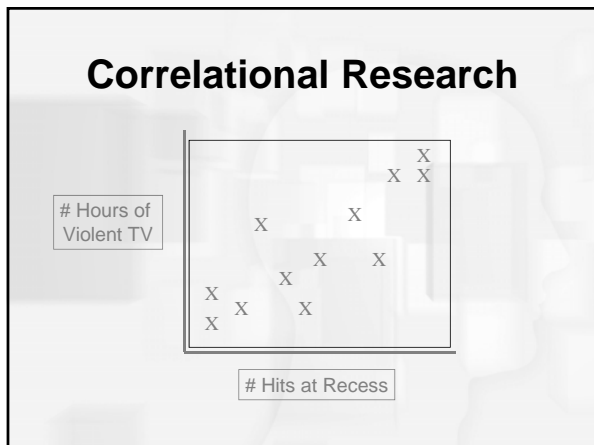


Correlation and Causation

- Correlation shows the strength of the _____ between two variables.
 - A correlation between two variables does not imply that one variable _____ the other.
- Correlation _____ mean causation!







CNN.com > health

Violent behavior and TV viewing

Researchers at Columbia University and the New York State Psychiatric Institute tracked more than 700 boys and girls over 17 years. The following shows daily number of television viewing at mean age 14 and the percentage of aggressive acts then committed at mean age 16 or 22.

Study Group	Less than 1 hour	1 to 3 hours	3-plus hours
ASSAULT OR PHYSICAL FIGHTS RESULTING IN INJURY			
Males	8.9 %	27.5 %	41.7 %
Females	2.3 %	8.6 %	9.3 %
Total	5.7 %	18.4 %	25.3 %
ROBBERY, THREATS TO INJURE ANOTHER OR WEAPON USED TO COMMIT CRIME			
Males	6.7 %	14.0 %	20.9 %
Females	0 %	4.8 %	8.5 %
Total	3.4 %	9.6 %	14.6 %
ANY AGGRESSIVE ACT AGAINST OTHERS			
Males	8.9 %	32.5 %	45.2 %
Females	2.3 %	11.8 %	12.7 %
Total	5.7 %	22.5 %	28.8 %

Source: Science Magazine

presented by

FULL BLITZ FANTASY FOOTBALL from CNNSci

WHERE OFFICE LEGENDS ARE MA

CNN (from
Science)
march 2002

What was that study?

Table 4
Correlations between media habits and parental limits and outcomes (n = 399-586)

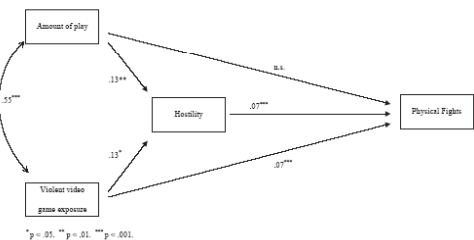
	Trait hostility	Arguments with teachers	Physical fights	Grades
Amount variables				
Amount of video game play	0.20***	0.12*	0.21***	-0.25***
Amount of time watching TV	0.20***	0.10*	0.12***	-0.20***
Amount of reading for pleasure	-0.08 [†]	-0.17***	-0.07	0.07 [†]
Violent content variables				
Violent video game exposure	0.21***	0.20***	0.32***	-0.23***
Preferred violence in video games	0.31***	0.25***	0.36***	-0.34***
Preferred violence compared to 2 or 3 years ago	0.23***	0.16**	0.19***	-0.14**
Parental involvement scale				
	-0.14**	-0.27***	-0.18***	0.27***

[†]p < 0.09; * p < 0.05; ** p < 0.01; *** p < 0.001.

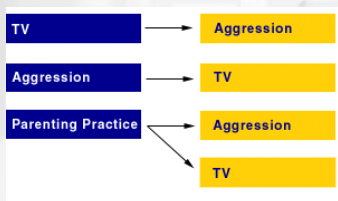
But yet...

D.A. Gentile et al. / Journal of Adolescence 27 (2004) 5-22

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Correlation and Causation







_____ Correlations

- The perception of a relationship where _____
- Examples
 - Sugar makes children hyperactive
 - Getting cold & wet will make you sick
- Related to perception of _____ in _____
 - What are the odds of being dealt:
 - J (hearts), Q (hearts), A (hearts), K (hearts), 10 (hearts)
 - 9 (spades), 3 (diamonds), 5 (clubs), 8 (clubs), 6 (hearts)
- One reason why we can't rely on anecdotal evidence!

_____ Methods

- **Methods** used when a researcher cannot _____ the variables under study
 - _____ **observation**
 - _____
 - _____
- Allow researchers to describe patterns of behavior and discover links or associations between variables but _____ causation

Overview of key research methods in psychology				
Research method	Description	Examples	Advantages	Disadvantages
 Experiment	Manipulation of an independent variable under carefully controlled conditions to test whether any changes occur in a dependent variable	Participants are randomly assigned to one of two conditions: no treatment film, and then aggression is measured in a laboratory situation	Practice control over variables, ability to draw conclusions about cause and effect relationships	Artificial situations often violate ethical standards and practical realities provide opportunity to miss important questions
 Naturalistic observation	Careful, usually prolonged observation of behavior without direct intervention	Researchers' spontaneous acts of aggression during recreational activities are observed unobtrusively and recorded	Minimizes artificiality, can be good place to observe phenomena under study	Often difficult to remain unobtrusive, can't manipulate, can't establish precise experimental or many important questions
 Case studies	In-depth investigation of a single participant using direct observation, direct interaction, and other data collection techniques	Detailed case histories are worked up for participants referred to clinicians because of unusual and/or extreme behavior	Well suited for study of unique phenomena, can provide compelling illustrations to support a theory	Subjectivity makes it easy to see what one wants to see based on each researcher's own clinical samples often unrepresentative
 Surveys	Use of questionnaires or interviews to gather information about user behavior about participants' behavior	Researchers are given questionnaires that describe hypothetical situations and are asked about the likelihood of aggressive behavior	Can gather data on difficult-to-obtain aspects of behavior, relatively easy to collect, data from large samples	Self-report data often unreliable, can't establish causality, social desirability bias, method effects, memory biases, and useful thinking

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Figure 2.10 Comparison of major research methods

**Evaluating Research:
Methodological Pitfalls**

- _____ bias
- _____ effects
- Distortions in _____ data:
 - Social _____ bias
 - _____ set
- _____ bias
 - the _____ solution

Ethics of Research

The Ethics of Studying Humans

- _____ consent.
- Freedom to _____ at any time.
- Minimize _____.
- Keep data _____.
- If _____ is necessary, debriefing must occur.

APA Ethical Guidelines for Research

<p>1 A subject's participation in research should be voluntary and based on informed consent. Subjects should never be coerced into participating in research. They should be informed in advance about any aspects of the study that might be expected to influence their willingness to cooperate. Furthermore, they should be permitted to withdraw from a study at any time if they so desire.</p>	<p>4 Subjects' rights to privacy should never be violated. Information about a subject that might be acquired during a study must be treated as highly confidential and should never be made available to others without the consent of the participant.</p>
<p>2 Participants should not be exposed to harmful or dangerous research procedures. This guideline is intended to protect subjects from psychological as well as physical harm. Thus, even stressful procedures that might cause emotional discomfort are largely prohibited. However, procedures that carry a modest risk of moderate mental discomfort may be acceptable.</p>	<p>5 Harmful or painful procedures imposed upon animals must be thoroughly justified in terms of the knowledge to be gained from the study. Furthermore, laboratory animals are entitled to decent living conditions that are spelled out in detailed rules that relate to their housing, cleaning, feeding, and so forth.</p>
<p>3 If an investigation requires some deception of participants (about matters that do not involve risks), the researcher is required to explain and correct any misunderstandings as soon as possible. The deception must be disclosed to subjects in "debriefing" sessions as soon as it is practical to do so without compromising the goals of the study.</p>	<p>6 Prior to conducting studies, approval should be obtained from host institutions and their research review committees. Research results should be reported fully and accurately, and raw data should be promptly shared with other professionals who seek to verify substantive claims. Retractions should be made if significant errors are found in a study subsequent to its publication.</p>

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Figure 2.12 Ethics in research

The Ethics of Studying

- _____ have always been used in a small percentage of psychological studies.
 - To conduct basic research on particular species.
 - To discover practical _____.
 - To study issues that cannot be studied experimentally with _____.
 - To clarify _____ questions.
 - To improve _____.

Ethics of Studying _____

- IACUC
 - _____
 - Reviews all procedures to be conducted with animals
 - Must use the "_____ " animal species possible
 - Cell cultures
 - _____
 - _____
 - Rodents & birds
 - Larger mammals (dogs & cats → apes)

**Ethics in Psychological Research:
Do the Ends Justify the Means?**

- The question of _____
- The question of _____
 - Controversy among psychologists and the public
- Ethical standards for research: the **American Psychological Association**
 - Ensures both human and animal subjects are treated with dignity
