



Psychology and Science

Module 2

Psychology 1

Mrs. Leach

Hello! My name is Bill and do I have something for you!

Do you need to lose weight? Are you unhappy? Do you want to impress your friends?

Just buy "Everyone's Answer." I guarantee it will work for any of your needs. All for 3 easy payments of \$19.95.....



The Doctor is In

- You are a leading researcher at the University of Michigan and want to study sex and sexual behavior.
- How would you study it?

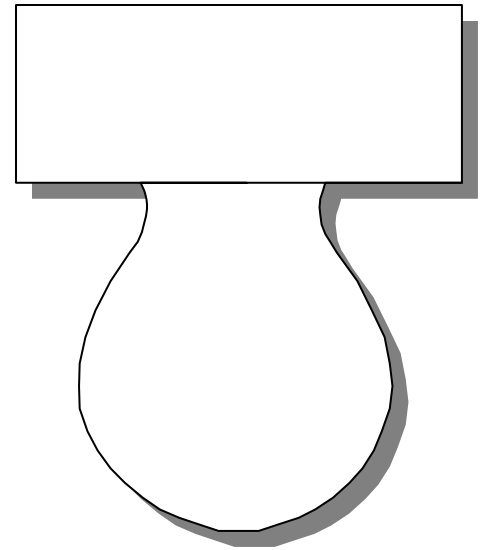


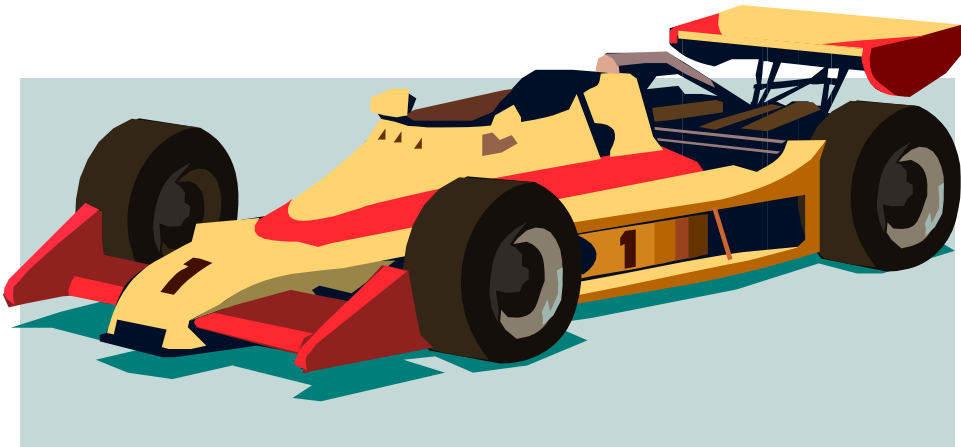


Three Major Types of Research

- Surveys (self-report)
- Case Studies
- Correlations/Experiments

-
- **HOW MANY OF YOU WASH YOUR HANDS AFTER YOU GO TO THE BATHROOM?**





○ **HOW MANY
OF YOU
OBEY THE
SPEED
LIMIT?**



SURVEY

- A quick, easy and cheap way to reach a large number of people.
- But they can be biased. How?
- How do you know the respondents are telling the truth or exaggerating or minimizing?
- What else can impact a survey?



CASE STUDY

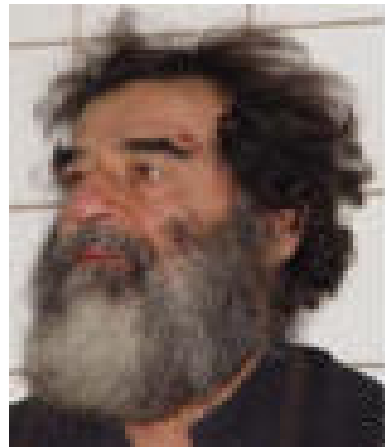
- An in depth analysis of a single individual; their feelings, thoughts, beliefs, experiences.
- They can provide rich information and understanding of one person's experiences.

The Story of Phineas Gage

- Railroad worker who accidentally had an iron railroad tie go through his skull in 1848.
- We learned a great deal about the functions of the parts of the brain from his recovery.



○ Upon whom would you like to do a case study and why?



What do these products have in common?





Be careful with case studies...

- They can be based on a **testimonial...**
- which can be based on strong personal beliefs....
- which could lead to **bias....**
- which can lead to **self-fulfilling prophecies.**



Self-Fulfilling Prophecy

- Having a strong belief about a result or future event and, **unknowingly**, acting to fulfill the behavior.

- What examples can you think of?

PLACEBOS



How do placebos work?

- An intervention that resembles medical therapy but has no medical effects.
- This leads to the **placebo effect**: a change in a patient's illness that is a result of the imagined treatment.
- They work by reducing tension and distress and creating powerful self-fulfilling prophecies.

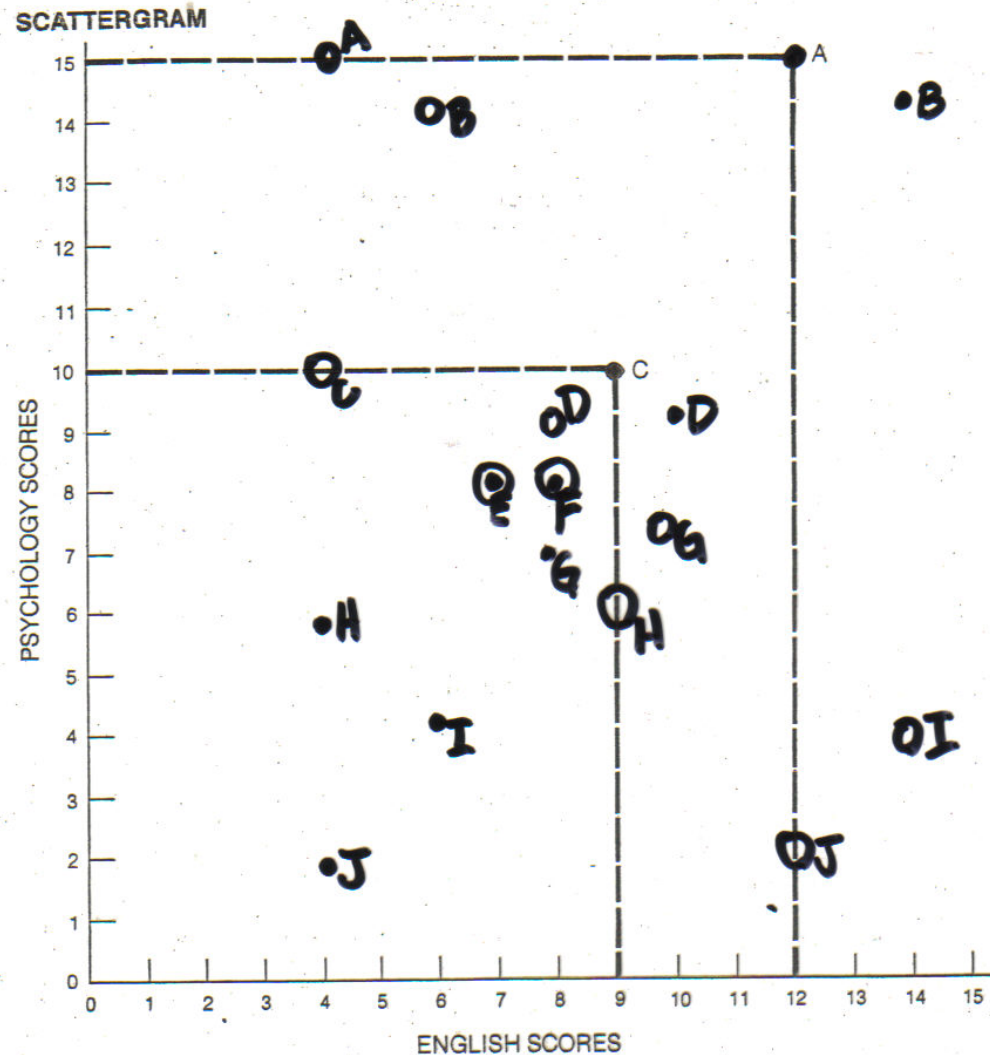


CORRELATIONS

- **A relationship between two or more factors or events.**
- For example...
- Do schools that require uniforms have less violence?
- If one twin has ADHD, will the other?
- Do babies with low birth weights have more colds??
- Do people who are children of alcoholics tend to become alcoholics?

- 
-
- **What are some other examples you can think of?**

English and Psych Scores Scatterplot



Are GPA's and SAT scores related?

SAT	GPA
1050	3.0
1200	3.9
1400	3.9
1100	3.0
800	2.5
1000	2.8
1300	3.7
850	2.6

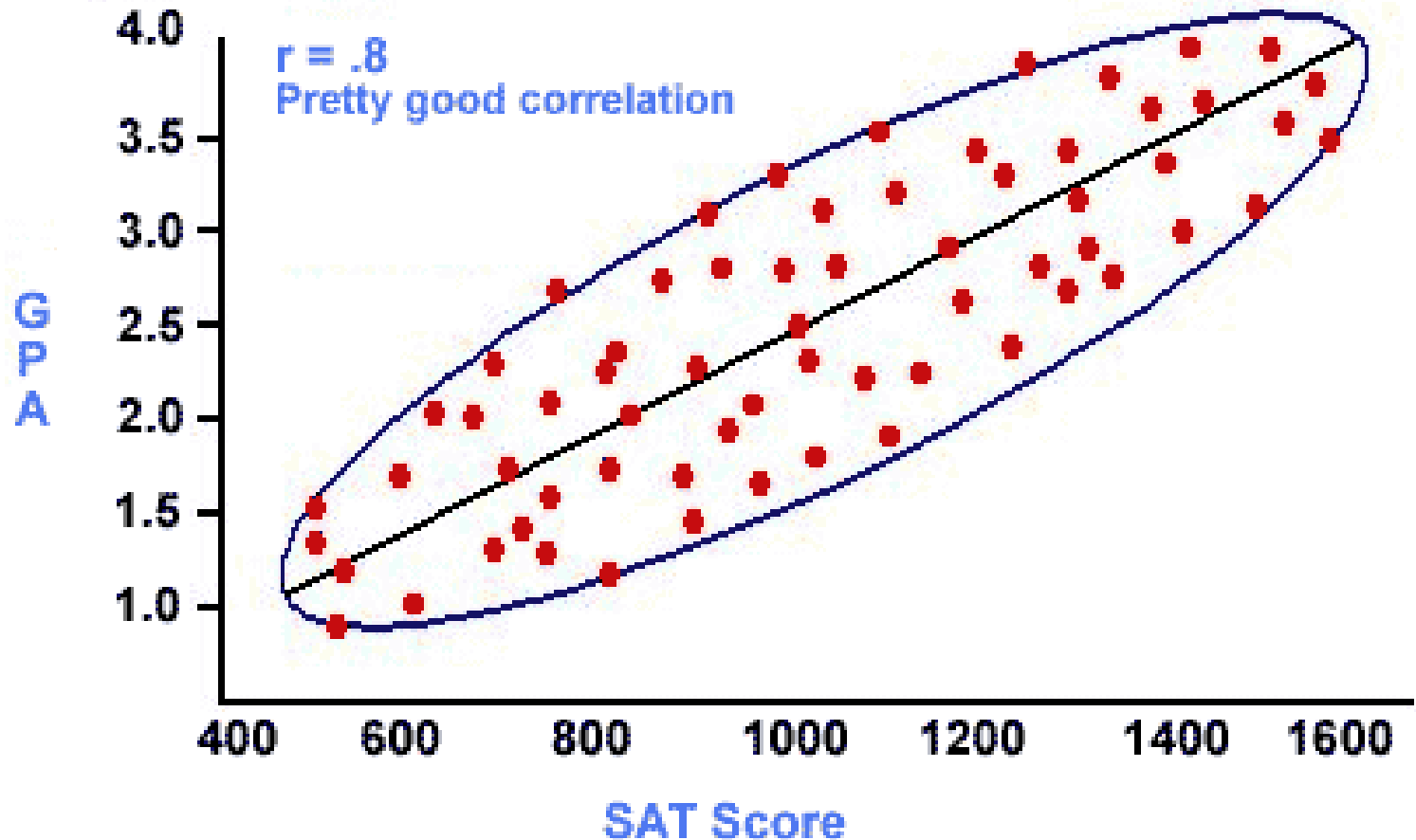
How might you describe this relationship?

Are GPA's and SAT scores related?

- What if you have a lot of data?

X	Y	X	Y	X	Y
SAT	GPA	SAT	GPA	SAT	GPA
1050	3.0	900	2.5	1450	3.8
1200	3.6	1350	3.8	1100	2.9
1400	3.9	1000	3.2	1250	3.7
1100	3.0	1200	3.5	900	3.0
800	2.5	800	2.3	1300	3.7
1000	2.8	1250	3.4	1000	3.0
1300	3.7	1000	2.9	1400	3.5
850	2.6	950	3.0	1050	2.7

Plot it on a Scattergram



What can we conclude?

- There is a relationship between SAT scores and GPA. ($r = .8$)
- The scattergram shows a positive relationship, since both scores go in the same direction.
- Does that mean that high GPAs **CAUSE** high SAT scores?

Correlation

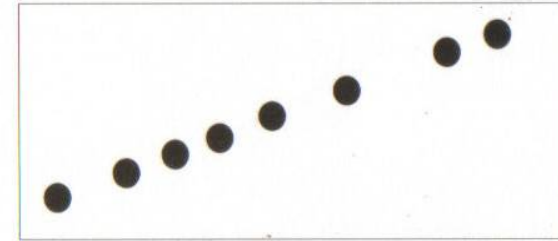
High positive correlation

stronger

+1.00

perfect positive

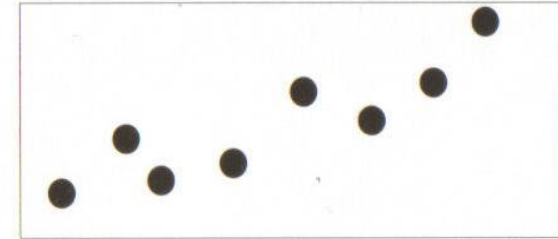
as one event increases, the second exactly increases



+0.50

positive

as one event increases, the second sometimes increases

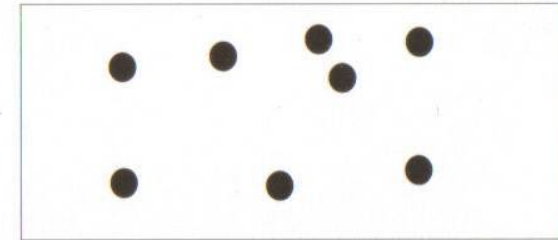


weaker

0

zero correlation

no relationship between the events

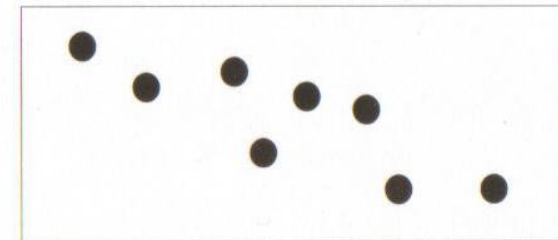


weaker

-0.50

negative

as one event increases, the second sometimes decreases

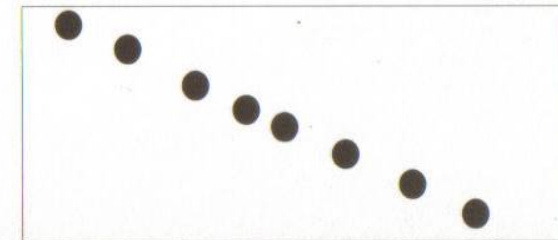


stronger

-1.00

perfect negative

as one event increases, the second exactly decreases



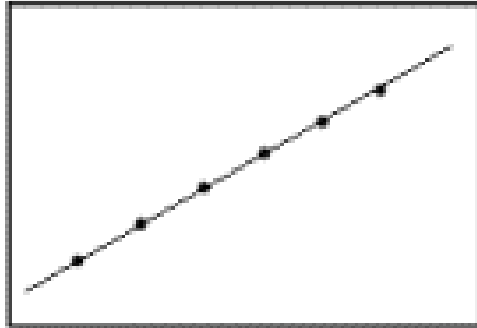
Zero correlation

High negative correlation

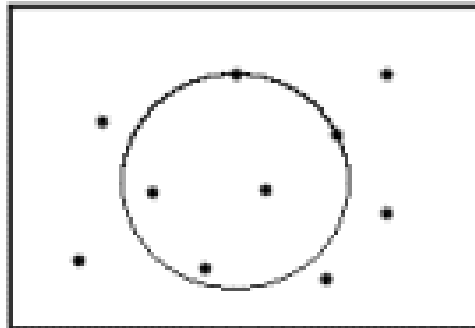
CDNSC!

- Repeat after me....
- **Correlations do not show causation...**
- **Correlations do not show causation...**
- **Because correlational studies can't CONTROL what is being studied.**
- But they can help **predict** behavior!

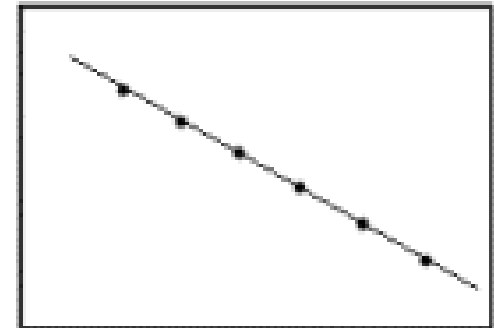
Correlation Coefficients



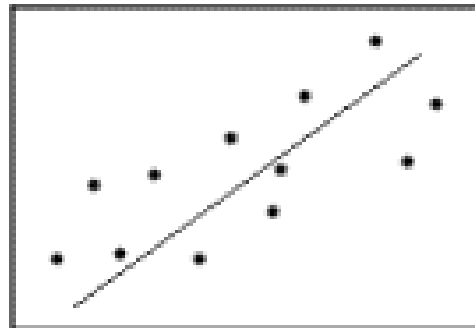
$r = +1.0$
Positive



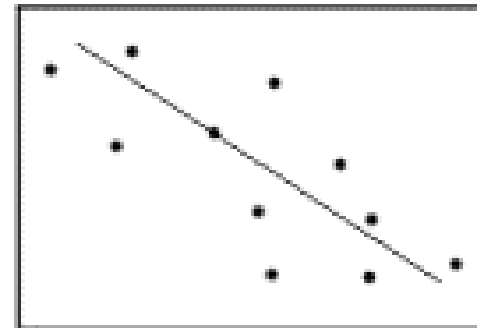
$r = 0.0$
Zero



$r = -1.0$
Negative



$r \approx +0.6$



$r \approx -0.6$

Remember that sex study?





Correlations in the News

- Red wine drinkers live longer than people who do not drink red wine.
 - Possible causes?

-
- People who floss everyday live longer.
 - Is it because of flossing, or other possible causes?





Correlation vs. Experimentation

- What is the MAIN difference?
- The amount of CONTROL you have over your subjects:
 - Correlation: none, very little
 - Experiment: much control

Experiment

- Make an hypothesis
 - What is an hypothesis?
 - I think wearing cologne/perfume will attract males/females

IV and DV

- Identify the independent and dependent variable
 - Independent variable:
 - What is being manipulated/changed
 - **D**ependent Variable:
 - **D**ata collected, results from experiment
 - Should be a measurable number

Choose

- Choose a random selection of subjects
 - Your sample should represent the population and
 - Be randomly chosen (every 5th senior at HHS, every 10th name in the phone book...)

Assign

- Assign to experimental or control group
- Random assignment (flip a coin, number by 3's, etc.)
 - **Experimental group** gets the treatment
 - **Control group** gets the placebo/no treatment

Manipulate

- Conduct your experiment
- Best to use double blind procedure!
 - WHY?



Measure

- Measure the results (collect your data)



Analyze

- Analyze the results using statistics
- Are the results due to variables, chance error?



Operational Definition

- Tells **exactly** what is being measured.
- Must be a measurable behavior
- Examples: pretty, smart, aggressive, hyperactive
- How to measure those behaviors?



Correlation vs. Experimentation

- What is the MAIN difference?
- The amount of CONTROL you have over your subjects:
 - Correlation: none, very little
 - Experiment: much control
- Correlations try to explain & predict, experiments try to control




Design your own Experiment

- In your cohort group, design your own experiment following the steps discussed.
- Ideas:
 - Does studying really help for testing?
 - Does wearing cologne/perfume really attract people?

Ethical Issues

- APA Code of Conduct:
 - Confidential
 - Informed consent
 - Debrief subjects
 - Protect from harm and discomfort
 - Testing on animals?

Ten Box Review Questions-Module 2 Research

<p>1. What is the MAIN difference between a correlational study and an experiment?</p>	<p>6. What is an operational definition?</p> <p>Write one for hyperactivity: _____</p> <p>_____</p>
<p>2. What is the difference between random sample and random assignment?</p>	<p>7.Independent Variable: _____</p> <p>_____</p> <p>Dependent variable: _____</p> <p>_____</p> <p>How are they related?</p>
<p>3. What is the placebo effect? Give an example.</p>	<p>8. What is the double blind procedure and why is it the best way to conduct an experiment?</p>
<p>4. List four ways a researcher can bias a study.</p> <p>a.</p> <p>b.</p> <p>c.</p> <p>d. _____</p>	<p>9. Label the following a positive (+), a negative (-), or zero (z)correlation:</p> <p>___ a. height and weight of an individual</p> <p>___ b. hours studied and grades on progress report</p> <p>___ c. shoe size and IQ</p> <p>___ d. temperature outside; sales of cold lemonade</p>
<p>5. On the graph below, draw what a positive correlation and a negative correlation would look like when plotted on a <u>scattergram</u>. <u>Label each one.</u></p> 	<p>10. Why is an experiment so highly regarded in terms of conducting research?</p> <p>It is the only research method that shows...</p> <p>What does CDNSC stand for?</p>