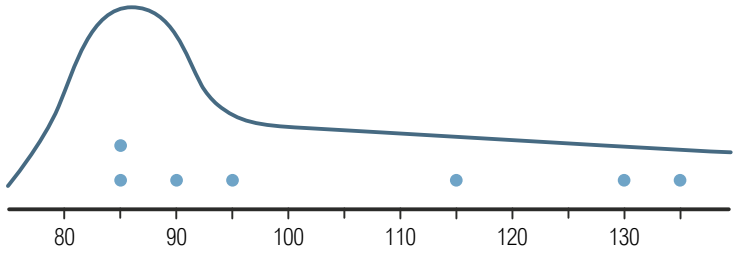
TOPIC: UNDERSTANDING RESEARCH FINDINGS

Measures of Central Tendency

◆ **Measures of Central Tendency:** Give information on which values are the most _____.

Measures of Central Tendency			
	Mean	**Median**	**Mode**
Definition	The _____ value.	The _____ value.	The most _____ (frequent) value.
How to Calculate	Add up values and divide by the number of values.	Put values in numerical order and find middle value.	Count how often each value occurs.
Dataset IQ Scores (n = 7) 85 115 85 95 90 130 135	**Mean:**	**Median:**	**Mode:** 
Keep in Mind....	Easily skewed by outliers ("unusual" numbers in data).	Very useful when data has _____.	Some datasets can have ____ mode, or multiple modes.

EXAMPLE

Carol is a sociologist who does a lot of work with housing market data, and her samples tend to have a lot of outliers.

Which measure of central tendency might be the most useful for Carol to use?

a) Mean.

b) Median.

c) Mode.

d) Range.

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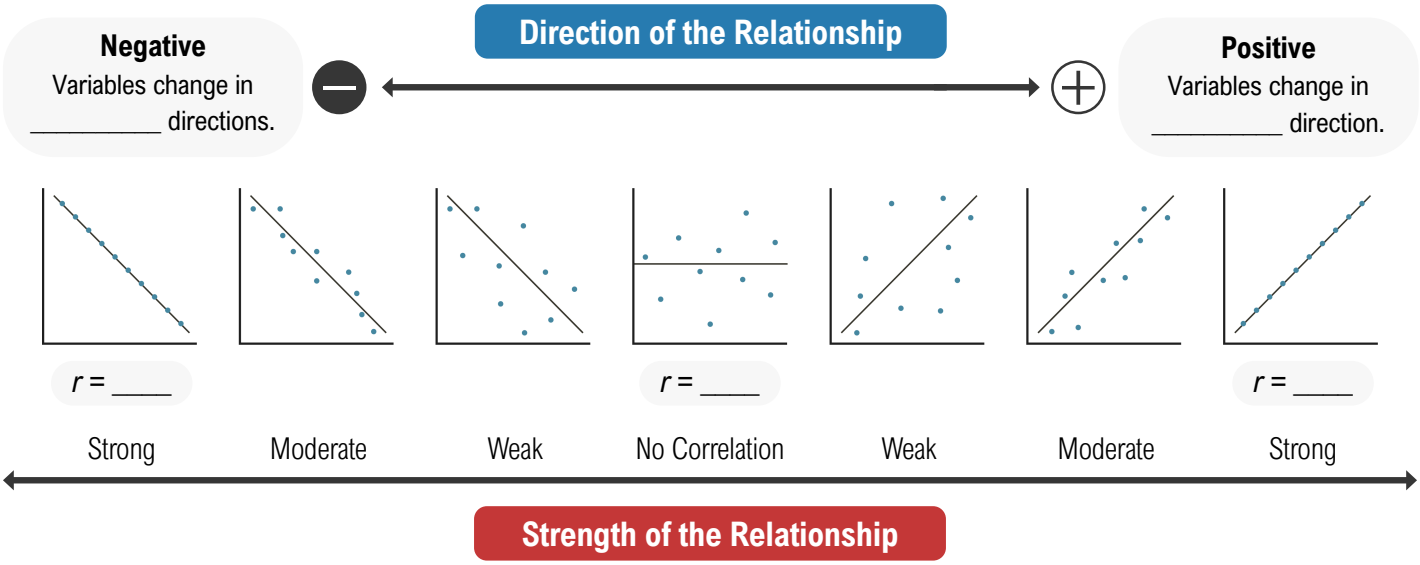
Correlations

- **Correlation:** A relationship in which two variables _____ together.
  - Measure of the **direction** and **strength** of a relationship.
  - Quantified with a **correlation coefficient** (*r*).



Tip: There is no standard for what is considered a 'strong,' 'moderate,' or 'weak' correlation. It differs among fields and topics of study. Don't worry if you notice inconsistent descriptions as you begin to read research.

EXAMPLE

Dr. Yang is examining the relationship between time spent in nature and job satisfaction. His data shows a correlation coefficient of $r = .006$. Which of the following statements provides the **BEST** description of this data?

a) Time spent in nature and job satisfaction have a strong positive correlation.

b) There appears to be a moderate positive relationship between time spent in nature and job satisfaction.

c) Time spent in nature and job satisfaction are negatively correlated.

d) There appears to be almost no relationship between time spent in nature and job satisfaction.

PRACTICE

Which of the following correlation coefficients indicates the **strongest** relationship between two variables?

a) $r = +.30$

b) $r = +.55$

c) $r = -.72$

d) $r = -.23$

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Correlation vs. Causation

- Correlations give us information about how variables are related – but correlation does _____ equal causation!
- **Causation:** A relationship between variables in which change in one **directly** _____ change in another.
- To claim causality between variables a researcher must:
  1. Demonstrate a correlation between the variables.
  2. Show temporal precedence between the variables (The _____ comes before the _____).
  3. Rule out the possibility of a **spurious correlation:**
     - A correlation between two variables that is actually explained by a **third** (_____) **variable.**

Example

Dr. Garcia conducted a study which revealed that playing violent video games was correlated with aggressive behavior in children.

CAUSATION?

____ Correlation

____ Temporal precedence

____ Ruling out a spurious correlation

Possible Explanations

A: Video Games → Aggression

B: Aggression → Video Games

C: Exposure to parental violence? → Video Games, Aggression

EXAMPLE

Which of the following statements about determining causality are **true**?

I. We first need to establish a correlation between the variables.

II. We need rule out as many intervening variables as possible.

III. We need to ensure that the mean is lower than the median.

a) I & II. b) I & III. c) II & III. d) I, II, & III.

PRACTICE

A research study demonstrates that that there is a strong, positive correlation between high SES and positive parenting behaviors. What is the **best** way to report on these results?

a) This study demonstrates that rich people are better parents.

b) This study found an association between income level and positive parenting, such that people with a higher income level demonstrated more positive parenting behaviors.

c) This study found that having more money causes people to be better parents.

d) This research confirms that people who engage in positive parenting make more money over time.