

“What good fortune for those in power that people do not think...”

Adolf Hitler, 1889-1945

Notes on Methodology, Approaches, and Statistics – Chapter 1 and Appendix

Essential Questions:

- *How do psychologists use the scientific method to study behavior and mental processes?*
- *Which methods of research are appropriate for the study of different behaviors?*
- *How do psychologists draw appropriate conclusions about behavior from research?*
- *How do psychologists make ethical decisions about researching behavior with human and animal subjects?*
- *What different ways does psychology approach the study of human and animal behavior?*
- *How has psychology changed the study of human and animal behavior?*
- *How do the different perspectives in psychology compare and contrast?*
- *Who were the movers and shakers in the evolution of psychology as a science?*

Unit Objectives:

- Define psychology.
- Discuss the advantage of research over other ways of knowing.
- Discuss the advantages and disadvantages of case study research.
- Discuss the advantages and disadvantages of naturalistic observations.
- Discuss the advantages and disadvantages of survey research.
- Evaluate why correlational research does not yield causal conclusions.
- Identify the elements of an experiment.
- Apply elements of an experiment to different situations.
- Evaluate the importance of ethics in research.
- Evaluate the importance of statistics in research.
- Trace the historical and philosophical development of psychology as a science.
- Describe how the different perspectives explore and explain human behavior.
- Identify famous psychologists and describe their contributions to the discipline.

I. What is Psychology?

- A. **Psychology** – the science of behavior and cognition (mental processes).
1. Behavior – any observable activity
 2. Cognition – any mental process

II. Psychology as a Science – to describe, explain, predict and control events/behavior

- A. **Critical Thinking in Psychology** - the adoption of a skeptical, questioning attitude, and careful scrutiny of claims or arguments.
1. Question everything – do not blindly accept the validity of claims made by others – keep an open mind and weigh evidence
 2. Clarify what you mean – whether a claim might be true or false may depend on how a person defines terms (ex. “Stress is bad for you”)
 3. Avoid oversimplifying – psychology is complex (ex. “Alcoholism is inherited”)
 4. Avoid overgeneralizing –overgeneralizing can lead to stereotyping (“All East Asian cultures tend to be reserved”)
 5. Don’t confuse correlation with causation – (ex. swimming causes drowning)
 6. Consider the assumptions upon which claims are based – evaluate the evidence claims are based on and if the evidence is not there, do not accept the claims
 7. Examine the sources of the claim – note well respected journals or periodicals, dates articles were published, and citations

8. Question the evidence upon which claims are based – is the information based on sound scientific evidence or personal testimony?
9. Consider alternative ways of explaining claims – (ex. watching violent television causes children to behave violently – not supervised, physical abuse, modeling, self-fulfilling prophecy, etc)

B. The Scientific Method in Psychology

1. *State the Problem/Develop a Research Question* – collection of interrelated ideas and facts put forward in the form of a question
2. *Develop Testable Hypotheses* – tentative idea/statement expressing a causal relationship between two events. It must be a testable statement.
 - a. What is testable? – Does God exist?
 - b. Different between a hypothesis and a theory?
3. *Research Design* – the researcher develops a research process or strategy for gathering evidence to provide a scientific test of the hypothesis. The type of research method or data collection depends on the nature of the problem.
 - a. Descriptive: to observe and record behavior
 - b. Correlational: to detect naturally occurring relationships, assess how well one variable predicts another
 - c. Experimental: to explore the cause and effect relationship between two variables
4. *Operational Definitions or Operationalize Variables*
 - a. A definition of key areas or variables and the experimental procedure and/or how you measure those variables (ex. Intelligence will be measured by a score on the Stanford-Binet Intelligence test)
 - b. This allows the experimenter and others to replicate the experiment using the same definitions
5. *Generalizability* – The extent to which program findings, principles, and models apply to other populations and/or settings. For example, a sleep study was conducted on teenagers from Maine. Can those results be used to make assumptions about the entire teen population?
6. *Collecting and Analyzing Data* (see chart below) – after the experiment has been designed (participants, etc.), the experiment is conducted and data is collected in the following ways:

| <i>Method</i> | <i>Features</i> | <i>Strengths</i> | <i>Pitfalls</i> |
|---------------------------------|---|---|--|
| <u>Experiment</u> | A researcher manipulates and observes elements of a situation to test hypothesis and make a cause and effect conclusion | Can establish a cause and effect relationship between independent and dependent variables | Confounding variables may prevent valid conclusions |
| <u>Naturalistic Observation</u> | Careful and objective observation of events from a distance, without observer intervention | Provide descriptive data about behavior presumably uncontaminated by outside influences | Observer bias and participant self-consciousness can distort results |
| <u>Case Studies</u> | Method of interviewing participants, observations, or past records to gain information about a person or situation | Provide detailed descriptive analysis of new, complex, or rare phenomenon | May not provide representative picture of phenomenon |
| <u>Questionnaires</u> | or survey, is usually printed and distributed set of questions to a large number of people. | Gather large amounts of descriptive data relatively quickly and inexpensively | Sampling errors, poorly phrased questions, and response biases can distort results |
| <u>Interviews</u> | A face to face meeting in which the researcher asks prepared questions | Gather descriptive data as well as reactions of the participants | Participant self-consciousness can distort results |

7. *Repeatability/Replication* – The study must be set up in a way that could be repeated to prove results

C. The Experimental Research

1. Purpose - With the experimental method, researchers directly explore cause and effect relationships by manipulating certain variables.
2. *Variables* – factors or measures that change or are manipulated
 - a. Independent variable is directly and purposefully manipulated
 - b. Dependent variable is the variable that is expected to change because of the manipulation of the independent variable
 - c. Confounding or Extraneous variables are which, if not controlled or addressed, could change or disrupt the experiment
3. *Experimental and Control Groups* –
 - a. Experimental Group or Condition: is the group of participants the treatment is given/situation changed
 - b. Control Group or Condition: is the comparison group which are not tested
 - c. Random selection – once a population has been identified, the researcher randomly selects people, animals, or item to be in the study (think of pulling names out of a hat) so that the results are due to chance not because of hand selected participants.
 - d. Random Assignment: participants are assigned randomly to the control and experimental conditions so that there is an equal chance of them going to either group. This insures that the experimenter and participant are not aware of the assignment (double-blind).
4. *Sample/Participants/Subjects* – participants in the experiment/study. The sample should be representative of the population about which the theory is testing and the size of the sample should be large enough so that the researcher can rule out chance as a reason for the results.
 - a. Population: represents the total group of people who are subject of interest (ex. High school students)
 - b. Random Sample: participants are assigned by lottery so not to influence the results
 - c. Representative Sample: segment of population that is representative of the target population that allows researchers to generalize their results from the sample to the entire population (ex. Teen sleep patterns)

D. The Correlational Research

1. Purpose - A research method that examines relationships between variables and it allows researchers to make predictions
2. “Correlation is not causation” – the fact that two variables are correlated, even highly correlated, does not mean that one causes the other.
3. Ex. There seems to be a link between optimism and outcomes following coronary bypass surgery. Patients who hold more optimistic attitudes tend to have fewer serious complications following surgery than less optimistic people
4. *Statistically Significant Difference* (based on correlation coefficient) – refers to a finding that is unlikely to have been due to chance or random fluctuations (usually between +1.00 [highly correlated] and – 1.00 [unlikely correlated] or 0 [no relationship])
5. *Descriptive Research*
 - a. Purpose – observe, collect, and record data through naturalistic observation, surveys or case studies.

E. Biological Research

1. Purpose – studies the brain and other parts of the nervous system to describe, identify, and/or predict behavior
2. Data collection - brain dissection, ablation (removing part of the brain) or lesions (destroying part of the brain), clinical observations/case studies, electrical recordings or brain imaging such as EEG, accidents such as brain trauma or lesions

F. Experimental Pitfalls: Research/participant issues or errors that can effect a study or experiment

1. *Self-fulfilling Prophecy* – (Rosenthal and Jacobson) a researcher unintentionally allows his or her expectations to influence the participants or the situation/experiment.
 - a. *Hawthorne Effect* – people behave better when they are being observed

- b. *Halo Effect* - Bias created by an observer's tendency to rate, perhaps unintentionally, certain objects or persons in a manner that reflects what was previously anticipated [positive or negative]
2. *Double-blind Technique* – a research technique where neither the experimenter nor the participants know who is in the control or experimental group (used to prevent self-fulfilling prophecy)
3. *Placebo Effect* – a nonspecific improvement that occurs as a result of a person's expectations rather than any specific treatment
4. *Correlation is not Causation* – correlated events are not necessarily causally related
 - *Illusionary correlation* – the perception of a relationship where none exists (ice cream and drowning)
5. *Purpose* – the general purpose of the experiment or study must match what the researcher is testing for
6. *Methodology* – the methodology must be appropriate for the experiment/study and variables have been controlled to the best of the researcher's ability
 - a. *Reliability* – refers to the extent to which a test or research is consistent in its measures (consistent results)
 - b. *Validity* – a test or research must measure what it is intended to measure (the SAT test has predictive validity between SAT scores and an individual's performance in college)
 - c. *Standardization* – the consistency and objectivity of a test or research so everyone is measured the same and can be compared to each other (you would not be able to compare a math test of a person who took their test in a thunderstorm – that may confound the results)
7. *Participants* – The participants should be representative of the testing population, adequate size, and chosen carefully for the experiment/study.
8. *Repeatability* – The experiment/study must be repeatable for others to check the conclusions
9. *Conclusions* – The conclusions made by the researcher must be clearly based on evidence from the research and investigation of the experiment/study.
10. *Bias* – The experiment/study should not have any experimenter bias or gender, ethnic, or cultural bias.
 - a. *Hindsight Bias* – the research believes that they knew the results all along (also known as I-knew-it-all-the-time phenomenon) can make research seem like common sense
 - b. ex. September 11th attacks – given all of the information before hand we *should* have seen it coming
11. *False Consensus Effect* – the tendency to overestimate the extent to which others share our beliefs or behaviors
12. *Wording Effects* – subtle use of language or order of questions that can effect the opinions respondents express on surveys or in interviews (not allowing vs. forbidding)
 - a. “Do you agree that 527 organizations that are funneling tens of millions of “soft money” from unions, corporations, and very wealthy Americans into today's campaigns must be reined-in and forced to comply with election law?” Straight Talk America National Survey 08/14/06
13. *Social Desirability Bias* – participants may want to give answer they believe are socially desirable rather than reflective of what they believe
 - a.
14. *Overconfidence* – overestimates the accuracy of one's beliefs and judgments [this leads to people overestimating their intuition]
15. *Ethnocentrism* – believing that one's culture is typical of all cultures or that viewing one's own ethnic group or culture as central, correct, or superior and judging others to this standard
16. *Ethics* – All experiments/studies must follow APA's *Ethical Principles of Psychologists and Code of Conduct*, which are guidelines for human and animal research.
 - a. IRB (internal/institutional research board) – An Institutional Review Board (IRB) is charged with protecting the rights and welfare of people involved in research. The IRB reviews plans for research involving human subjects. Institutions that accept research

- funding from the federal government must have an IRB to review all research involving human subjects (even if a given research project does not involve federal funds).
- b. Informed Consent – agreement to participate in a study following the disclosure of information about the purposes and nature of the study and its potential risks and benefits (no deception). Although, psychologists can dispense with informed consent if the research would not reasonably create distress or harm to the subjects.
 - c. Deception – if the participants are deceived in any way about the nature of the study, the deception must not be so extreme as to invalidate the informed consent. The research the participants thought they were consenting to must be similar enough to the actual study to give informed consent meaning. Also, researchers must be very careful about the trauma deception may cause.
 - d. Debrief – psychologists must provide prompt opportunity for participants to obtain proper information about the nature, results, and conclusions of the research and correct any misconceptions the participants may have. If scientific or humane values justify withholding or delaying debrief, psychologists must take reasonable measure to reduce the risk of harm.
 - e. Coercion – participants cannot be coerced in any way to give consent to be in the study must be voluntary
 - f. Confidentiality/Anonymity – researchers must respect people’s right to privacy and keep their identities and actions private
 - g. Risk – participants cannot be placed at significant mental or physical risk. This clause requires interpretation by the review board. Some institutions might allow a low level of risk other boards may not allow.
 - h. Opt Out – Participants must be able to decline or withdraw from the procedure without adverse consequences.
 - i. Humane Care and Use of Animals – psychologists acquire, care for, use, and dispose of animals in compliance with federal, state, and local laws, regulations, and professional standards. Psychologists make reasonable efforts to minimize the discomfort, infection, illness, and pain of animal subjects.

III. Schools of Psychology

A. Early development:

| <u>Perspective</u> | <u>Prominent Figure(s)</u> | <u>Major Emphasis</u> |
|----------------------|----------------------------------|---|
| <i>Structuralism</i> | Wilhelm Wundt Edward Titchner | <ul style="list-style-type: none"> ▪ Basic building blocks [structure] of the mind ▪ Wundt’s method was to engage people in the scientific self-reflective or <u>introspection</u> to discover the elements of the mind (training people to report elements of their experiences) & sought to determine how elements of the mind and consciousness related to behavior ▪ Doomed to failure – different people had different “introspections” & did not know how to resolve these ▪ <i>Legacy</i> – the first model for the scientific study of psychology (first psych lab) |
| <i>Functionalism</i> | William James | <ul style="list-style-type: none"> ▪ Wanted to see how the mind functions to adapt human behavior ▪ James’ pragmatism encouraged people to explore the evolved functions of our thoughts and feelings such as emotions, memories, willpower, habits, and moment-to-moment stream of consciousness ▪ Asked such questions - “Why do we have an emotion? What function does it serve?” ▪ Huge influence on Darwin but splintered into different modern day groups |

B. Modern perspectives:

| <u>Perspective</u> | <u>Prominent Figure(s)</u> | <u>Major Emphasis</u> |
|---|---|--|
| <i>Psychoanalytic/ Psychodynamic</i> (1895-present) | Sigmund Freud Carl Jung Alfred Adler Karen Horney | <ul style="list-style-type: none"> ▪ Psychological maladjustment comes from anxiety due to unresolved conflicts and forces in the unconscious mind of which the person may not be aware ▪ behavior is caused by conflict and anxiety in the unconscious mind |
| <i>Behavior</i> (1906-present) | Ian Pavlov Edward Thorndike John Garcia John Watson B.F. Skinner | <ul style="list-style-type: none"> ▪ Describing, measuring, and possibly changing only behavior that is observable ▪ behavior is learned through associations and reinforcement |
| <i>Humanist</i> (1950s-present) | Carl Rogers Abraham Maslow | <ul style="list-style-type: none"> ▪ Emphasizes the uniqueness of each individual and that humans have the ability because of free will to meet their needs and determine their destiny (self-actualization) ▪ behavior is determined by a person's belief in free will, meeting their needs, and self-actualization |
| <i>Cognitive</i> (1950s-present) | Jean Piaget Albert Ellis Albert Bandura Robert Sternburg Howard Gardner Clark Hull | <ul style="list-style-type: none"> ▪ Focuses on mental processes such as perception, learning, memory, and thinking. ▪ behavior is caused by mental processes including thought, perception, memory, or learning |
| <i>Neuroscience/ Biopsychological</i> (1950s-present) | Johannes Muller Karl Lashley David Hubel James Olds Roger Sperry | <ul style="list-style-type: none"> ▪ Focuses on heredity and biological factors such as the brain and how these affect mental processes as well as how physical mechanisms affect emotions, feelings, desires, and sensory experiences. ▪ behavior is caused by genetics, biological structures or chemistry |
| <i>Evolutionary</i> (1980s-present) | Charles Darwin Konrad Lorenz | <ul style="list-style-type: none"> ▪ Seeks to explain and predict behavior over the course of generations that have led to adaptation and survival ▪ behavior is the result of natural selection |
| <i>Sociocultural</i> (1980s-present) | Darley & Latene Kenneth Clark Solomon Asch Philip Zimbardo Muzafer Sherif Stanly Milgram | <ul style="list-style-type: none"> ▪ Focuses on the role of social and cultural influences on behavior ▪ behavior is influenced by how we perceive, influence, and relate to others |

IV. Subfields in Psychology

- A. Psychologists v. psychiatrists – psychiatrists have an MD and prescription privileges
- B. Clinical psychologists – study/treat health in individuals, groups, and organizations
- C. Cognitive psychologists – study thought processes such as perception, language, attention, problem solving, memory, judgment, decision making, forgetting, and intelligence
- D. Community psychologists – deal with broad problems of mental health in community settings
- E. Counseling psychologists – help people adjust to life transitions or make life changes
- F. Developmental psychologists – conduct research on age related changes and apply that research to education, child care, or public policy
- G. Educational psychologists – study the relationship between learning and our social/physical environments
- H. Experimental psychologists – investigate a variety of basic behavioral processes involving humans/animals
- I. Forensic psychologists – apply psychological principles to legal issues (think of the guy on Law and Order – SVU)
- J. Health psychologists – research and practitioners interested in promoting health and/or preventing disease (programs to stop smoking, lose weight, or improve sleep)

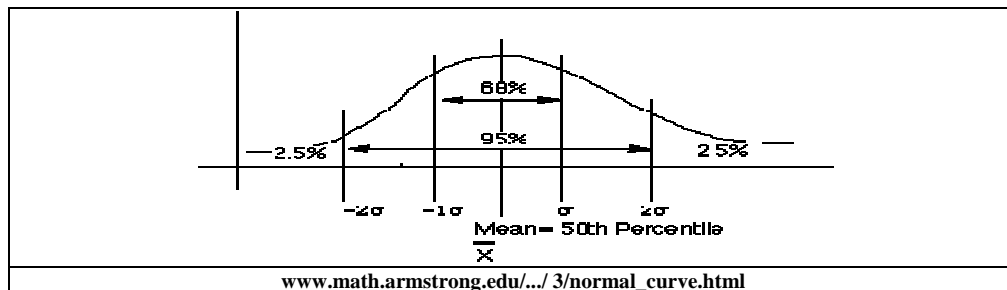
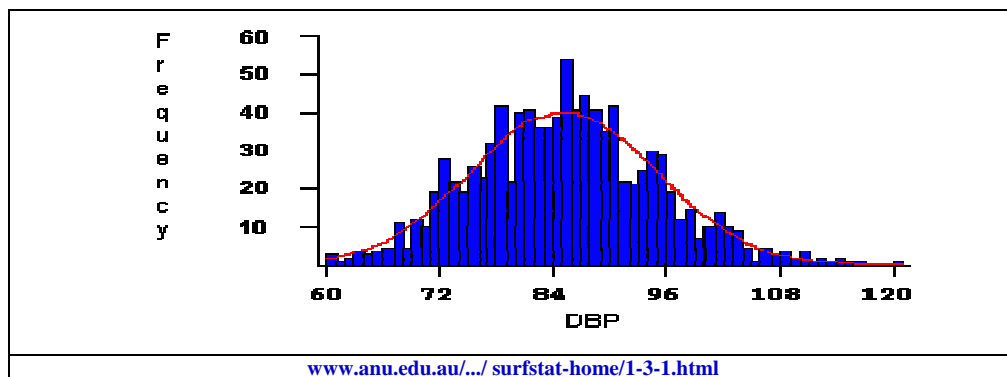
- K. Industrial/organizational psychologists – the relationship between people and their work/living environment
 - 1. Human factors – test designs and instructions on real people (engineers design ATM machines industrial psychologists help make them more user friendly for people)
- L. Neuropsychologists – investigate the relationship between neurological structures (structure or function of the brain or genetics) and behavior (may look at biological reasons behind Alzheimer’s disease)
- M. Psychometric/quantitative psychologists – study the methods used to acquire psychological knowledge (administer, score, and interpret psychological tests such as personality or IQ tests)

V. **Statistics**

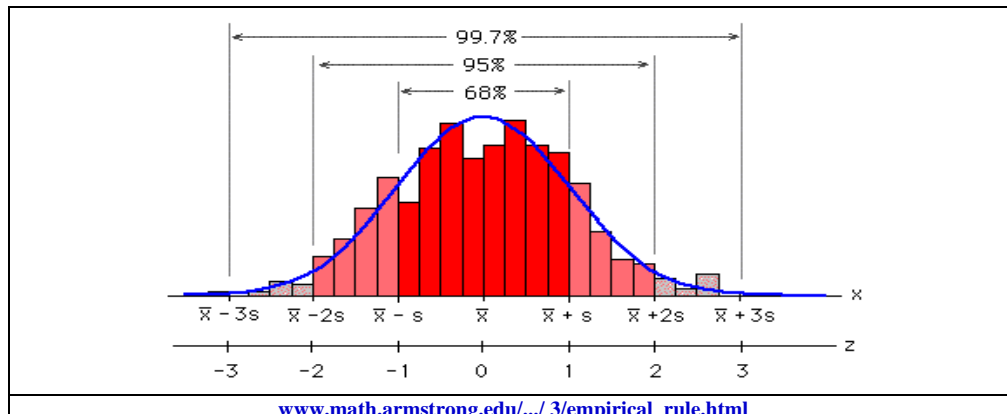
A. Important concepts:

- 1. *Descriptive Statistics* – allows researchers to take known data or information and make sense of it
 - a. Validity – ability of a test to measure what it is designed to measure
 - b. Reliability – a measure of the consistency and stability of test scores when the test is administered
 - c. Standardization - establishment of norms used to and uniform procedures for giving and scoring a test
- 2. *Population* –the group of individuals that you wish to studying order to answer your research questions.
 - a. Do babies sleep better with music playing?
 - b. Narrow the population - Under three months? Under a year? Only in the United States?
- 3. *Sample* – a selection of a small number of individuals from the population and use that information to draw conclusions about the whole population.
 - a. population - all teenagers
 - b. sample – send out via e-mail a survey to 550 teenagers (can we use this to explain the behavior of all teens? What about the ones do not have internet access?)
- 4. *Random* – people don’t select themselves to participate which means that no one in the population is favored over another individual in the selection process. A non-random sample is bad.
- 5. *Bias* – a systematic favoritism that is present in the data collection process, resulting is lopsided, misleading results. Bias can occur in a number of ways:
 - a. the way the sample is selected – if a person is looking at how much Christmas shopping people do in your community and go out to the mall the day after Thanksgiving and ask shoppers about their plans, then you are favoring those die-hard shoppers who brave the mall on that day.
 - b. the way data are collected – the questions that are asked can often reflect what the researcher is expecting as a result. For example, asking the questions “Aren’t you tired of paying money out of your pocket to educate other people’s children’s besides your own?”
- 6. *Data* – actual measurements that one gets from their study
 - a. Numerical data – are data that have meaning as a measurement, such as a person’s height or weight (also referred to as quantitative data or measurement data)
 - b. Categorical data - represent characteristics such as a person’s gender, opinion, race, or even bellybutton orientation (also referred to as qualitative data)
- 7. *Measures of Central Tendency*
 - a. Mean (average) – also referred to by statisticians as the average, is the most common statistics (3, 3, 4, 5, 7, 8, 8, 8, 12 – Median is 29)
 - b. Median – is the point at which there are an equal number of data points whose value lie above and below the median value or the truly middle of the data set (3, 3, 4, 5, 7 (median), 8, 8, 8, 12)
 - c. Mode – The value or item occurring most frequently in a series of observations or statistical data. (3, 3, 4, 5, 7, 8, 8, 8, 12 – Mode is 8)
- 8. *Measure of Variation*
 - a. It helps to know something about the variation of data – variability are more reliable than high variability [basketball player scores between 10 and 18 points in her first 10 games rather than 5 and 25 points in 10 games]
 - b. Range – gap between the lowest and highest scores

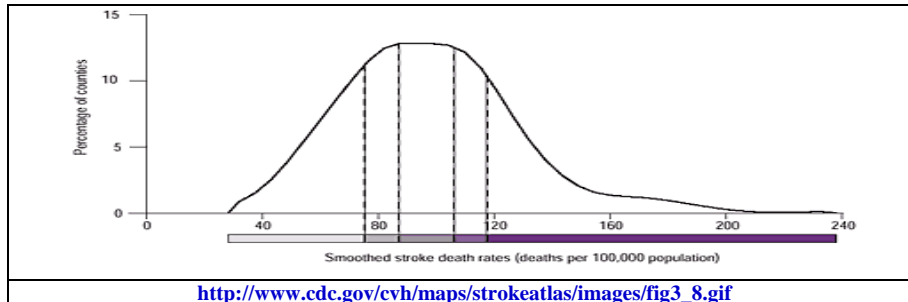
- c. Standard Deviation – is the way to measure the amount of variability (or spread) among the numbers in a set. As the term implies, a standard deviation is a standard (or typical) amount of deviation (or distance) from the average (or mean). So standard deviation is the average distance from the mean.
- d. Percentile – is the percentage of vales in the data set that fall below a certain score. For example, if your score was reported to be in the 90th percentile, which means that 90% of the other people who took the test with you scored lower than you did (and 10% higher than you did).
- e. Normal Distribution (or bell curve) – when numerical data is organized from lowest value to highest and put into a graph to determine the shape or distribution of the data. The most common is the normal distribution in which most the data are centered around the mean and as you move out farther on either side of the mean you find fewer and fewer data points. (mean, median, and mode are all in the center of the curve – that’s what makes it “normal”).



9. Empirical rule for a Normal Curve – For data sets having a normal, bell-shaped distribution, the following properties apply:
- a. About 68% of all values fall within 1 standard deviation of the mean
 - b. About 95% of all values fall within 2 standard deviation of the mean
 - c. About 99.7% of all values fall within 3 standard deviation of the mean.



10. *Skewed Distribution* – when numerical data is organized from lowest value to highest and put into a graph to determine the shape or distribution of the data. A skewed distribution describes a population whose values are not equally distributed about the mean or distribution in which most the data are skewed meaning it looks like a lopsided mound with one long tail
- going to the right (right skewed or positively skewed - put statistically, the mode is lowest, then the median, then the mean is highest, effectively dragged upwards by the few high results with mostly lower scores)
 - going to the left (left skewed or negatively skewed - in a negative skew there are a small number of lower values and mostly higher scores. The tail appears before the peak, and the mean is the smallest, followed by the median and the mode.)



11. *Standard Score* – (also referred to as z-score or z-value) represents the number of standard deviations above or below the mean. For example, Fred took a statewide test in 10th grade and scored a 400. If Fred’s standard score is a +2, good for Fred. If his score is a -2, not so good.
- Calculating a z-score –

$$z = \frac{\text{data point} - \text{mean}}{\text{standard deviation}}$$

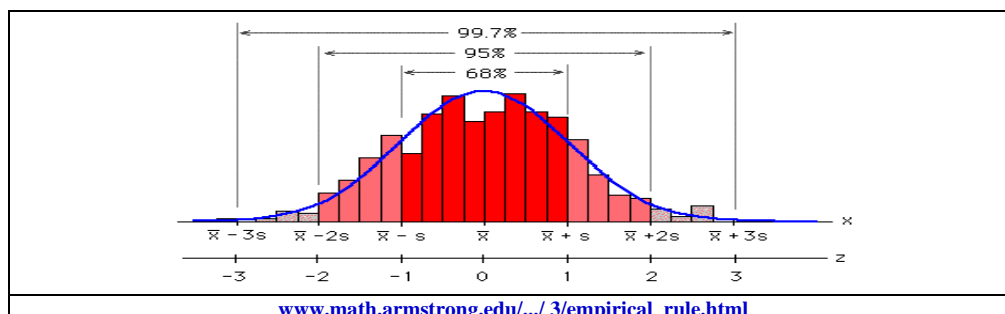
- For example, let’s say you took the GRE a few weeks ago and got scores of 630 Verbal and 700 Quantitative. How good are these scores? Which is better, the Verbal or Quantitative score? Using a z-score can tell you how far you are from the mean and thus how well you performed. If you know the mean and standard deviations for a set of GRE test takers you can compare your scores. ETS publishes the means and standard deviations of a set of test takers on the GRE website.

| | Verbal | Quantitative |
|--------------|--------|--------------|
| Mean | 469 | 591 |
| StDev | 119 | 148 |

- By plugging in your scores you get the following:

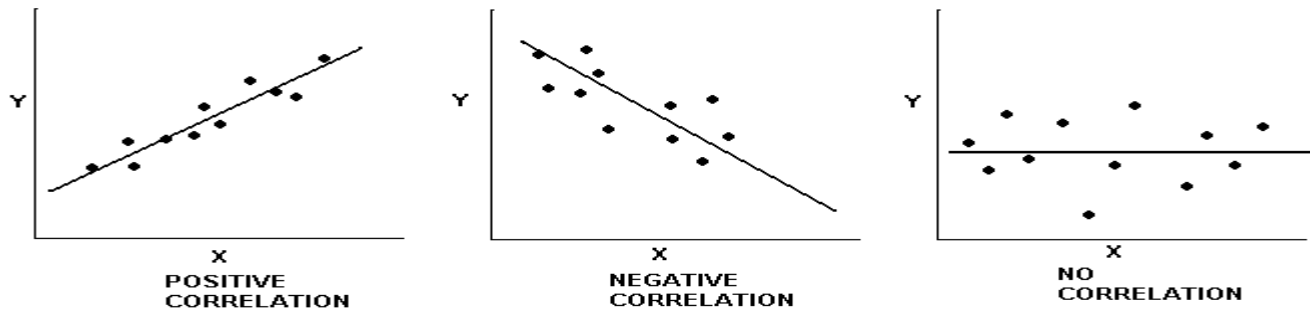
$$\text{Verbal } z = (630 - 469) \div 119 = 1.35$$

$$\text{Quantitative } z = (700 - 591) \div 148 = .736$$



| <i>z-score</i> | <i>Approximate percentile</i> |
|----------------|-------------------------------|
| -2 | 2.5 th |
| -1 | 16 th |
| 0 | 50 th |
| 1 | 84 th |
| 2 | 97.5 th |

12. *Hypothesis Testing* – is a statistical procedure in which data are collected and measured against a claim about a population (ex. if a pizza chain claims to deliver their pizzas within 30 minutes of placing an order, you could test whether this claim is true by collecting a random sample of delivery times over a certain period of time and looking at the mean (or average) delivery time for that sample)
13. *Correlation and Causation* –
- a. statistically significant
 1. for research to be statistically significant, the chance of the variables being related due to chance must be less than 5 percent
 - b. correlation means that two numerical values have some sort of linear relationship
 - c. causation means that a change in *x* will cause a change in *y* to happen
 - d. Correlation coefficient - The correlation coefficient is a number between 0 and 1. If there is no relationship between the predicted values and the actual values the correlation coefficient is 0 or very low (the predicted values are no better than random numbers).
 1. As the strength of the relationship between the predicted values and actual values increases so does the correlation coefficient. A perfect fit gives a coefficient of 1.0. Thus the higher the correlation coefficient the better.
 2. If the slope of the scatter plot (used to plot data points with correlation studies) is positive, there is a positive correlation
 3. If the slope of the scatter plot is negative, there is a negative correlation
 4. If there is no slope, than there is no correlation.



Notes based on information from the following sources:

- Lefton, Lester. *Psychology* - seventh edition. Allyn and Bacon. Boston. 2000
- Myers, David. *Psychology* – seventh edition. Worth Publishing. Michigan. 2004
- Nevid, Jeffery. *Psychology: Concepts and Applications*. Houghton Mifflin Company. Boston. 2003
- Pettijohn, Terry. *Psychology: A ConnecText*. McGraw-Hill. Ohio. 1998.
- Rumsey, Deborah. *Statistics for Dummies*. Wiley Publishing. New Jersey. 2003
- Thomas-Cottingham, Alison. *Psychology: Made Simple*. Philip Leif Group Publishing. New York. 2004