Research Methods in Psychology

One reason that science is necessary in psych is to avoid ***hindsight bias*** – tendency to say that "I knew that all along".

The first step in performing psych research is to ***operationalize*** your variables. You must define your variables in a way that they can be **quantified** and **replicated**.

When researching, make sure that your ***sample*** (the people participating in your research) represents the ***population*** (the group as a whole). This is achieved through ***random sampling*** (each person in the population has an equal chance of being selected) or ***stratified sampling*** (the population is divided into groups, then a random sample is drawn from each group). Unless you use random sampling, your results cannot be **generalized** to the population, and your study may suffer from ***sampling bias (***members of the population do not have an equal chance of selection in the sample).

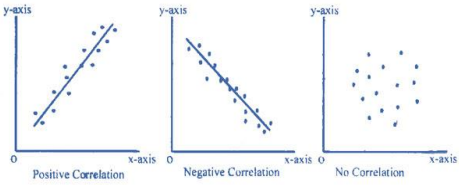
Types of Research Designs

Descriptive

- ***Observational*** (***naturalistic***) ***studies*** assess subjects without interfering in the environment.
- ***Case studies*** provide great detail about a single case or group. Good for rare occurrences.
- ***Surveys*** use questions to obtain information (watch out for ***social desirability***! – giving the response you think the researcher wants).
- ***Longitudinal research*** follows a group of subjects over time with multiple instances of data gathering.
- ***Cross-sectional research*** is data collected from different groups at one point in time.

Allows Prediction

- ***Correlational studies*** examine the relationship between two variables.
- Statistical index is the ***correlation coefficient*** (Pearson's r).



- The closer the dots are to the line, the stronger the relationship.
- ***Spurious correlations*** occur when the relationship between two variables is actually related to a third variable.

Can Infer Causality

- ***Experimentation*** occurs when one variable is manipulated to assess the result on another variable.
- ***Independent variable*** is the variable manipulated by experimenter.
- ***Dependent variable*** is measured. Any variation is caused by manipulation of independent variable.
- ***Subject Variables*** (gender, age race, etc.) cannot be manipulated, but could still affect DV. If subject variables "serve" as the IV, then the research is ***quasi-experimental.***
- It is important to control ***extraneous variables*** which may also affect the dependent variable.
- ***Placebo effect*** occurs when improvement is only due to an expectation that a treatment will work.

Four Components of An Experiment

- Manipulate at least one independent variable.
- At least two groups in the experiment.
- Control extraneous variables.
- ***Random assignment*** – subjects have an equal chance of being put in any experimental group. This controls for **individual differences** of the subjects in the experiment.

Use a ***double-blind study* to combat ***experimenter bias*** and use **deception** to counteract ***demand characteristics***.

TYPES OF VALIDITY

Content Validity	Does the measure adequately measure the concept?
Face Validity	Do "experts" validate that the instrument measures what its name suggests it measures?
Criterion-related Validity	Does the measure differentiate in a manner that helps to predict a criterion variable.
Concurrent Validity	Does the measure differentiate in a manner that helps to predict a criterion variable currently?
Predictive Validity	Does the measure differentiate individuals in as manner as to help predict a future criterion?
Construct Validity	Does the instrument tap the concept as theorized?
Convergent Validity	Do two instruments measuring the concept correlate highly?
Discriminant Validity	Does the measure have a low correlation with a variable that is supposed to be unrelated to this variable?

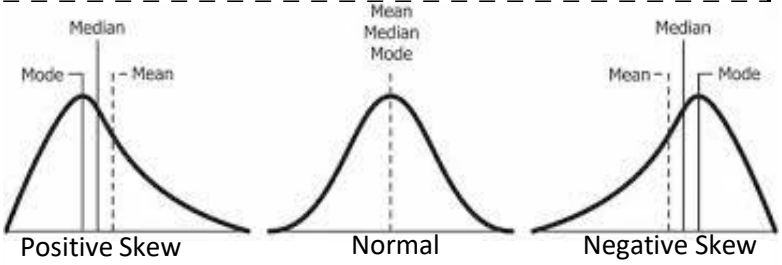
Descriptive Statistics (describes data)

- Measures of ***Central Tendency*** are ***mean***, ***median***, and ***mode***.
- ***Mean*** is most affected by outliers.
- Measures of ***Variability*** are ***range*** and ***standard deviation***.

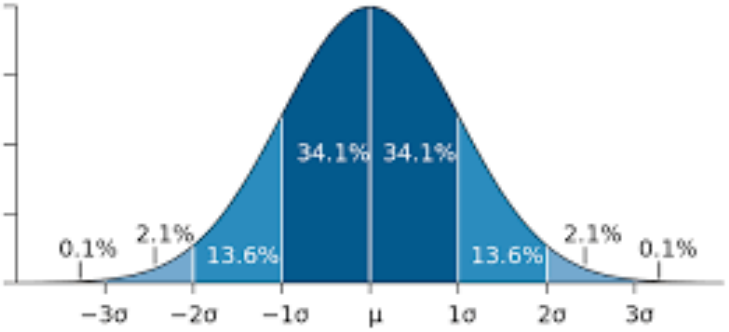
Inferential Statistics

(allows you to see whether your results are due to chance.)

- ***t-test*** statistically compares two means.
- A p value of less than .05, indicates that results are not due to chance.
- p value less than .05 indicates that results are ***generalizable*** *and* ***statistically significant***.



The Normal Curve



Types of Reliability

Test-retest	• A measure produces the same result each time it is assessed. • Usually assessed by Pearson's r (correlation)
Split-half	• Data from one assessment is split into two groups, and those scores are correlated.
Inter-rater	• Extent to which different observers are similar in their judgements.

Factor Analysis

- Statistical procedure that creates clusters of related items.
- Used most often in personality research (that is how the Big Five were identified.
- Based on intercorrelations of items within a questionnaire.

Ethics in Psychological Research

- Informed consent
- Voluntary
- Debriefing, especially when deception is used.
- Confidentiality
- Subjects cannot be harmed or exploited.

Research must be pre-approved by an ***Institutional Review Board*** that evaluates whether proposed studies meet ethical guidelines.