Research methods in Psychology

- The research process entails forming an idea and then testing it.
- Psychological theories attempt to understand how the brain, mind, behavior and environment function and related.
- A theory is an organized set of concepts that explains a phenomenon or a set of phenomenon.
- Core assumption is Determinism i.e. all events, physical, mental or behavioral are determined by specific causes, which lie with in the individual or the person's environment.
- Researchers assume patterns in mental processes and behaviors and theories are about causes that underlie the patterns.

What is a hypothesis

- a tentative testable statement about the relationship between the causes and consequences.
- If-then predictions, specific outcomes from specific conditions.
- Theories are of fundamental importance for generating hypothesis, when a hypothesis is rejected then aspects of the theory need to be revisited.

Scientific method

- It is a general set of procedures for gathering and interpreting evidence in ways that limit sources of errors and give dependable conclusions.
- To minimize subjectivity in the data collection and analysis phases procedural safeguards are kept to increase objectivity.
- Proper and complete records of observations for other researchers to understand and evaluate.
- No Secrecy.
- 2 challenges to objectivity- observer bias & in experiments alternative explanations possible hence need for control.

Observer biases and operational definitions

- An error that occurs due to the personal motives and expectations of the viewer.
- The biases of observers act as filters through which some things are noticed as relevant and significant & others are ignored as not meaningful.
- Experimenters/researchers bring their own prior experiences, commitment to a particular theory.

Remedy

- Rely on standardization and operational definitions.
- Standardization is using uniform consistent procedures in all phases of data collection.
- All features of the test and experiment should be standardized i.e. all participants face exactly the same condition.
- This allows for comparability across different times, places, observers and researchers.

- Meaning of concepts also need to be standardized, hence operational definitions.
- A concept is defined in terms of specific operations or procedures used to measure it or to determine its presence.
- All variables should be operationally defined.
- A variable is any factor that varies in amount or kind.
- Cause and effect relationship- independent and a dependent variable.

- Independent variable researcher manipulates it, is the causal part.
- The effect of change is seen on the dependent variable.
- For causal effect to be correct the value of the dependent will depend on the independent.

Experimental methods

- Psychologists manipulate an independent variable to look for an effect on a dependent variable.
- Strong claims about causality.
- However problems of alternate explanations can be found.
- Eg. Viewing violence on television leads to high levels of aggression.
- Confounding variables can interfere.

- Not introduced by the experimenter, can confuse the interpretations.
- Two types of confounds possible in experiments are:
  - Expectancy effects- the researcher subtle communicates to the participant about which behavior is desirable.
  - Placebo effects- when participant change their behavior in the absence of any kind of experimental manipulation.

Remedy..

- Researchers use control procedures- methods that aim to hold constant all variables & conditions except than the one being studied.
- Instructions, room temperature, tasks, the way responses are recorded etc should be identical for all respondents. Only differences should exist in the independent variable.
- Double blind control for expectancy effects.
- Placebo controls use an experimental condition in which no treatment is administered

Remedy..

- Placebo control using
  - Between subjects design where different groups of participants are randomly assigned to chance procedures to an experimental condition or a control condition.
  - Representative sample from the population.
  - Within-subjects design- each participant is his or her control.
  - The behavior of the participant before getting the treatment is compared with behavior after.

Criticized for

- Experiments occur in artificial environments may result in distorting the behavior. May lose the richness of natural situations.
- Subjects are in an experiment and hence, may react differently.
- For ethical issues some problems can not be studied in a laboratory setting.

Correlational Methods

- Psychologists use the correlational methods when they want to determine to what extent two variables, traits or attributes are related.
- Coefficient of correlation is used to, ranges from +1.0 to -1.0.
- A positive correlation means as one increases the other also increases.
- A negative correlation means as one score increases the other decreases.
- Correlation does not imply causation.

Psychological Measurement

- Major challenge to measure psychological processes.
- Begin by operationally defining the phenomenon being studied, which provides procedures for quantifying the phenomenon, identifying its levels or intensities etc.
- Two ways are used to check the accuracy of a measure- the reliability and the validity.

Accuracy of measures

- Reliability – consistency or dependability of behavioral data resulting from psychological testing.
- A reliable instrument gives comparable scores on repeated usage.
- Validity means that the instrument accurately measures the psychological quality it intended to measure.

Self-report meaures

- Researchers attempt to understand the internal psychological states such as beliefs, attitudes and feelings.
- Self-reports measures are answers either written or spoken to questions about the internal state.
- Includes surveys or questionnaires with a written set of questions and interviews.

Self-report measures

- Questionnaires can be open-ended or fixed alternatives.
- Interviews would be interactive, with the interviewer varying the questions depending on the responses.
- Limited as self-reports cannot be used with those who cannot speak the language.
- Sometimes participants can misunderstand.
- Influenced by social desirability.

Behavioral measures

- Ways to study overt actions and observable and recordable reactions.
- Primary way of studying behavior is observation.
- Used in a planned, precise and systematic manner.
- For direct observations the behavior must be visible and overt.

Behavioral measures

- In naturalistic observations some naturally occurring behavior is viewed by researcher.
- No attempt is made to change or interfere with it.
- Useful in an early investigation of a phenomenon.
- Sometimes observation of small group or single unit as case study.

Ethical issues in Human & Animal research

- Respect for basic rights for human and animals is a fundamental obligation of all researchers.
- IN 1953 APA provided guidelines for ethical standards, most recent revision in 2002.
- Asserts that psychologists do not deceive prospective participants about research that is reasonably expected to cause physical pain or emotional discomfort.

- Review boards in most institutions.
- That require
  - **Informed consent**- participants are given a description of procedures, potential, risks, expected benefits.
    Assured of privacy and confidentiality of responses.
    Sign statements declaring they have been informed about the goals and consent to continue.

- **Risk & gain assessment**- most experiments have low levels of risk.
  - However, if risk of certain emotional reactions or stress, or psychologically disturbance is involved.
  - Then the review boards examine the precautions and weigh the benefits of the research.

- **Intentional deception**- some researches require deception as telling the objectives may bias the results.
  - The guidelines provide that adequate justification of the importance be provided for the deception.
  - Researchers must demonstrate that no effective procedures excluding deception are available .
  - At the end of the research the deception must be explained and if the person must have the opportunity to withdraw if they feel.

- **Debriefing** should be given in the end of the research so as to ensure that no one leaves feeling confused, upset or embarrassed.
- Issues in animal research- while animal research has contributed a lot however objections of animal rights activists.
  - Better conditions in animal facilities.
  - Attempts to have minimally manipulative research on animals, more observational.