# INDIRA GANDHI NATIONAL OPEN UNIVERSITY

**Assignment Submission for Term-End Exam** DECEMBER (2022)

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5. **Course Title** RESEARCH MEATHODS IN PSYCHOLOGY
6. **Course Code** MPC-005
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**RESEARCH METHODS**

**TUTOR MARKED ASSIGNMENT (TMA)**

**Course Code: MPC 005**

**Assignment Code: MPC 005/ASST/TMA/2021-22**

**Marks: 100**

**NOTE: All Questions Are Compulsory**

**Section A**

**Answer the following question in about 1000 words each:** **Marks 15x3=45**

1. Discuss the nature, types and steps of case study. Describe the criteria and misconceptions of case studies.

2. Explain the method, steps, relevance and implications of grounded theory. Describe the types of coding in grounded theory.

3. Elaborate the assumptions, approaches, steps, issues and implications of discourse analysis.

**Section B**

**Answer the following questions in about 400 words each:** **Marks 5x5=25**

4. Explain the methods of estimating reliability.

5. Explain the different types of variables.

6. Discuss the various types of validity.

7. Describe the importance and types of hypotheses.

8. Discuss the types, advantages and limitations of factorial research design.

**Section C**

**Answer the following in about 50 words each:** **Marks 10x3=30**

9. Content of research report.
10. Objectivity safeguards in research process.
11. Types of constructs.
12. Quota sampling.
13. Advantages and disadvantages of survey research.
14. Differences between Ex-post Facto and Experimental research.
15. Criteria for a good research design.
16. Quasi-experimental research design.
17. Advantages of correlational research design .
18. Ethnography.

MPG- 005

# RESEARCH MEATHODS

# SECTION - B

**Q4. Explain the methods of estimating reliability?**

**Ans** Reliability refers to whether research methods can reproduce the same results multiple times. If your research method can produce consistent results, then the method are likely reliable & not influenced by external factors.

* There are basically 2 methods of estimating the reliability:
(1) External Consistency Procedure
(2) Internal Consistency Procedure

## (1) External Consistency Procedure

This method basically compares the finding from two independent process of data collection with each other in order to verify the reliability of measures.
There are generally two methods which lie under external consistency:-

### (a) Test - Re test Reliability

- This method involves giving a group of subject the same test more than once over the set period of time.
- The time gap that is given between the measure is of critical value, the more the gap, lesser the correlational value & vice-versa.
- There are three limitations of this approach:-

→ Memory effect / carry over effect :- where, if a same test is provided to the subject twice after first attempt the subject will know what is the question & answer for the same which leads to artificial reliability coefficient.

→ Practice effect : As practice makes a man perfect, this hinder the test scores.

→ Absence → People are not available for re-test.

(b) Parallel form Reliability

- Researcher gives the same group of people multiple different types of test to determine if the results stay the same when using different research method.
- The Pearson product moment correlation coefficient is used to estimate of reliability.
- Unfortunately psychologist do not always have two forms of test that's why this method is practiced less.

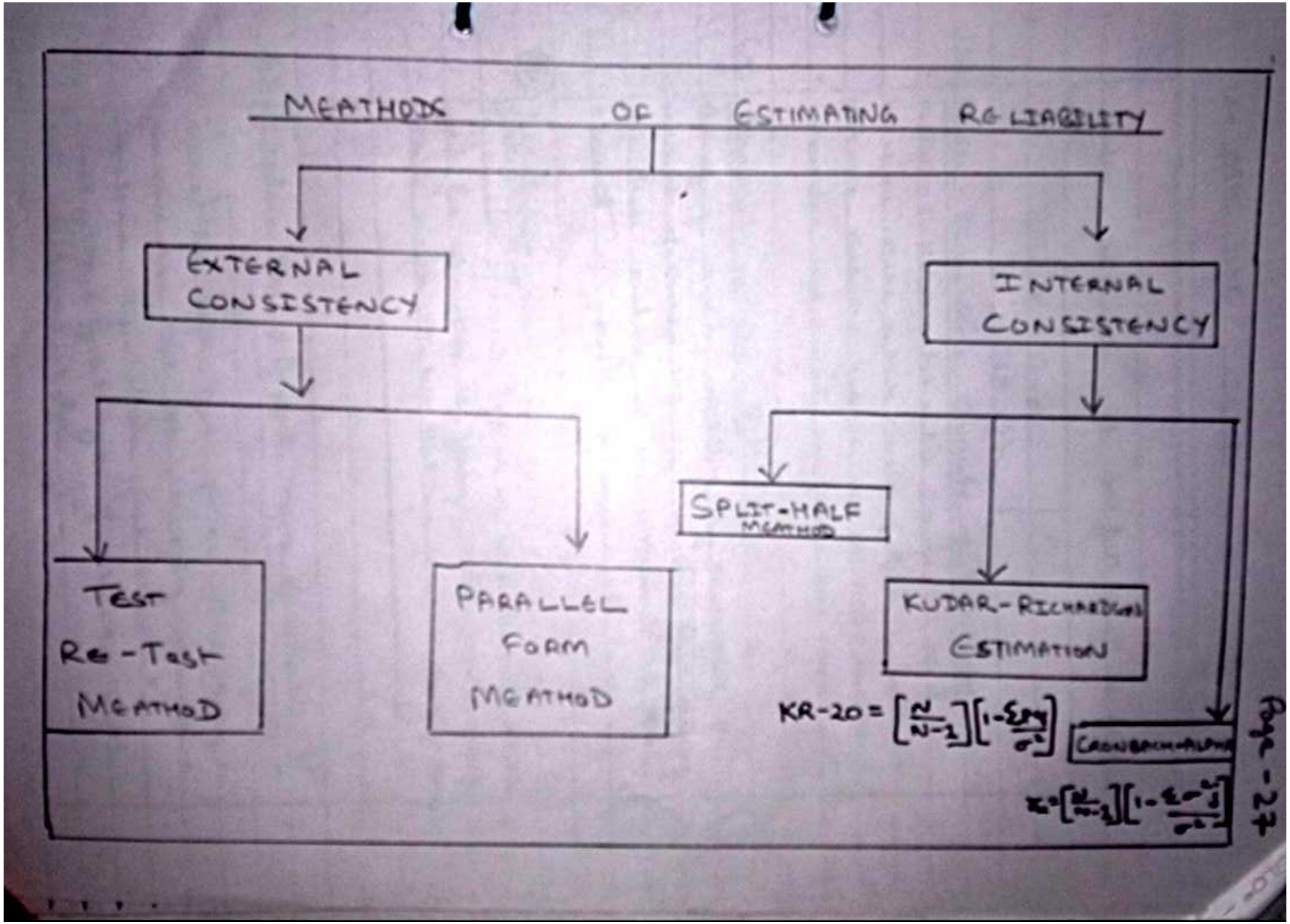
(2) Internal Consistency Procedure

It states that items performing same phenomena should produce similar results.

There are some methods used which are as follows

(a) Split half Reliability

- In this method a test for a single knowledge area is split into two parts and then both test given to the same group of subject at same time.
- Spearman - Brown formula can be used, enabling


METHODS OF ESTIMATING RELIABILITY
EXTERNAL CONSISTENCY
INTERNAL CONSISTENCY
TEST RE-TEST METHOD
PARALLEL FORM METHOD
SPLIT-HALF METHOD
KUDAR-RICHARDSON ESTIMATION
KR-20 = [N/(N-1)][1-Σpq/σ²t]
CRONBACH ALPHA
α = [N/(N-1)][1-Σσ²i/σ²t]
Page - 24

correlation as if each part were full length as given below

$$r = \frac{2r_{hh}}{1 + r_{hh}}$$

(b) Kudar - Richardson Estimate of Reliability

- Kudar - Richardson Formulae 20 or KR-20 is a measure where a test consist of question with two probable answers yes or no, or right or wrong.
- Formulae mentioned in figure ~~bef~~ above.

(c) Cronbach's Alpha ($\alpha$)

A way of assessing reliability by comparing the amount of shared variance, or covariance among the items making up an instrument to the amount of overall variance.

◎ Conclusion

To conduct research it becomes vital that the method used for estimation is giving accurate results mostly reliable results. To test that we can use above methods

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Q5 Explain the different types of variables?

Ans Variables refers to a person, place, thing or phenomenon that you are trying to measure in some way within your research.
There are different types of variables which are mentioned below :-

## (1) Stimulus, Organism & Response Variable

- In order to explain behaviour many psychologist have adopted a theoretical viewpoint of S-OR model
- S is the symbol of stimulus which can change the current form of variable. It can be some form of environmental energy, such as light to which organism is sensitive.
- Organism is represented with "O" which refers to internal forces that can influence organism behaviour.
- Response is represented with "R" which is an action to stimulus. For example pressing lever, moving away from fire etc.

## (2) Independent & Dependent Variable

- Independent variable is a variable in which manipulation is done intentionally in order to change ~~the~~ or check the effect on dependent variable.
- Dependent variable relies on and can be changed by other factors or variable like independent variable.
- Many researchers have devided independent variable into two parts as TYPE E which is experimentally manipulated and TYPE S, manipulated through selection of samples.

## (3) Extraneous And Confounded Variable

- Extraneous variables are factors that affect the dependent variable but that the researcher did not originally consider when designing the experiment.
- A confounding variable is one a researcher did not account for that can disguise another variable effect. Confounding variable can invalidate





experiment result by making it biased or suggesting a relationship between variables exist when it does not.

## 4. Active & Attribute Variable

- Any variable which can be manipulated is known as active variable.
- Non variable that cannot be manipulated is known as inactive variable. Organizations, institutions, group, populations and geographical areas have attributes.

## 5. Quantitative & Categorical Variables

- Quantitative variables are any data set that involves numbers and amounts. Researcher have further categorised it into discrete variable which is countable and continuous variable that cannot be counted.
- Categorical variable refers to qualitative variables that are non-numerical values or grouping.
- When a variable has only one value, it is Constant variable
- When variable has two categories, it is dichotomous variable
- When variables has more than two categories, it is polytomous variable.

## 6. Continuous Variable & Discrete Variable

- Continuous variables are the one which is capable of being measured in any arbitary degree of fineness or exactness. For example, height, age, reaction time etc.
- Whereas, discrete variables are those which contains clear gap within them which makes them unable to be measured in any arbitary degree of fineness. For example no of books, people, etc.

## Conclusion

Many types of variable exist and one must choose the correct variable to measure when designing studies, selecting test and interpreting the results.

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Q6 Discuss the various types of Validity ?

Ans Validity of research study refers to how well the results among the study participants represent true findings among similar individuals outside the study

* There are different types of validity :-

### (1) Content Validity

- When test has content validity, the items on the test represent the entire range of possible items the test should cover. Individual test questions may be drawn from a large pool of items that cover a broad range of topics.
- It is a non-statistical type of validity with involvement of assessment of content of the test

### (2) Criterion Related Validity

It involves the correlation between the test & criterion variable taken as representative of construct. Test demonstrate effective predicting criterion or indicator of construct.

- It is basically of two types :-





(a) Concurrent Validity

If the test data & criterion data are collected at the same time, this is referred as Concurrent validity evidence. If the new test is validated by a comparison with a currently existing criterion, we have concurrent validity.

(b) Predictive Validity

It indicates the extent to which an individual future level on criterion is predicted from prior test performance.

### (3) Construct Validity

It concerns the extent to which your test or measure accurately assesses what it's supposed to. It's important to operationalize construct into concrete and measurable characteristics based on your idea of construct & its dimensions.

The two types of construct validity :-

(a) Convergent Validity

The extend to which your measure corresponds to measures of related constructs.

(b) Discriminant Validity

The extend to which your measure is unrelated or negatively related to measure of distinct construct.

### (4) Face Validity

- The content of measure appears to reflect the construct being measured. It is one of the most basic measure of validity.
- Essentially, researchers are simply taking the

validity of test at face value by looking at whether it appears to measure the target variable

## (5) Internal Validity

It is the extend to which a study established a trustworthy cause - and effect relationship between a treatment & an outcome.

- The effect of an independent variable upon the dependent one is observed under highly controlled conditions make possible higher degree of internal validity.
- There are certain threats like :- the relation between variables is not clear is called confounding. Selection bias is also one of the threat.

## (6) External Validity

External validity refers to how well the outcome of a study can be expected to apply to other settings. In other words, this type of validity refers to how generalizable the finding are.

- There are some of the threats like pre test effect and pre-test effect as well as rosenthal effects are common.

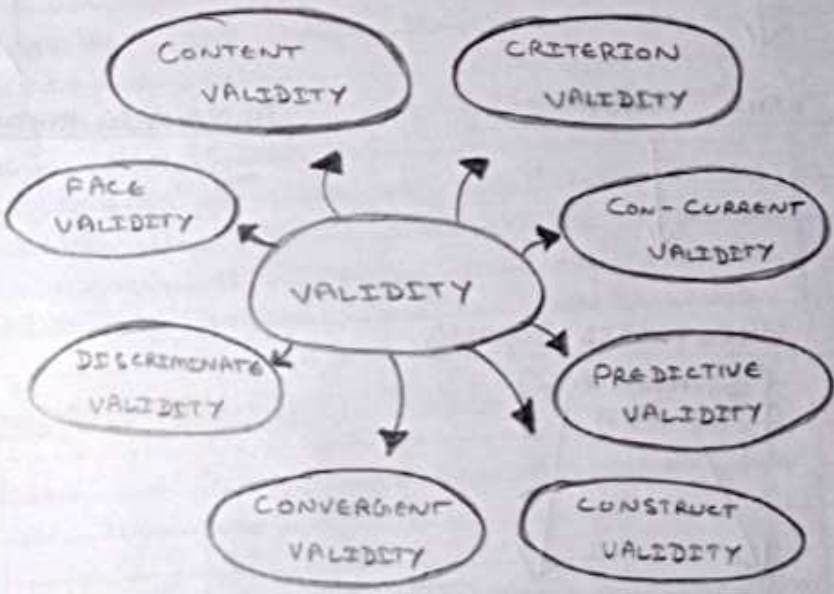
## Conclusion

Validity is often a more significant concern in psychology and the social sciences, where researcher measure intangible constructs such as self-esteem & positive outlook.





TYPES OF VALIDITY



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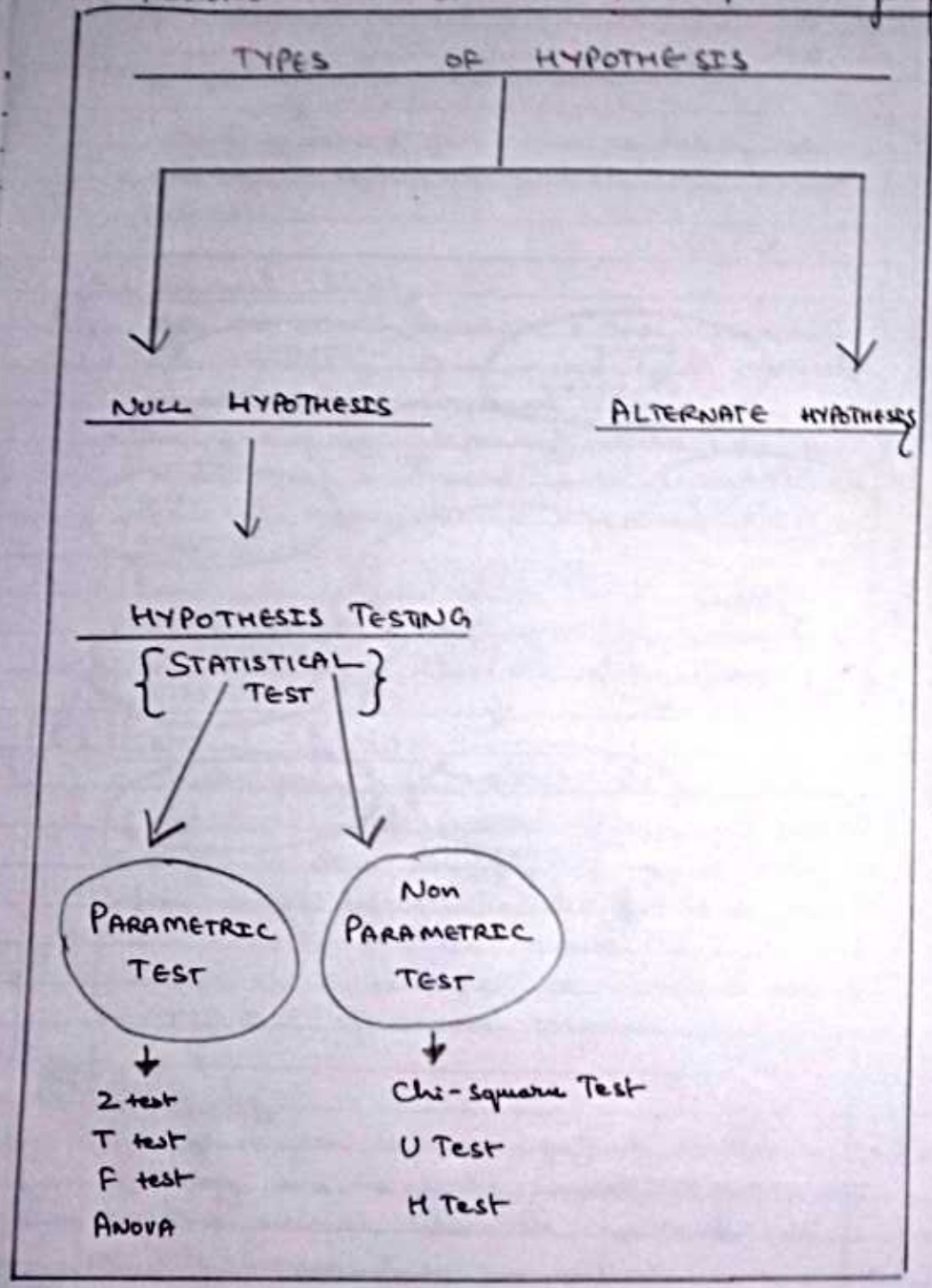


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Q7 Describe the importance and types of hypothesis ?

Ans Hypothesis are tentative explanation & potential answer to a problem. Hypothesis gives the direction and helps the researcher interpret data.

- It explains what is going to happen further & how the investigation will go through.
- It consist of variables, a population & the relationship between the variable. Hypothesis in research is a theory used to test the relationship between two or more variable.

## * Importance of hypothesis

There are many importance of hypothesis which are listed below :-

① Hypothesis facilitates observation and experimentation whereas, it serves as investigation's starting point.

② The hypothesis aids in the verification of the observation & aids in steering inquiries in the right direction.

③ Hypothesis enables the researchers to objectively investigate new areas of discovery. Thus, it provide a powerful tool for advancement of knowledge. It provides objectivity to the

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research activity.

* Types of Hypothesis Testing

- There are two major types of hypothesis

(1) Null Hypothesis ($H_0$)

The null hypothesis (denoted by $H_0$) is a statement that the value of a population parameter (such as proportion, mean or standard deviation) is equal to some claimed value.

- Must contain condition of equality $=, \geq$ or $\leq$
- We test null hypothesis directly.
- Either reject $H_0$ or fail to reject $H_0$.

(2) Alternative Hypothesis ($H_1$)

The alternative hypothesis (denoted by $H_1$ or $H_a$ or ⊮ $H_a$) is the statement that the parameter has a value that somehow differs from the null hypothesis.

- The symbol form of the alternative hypothesis must use one of these symbol: $\neq, <, >$
- It must be true if $H_0$ is false
- It is opposite of null hypothesis

The alternative hypothesis is stated as :-

$H_1 : M_x > M_y$ or $M_x < M_y$

$H_1$ → Alternate hypothesis

$M_x$ → Mean of 1st group in research

$M_y$ → Mean of 2nd group in research.

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◎ Conclusion

Hypothesis plays an important role in giving a proper direction to any research which makes it an integral part to be studied before performing any research.

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Q8 Discuss the types, advantages & limitations of factorial research design ?

Ans An experiment whose design consist of two or more factors, each with discrete possible values or "levels" and whose experimental units take on all possible combination of these levels across all such factors.

- It allows experiments to have more than one independent variable.
- The factorial experiment is a powerful weapon for investigating responses affected by many single.

* There are three main types of factorial research design which are as follows :-

(1) Within Subject Factorial Design

In this factorial design all of the independent variable are manipulated within subject.

◎ In the experiment of Craddon & Baddley In this experiment the purpose was to study the effect of [illegible] the context of memory. They hypothesised that memory should be better

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when the condition of test are similar to conditions experienced during learning.

⊙ The layout of within subject factorial design is presented below :-

Table :- Within subject factorial design learning Place

| Testing Place B | Onland $A_1$ | Under Sea $A_2$ |
|---|---|---|
| $B_1$ | $S_1$ $S_2$ $S_3$ $S_4$ $S_5$ $S_6$ | $S_1$ $S_2$ $S_3$ $S_4$ $S_5$ $S_6$ |
| $B_2$ | $S_1$ $S_2$ $S_3$ $S_4$ $S_5$ $S_6$ | $S_1$ $S_2$ $S_3$ $S_4$ $S_5$ $S_6$ |

## (2) Between Subject Factorial Design

In the Between subject factorial design the subject are assigned to different condition & each subject only experience one of the experimental condition.

⊙ Example 2x2 design :- Where group of six experience each condition, requiring 24 subject to get six response to each of four condition

Table : Factor A

| Factor B | $A_1$ | $A_2$ |
|---|---|---|
| $B_1$ | $S_1$ $S_2$ $S_3$ $S_4$ $S_5$ $S_6$ | $S_{13}$ $S_{14}$ $S_{15}$ $S_{16}$ $S_{17}$ $S_{18}$ |
| $B_2$ | $S_7$ $S_8$ $S_9$ $S_{10}$ $S_{11}$ $S_{12}$ | $S_{19}$ $S_{20}$ $S_{21}$ $S_{22}$ $S_{23}$ $S_{24}$ |





## (3) Mixed Factorial Design

This design is mostly used in the study of psychology. It is named the "Mixed factorial design" because it has at least one within Subject- variable & one Between Subject Variable.

- Two independent variables are used as variable A and B. Subject either experience B1, once with A1 and also with $A_2$ and they experience $B_2$ once with A1 & also with $A_2$

| Between Subject Variable A | within Subject Variable $B_1$ | $B_2$ | $B_3$ | $B_4$ |
|---|---|---|---|---|
| $A_1$ | $S_1$ $S_2$ $S_3$ $S_4$ $S_5$ | $S_1$ $S_2$ $S_3$ $S_4$ $S_5$ | $S_1$ $S_2$ $S_3$ $S_4$ $S_5$ | $S_1$ $S_2$ $S_3$ $S_4$ $S_5$ |
| $A_2$ | $S_6$ $S_7$ $S_8$ $S_9$ $S_{10}$ | $S_6$ $S_7$ $S_8$ $S_9$ $S_{10}$ | $S_6$ $S_7$ $S_8$ $S_9$ $S_{10}$ | $S_6$ $S_7$ $S_8$ $S_9$ $S_{10}$ |

⊙ Advantages

- Factorial experiments give the opportunity to an experiment to combine the effect of more than one factor at a time.
- Factorial experiments are not only time saving but also to some extent cost saving also.
- Factorial design is more precise than single factor design.
- These design are more comprehensive and can be generalised to a wider range.

◉ Limitations

The main disadvantage is the difficulty of experimenting with more than two factors, or many levels. A factorial design has to be planned meticulously, or an error in one of the levels or in the general operationalization will create an faltycurvy results.

- The number of treatments combination become large which makes it difficult for experimenter to select homogeneous group in research.

◉ Conclusion

In conclusion, the factorial design is a mainstay of many scientific disciplines, delivering great results in the feild.



## SECTION - C

Q9. Content of Research Project Report

Ans Research report are detailed and accurate account of the conduct of disciplined studies accomplished to solve problems & reveal new knowledge. The content of research project

- Includes :- Statement of problem — CHAPTER I
- Purpose of study, Hypothesis — CHAPTER I
- Significance of study — CHAPTER I
- Delimitation & Limitation — CHAPTER I
- → Review related literature — CHAPTER II
- Sample Size — CHAPTER III
- Selection of Variable — CHAPTER III
- Test Administration — CHAPTER III
- Statistical Analysis — CHAPTER III
- ◇ Summary, conclusion (finding) — CHAPTER IV & V
- ◉ Bibliography.

Q10 Objectivity Safeguards In Research Process

Ans Objectivity in a research is very important in order to get accurate & unbiased results that consist Scientific claims, methods & results. This consist of 4 methods :-

- Procedural Safeguard :- It helps in increasing objectivity by keeping complete records of observation & data collection.
- Standardisation :- Using uniform, standardised & consistent procedures in all phase of data collection

◉ **Limitations**

The main disadvantage is the difficulty of experimenting with more than two factors, or many levels. A factorial design has to be planned meticulously, as an error in one of the levels or in the general operationalization will create unfortunate results.

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- Procedural Safeguard :- It helps in increasing objectivity by keeping complete records of observation & data collection.
- Standardisation :- Using uniform, standardised & consistent procedures in all phase of data collection.
- Operationalisation :- Which concepts in terms of

how it is measured & what operations produce it.
- Avoiding of bias :- Data should be protected from external influences, human expectations etc.

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Q 11 Types of Constructs

Construct or concept refers to describable regularity of real or imagined events or object & consist of set of features connected by some rules. There are two basic types of construct :-

→ Intervening Variable

An intervening variable is a hypothetical variable used to explain casual link between other variables. Intervening variables cannot be measured

→ Hypothetical Construct

It is a part of research employed to describe something real. It is an explanatory variable which is not directly observed.

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Q 12. Quota Sampling

Ans • Quota Sampling method is a non probability sampling & it can be defined as a sampling method of gathering representative data from a group. Application of quota sampling ensures that sample group represents certain characteristic of population ~~student~~ chosen by researcher.

Adv • It is less time consuming method.

Disadv - Great potential for researcher bias.



- Quota Sampling is being subdivided into two parts as controlled & uncontrolled quotas sampling.

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Q 13. Advantages & Disadvantages of Survey Research

Ans Advantages of Survey Research :-

(1) It is convinient, less time taking & economical for the researchers.

(2) Surveys provide a high level of general capacity in representing a large population.

(3) Researchers get full chance to well organise & present the nature of the study to get honest answer from the researchers

→ Disadvantages of Survey Research :-

(1) In surveys respondent may not feel encouraged to provide accurate, honest answers.

(2) Surveys with closed-ended questions may show a lower validity rate than other questions.

(3) High attrition rate of respondent can hinder longitudinal based studies.

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Q14 Difference between Ex-post facto & Experimental Research

Ans

| | Ex-post facto Research | Experimental Research |
|---|---|---|
| ① | In this research design we cannot manipulate the independent variable | We can directly manipulate the independent variable to see effect on dependent variable |

| Principle of Randomisation | |
|---|---|
| (2) The researcher cannot use the principle of randomisation or they do not have direct control over cause | The researcher can use principle of randomisation as they have direct control over the cause |
| (3) Manipulation of Variables | |
| It is difficult to interpret on infer relationship b/w the independent & dependent variable. | It is easier to interpret the relationship between independent & dependent variable. |

Q15 Criteria for a good research design

Ans A good research design should be appropriate when it provide the opportunity as per the various aspect of research problem.
Whereas other criteria should be :-

- Purpose of the research design should be clearly defined
- Planning becomes an important part in order to direct the research & generate results to maintain objectivity.
- Validity & reliability should be examined carefully for the data.





Q16 Quasi - Experimental Research Design

Ans Quasi - Experimental research design is defined as research that appears to be experimental but is not. Individuals are not randomly allocated to conditions or order of conditions even though the regression analysis is changed.

- Advantage → It can mimic an experimental and provide a high level of evidence without randomisation.
- Disadvantage → Degree of control is less as the presence of uncontrolled & confounded variable reduce internal validity.

Q17 Advantages of correlational Research Design?

Ans This research is conducted in order to assess the relationship among two or more variables.

* The other advantages / benefits would be as follows

- Correlation coefficient can produce for the degree and direction of relationships.
- It uses very realistic measurements of behaviours and its possible causes as well.
- Does not involve repeated administration of a behavioural measure thus helps in avoiding pre test sensitization.
- Research studies variables as they exist naturally.

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## Q18 Ethnography

Ans Ethnography refers to qualitative research procedures for describing, analyzing and interpreting a culture-sharing group's shared patterns of behaviour, beliefs and language that develop over time.

- Characteristics
  - Research reflexivity
  - Group context & setting
  - Data collection through fieldwork
  - Helps in cross cultural analysis

### TYPES OF ETHNOGRAPHIC RESEARCH

| Macro Ethnography | Micro Ethnography | Emic Perspective | Etic Perspective |
|---|---|---|---|
| Study of broadly defined cultural grouping. | More specific cultural grouping | Response of ingroup | Response of outgroup |

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