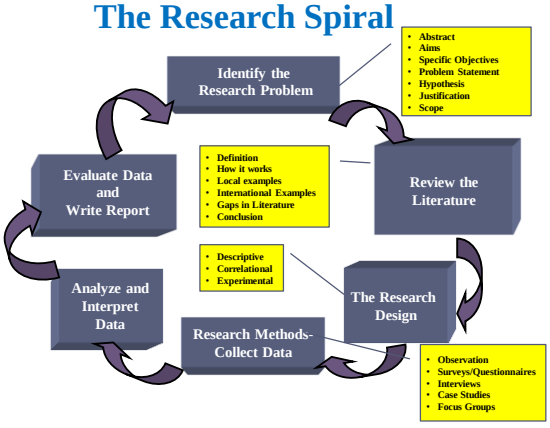
Phase 3: Research Designs and Research Methods

The Research Spiral



What is the difference between Research Design and Research Method?

- ***Research design*** is **a plan to answer your research question.**
- A ***research method*** is a procedure used to implement that plan.
- Research design and methods are different but closely related, because good research design ensures that the data you obtain will help you answer your research question more effectively.

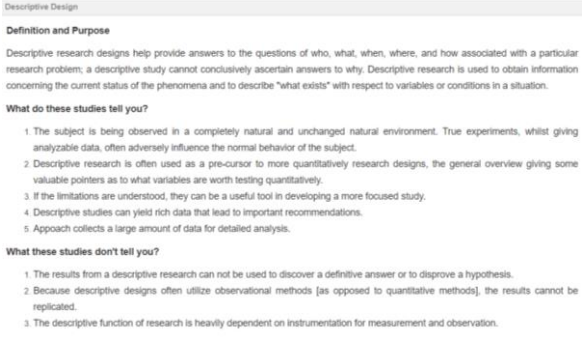
RESEARCH DESIGN VS.RESEARCH METHOD

	RESEARCH DESIGN	RESEARCH METHOD
Function	Is the overall structure of the research.	Are the procedures that will be used to collect and analyze data.
Focus	Focuses on ***what type of study is planned*** and ***what kind of results are expected*** from the research.	Focus on ***what type of methods are more suitable to collect and analyze*** the evidence we need.
Base	Is based on the research question or problem.	Depends on the research design.

Types of Research Designs

- Research design is the overall plan or structure of the research project. ***It indicates what type of study is planned*** and what kind of results are expected from this project.
- It specifically focuses on the final results of the research. It is almost impossible to proceed with a research project without a proper research design.
- The main function of a research design is to make sure that the information gathered throughout the research answers the initial question unambiguously. In other words, the final outcomes and conclusions of the research must correspond with the research problems chosen at the beginning of the research.
- A research design can be,

1. ***Descriptive*** (case study, survey, naturalistic observation, etc.)
2. ***Correlational*** (case-control study, observational study, etc.)
3. ***Experimental*** (experiments)



Descriptive Design

Definition and Purpose

Descriptive research designs help provide answers to the questions of who, what, when, where, and how associated with a particular research problem; a descriptive study cannot conclusively ascertain answers to why. Descriptive research is used to obtain information concerning the current status of the phenomena and to describe "what exists" with respect to variables or conditions in a situation.

What do these studies tell you?

1. The subject is being observed in a completely natural and unchanged natural environment. True experiments, whilst giving analyzable data, often adversely influence the normal behavior of the subject.
2. Descriptive research is often used as a pre-cursor to more quantitatively research designs, the general overview giving some valuable pointers as to what variables are worth testing quantitatively.
3. If the limitations are understood, they can be a useful tool in developing a more focused study.
4. Descriptive studies can yield rich data that lead to important recommendations.
5. Appoach collects a large amount of data for detailed analysis.

What these studies don't tell you?

1. The results from a descriptive research can not be used to discover a definitive answer or to disprove a hypothesis.
2. Because descriptive designs often utilize observational methods [as opposed to quantitative methods], the results cannot be replicated.
3. The descriptive function of research is heavily dependent on instrumentation for measurement and observation.

Which research method should I choose?

- It depends on your research goal. It depends on what subjects (and who) you want to study. Let's say you are interested in studying what makes people happy. To answer this question, you need to make a decision about how to collect your data.
- Most frequently used research methods include:

1. Observations.
2. Questionnaires.
3. Interviews.
4. Lab/ Field Experiments.
5. Case Studies.
6. Correlation studies.
7. Pilot Study.
8. Content Analysis.

TRIANGULATION

- Triangulation means ***using more than one method to collect data on the same topic***. *E.g. using questionnaires and interviews to collect data for the same research topic.*
- The ***main purpose*** of triangulation in educational and social science research ***is to increase the credibility and validity of the results.***
- However, the purpose of triangulation is not necessarily to cross-validate data but rather to capture different dimensions of the same phenomenon.

TYPES OF TRIANGULATION

- **Data triangulation:** Involves the use of different data, which could mean using data collected from different sources; E.g. **two different universities** or a single university at two different times.
- **Investigator triangulation:** Involves using different people as researchers; for example, the **use of two or three observers**, which increases the conformability and credibility of conclusions made in analysing the data.
- **Methodological triangulation:** Involves using different methods to research a single topic. E.g. a researcher might choose to **send a questionnaire** into a company **and conduct interviews** afterwards.
- **Theoretical Triangulation:** Involves using **different theoretical approaches** to address a single situation. This is advantageous in that it requires the researcher to look at the data analysis from different viewpoints.
- **Multiple triangulation: Combines the four basic** types of triangulation.
- **Credibility/Trustworthiness:** An estimate whether research findings are **believable or true**. It **can be increased** if research subjects accept the findings and through **reflexivity and triangulation.**
- **Reflexivity :**Refers to the researcher's **need to constantly be aware of how and why they are conducting the research**, and to recognize at what points their own beliefs and opinions about the topic under investigation might have influenced data collection of analysis.

Example of a research study using triangulation

- A study was undertaken to explore the quality of care for patients in a unique model of primary healthcare in Ontario, Canada: the Nurse Practitioner-Led Clinic (NPLC).
- The focus of the study was on the care of patients with diabetes and at least one additional chronic condition, with the assumption that this group of patients represents those with the most complex clinical presentations managed in family practice settings.
- A **multiple case study design** was chosen for this research because with this approach, analysis of a variety of data arising from several NPLCs allowed for assumptions to be made about the model as a whole.
- Additionally, **both qualitative and quantitative research methods** were used in the study.
- Mixing methods is a form of triangulation in research seen as alleviating the weaknesses found in single methods.

1. **The first research method was a chart audit**, conducted on randomly selected charts of adult patients in five NPLCs who had diabetes and at least one additional chronic condition. The variables included demographic items as well as clinical data related to the care of patients with diabetes. The data were analysed to determine the completeness of the care of diabetes for the subjects.[2]
2. **The second research method was interviews** with nurse practitioners (NPs) working at the five NPLCs to determine their perceptions of the quality of care delivered in the NPLC model for patients with diabetes and other chronic conditions. Data from the interviews were analysed using the processes related to an integrative description design

What is…..? Write your answers in the zoom chat….

1.) What is triangulation?

A. Cross-checking research results by using different research strategies
B. Using two quantitative and two qualitative research methods
C. Asking three different control groups the same questions in an experiment
D. Proving that every theory is based on three different angles

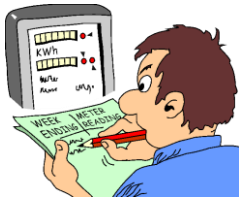
2.) Comparing *data that comes from different methods* (qualitative and quantitative) is what kind of triangulation?_____

3.) Looking at *data using different theoretical perspectives* is what kind of triangulation? _____

4.) Comparing *data from different participants and sources* is what kind of triangulation? _____

5.) What kind of triangulation involves *the use of several observers, interviewers, researchers* to compare and check data collection and interpretation? _____

DATA COLLECTION

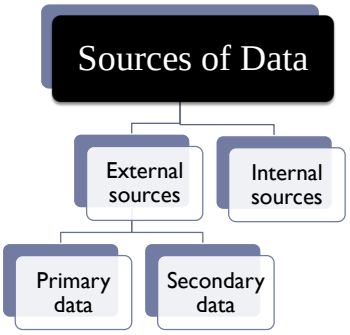


Introduction

- Data can be define as the ***quantitative or qualitative*** value of a variable (e.g. number, images, words, figures, facts or ideas).
- It is a lowest unit of information from which other measurements and analysis can be done.
- Data is one of the most important and vital aspect of any research study.

Factors to be Considered Before Collection of Data

- Object and scope of the enquiry.
- Sources of information.
- Quantitative expression.
- Techniques of data collection.
- Unit of collection.



Internal & External Sources of Data

External sources of data
- When information is collected from outside agencies is called external sources of data.
- Such data is either **primary** or **secondary**.
- This type of information can be collected by census or sampling method by conducting survey.

Internal sources of Data
- Many institutions and departments have information about their regular functions,for their own internal purposes.
- When this information is used in any survey is called internal sources of data.

Primary Data

- Data that has **been collected from first-hand** experiences is known as primary data.
- It has **more reliable, authentic** and not been published anywhere.
- Primary data has not been changed or altered by human being, therefore its validity is greater than secondary data.

Collection of Primary Data

- There are several methods of collecting primary data. These are:-
  1. Observations.
  2. Questionnaires.
  3. Interviews.
  4. Lab/ Field Experiments
  5. Case Studies.
  6. Correlation studies
  7. Pilot Study
  8. Content Analysis

1.) Observation as a research method..

- A good researcher is first a good observer. In order to make good observations, you must pay attention to details and use your five senses.
- In research , we pay very close attention to what we can **see, hear, or touch, or smell.** ***Tasting doesn't always translate into good research practice… why???***
- **Observation** is defined as **using** one or more of **the five senses** to gather information, and may include the use of equipment.
- Observations themselves are just facts.

…cont'…Observations

- Observations may be **qualitative** or **quantitative**.
- **Qualitative** observations are those that **describe qualities**, properties or characteristics of objects or phenomena. Color, texture, smells, sounds are all examples of qualitative observations.
- **Quantitative** observations are those that can be **measured** in numbers. Mass, volume, speed, temperature are a few examples. Tools are often used to make quantitative observations

Inferences

- Inferences, are **how we interpret the observations** we make. Observations themselves are just facts.
- Inferences **take those facts and try to make sense of them** by applying our past experiences or prior knowledge.
- You use your thinking ability in order to make inferences instead of senses. We are so good at this that sometimes we confuse the two.

Inferences

- Observation:
  - The grass on the school's front lawn is wet.
- Possible inferences:
  - It rained.
  - The sprinkler was on.
  - There is dew on the grass in the morning.
  - A dog urinated on the grass!
- All of these inferences could possibly explain why the grass is wet. They are based on prior experiences.

Inferences

- Observation:
  - The school fire alarm is going off.
- Possible Inferences:
  - The school is on fire.
  - We are having a fire drill.
  - A student pulled the fire alarm.

Everyday Examples of Inferences

- You might not realize how often you derive conclusions from indications in your everyday life. These inferences help you make decisions about things like what you'll say or how you'll act in a given situation.

1. Sally arrives at home at 4:30 and knows that her mother does not get off of work until 5. Sally also sees that the lights are off in their house.

   Sally can infer that her mother is not yet home.

2. When the phone rang and Liz picked it up, she was all smiles.

   It can be inferred that she was pleased to receive the phone call.

Predictions

- A **prediction** is defined as the ***use of knowledge to identify and explain observations***, or changes, in advance.
- Predictions can be made from inferences.
- A PREDICTION **may or may not happen**, but it should be logical. Key word is **"WILL."**

Predictions vs. Inferences

- Will be proven at the end
- May or may not be explained at the end
- May not be about what happens next

EXAMPLES:

- For example, a student wakes up to thunder one morning.

1. He may **observe** the thunder – using his sense of hearing, he made a factual, qualitative observation.
2. The sound of the thunder led to the **inference** that it was raining – it might not have been raining.
3. The student then **predicted** that they would not go outside during school that day because of the rain.

Example 2:

- I put five plants into a dark room for six months.
  - **Observation**: All five plants died.
  - **Inference**: All plants die without sunlight.
  - **Prediction**: If a plant stops receiving sunlight it will die.

OBSERVATION, INFERENCE, OR PREDICTION?

The bell is ringing

OBSERVATION

OBSERVATION, INFERENCE, OR PREDICTION?

The flower has red petals

OBSERVATION

OBSERVATION, INFERENCE, OR PREDICTION?

The fire might be alive

INFERENCE

OBSERVATION, INFERENCE, OR PREDICTION?

The boy has tears in his eyes, so I think he is sad

INFERENCE

OBSERVATION, INFERENCE, OR PREDICTION?

The dog is going to burp

PREDICTION

OBSERVATION, INFERENCE, OR PREDICTION?

There is a lot of red in the painting, so I think the artist was mad

INFERENCE

OBSERVATION, INFERENCE, OR PREDICTION?

The cell phone is making a noise

OBSERVATION

OBSERVATION, INFERENCE, OR PREDICTION?

The exam is going to be easy

PREDICTION

MAKE AN OBSERVATION ABOUT THE PICTURE

MAKE AN INFERENCE ABOUT THE PICTURE

MAKE A PREDICTION ABOUT THE PICTURE

Types of observation

1. Participant Observation/ Non-participant Observation
2. Direct Observation/Indirect Observation
3. Structured/Unstructured Observation.
4. Disguised/Undisguised.
5. Natural/Contrived.
6. Personal/Mechanical.

1. Participant Observation: In this observation, the observer is a part of the phenomenon or group which observed and he acts as both an observer and a participant.

Example: a study of how students behave during the *"Sports Day"*. The persons who are observed should not be aware of the researcher's purpose. Then only their behaviour will be 'natural.'

Non - Participant Observation : in this method, the observer stands apart and does not participate in the phenomenon observed. Naturally, there is no emotional involvement on the part of the observer. This method calls for skill in recording observations in an unnoticed manner.

Example : use of recording devices to examine the details of how people talk and behave together.

2. Direct Observation : This means observation of an event personally by the observer when it takes place. This method is flexible and allows the observer to see and record subtle aspects of events and behaviour as they occur. He is also free to shift places, change the focus of the observation.

Example: Observer is physically present to monitor

Indirect Observation : This does not involve the physical presence of the observer, and the recording is done by mechanical, photographic or electronic devices.

Example : Recording customer and employee movements by a special motion picture camera mounted in a department of large store.

3. Structured Observation : Also known as systemic observation. An observation that **uses an explicitly pre-determined behavioural** categories of behavior.

For structured observation ***the researcher specifies in detail what is to be observed and how the measurements are to be recorded***.

Example: An auditor performing inventory analysis in store.

Unstructured Observation:

In unstructured observation **the observer monitors all aspects of the phenomenon** that **seems relevant** to the problem at hand.

Example: Observing children playing with new toys.

- **Disguised or undisguised**
- In disguised observation, respondents are unaware they are being observed and thus behave naturally. Disguise is achieved, for example, by hiding, or using hidden equipment or people disguised as shoppers.
- In **undisguised** observation, respondents are aware they are being observed. There is a danger of the Hawthorne effect – people behave differently when being observed.

- **Natural or contrived**
- **Natural** observation involves observing behavior as it takes place in the environment, for example, eating hamburgers in a fast food outlet.
- In **contrived** observation, the respondents' behavior is observed in an artificial environment, for example, a food tasting session.

- **Personal:** In personal observation, a researcher observes actual behavior as it occurs. The observer may or may not normally attempt to control or manipulate the phenomenon being observed. The observer merely records what takes place.
- **Mechanical:** Mechanical devices (video, closed circuit television) record what is being observed. These devices may or may not require the respondent's direct participation. They are used for continuously recording on-going behavior.

Advantages & Disadvantages of Observation Technique:

Advantages	Disadvantages
1) Subject bias is eliminated.	1) An expensive method.
2) Relates to what is currently happening.	2) Information is very limited.
3) Independent of respondent.	3) Unforeseen factors may interfere with the observational task.

Example Question…..

A Researcher conducted an observation study to investigate *how people react when walking towards each other along a corridor* in a building where different office staff work. To do this, she asked for permission to set up hidden cameras for a day to record people's encounters along one of the main corridors in the building. The results from the study are shown in the table below:

Avoids Eye Contact	Smiles	Says hello	Makes Eye Contact	Nods	TOTAL
80	**48**	**40**	**24**	**8**	**200**

a.) This study is an example of the use of structured observation. What is ***structured observation***? (**1 mark**)

Structured observation in this study means that the researcher set out to observe the pre-determined behavior of how people react when walking towards each other along a corridor

b.) Outline **TWO conclusions** that can be made ***from*** the data collected in ***this study***. (**2 marks**)

Conclusions could include:

- ***the most frequent behaviour was to avoid eye-contact, which suggests people do not like acknowledging each other in a corridor; (INFERENCE)***
- ***The lowest frequency of behaviour was 'nods head', which suggests people do not like greeting people as they meet in a corridor. (INFERENCE)***

2.) Questionnaires/Surveys as a research method..

QUESTIONNAIRES:

- It comprises a series of questions prepared by the researcher that are answered and filled by all the respondent.
- This is usually *popular self report* or self-administered method.
- It commonly used to get demographic data-(***e.g. of demographic data includes: age, ethnicity, income, education level***)

N/B: it is recommended that one puts questions that request demographic data at the end of a questionnaire, so that the respondent does not feel stereotyped as they fill in the questionnaire.

- It allows the collection of larger data from large no. of sample quickly and inexpensively.

Be careful NOT to introduce Confounding Variables in Questionnaires

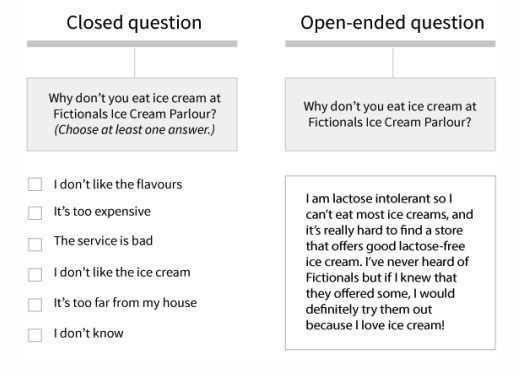
- A confounding variable is an outside influence that changes the effect of a dependent and independent variable.
- This extraneous influence is used to influence the outcome of an experimental design.
- Simply, a confounding variable is an extra variable entered into the equation that was not accounted for.
- Confounding variables can ruin an experiment and produce useless results.
- They suggest that there are correlations when there really are not.

- In an experiment, the independent variable generally has an effect on the dependent variable.
- ***For example,*** if you are researching whether a lack of exercise has an effect on weight gain, the lack of exercise is the independent variable and weight gain is the dependent variable.
- A confounding variable would be any other influence that has an effect on weight gain. ***Amount of food consumption*** is a confounding variable, **or weather could be a confounding variable.**
- Each may change the effect of the experiment design.

Structure of Questions used in questionnaires:

Open ended question	Close ended/fixed/alternative
•When researcher want more information.	•Limited respond.
• difficult to analyze.	•Easy to analysis
e.g.Why did you choose to take your graduate work at this university?	e.g. Have you ever taken a course in statistics? ( ) yes ( ) No

Structure of Questions:



Types of closed ended questions

A. Dichotomous questions
B. Multi choice questions
C. Cafeteria questions
D. Rank order questions
E. Rating scale
F. Checklist
G. Visual analogue scales[VAS]

A. Dichotomous questions

It makes the respondent to make a choice between two responses such as "Yes/No" "Male/Female"

E.g. Have you ever been sent home by the fashion cops?

B. Multi-choice questions

- It offers more than two response alternatives
- Graded alternatives are preferable for opinion or attitude questions that give more information

- E.g. how important is to you to avoid a being expelled from University at this time

1. Extremely important
2. Very important
3. Somewhat important
4. Not at all important

C. Cafeteria questions/Forced-Choice Questions

- These are special type of MCQ that ask respondents to select a respondent's response that most closely corresponds to their view.

E.g. Students have different opinions or attitudes about how IS project supervisors should communicate with their students; which of the following statements best represents your view?

1. I prefer direct face-to-face feedback in a public setting only when needed
2. I prefer direct face-to-face feedback in a private setting only when needed
3. I prefer feedback via written note only when needed
4. I prefer feedback via email only when needed

D. Rank-order questions

- It asks respondents to rank target concept along some continuum such as most favorable or most to least important.
- Respondents are asked to mark 1,2,3,4…. According to their importance and their should not be more than10 alternatives

- E.g. people value different things about life. Below is a list of principles or ideas that are often cited when people are asked to name things they value most by putting 1,2,3.etc.
  i. Achievement and success
  ii. Family relationship
  iii. Health
  iv. Money
  v. Religion

F. Rating scale:

It asks the respondent to judge something along an order dimension.

e.g. How satisfied are you with the nursing care during your hospitalization?

Extremely dissatisfied Neutral Extremely satisfied

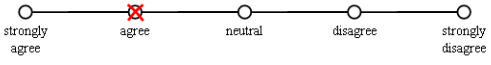
0 1 2 3 4 5 6 7 8 9 10

Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
(1)	(2)	(3)	(4)	(5)

Likert Scale

- A **"Likert scale"** is the sum of responses to several Likert items.
- A **"Likert item"** is a statement that the respondent is asked to evaluate in a survey. In the example below, the statement, *"Wikipedia has a user friendly interface"* is a Likert item. The table as a whole is the Likert scale.

1. Wikipedia has a user friendly interface.



G. Visual Analog Scale (VAS)

- It is useful for assessing perception of physic stimuli such as pain, sleep, quality and shortness of breath.

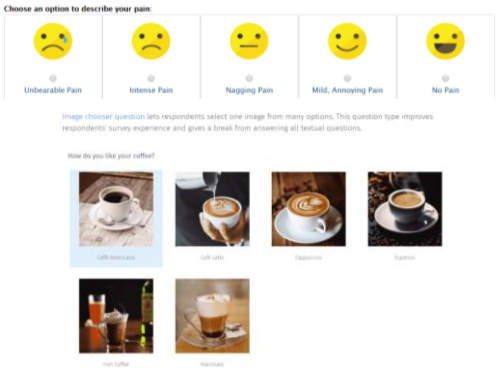
Advantages of Visual Analog Scale

1. **Ease of use:** The VAS is extremely convenient to fill out for the respondents and is extremely easy to keep track of for the survey maker.
2. **Super quick to fill out:** This scale takes less than a minute to fill out.
3. **Highly reliable:** VAS is extremely reliable to track a patient's progress by conducting it before and after a surgery or therapy, especially amongst the literate patients.

Disadvantage

- It includes concern with reliability and validity.

Example of a Visual Analog Scale/Image Type Question



Qualities of good questions on a questionnaire:

- There are ***good*** and *bad* questions. The qualities of a good question are as follows:

1. ***Encourages the truth:*** Questions must be non-threatening. When a respondent is concerned about the consequences of answering a question in a particular manner, there is a good possibility that the answer will not be truthful.

   Anonymous questionnaires that contain no identifying information are more likely to produce honest responses than those identifying the respondent.

   If your questionnaire does contain sensitive items, be sure to clearly state your policy on confidentiality.

2. ***Asks for only one answer per question:*** The purpose of a survey is to find out information. A question that asks for more than one answer in the same question will not provide the information you are seeking.

- For example, a researcher investigating a new food snack asks:

  "Do you like the texture and flavor of the snack?"

- If a respondent answers "no", then the researcher will not know if the respondent dislikes the texture or the flavor, or both.
- Another question asks, ***"Were you satisfied with the quality of our food and service?"***
- Again, if the respondent answers "no", there is no way to know whether the quality of the food, service, or both were unsatisfactory.
- **A good question asks for only one "bit" of information.**

3. ***Can accommodate all possible answers:*** Multiple choice questions are the most popular type of survey questions because they are generally the easiest for a respondent to answer and the easiest to analyze.

- Asking a question that does not accommodate all possible responses can confuse and frustrate the respondent. For example, consider the question: ***What brand of computer do you own? __***

  A. IBM PC

  B. Apple

- Clearly, ***there are many problems with this question***:
  - What if the respondent doesn't own a microcomputer?
  - What if he owns a different brand of computer?
  - What if he owns both an IBM PC and an Apple?
- There are **two ways to correct this kind of problem**:

- The ***first way is to make each response a separate dichotomous item*** on the questionnaire. For example:
  1. Do you own an IBM PC? (circle: Yes or No)
  2. Do you own an Apple computer? (circle: Yes or No)

- ***Another way to correct the problem is to add the necessary response categories and allow multiple responses***. This is the preferable method because it provides more information than the previous method. Example:

What brand of computer do you own?(Check all that apply)

__ Do not own a computer

__ IBM PC

__ Apple

__ Other

4. ***Has mutually exclusive options:*** A good question leaves no doubt in the mind of the respondent. ***There should be only one correct or appropriate choice for the respondent to make***.

   An obvious example is:

   Where did you grow up? __

   A. country

   B. farm

   C. city

- A person who grew up on a farm in the country would not know whether to select choice A or B.
- This question would not provide meaningful information. Worse than that, it could frustrate the respondent and the questionnaire might find its way to the trash.

5. ***Produces variability of responses:*** When a question produces no variability in responses, we are left with considerable uncertainty about why we asked the question and what we learned from the information.

   If a question does not produce variability in responses, it will not be possible to perform any statistical analyses on the item.

   For example:

   What do you think about this report? __

   A. It's the worst report I've read.

   B. It's somewhere between the worst and best.

   C. It's the best report I've read.

- Since almost all responses would be choice B, very little information is learned.
- **Design your questions so they are sensitive to differences between respondents**.

- Another example:

  Are you against drug abuse? (circle: Yes or No)

  Again, there would be very little variability in responses and we'd be left wondering why we asked the question in the first place.

6. ***Follows comfortably from the previous question:*** Creating a questionnaire is similar to writing anything else.
   - Changes between questions should be smooth.
   - Grouping questions that are similar will make the questionnaire easier to complete, and the respondent will feel more comfortable.
   - Questionnaires that jump from one unrelated topic to another feel disorganized and are not likely to produce high response rates.

7. ***Does not imply a desired answer:*** The wording of a question is extremely important.

   We are striving for objectivity in our surveys and, therefore, must be careful not to lead the respondent into giving the answer we would like to receive.

- Leading questions are usually easily spotted because they use negative phrases. Examples:

- ***Wouldn't you like*** to receive our free brochure?

- ***Don't you think*** the Government is spending too much money?

- At the end of any questionnaire, a researcher should be able to gather information that provides useful insight to their research question.
- **EXAMPLE QUESTION:**

  Chania bookshop has re-launched its online shopping website. The research department has created a pop-up online questionnaire for website users to complete. The aim of the questionnaire is to gather feedback on the new website. The pop-up questionnaire will appear at the end of the website visit regardless of whether or not the visitor has made a purchase.

  a) Identify at least ***three types of information*** which the questionnaire needs to gather to provide useful insight into the users' experience of the website. Give reasons for the suggestions you make.

1. *Demographic info – e.g. gender, age bracket, income band etc of those who visit the website-so as to find out who are the customer base.*
2. *Whether the visitor bought or did not buy at that visit*
3. *Shopping history with the bookstore – are there differences between those who were regular users of last website and new users?*
4. *Ease of use of website – helping to identify what does/doesn't work.*
5. *Likes/dislikes.*
6. *What further improvements they might like to see.*
7. *Likelihood of using the website again.*
8. *Can they be contacted for further research? If so, contact details.*

b) Two weeks after the launch of the questionnaire, the Research Director discovers that only 20% of the customers who start the questionnaire complete it. ***Identify at least three reasons why there might be such a high drop-out rate.*** What could have been done when designing the questionnaire to avoid this? Illustrate your answer with examples.

- **Reasons might include some or all of the following**:

1. *Is it clear why the questionnaire is being used/why the individual is being asked to take part?*
2. *Length of questionnaire – if website visitors are completing it after they visit, it needs to be an appropriate length, and the content needs to be sharp and focused.*
3. *Question wording and wording of instructions – are they clear and easy to understand?*

4. *Does the questionnaire make sense? Are the questions appearing in the right order? Do the questions make sense?*
5. *Relevance of questions - are they all relevant to all respondents, is the filtering correct?*
6. *Is there a filter/mechanism in place for recognizing those who have already completed the questionnaire on another occasion?*
7. *Is it set up in a way that makes it interesting/engaging to respondents?*
8. *Does the questionnaire allow respondents to answer truthfully? Lack of don't know / not applicable options etc. may lead to them abandoning and/or inability to skip questions they are unable to answer.*
9. *Do they need to answer all parts of all questions? Making questions compulsory may discourage completion.*
10. *Is there the right balance of open and closed questions?*
11. *Are all of the questions relevant to the stated aim? Visitors may be unwilling to answer questions which stray from what they expect.*
12. *Technical limitations – is the questionnaire working properly? Is it easy to read/navigate in all formats (e.g. mobile)?*

QUALITIES OF A GOOD QUESTIONNAIRE:

1. The questions should be a reflection of the research question/objectives.
2. The length of questionnaire should be proper one-i.e. a good balance of open and closed questions.
3. The language used should be easy and simple.
4. The term used are explained properly.
5. The questions should be arranged in a proper way.
6. The questions should be in logical manner.
7. The questions should be described precisely and correctly.
8. The answers should be short and simple.
9. These answers should be accurate.
10. The answers should be direct one.
11. The answers should be understand able to everyone of respondents.

3.) Interviews as a research method..

- Interviews are most effective for ***qualitative research***:
- They help you **explain**, better understand, and explore research subjects' **opinions**, behavior, experiences, phenomenon, etc.
- Interview questions are usually open-ended questions so that in-depth information will be collected.

a.)Telephonic Interviews: entails collecting information from respondents on telephone.

- Telephonic interviews are widely used and *easy to combine with online surveys* to carry out research effectively.

ADVANTAGES	DISADVANTAGES
1.) To find the interviewees it is enough to have their telephone numbers on hand.	1.) Many times researchers observe that people do not answer phone calls because it is an unknown number for the respondent, or simply already changed their place of residence and they cannot locate it, which causes a bias in the interview.
2.) The information is collected quickly.	2.) Researchers also face that they simply do not want to answer and resort to pretexts such as they are busy to answer, they are sick, they do not have the authority to answer the questions asked, they have no interest in answering or they are afraid of putting their security at risk.
3.) Having a personal contact can also clarify doubts, or give more details of the questions.	3.) One of the aspects that should be taken care of in these types of interviews is the kindness with which the interviewers address the respondents, in order to get them to cooperate more easily with their answers. Good communication is vital for the generation of better answers.

b.)Personal Interviews: There are **three** fundamental types of personal interviews in research:

1. Structured Interviews.
2. Un-structured Interviews.
3. Focus-Group Interviews.

STRUCTURED INTERVIEWS:

- A structured interview is a *quantitative* research method where the interviewer ***a set of prepared, closed-ended questions***, which he/she reads out exactly as worded.
- Structured Interviews *have a standardized format which means the same questions are asked to each interviewee in the same order* (see Fig. 1 next slide).
- The interviewer will not move away from the interview questions *(except to clarify the meaning of the question)* or probe beyond the answers received.
- A structured interview is **also known as a formal interview** (like a job interview).

Example of questions for a structured interview:

Focus area	Examples of questions and probes
Study and participant introduction	What do you understand the study to be about? In your own words, can you describe the relationship between the two of you?
Health conditions	Tell me a little about your illness. How has it developed? At the moment, what are your main problems? Who is looking after your care?
Interactions with the NHS and social care	Tell me about how you were admitted to the [name of site]? Tell me about your visit to the [name of service / site]? What happened after your visit to the [name of site]? Who is involved in your care? What input have you had from social care? How much information did social care have about you when they visited? Can you tell me more about that? How does social care communicate with your [name of site / clinician type]?
Future care perceptions	What is planned for your care in the next few weeks?
Perceptions of current and past care and coordination	What does coordination mean to you? Has there been an occasion when something you expected to happen about your care didn't happen? Tell me more about that. What else would make a difference to the way your care has been coordinated? How well do you think your care has been coordinated? How could the coordination of your care be improved?

STRUCTURED INTERVIEWS

ADVANTAGES	DISADVANTAGES
1. Structured interviews are ***easy to replicate*** as a fixed set of closed questions are used, which are easy to quantify – this means it is easy to test for **reliability**.	1. Structure interviews are **not flexible.** This means new questions cannot be asked impromptu (i.e. during the interview) as an interview schedule must be followed.
2. Structured interviews are ***fairly quick to conduct*** which means that many interviews can take place within a short amount of time. This means a large sample can be obtained resulting in the findings being representative and having the ability to be generalized to a large population.	2. The answers from structured interviews **lack detail** as only closed questions are asked which generates quantitative data. This means a researcher won't know why a person behaves in a certain way.

What is Reliability??

Reliability – **must provide data with consistent results, especially if the study is repeated**.

The term reliability in research refers to the **consistency of a research study** or measuring test.

E.g: if a person weighs themselves during the course of a day they would expect to see a similar reading.

Scales which measure weight differently each time would be of little use.

- **If findings from research are replicated consistently they are reliable.**

Un-structured interviews:

- Unstructured interviews *do not use any set questions*, instead, the interviewer ***asks open-ended questions based on a specific research topic***, and will try to let the interview flow like a natural conversation.
- The interviewer modifies his or her questions to suit the candidate's specific experiences.
- Unstructured interviews are sometimes referred to as 'discovery interviews' and are more like a 'guided conservation' than a strict structured interview.
- They are sometimes called informal interviews.

UN-STRUCTURED INTERVIEWS

ADVANTAGES	DISADVANTAGES
1. Unstructured interviews ***are more flexible*** as questions can be adapted and changed depending on the respondents' answers. The interview can deviate from the interview schedule.	1. It can be **time-consuming to conduct** an unstructured interview and analyze the qualitative data (using methods such as thematic analysis).
2. Unstructured interviews generate qualitative data through the use of open questions. This allows the respondent to talk in some depth, choosing their own words. This ***helps the researcher develop a real sense of a person's understanding of a situation.***	2. **Employing and training interviewers is expensive**, and not as cheap as collecting data via questionnaires. For example, certain skills may be needed by the interviewer. These include the ability to establish rapport and knowing when to probe.
3. They also ***have increased validity*** because it gives the interviewer the opportunity to probe for a deeper understanding, ask for clarification & allow the interviewee to steer the direction of the interview etc.	

What is Validity??

- Validity refers to ***how accurately a tool/method measures what it is intended to measure.***
- If a research method has high validity, that means it produces results that match to real properties, characteristics, and variations in the physical or social world.

Focus-Group interviews:

- Focus group interview is ***a qualitative approach where a group of respondents are interviewed together***, used to gain an in-depth understanding of social issues.
- The method **aims to obtain data from a purposely selected group of individuals** rather than from a statistically representative sample of a broader population.
- The role of the **interview moderator** is to ***make sure the group interact with each other and do not drift off-topic.*** Ideally, the moderator will be similar to the participants in terms of appearance, have adequate knowledge of the topic being discussed, and exercise mild unobtrusive control over dominant talkers and shy participants.
- A researcher must be highly skilled to conduct a focus group interview. For example, certain skills may be needed by the moderator including the ability to establish rapport and knowing when to probe.

FOCUS GROUP INTERVIEWS

ADVANTAGES	DISADVANTAGES
1. Group interviews ***generate qualitative narrative data through the use of open questions.*** This allows the respondents to talk in some depth, choosing their own words. This helps the researcher develop a real sense of a person's understanding of a situation. Qualitative data also includes observational data, such as body language and facial expressions.	1. The *researcher must ensure that they keep all the interviewees'* details confidential and respect their privacy. This is difficult when using a group interview. For example, the researcher cannot guarantee that the other people in the group will keep information private.
2. They also ***have increased validity*** because some participants may feel more comfortable being with others as they are used to talking in groups in real life (i.e. it's more natural).	2. Group interviews *are less reliable as they use open questions and may deviate from the interview schedule* making them difficult to repeat.
	3. Group *interviews may sometimes lack validity as participants may lie to impress the other group members.* They may conform to peer pressure and give false answers.

c.)Email or Web Interviews: entails collecting information online via email or web page because consumers are migrating to a more virtual world and it is best for each researcher to adapt to this change.

ADVANTAGES
1. Speed in obtaining data 2. The respondents respond according to their time, at the time they want and in the place they decide. 3. Online surveys can be mixed with other research methods or using some of the previous interview models. They are tools that can perfectly complement and pay for the project. 4. A researcher can use a variety of questions, logics, create graphs and reports immediately.

d) Qualitative interviews are sometimes called **intensive or in-depth interviews**. These interviews are semi-structured; the researcher has a particular topic about which he or she would like to hear from the respondent, but questions are open ended and may not be asked in exactly the same way or in exactly the same order to each and every respondent.

e) Quantitative interviews:

- might also be called **standardized interviews**. The difference between surveys and standardized interviews is that questions and answer options are read to respondents rather than having respondents complete a questionnaire on their own.

Key differences:

Qualitative interviews	*Quantitative interviews*
• *Good for exploring issues in-depth* • *More freedom for interviewer to explore issues* • *Setting can be important, with sensitivity of topic a key determiner in whether phone interviews can be used* • *Can be more than one-to-one (e.g. paired)* • *More time consuming than quant (therefore also more costly per interview, and possibly lower sample sizes)* • *More open questions* • *Less directive than in quant* • *Use of projective or enabling techniques*	• *Good for directional, conclusive and robust data gathering* • *Standard questions (no interviewer freedom)* • *Wide range of settings possible* • *Generally one-to-one* • *Can ask remotely, e.g. by phone. May not involve an interviewer – e.g. web-based surveys may be viewed as interviews* • *Usually shorter than qual* • *More closed questions* • *Pre-coding restricts range of possible answers* • *Some probing possible, but less than in qual* • *Cost per interview usually lower, therefore larger sample sizes more achievable, therefore more scope for analysing sub-groups*
The interviewer: • *Must listen and respond to subtle clues* • *Must be skilled at reading non-verbal info* • *Recorded on video/audio, may be transcribed*	***The interviewer:*** • *Must question efficiently and effectively* • *Listening skills important but less than qual* • *Many ways to record (CAPI, CATI, CAWI)*

4.) Lab Experiments as a research method..

- This type of experiment is conducted in a well-controlled environment – *not necessarily a laboratory* – and therefore accurate and objective measurements are possible.
- ***A study that takes place within a controlled (or artificial) environment and where the I.V. can be manipulated and the D.V. can be measured.***
- The **researcher decides where** the experiment will take place, at **what time**, with **which participants**, in **what circumstances** and **using a standardized procedure**.
- An experiment that takes place in a natural setting and a key variable is manipulated so that its effect can be measured.
- Experiments have to be **'operationalized'**, i.e. ***Defining variables in a form that can be easily measured.***
- ***It is important from the point of view of objectivity, replicability and control of extraneous variables to make sure that variables are clearly defined.***

Lab Experiments

- **Advantages:**

1. **Causal relationships** can be established by manipulating the key variable and measuring its effects.
2. **More** control of extraneous/confounding variables.

- **Disadvantages:**

1. Behaviour maybe artificial which would result in poor ecological validity.
2. Demand characteristics can affect results
3. Ethical issues e.g. participants didn't agree to take part; might experience distress; can not be debriefed.

Ecological validity

The degree to which an investigation represents real-life experiences.

Experimenter effects

These are the ways that the experimenter can accidentally influence the participant through their appearance or behavior.

Demand characteristics

The clues in an experiment that lead the participants to think they know what the researcher is looking for (e.g. experimenter's body language).

5.) Field Experiments as a research method..

- Field experiments are done in the everyday (i.e. real life) environment of the participants. The **researcher still manipulates the independent variable**, but in a real-life setting (*so cannot really control extraneous variables*).
- An example is ***Holfing's hospital study on obedience***.
- **Advantages:**

1. Behavior in a field experiment is more likely to reflect real life because of its natural setting, i.e. **higher ecological validity** than a lab experiment.
2. There is **less likelihood of demand characteristics** affecting the results, as participants may not know they are being studied. This occurs when the study is secret.

- **Disadvantage**:

1. There is **less control over extraneous variables** that might bias the results. This makes it difficult for another researcher to replicate the study in exactly the same way.

Demand Characteristics…

- Demand characteristics are ***signs in the environment that might alter participants behaviour*** (*the environment can include the investigator's behaviour*). They change their behaviour and act according to the cues they pick up.
- Demand characteristics can include such things as:
  - the participant trying to guess what the researcher is trying to find out, so the participant tries to behave in a helpful (or unhelpful) manner.
- Other demand characteristics may result in participants behaving in ways that they don't usually behave, feeling that they are being evaluated and then feeling stressed or nervous.
- Participants may also want to show themselves in the best light and show a social desirability in their answers to interviews.

6.) Natural Experiments as a research method..

- Natural experiments are conducted in the everyday (i.e. real life) environment of the participants, but here the **researcher has no control over the IV** as it occurs naturally in real life.
- E.g. Hodges and Tizard's attachment research (1989) compared the long term development of children who have been adopted, fostered or returned to their mothers with a control group of children who had spent all their lives in their biological families.
- **Advantages**:

1. Behavior in a natural experiment is more likely to reflect real life because of its natural setting, i.e. **very high ecological validity**.
2. There is **less likelihood of demand characteristics** affecting the results, as participants may not know they are being studied.
3. Can be used in situations in which it would be ethically unacceptable to manipulate the independent variable, e.g. researching stress.

- **Disadvantages**:

1. They may be more expensive and time consuming than lab experiments.
2. There is **no control over extraneous variables** that might bias the results. This makes it difficult for another researcher to replicate the study in exactly the same way.

Example Question

Researchers carried out a ***natural experiment*** measuring the stress levels of ten participants who continued to live near a volcano even after an eruption. These were compared with the stress levels of ten participants who lived outside the danger zone of a volcanic eruption. Stress levels were measured on a ten point scale with 1 being low stress and 10 being high stress.

	Inside Danger zone	Outside Danger zone
Mean stress level score	8.2	3.1

(a) Define what is meant by the term ***'natural experiment'***. [**2 marks**]

Natural experiments in this study means that the researcher conducted a study in a. real life environment of those living inside or outside the danger zone, and the researcher could not control the independent variable.

(b) Explain ***one advantage and one disadvantage*** of a 'natural experiment'. [**2 marks**]

Advantages should be CONTEXTUALISED e.g:

- ***Natural experiments have very high ecological validity. In this particular example, we see very high ecological validity in that the study was carried out in a natural occurring environment, i.e. areas with volcanic activity.***

Disadvantages should be CONTEXTUALISED e.g:

- ***There is no control over extraneous variables that might bias the results. This makes it difficult for another researcher to replicate the study in exactly the same way. In this study the researcher has no control as to when/how the volcano will erupt, thus making it difficult to replicate the study.***

(c) Identify:

(i) The **independent variable (IV)** in the above research; [1mark]

Living Outside/Inside the danger zone

(ii) **The dependent variable (DV)** in the above research. [1 mark]

Mean stress level score

CONTEXTUALISE….

- Answers to questions about Research methods should always be **CONTEXTUALISED** to the narrative given…
- To CONTEXTUALISE an answer ***means to apply the knowledge you have about the topic to the narrative given***.
- If you only give *general answers*, then you will only *get ½ marks*….to get **full marks**, you need to **contextualise**..

7.) CASE STUDIES as a research method..

- Case studies are in-depth investigations of a single person, group, event or community.
- The *case study is not itself a research method*, but researchers select methods of data collection and analysis that will generate material suitable for case studies. (e.g. **observations** & **interviews**).
- Famous case studies include Little Hans (1909) and The Rat Man (1909).
- The research may also continue for an extended period of time, so processes and developments can be studied as they happen.
- Case studies **provide rich qualitative data** and have **high** levels of **ecological validity**.

- The case study method often involves simply observing what happens to, or reconstructing 'the case history' of a single participant or group of individuals (such as a school class or a specific social group)
- **Advantages:**

1. Provides detailed (rich qualitative) information.
2. Provides insight for further research.
3. Permitting investigation of otherwise impractical (or unethical) situations.

- **Disadvantages:**

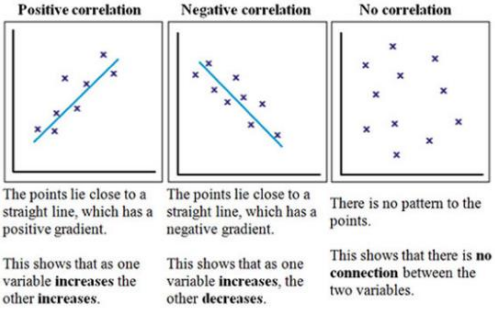
1. Can't generalize the results to the wider population.
2. Researchers' own subjective feeling may influence the case study (researcher bias).
3. Difficult to replicate.
4. Time consuming.

8.) Correlation as a research method..

- Correlation means association - more precisely ***it is a measure of the extent to which two variables are related.***

1. If an **increase in one variable tends to be associated with an increase in the other** then this is known as **a positive correlation**. *E.g: height and weight. Taller people tend to be heavier.*
2. If an **increase in one variable tends to be associated with a decrease in the other** then this is known as **a negative correlation**. *E.g: height above sea level and temperature. As you climb the mountain (increase in height) it gets colder (decrease in temperature).*
3. When there is **no relationship between two variables** this is known as **a zero correlation**. *E.g: no relationship between the amount of tea drunk and level of intelligence.*

- A correlation can be **expressed visually**. This is done by **drawing a scattergram** - that is one can plot the figures for one variable against the figures for the other on a graph.



Advantages of Correlations

1. Correlation allows the researcher **to investigate naturally occurring variables that maybe unethical or impractical to test experimentally**. For example, it would be unethical to conduct an experiment on whether smoking causes lung cancer.
2. Correlation allows the researcher to **clearly and easily see if there is a relationship between variables**. This can then be displayed in a graphical form.

Disadvantages of Correlations

1. Correlation is not and **cannot be taken to imply causation**. Even if there is a very strong association between two variables we cannot assume that one causes the other. *E.g. suppose we found a positive correlation between watching violence on T.V. and violent behavior in adolescence. It could be that the cause of both these is a third (extraneous) variable - say for example, growing up in a violent home - and that both the watching of T.V. and the violent behavior are the outcome of this.*

2. Correlation **does not allow us to go beyond the data that is given**. *E.g: suppose it was found that there was an association between time spent on assignments (1/2 hour to 3 hours) and number of units passed in BTC/BIF/BBIT (1 to 6). It would not be valid to assume from this that spending 6 hours on homework would be likely to generate 12 BTC/BIF/BBIT passes.*

9.) Pilot Study as a research method..

- A pilot study is an initial run-through of the procedures to be used in an investigation; it involves selecting a few people and trying out the study on them. It is possible to save time, and in some cases, money, by identifying any flaws in the procedures designed by the researcher.
- A pilot study can help the researcher spot any ambiguities (i.e. unusual things) or confusion in the information given to participants or problems with the task devised.
- Sometimes the task is too hard, and the researcher may get a floor effect, because none of the participants can score at all or can complete the task – all performances are low. The opposite effect is a ceiling effect, when the task is so easy that all achieve virtually full marks or top performances and are "hitting the ceiling".

Example Question

- Every year, all 15 year-old school students across the country complete a 2-week *Work Experience Programme* towards the end of the school year. Each student spends two weeks working for an employer who has volunteered to offer internship. The programme is intended to help the students make career and study choices and to prepare them for the world of work. However, the government is concerned that the programme is not achieving its aims. Recent news stories have highlighted complaints from the students and their parents about the range and quality of placements, and from employers about the support provided for them and for the students.
- The government has commissioned your research company to find out how the Work Experience Programme could be made more effective in achieving the above objectives. This research will involve gathering information from the students and employers along with parents and school staff.
- Before commencing with a national programme of research, your research company intends to conduct **A PILOT STUDY** at six schools in different regions of the country, using both qualitative and quantitative research. It hopes that information gathered during this initial study will help inform the national study. The schools involved have agreed to participate in the research.

a) Identify and explain ***benefits that might be gained from conducting this pilot study*** prior to roll-out of the full national study. Illustrate your answer with examples.

Potential benefits include:

1. *the opportunity to identify issues/ areas which can be included in the final study.*
2. *the chance to pilot the data collection instruments (e.g. questionnaire)*
3. *opportunity to pilot the sampling method and recruitment processes*
4. *opportunity to plan for the full project from a timing perspective*
5. *the opportunity to generate hypotheses which can be tested at the next stage*
6. *the chance to identify possible problems and how to overcome them – e.g. unforeseen issues which prevent groups from participating; bad times to conduct the research etc.*
7. *establish vocabulary appropriate for the target populations*
8. *opportunity to develop a more closed-ended questionnaire for the wider study, resulting in greater cost-efficiency for the quant stage*

10.) Content Analysis a research method..

- Content analysis is a technique ***for analysing qualitative data*** of various kinds.
- Data can be ***placed into categories and counted*** (quantitative) ***or can be analysed in themes*** (qualitative).

- Researchers **quantify (i.e. count) and analyze (i.e. examine)** the presence, meanings and relationships of words and concepts, then make inferences about the messages within the media, the writer(s), the audience, and even the culture and time of which these are a part.
- To conduct a content analysis on any such media, **the media is coded** or broken down, into manageable categories on a variety of levels - word, word sense, phrase, sentence, or theme - **and then examined**.

Considerations when choosing a research method

1. **Validity** – The concept of validity was formulated by Kelly (1927) who stated that ***a test is valid if it measures what it claims to measure.*** For example a test of intelligence should measure intelligence and not something else (such as memory).

- **TYPES OF VALIDITY: Internal and External**
  - A distinction can be made between internal and external validity.
  - These types of validity are relevant to evaluating the validity of a research study.

- **Internal validity** refers to **whether the effects observed in a study are due to the manipulation of the independent variable and not some other factor**. In-other-words there is a causal relationship between the independent and dependent variable.

- Internal validity can be improved by:
  1. **controlling** extraneous variables,
  2. **using** standardized instructions, and
  3. **eliminating** demand characteristics and experimenter effects.

- **External validity** refers to the **extent to which the results of a study can be generalized to other settings** (ecological validity), **other people** (population validity) and **over time** (historical validity).

- External validity can be improved by:
  1. setting experiments in a **more natural** setting and
  2. using **random sampling** to select participants.

2. **Reliability** – **must provide data with consistent results, especially if the study is repeated**.

   The term reliability in research refers to the **consistency of a research study** or measuring test.

   E.g: if a person weighs themselves during the course of a day they would expect to see a similar reading.

   Scales which measure weight differently each time would be of little use.

- **If findings from research are replicated consistently they are reliable.**
- A correlation coefficient can be used to assess the degree of reliability. ***If a test is reliable it should show a high positive correlation.***
- Of course, **it is unlikely the exact same results will be obtained each time** as participants and situations vary, **but a strong positive correlation between the results of the same test indicates reliability**.

- There are **two types of reliability** – internal and external reliability.

1. Internal reliability **assesses the consistency of results across items within a test**.
2. External reliability refers to **the extent to which a measure varies from one use to another.**

3. **Appropriateness** – in context of objectives.
4. **Amount of data** – must provide enough quality data for sufficient analysis.
5. **Flexibility** – should match the flexibility you require in terms of informational needs.
6. **Time constraints** – should allow you to gather data, analyse it, interpret findings and write a report in the given time frame.
7. **Cost** – should not cost you more that you can afford.
8. **Potential errors** – you should exhaust all possible sources of error with view to minimize them.
9. **Researcher's ability** – should be within one's ability to complete.

Next week…..

- Class from 8:15am to 9:30am
- **CAT 1 from 10:00am to 11:15am**
  - Will be online.
  - CAT will cover all topics done so far.