

ECDE7018

Week 3

DISCUSSION:

INVESTIGATING AGE AND SLEEP PATTERNS

Research has shown that the human body clock is very important in determining sleep and wake patterns.

Design a study to investigate the relationship between age and sleep duration.

Think about how they will record the amount of time they sleep over a number of nights (how many nights? which days of the week? how they will record it?)

- **How might you go about doing this study?**
- **What are the elements that you will need to consider?**

Research Design

Can you answer the following questions?:



What is the aim of your research project?



Why is it important for you to explore?



What will be the benefits – to you, students/ others, a school/ university/ other?



Who does your research involve? participants (number, who are they?)

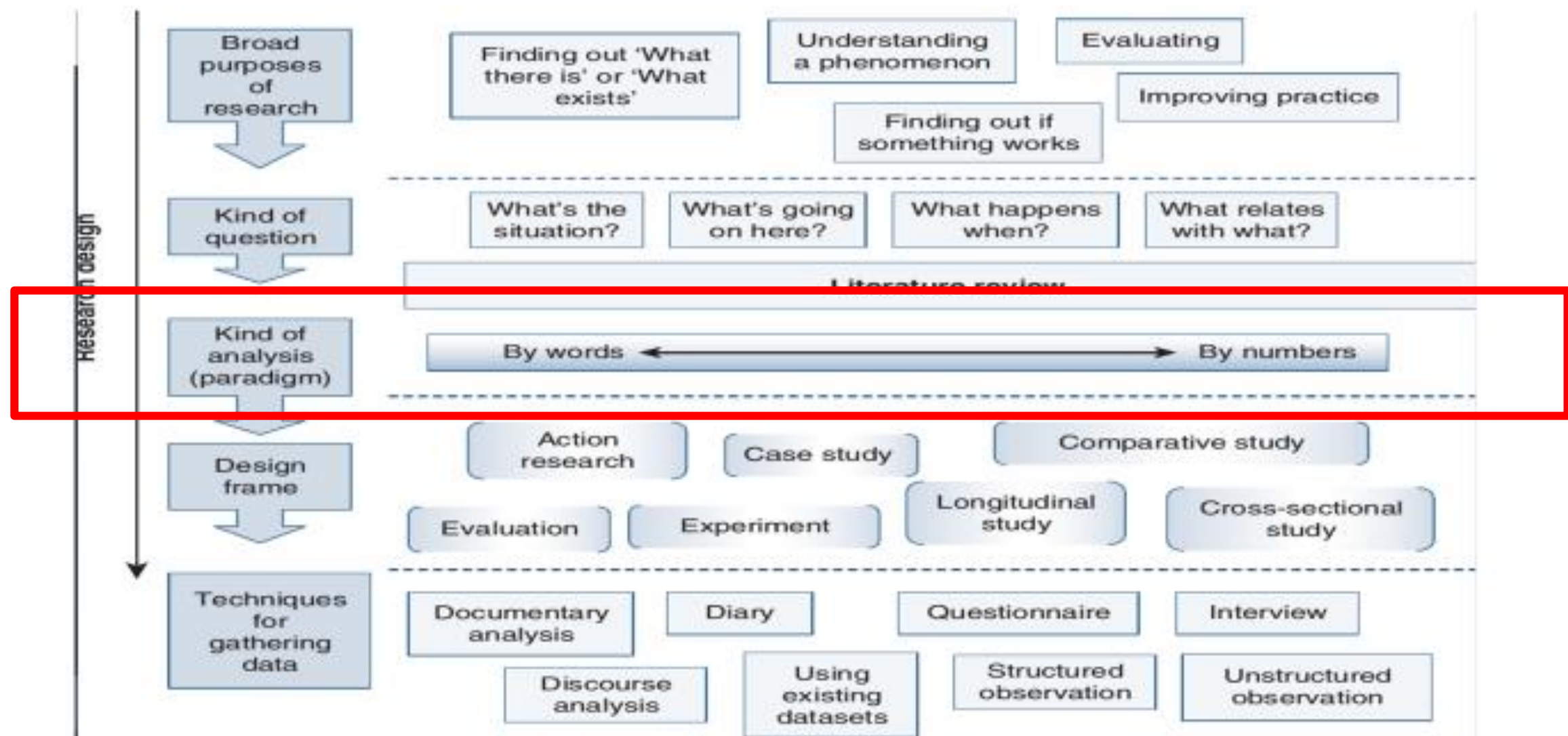


What is your research question?



What type of research study will it be?

The process of research design:

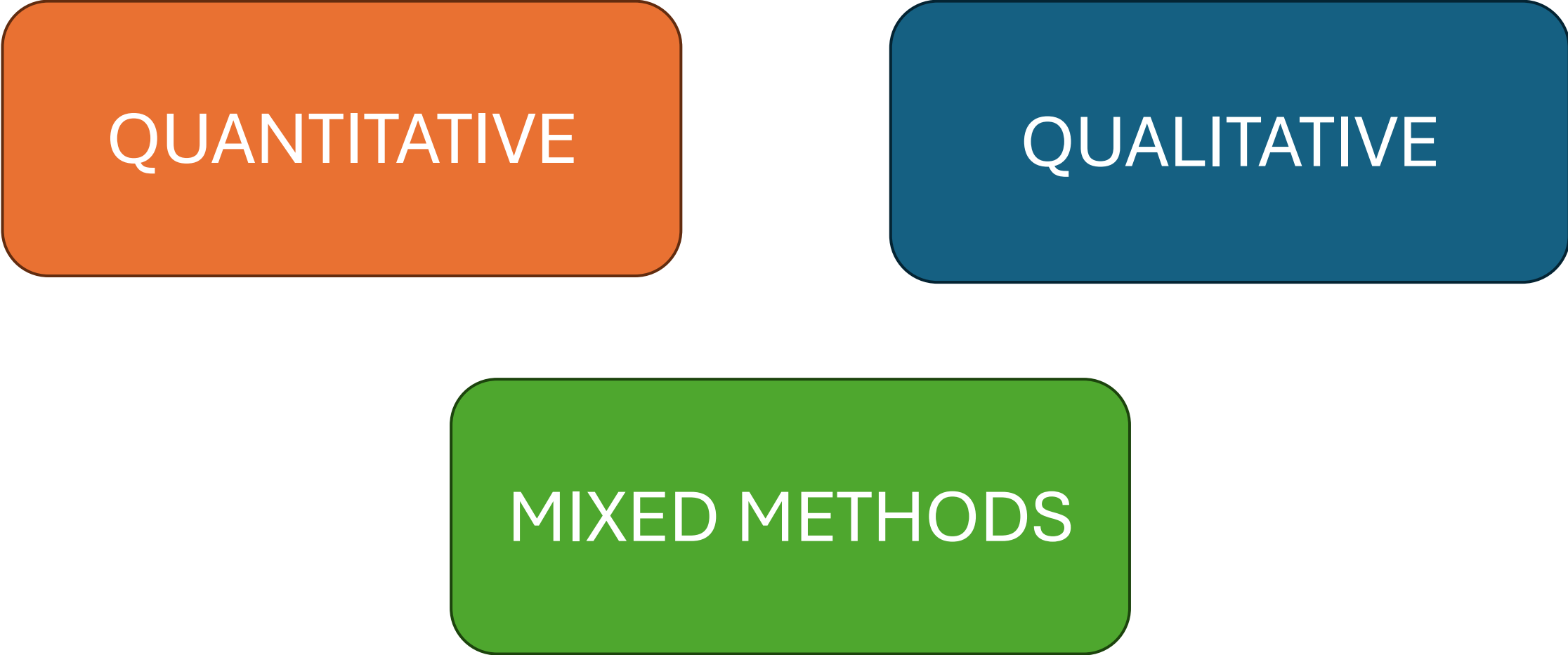


Methodology

- Theoretical positioning of the research
- Body of knowledge that explains how the research is done
- Justification of using a particular research method

Method

- The 'doing' of the research
- Strategy employed in the collection of data for analysis to uncover new information or gain a better understanding of a topic
- The tool(s) used to carry out the research



QUANTITATIVE

QUALITATIVE

MIXED METHODS

Quantitative Research (numbers)

- A means for testing objective theories by examining the relationship among variables.
- These variables can be **measured**, typically on instruments.
- Numbered data can be analysed using statistical procedures.

Creswell, 2008

Qualitative Research (words)

- A means for exploring and understanding the meaning of individuals or groups ascribed to a social or human problem.
- The process of research involves emerging questions and procedures.
- Data is typically collected in the participant's setting.
- Data analysis inductively builds from particulars to general themes, and the researcher making interpretations of the meaning of the data.

Creswell, 2008

Mixed Methods Approach

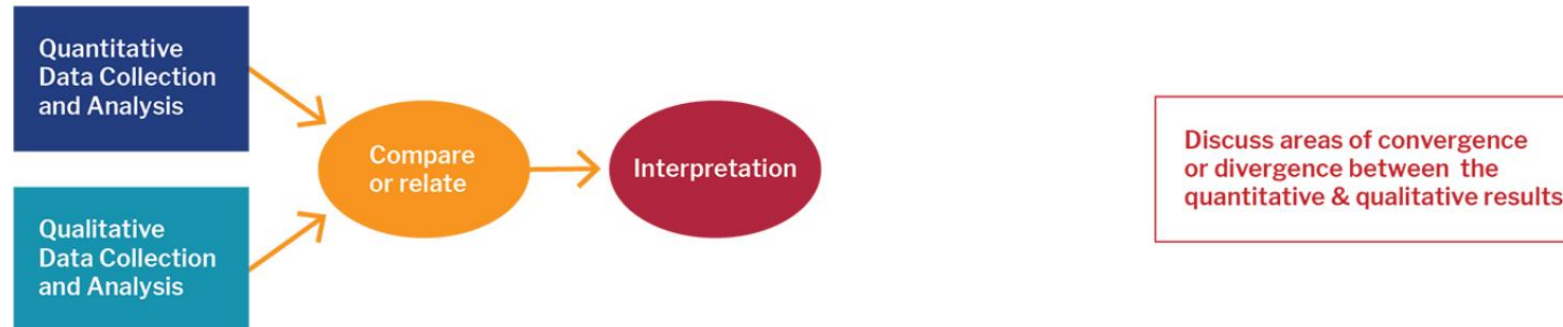
- An approach to inquiry that combines both qualitative and quantitative methods.
- It involves the use of both approaches in tandem so that the overall strength of a study is greater than either qualitative or quantitative research.

Creswell, 2008

Creswell and Plano Clark (2018) identify three core mixed methods designs:

BASIC MIXED METHODS RESEARCH DESIGNS

Convergent Parallel Design



Explanatory Sequential Design



Exploratory Sequential Design



The background of the image consists of several overlapping, wavy, translucent layers of color. The colors range from a deep, muted purple to a soft, dusty pink. The layers create a sense of depth and movement, with the edges of the waves flowing across the frame. The overall effect is a textured, ethereal, and modern aesthetic.

Research Strategy

Research Strategy

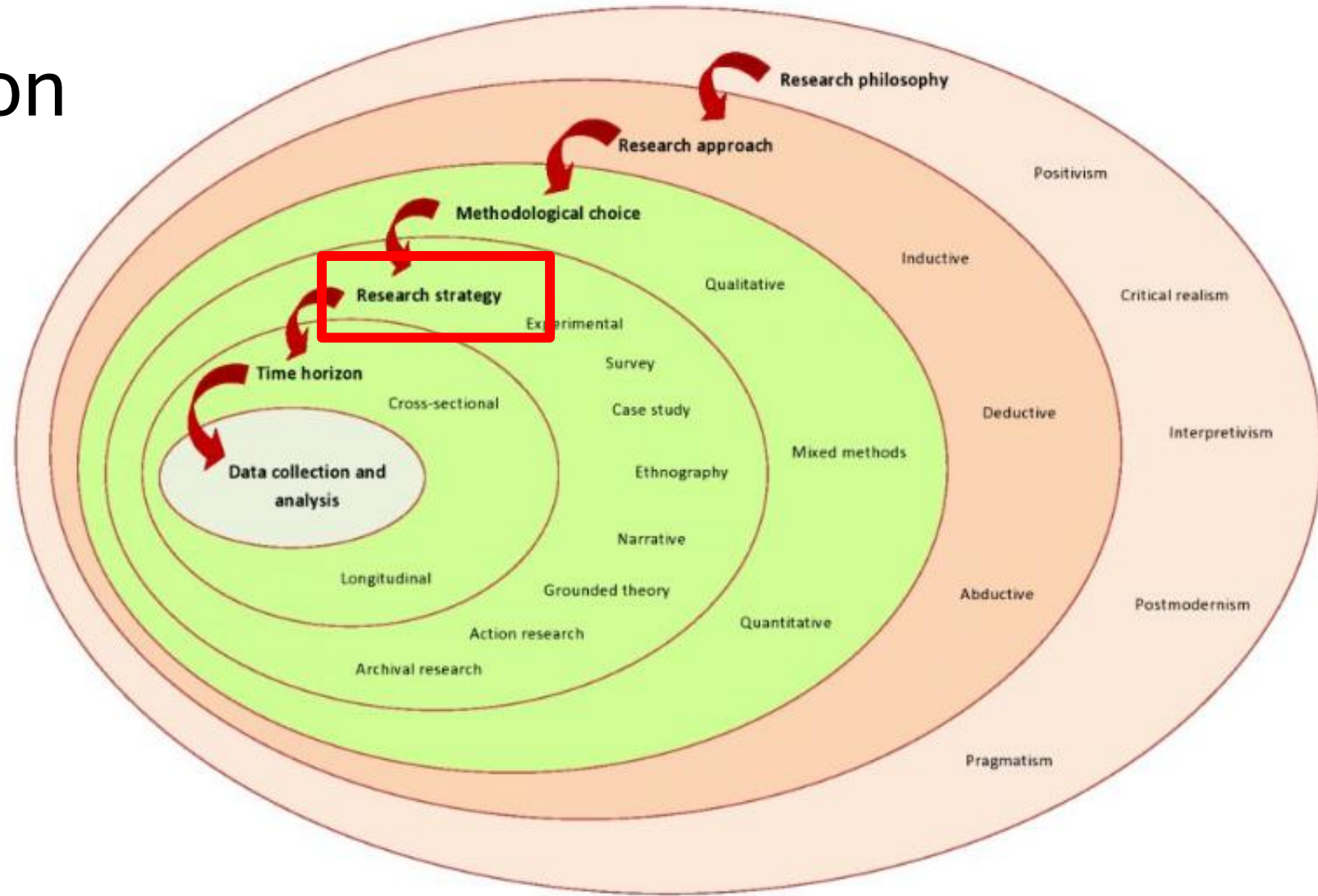
= how the researcher intends to carry out the work;
i.e. what method(s) of data collection / research tools will be used.

The Research Onion

Start from the outside and peel each layer away until you reach the core.

These layers are broken up into six main areas:

- research philosophy;
- research approach;
- research methodology choices;
- research strategy;
- time horizons;
- data collection techniques and analysis.



(Saunders et al., 2007)



How many research tools are
available to us?

Make a list!

Research Tools



QUESTIONNAIRE



INTERVIEW



FOCUS GROUP
INTERVIEW



OBSERVATION



EXPERIMENT



MOSAIC
APPROACH



SECONDARY
DATA ANALYSIS



What kind of data will each
one give you?

Qualitative / Quantitative

Qualitative, quantitative or both?



QUESTIONNAIRE



INTERVIEW



FOCUS GROUP
INTERVIEW



OBSERVATION



EXPERIMENT



MOSAIC
APPROACH



SECONDARY
DATA ANALYSIS

Assessment Component 1

Section	Suggested content	Approximate word count
Proposed Title		20-30
Background & Context	In this section you will need to: - Place the research topic in its historical, cultural and social context. - Explain why the research is significant and important. e.g. What is your research about? Why have you chosen this topic? Why is it important (to you/to others)? What does the published literature say about your topic? Do authors agree or disagree? Are there studies available that are <u>similar to</u> the study that you are proposing?	500
Aims and Objectives	In this section, you will need to: - Explain what you want to achieve through the <u>research</u>; - Outline the aims and objectives of the research.	250 – 500
	Is there a gap in the literature that you intend to fill?	
Proposed methodology	In this section, you will need to explain how you will achieve your aims and objectives: - Describe the method(s) you will use to carry out your research; - Discuss your proposed sampling strategy/<u>ies</u>.	500
Introductions	You should list a minimum of 10 titles that are relevant	
bibliography	to your research. You should include all works cited in this form. The list should be alphabetical using the Harvard referencing system.	

Assessment Component 2

Section	Suggested content	Suggested word count
Introduction	Briefly introduce your topic and the research question that you have chosen to focus on in this part of the assignment. ~~What is the aim of your study?~~	200
Chosen method	What is/are your chosen method(s)? • Quantitative • Qualitative • Mixed-methods approach	1000
Sampling	~~What is/are your sampling method(s)?~~	~~600~~
Ethics	~~What are the ethical considerations that relate to your study?~~	~~500~~
Research tool(s)	What is/are the research tool(s) that you have selected?	1000
Data analysis method(s)	Which method(s) of data analysis have you chosen?	400
Conclusion	<u>Summarise</u> your intentions.	50

QUESTIONNAIRES

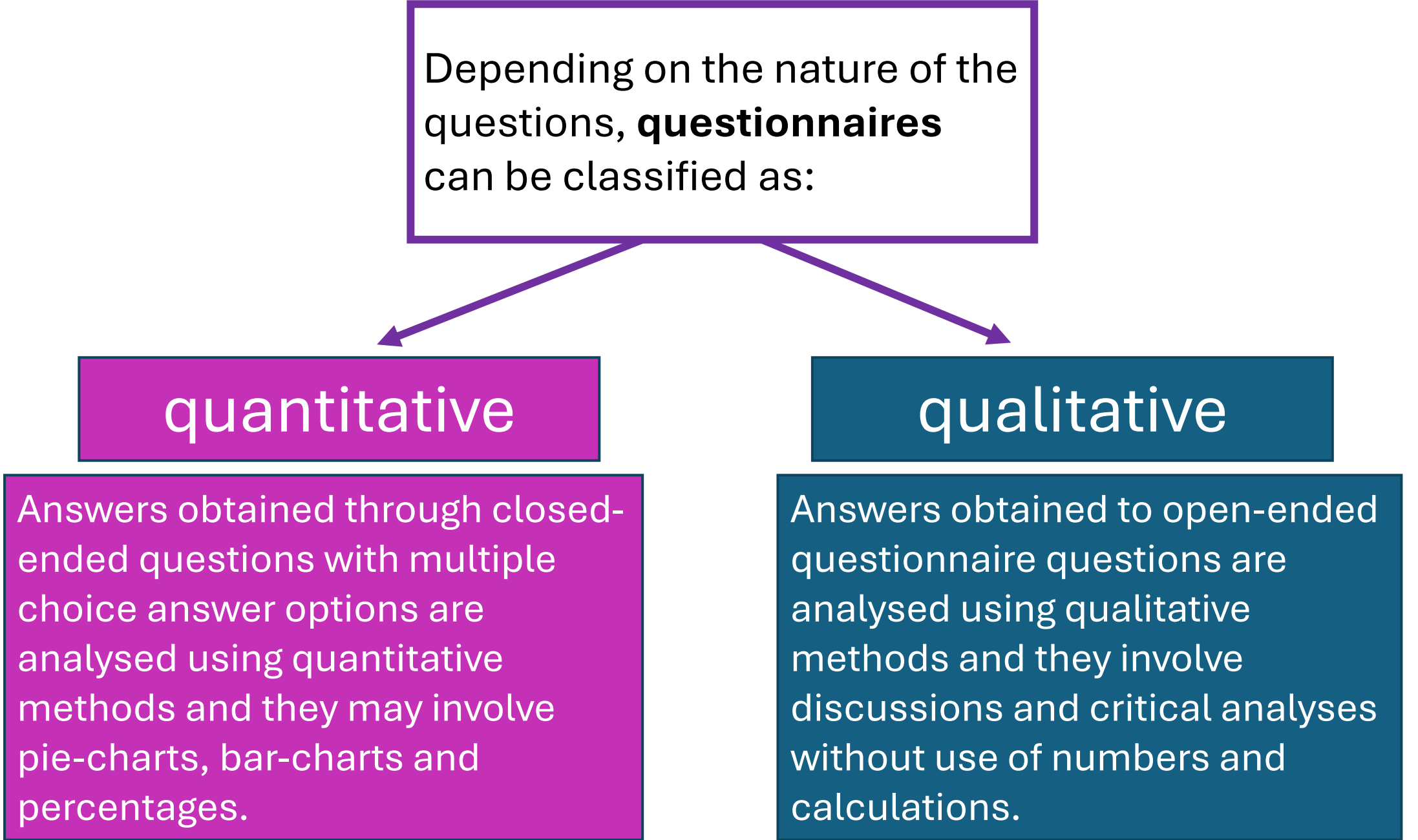


Name _____

Signature _____

Date _____

Depending on the nature of the questions, **questionnaires** can be classified as:



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graph TD; A["Depending on the nature of the questions, questionnaires can be classified as:"] --> B["quantitative"]; A --> C["qualitative"];
```

quantitative

Answers obtained through closed-ended questions with multiple choice answer options are analysed using quantitative methods and they may involve pie-charts, bar-charts and percentages.

qualitative

Answers obtained to open-ended questionnaire questions are analysed using qualitative methods and they involve discussions and critical analyses without use of numbers and calculations.

With reference to relevant literature, identify an area of research you may want to explore. Outline your preferred approach (qualitative/quantitative/mixed methods) to this enquiry by focusing on one or more of your research questions. Plan an appropriate data collection process and associated analysis of the data, reflecting on its strengths and limitations.

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Strengths?



Limitations?

Questionnaires

Strengths

- Practical
- Large amounts of information can be collected quickly
- Can be carried out by many people with limited affect to its validity and reliability
- Results can be quickly and easily quantified
- Can be analysed easily and objectively

Limitations

- Difficult to understand some forms of information
- No way of telling how truthful a respondent is being
- No way of telling how much thought a respondent has put in
- People answer based on their interpretation of the question (e.g. good, poor, difficult)
- Lacks **validity**



Discussion Points

- Validity
- Reliability
- Representative sample
- Generalisability

- the application of research results to cases or situations beyond those examined in the study

Generalisability

- the degree to which an assessment tool produces stable and consistent results.

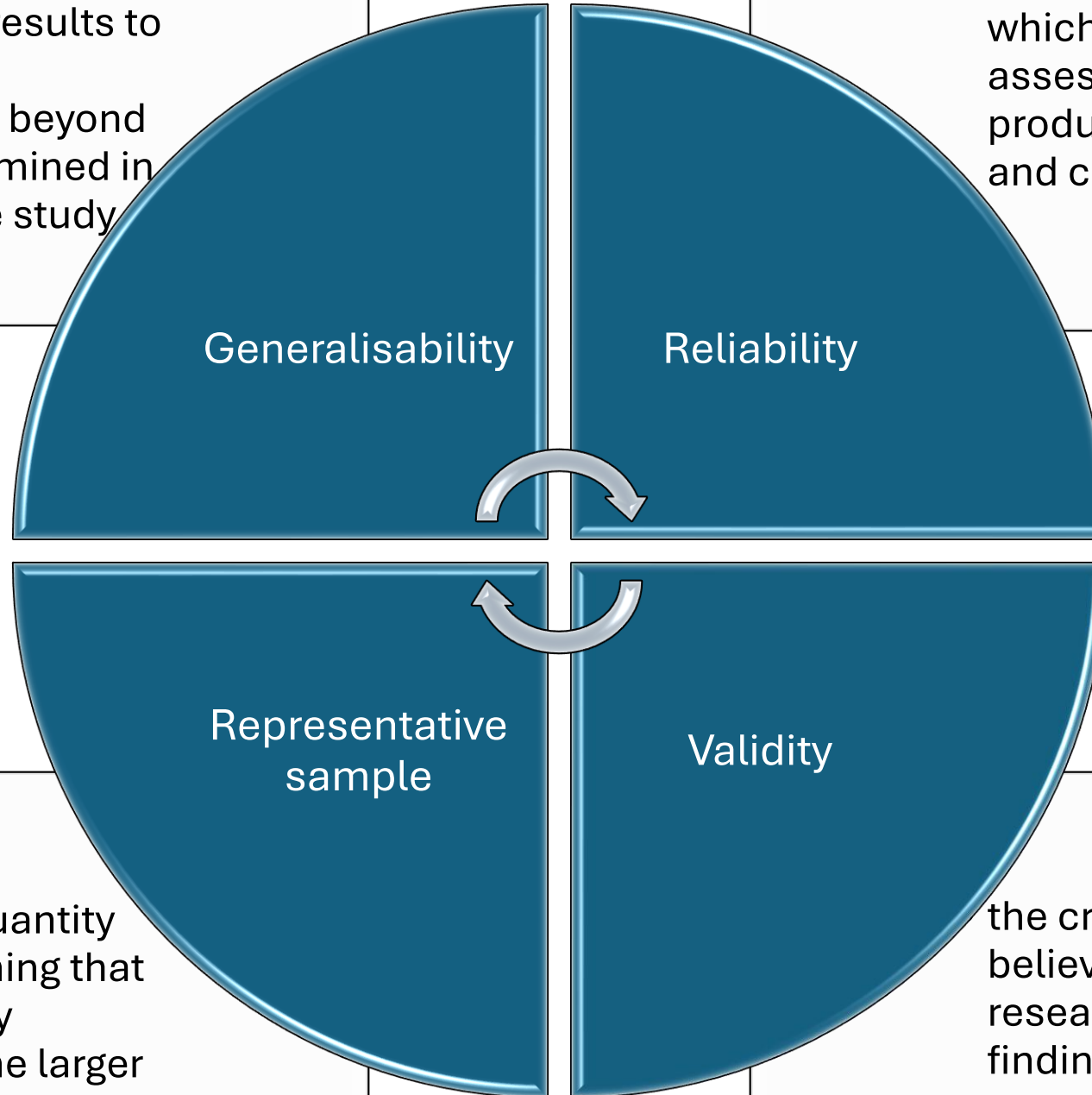
Reliability

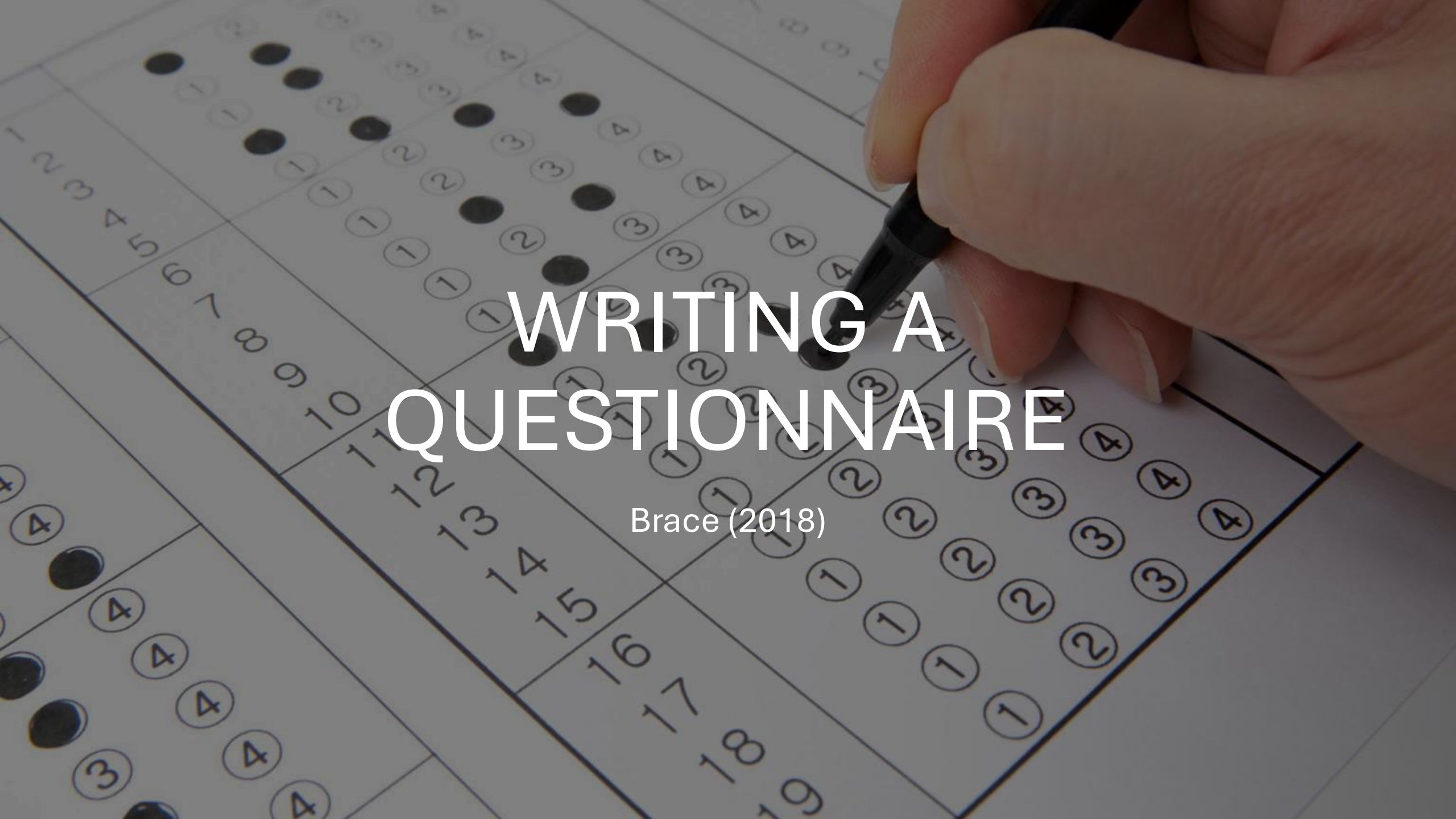
Representative
sample

- a small quantity of something that accurately reflects the larger entity

Validity

the credibility or believability of the research. Are the findings genuine?



A close-up photograph of a hand holding a black pen, filling out a questionnaire. The questionnaire is a grid with rows numbered 1 to 19 and columns numbered 1 to 10. Each cell contains a small circle with a number inside, likely for a Likert scale. Some circles are already filled with black ink. The text 'WRITING A QUESTIONNAIRE' is overlaid in large white letters, and 'Brace (2018)' is written below it in smaller white letters.

WRITING A QUESTIONNAIRE

Brace (2018)

Open questions

- ⊕ Open questions may produce unexpected results.
This can make the research more original and valuable.
- ⊖ **However**, it is difficult to analyse the results of the findings when the data is obtained through open questions.



Closed questions

The respondents are given a list of predetermined responses from which to choose their answer.

The list of responses should include every possible response and the meaning of the responses should not overlap. For example...



1. Please select your age group.

☐ Under 18

☐ 18 - 24

☐ 24 - 34

☐ 34 - 45

☐ Over 45

Closed questions

- The respondents are given a list of predetermined responses from which to choose their answer.
- The list of responses should include every possible response and the meaning of the responses should not overlap. For example...
- A **Likert** scale is a commonly used set of responses for closed questions.



Likert Scale

Example 1: How satisfied were you with your stay at our hotel?

1. Very dissatisfied.
2. Somewhat dissatisfied.
3. Neither satisfied nor dissatisfied.
4. Somewhat satisfied.
5. Very satisfied.

Example 2: Which image best describes your experience with our product?



Agreement

Strongly agree

Agree

Undecided

Disagree

Strongly disagree

Frequency

Very frequently

Frequently

Occasionally

Rarely

Never

Examples
of Likert
Scales

Importance

Very important

Important

Moderately important

Of little importance

Unimportant

Likelihood

Almost always true

Usually true

Occasionally true

Usually not true

Almost never true

Dichotomous Questions

This type of questions gives two options to respondents to choose from:

yes / no

agree / disagree.

It is the easiest form of questionnaire for the respondent in terms of responding to it.



What do you think of Starbucks?



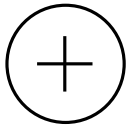
Love It



Hate it

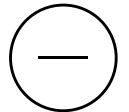
Multiple choice questions

Respondents are offered a set of answers they have to choose from.



= easy to complete.

However, if there are too many answers to choose from, it can make the questionnaire boring.



Best Multiple Choice Ever?

Which answer is correct?

1. All of the below.
2. None of the below.
3. All of the above.
4. One of the above.
5. None of the above.
6. None of the above.

Scaling / Ranking Questions

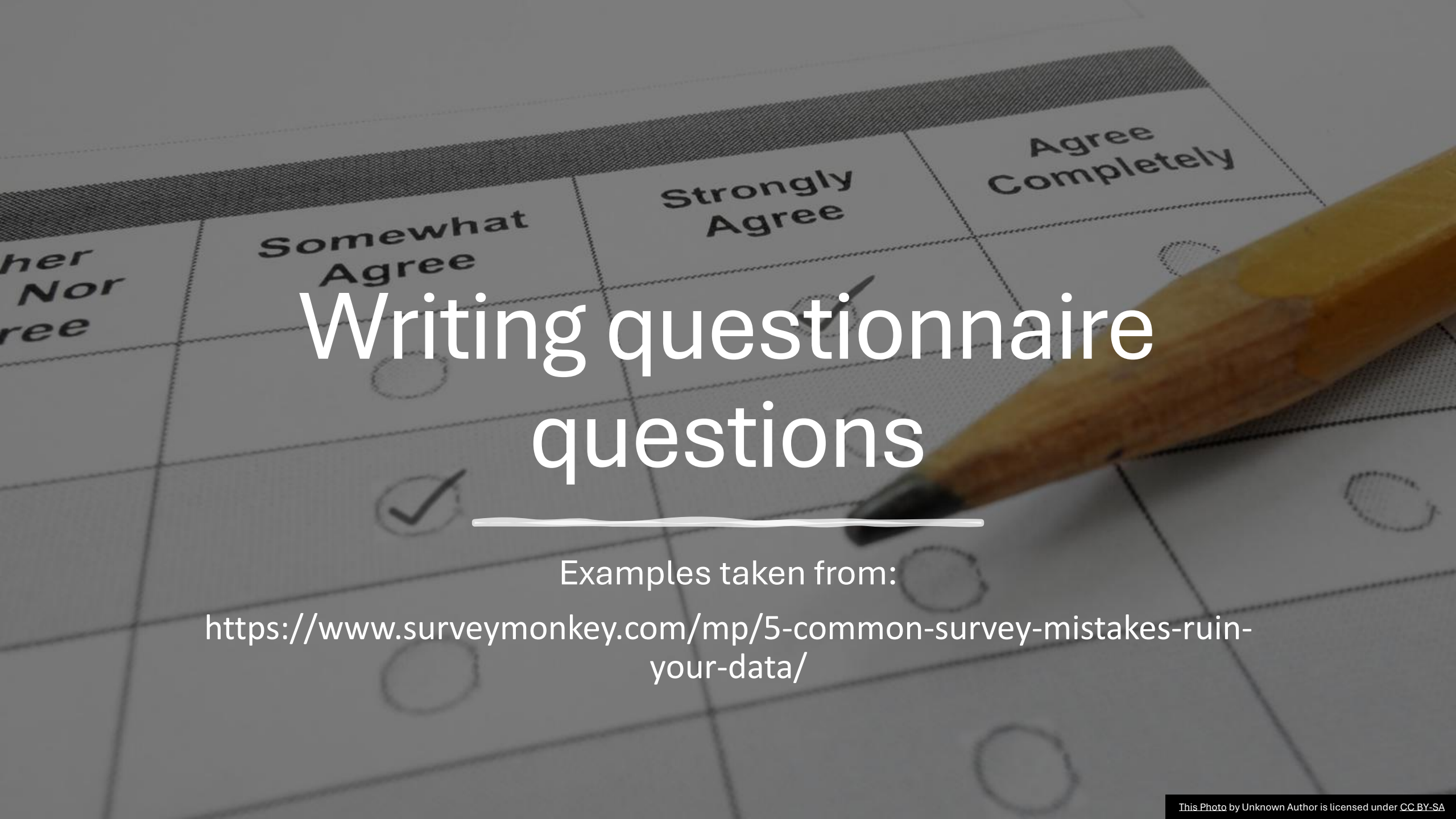
They present an option for respondents to rank the available answers to the questions on the scale of given range of values (for example from 1 to 10).



Points to consider

Social desirability –
individuals may lie
to put themselves
in a positive light

Anonymity – can
reduce social
desirability bias



Writing questionnaire questions

Examples taken from:

<https://www.surveymonkey.com/mp/5-common-survey-mistakes-ruin-your-data/>

Writing Questions

How short was
Churchill?

Good? / Bad?



Writing Questions

Avoid leading questions:

Better Question: How would you describe Churchill's height?

If the question is rewritten to be neutral-sounding, it can eliminate the leading bias.



Writing Questions

Where do you
enjoy drinking
coffee?

Good? / Bad?



Writing Questions

Avoid loaded questions

Some people dislike coffee and, therefore, can't answer the question.



Writing Questions

How useful will this textbook be for students and newly qualified teachers?

Good? / Bad?



Writing Questions

Stay away from double-barreled questions

Better Questions:

How useful will this textbook be for students?

How useful will this textbook be for newly qualified teachers?



Writing Questions

Do you always eat
breakfast?

Yes/No

Good? / Bad?



Writing Questions

Avoid absolutes in questions

Better Question: How many days a week do you usually eat breakfast?

Are there still issues with this?



Question testing - example 1



Do you have a personal computer (PC) at home?

(Tick one box)

Yes

☐

No

☐

Good / bad?

If bad, can you improve it?

Question testing - example 1 revised



Do you or your family have a computer at home?

(Tick one box)

Yes

☐

No

☐

Is this a better question?
Can you improve it?

Question testing - example 2



How often, if ever, are you punished at school; e.g. detention, sent to see the headteacher, sent out of the classroom?

- Never
- Rarely
- Sometimes
- Often



Good / bad?
If bad, can you improve it?

Question testing - example 2 revised



In the last four weeks, how many times have you been punished at school?

- Never
- Once or twice
- Three or more times



Good / bad?
If bad, can you improve it?



Piloting



What is a ‘pilot’ in research?

A pilot study can be defined as:

“a small study to test research protocols, data collection instruments, sample recruitment strategies, and other research techniques in preparation for a larger study”

Hassan, Z.A., Schattner P. & Mazza, D. (2006) Doing A Pilot Study: Why Is It Essential? Malays Fam Physician. Aug 31;1(2-3):70-3.

Piloting research tools – why bother?



Piloting is **crucial** - in order to:



ensure that the researcher has included questions that are necessary to measure the concept being studied (Dikko, 2016)



help identify any flaws or limitations within the interview design that allow necessary modifications to the study (Kvale, 2007)



ensure validity and reliability



Why pilot...?

Questionnaires

- Check that respondents understand the **terminology** used in the questionnaire;
- Check that respondents understand the **instructions** (e.g. 'If yes, go to Q4);
- Check that leading questions have not been used;
- Ensure that the questionnaire can be completed in a reasonable amount of time.

[Key considerations for testing and piloting surveys.pdf \(unhcr.org\)](#)

Interview questions

- Identify flaws or limitations in the questions – can the questions be answered?;
- Test the validity – are the questions clear and asking what you think you are asking?
- Is the interview too long / short?

[\(PDF\) Piloting for Interviews in Qualitative Research: Operationalization and Lessons Learnt \(researchgate.net\)](#)



Ensuring...

Validity

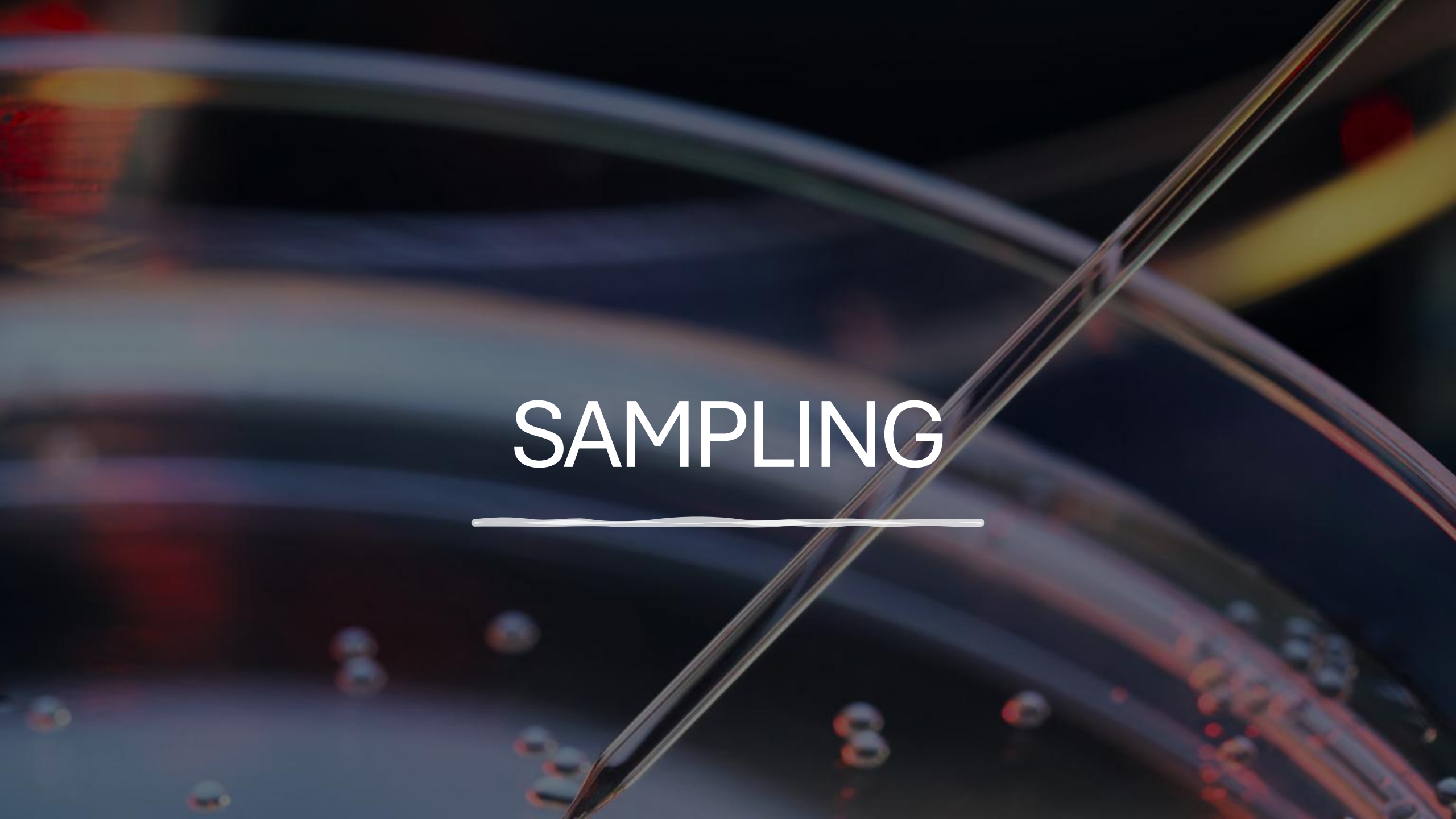
The extent to which the results really measure what they are supposed to measure.

- Can participants answer the questions? We must ensure that we should ask the questions that they are capable of providing answers.
- In a questionnaire, are the response codes provided sufficient? Missing response codes can lead to answers being forced to fit into the codes provided, or to large numbers of 'other' answers.
- Do the response codes provide the sufficient discrimination? If most respondents give the same answer, then the pre-codes provided may need to be reviewed to see how the discrimination can be improved and, if that cannot be achieved, queries should be raised regarding the value of including the question.
- Do questions and responses allow us to answer the research question(s)? We need to ensure that the answers which respondents give to those questions are the responses to the questions that we think we are asking.

Reliability

The extent to which the results can be reproduced when the research is repeated under the same conditions.

- In an interview situation, do the questions sound right? It is surprising how often a question looks acceptable when written on piece of a paper but sounds false, stilted or simply silly when read out loud. Might the question need to be paraphrased so that it sounds more natural?
- Do the participants understand the questions? It is easy for technical vocabulary and jargon to creep into questions, so we need to ensure that it is eliminated.
- Have we included any ambiguous questions, double barrelled questions, loaded or leading questions?
- Does the interview retain the attention and interest of participants throughout? If attention is lost, then the quality of the data may be in doubt. Changes may be required in order to retain the respondent's interest.
- Does the interview flow properly?
- In a questionnaire, can the respondent understand the routing instructions? Particularly with paper questionnaires, we should check that the routing instructions can be understood.
- Does the questionnaire unfold in a logical sequence, with a minimum of jumps between different ideas?

The background is a dark, abstract composition featuring blurred, curved lines of light in shades of blue, purple, and yellow, suggesting motion or light trails. A sharp, diagonal line representing a pen nib or needle enters from the top right, pointing towards the bottom left. The word "SAMPLING" is centered in a clean, white, sans-serif font. Below the text is a thin, white, wavy horizontal line.

SAMPLING

Research Question:

Do university students think that they are cleverer than their peers?

(i.e. others of the same age who are not university students)

The target population is the 10,000 undergraduate students at my university.

I recruit 200 participants.

They are studying in the Faculty of Science and Engineering.

Most of them are British, male, 18–20 years old and from a high socio-economic background.

I give them a maths test.

I then ask them to rate how well they think performed compared to everyone else.

The findings show that the average participant believes that they are cleverer than 66% of the population.

Can I conclude that most people believe themselves to be cleverer than their peers?

What is a sample?
Why use a sample?

Should the sample always be representative?

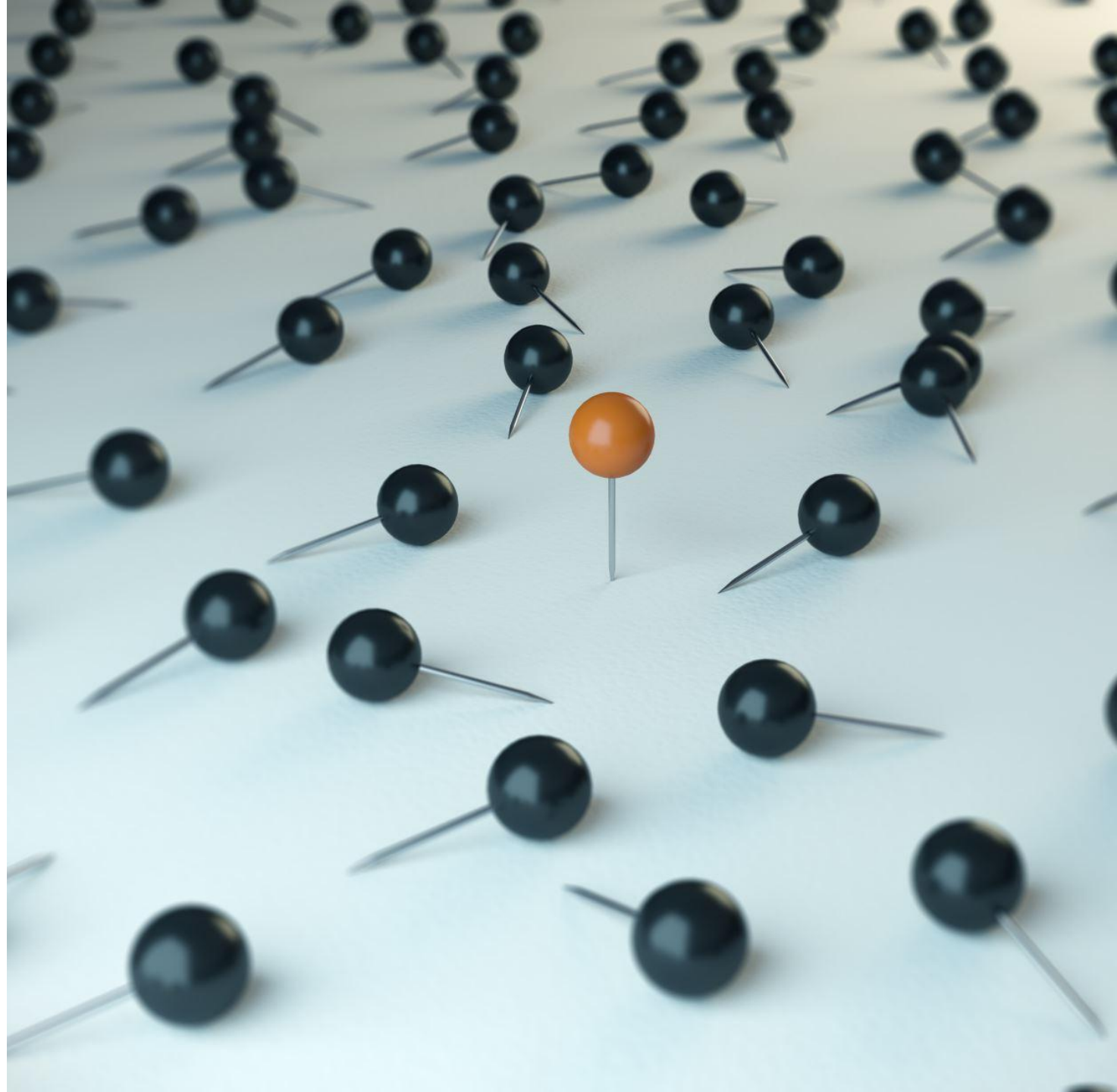


Assessment Component 2

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Random and non-
random sampling
techniques –
**which will you
choose?**

Flick, 2014



CONVENIENCE SAMPLING

Convenience sample

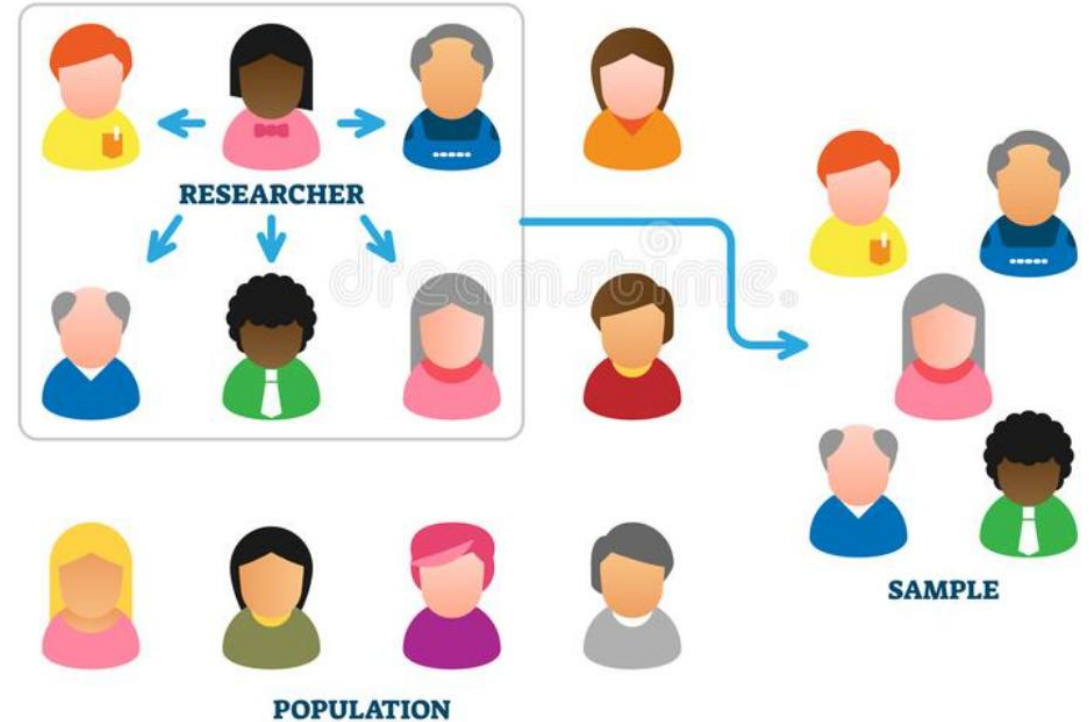
(non-random sampling)

Example:

Deliberately choose a group of people who are most likely to provide information that will answer your research question (e.g. teachers from a school who you know use a specific strategy)

Benefit:

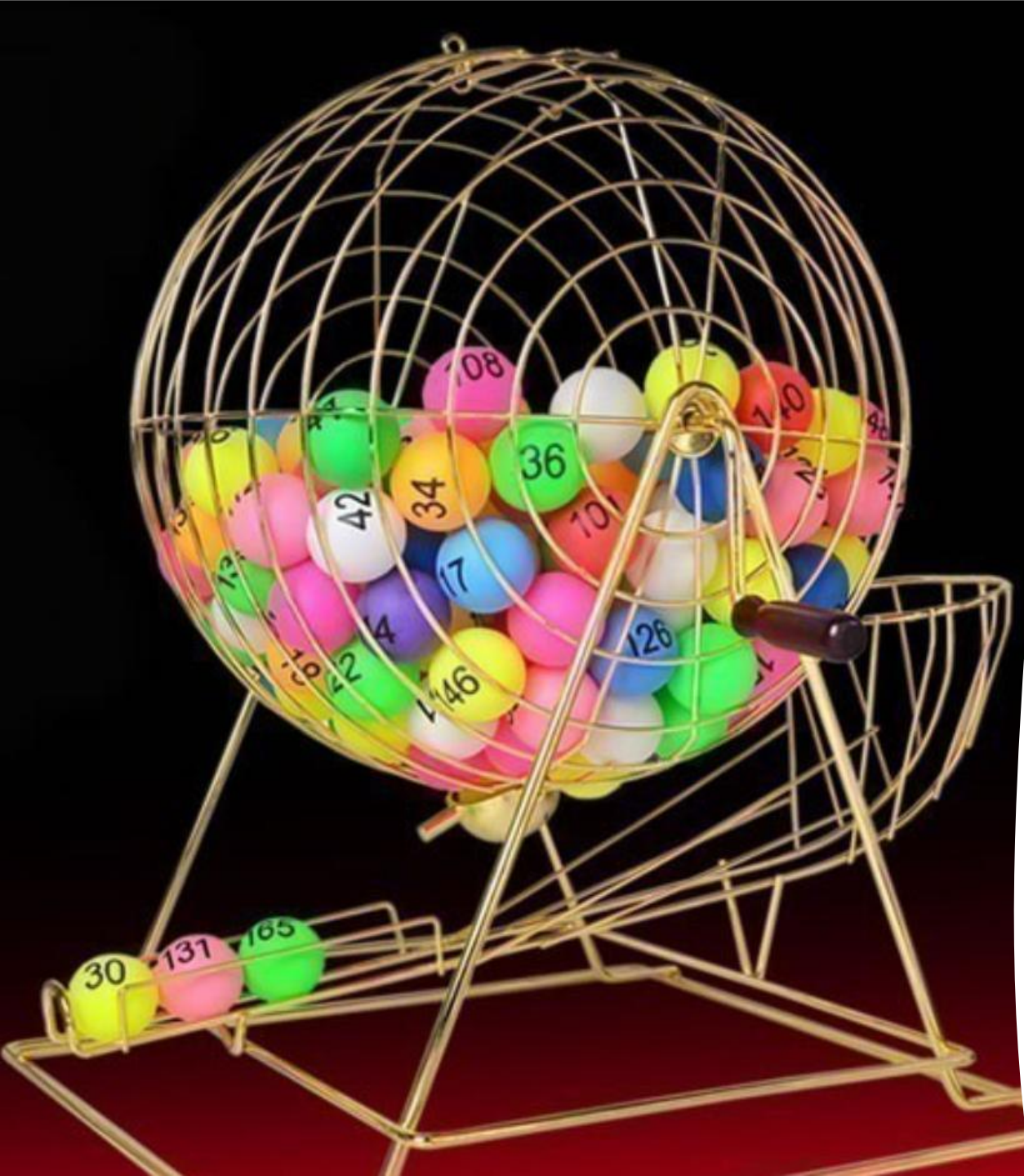
You have participants that are likely to give you the information you want to get



Limitations:

Does not produce a representative sample of the population and this can distort the results.

Findings cannot be generalised to the wider population.



Simple random sample

Example:

Assign a number to all 100 students.

Then, use a random number generator to select 10 random numbers and use the corresponding students as members in the sample.

Benefit:

Simple random samples are usually representative of the population we are interested in since every member has an equal chance of being included in the sample.

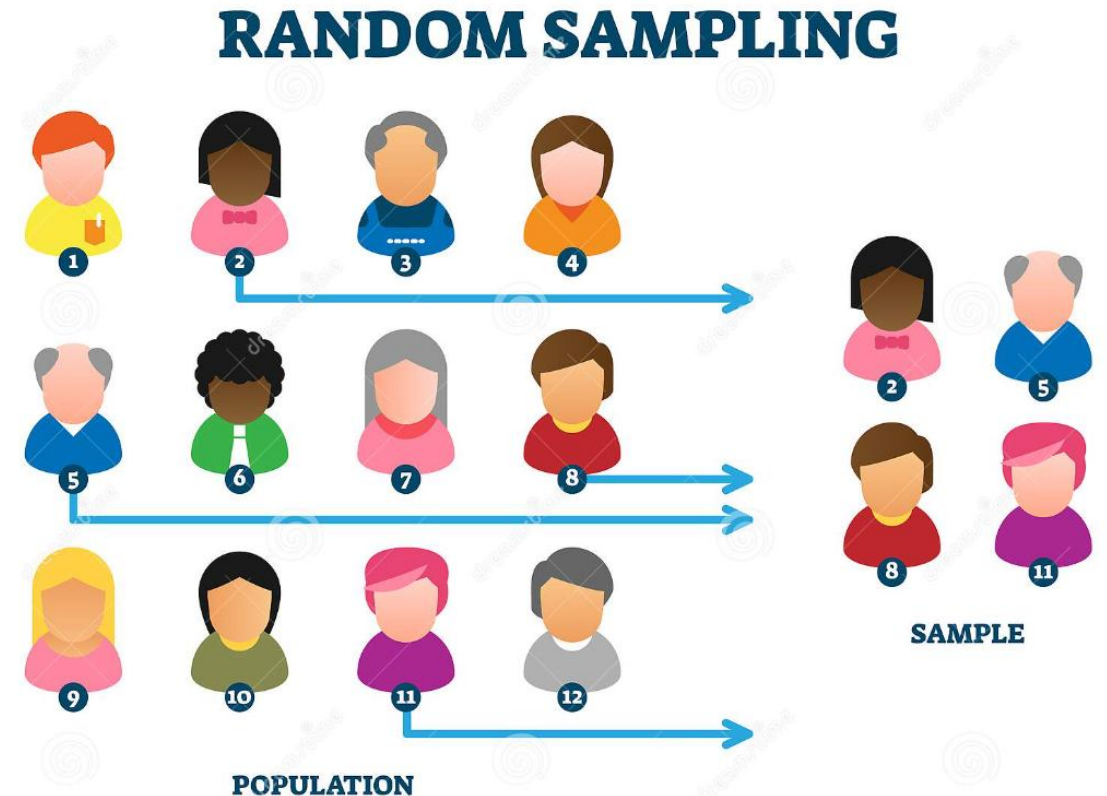
Systematic random sample

Example:

Create a list in alphabetical order based on the surname of all your students, randomly choose a starting point, and pick every 3rd student to be in the sample.

Benefit:

Systematic random samples are usually representative of the population we are interested in since every member has an equal chance of being included in the sample.



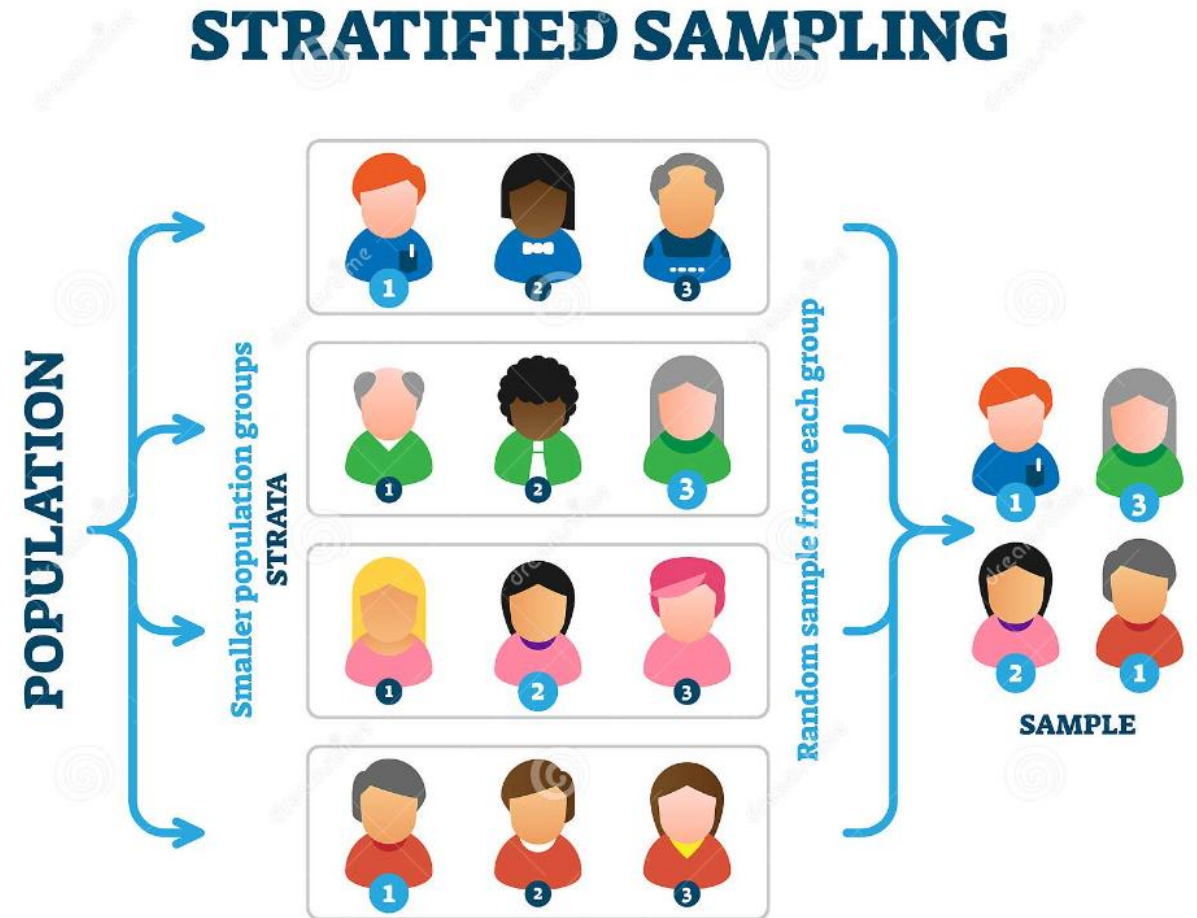
Stratified random sample

Example:

Split up all students according to their year group – Year 5, Year 7, Year 9 and Year 11. Randomly select 25 students from each grade to be in the sample.

Benefit:

Stratified random samples ensure that an equal number of students from each year group are included in the sample.





Suggested reading/ watching

What is mixed methods research?

Dr. John Creswell

www.youtube.com/watch?v=1OaNiIpyX8

Bell, J. (2017) Doing your research project: A guide for first-time researchers.

Chapter 2: Approaches to research:

- Styles of research
- Advantages and disadvantages of quantitative and qualitative research methods

Cohen, L., Manion, L. & Morrison, K. (2011) Research Methods in Education, 7th ed.; Routledge.

Pages 21-26: 1.13 Mixed methods research: a new paradigm

Follow-up Task

Follow-up task

Prepare a presentation of the plans that you have for your research study. Aim to speak for five minutes. You can prepare a PowerPoint presentation to help you, but you do not have to do so.

You could answer some or all of the following questions:

- What is your research about?
- Why have you chosen this topic?
- Why is it important (to you/to others)?
- Is there literature available that relates to your proposed study? Can you give examples?
- Can you suggest some suitable research questions?
- Do you have some ideas about the research tools that might be appropriate for data collection?

A birthday celebration scene. In the foreground, a multi-layered cake with blue, yellow, and red layers sits on a white cake stand. A slice has been cut out. To the left, a bowl of orange snacks is visible. To the right, there are several cupcakes. In the background, gold balloons spell out 'HAPPY BIRTHDAY'. A blue party hat is on the table. The scene is set in a kitchen with white cabinets.

Happy Birthday Penblwydd Hapus

to Yi and Sonia



Time for lunch.
See you next week.