# GCE A LEVEL MARKING SCHEME

## SUMMER 2022

## A LEVEL
## PSYCHOLOGY – COMPONENT 2
## A290U20-1

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## INTRODUCTION

This marking scheme was used by WJEC for the 2022 examination. It was finalised after detailed discussion at examiners' conferences by all the examiners involved in the assessment. The conference was held shortly after the paper was taken so that reference could be made to the full range of candidates' responses, with photocopied scripts forming the basis of discussion. The aim of the conference was to ensure that the marking scheme was interpreted and applied in the same way by all examiners.

It is hoped that this information will be of assistance to centres but it is recognised at the same time that, without the benefit of participation in the examiners' conference, teachers may have different views on certain matters of detail or interpretation.

WJEC regrets that it cannot enter into any discussion or correspondence about this marking scheme.

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**GCE A LEVEL PSYCHOLOGY – COMPONENT 2**

**SUMMER 2022 MARK SCHEME**

**Mark allocation**

| Question | AO1 | AO2 | AO3 |
|---|---|---|---|
| **1** | 4 | | 6 |
| **2** | 2 | | 4 |
| **3** | 4 | | |
| **4** | 2 | | |
| **5** | 2 | | 4 |
| **6** | 2 | | 12 |
| **7** | | 22 | |
| **8** | | 8 | |
| **9** | 4 | 5 | |
| **10** | | 15 | 4 |
| **TOTAL** | **20** | **50** | **30** |

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## Section A

1. (a) Explain what is meant by 'primary sources' in psychology. [2]

| Exemplar answers:<br><br>Information sources/data that is directly collected by the researcher first-hand e.g. they collect data through a questionnaire, experiment, interviews etc. for their research (2 marks)<br><br>Data that is collected by the researcher (1 mark)<br><br>• Any other appropriate content. | |
|---|---|
| **Marks** | **AO1** |
| **2** | • Reasonable explanation. |
| **1** | • Partial explanation. |
| **0** | • Inappropriate answer given.<br>• No response attempted. |

(b) Explain what is meant by 'secondary sources' in psychology. [2]

| Exemplar answers:<br><br>Information sources/data that have not been directly collected /created by the researcher e.g. use of methods such as content analysis of existing data, or literature reviews. (2 marks)<br><br>The researcher uses data that already exists (1 mark)<br><br>• Any other appropriate content. | |
|---|---|
| **Marks** | **AO1** |
| **2** | • Reasonable explanation. |
| **1** | • Partial explanation. |
| **0** | • Inappropriate answer given.<br>• No response attempted. |

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(c) Using examples from psychology, discuss why primary sources may be better than secondary sources. [6]

Credit will be given for:

- Primary sources may be more valid than secondary sources as the researcher has designed the investigation and the method of data collection specifically to test a hypothesis. For example, an experiment can be controlled to reduce or eliminate the effect of extraneous variables.
- Primary sources may be more ethical than secondary sources as the researcher has control over how participants are recruited and tested and can ensure that BPS guidelines are followed. For example, an interview of a sensitive topic can be adjusted to take into consideration any sensitive issues that arise.
- However, primary sources may be more time consuming to collect and analyse data whereas secondary data is already available; for example, existing medical data exists to examine the effectiveness of drug therapy for clinical disorders.
- Primary sources cannot examine historical trends whereas secondary sources can be looked at over time to see trends and changes; for example, we can understand obedience to authority at different points in time.

- Any other appropriate content.

| Marks | AO3 |
|---|---|
| **5-6** | • Reasonable discussion of the strengths and/or weaknesses of using primary sources compared to secondary sources, with relevant examples from psychology. |
| **3-4** | • Basic discussion of the strengths and/or weaknesses of using primary sources, with relevant examples from psychology.<br>OR<br>• Reasonable discussion of the strengths and/or weaknesses of using primary sources, without examples from psychology. |
| **1-2** | • Superficial discussion of the strengths and/or weaknesses of using primary sources, with relevant examples from psychology.<br>OR<br>• Basic discussion of the strengths and/or weaknesses of using primary sources, without examples from psychology. |
| **0** | • Inappropriate answer given.<br>• No response attempted. |

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2. (a) Explain the difference between quantitative and qualitative data. [2]

| |
|---|
| Exemplar answers:<br><br>Quantitative data is a type of data that can be measured numerically by the psychologist, so that statistical analysis can be completed, whereas qualitative data is a type of data that can be observed, but not measured numerically, usually in the form of words. (2 marks)<br><br>Quantitative data is usually numbers whereas qualitative data is often in word form. (1 mark)<br><br>• Any other appropriate content |

| Marks | AO1 |
|---|---|
| **2** | • Reasonable explanation of the difference. |
| **1** | • Partial explanation of the difference. |
| **0** | • Inappropriate answer given.<br>• No response attempted. |

(b) Evaluate the use of qualitative data in psychological research. [4]

| |
|---|
| Credit will be given for:<br>Strengths<br>• Validity.<br>• Ethical consideration.<br><br>Weaknesses<br>• Lower reliability.<br>• More time consuming to analyse.<br><br>Any other appropriate content. |

| Marks | AO3 |
|---|---|
| **3-4** | • Reasonable evaluation of the strengths **and** weaknesses of using qualitative data in psychological research.<br>OR<br>• Thorough evaluation of the strengths **or** weaknesses of using qualitative data in psychological research. |
| **1-2** | • Basic evaluation of the strengths **and** weaknesses of using qualitative data in psychological research.<br>OR<br>• Reasonable evaluation of the strengths **or** weaknesses of using qualitative data in psychological research. |
| **0** | • Inappropriate answer given.<br>• No response attempted. |

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3. Describe the following ways of assessing validity in psychological research:

(a) concurrent validity [2]

Exemplar answers:

Validating a measurement by comparing it with an established measurement that has known validity. If similar results occur on both tests, then this new test is valid. If not, then the new test would have to be redesigned and tested. (2 marks)

Comparing the results of a test to the results of an existing test which is valid (1 mark)

- Any other appropriate content

| Marks | AO1 |
|---|---|
| **2** | • Reasonable description. |
| **1** | • Basic description. |
| **0** | • Inappropriate answer given.<br>• No response attempted. |

(b) construct validity [2]

Exemplar answers:

The most sophisticated test of validity as it looks at whether the overall results reflect the phenomena as a whole (external validity). Checking the existing definitions of the behaviour being studied and redesigning the test if it measures a different construct. (2 marks)

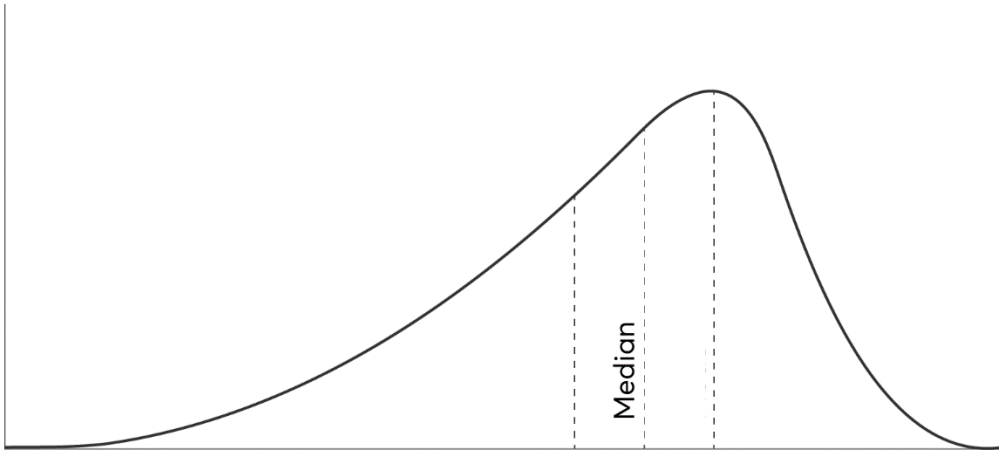
Checking that the test is measuring the construct that it claims to be measuring (1 mark)

- Any other appropriate content

| Marks | AO1 |
|---|---|
| **2** | • Reasonable description. |
| **1** | • Basic description. |
| **0** | • Inappropriate answer given.<br>• No response attempted. |

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4. Identify which measures of central tendency are represented by (a) and (b) on this diagram:




(a)

| Credit will be given for:<br>Mean | |
|---|---|
| **Marks** | **AO1** |
| **1** | • Correct identification of the mean. |
| **0** | • Inappropriate answer given.<br>• No response attempted. |

(b)

| Credit will be given for:<br>Mode | |
|---|---|
| **Marks** | **AO1** |
| **1** | • Correct identification of the mode. |
| **0** | • Inappropriate answer given.<br>• No response attempted. |

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5. (a) Define the term ‘case studies’. [2]

| Exemplar answer:<br><br>A method which involves an in-depth investigation of a phenomenon, which uses a descriptive analysis of a person, group or event. It is a holistic study through one or more methodologies that is usually longitudinal (2 marks)<br><br>An in-depth investigation of a person or event using several methods (1 mark)<br><br>• Any other appropriate content | |
|---|---|
| **Marks** | **AO1** |
| **2** | • Reasonable definition. |
| **1** | • Basic definition. |
| **0** | • Inappropriate answer given.<br>• No response attempted. |

(b) Explain **one** strength and **one** weakness of using case studies in psychological research. [2+2]

| Credit will be given for:<br>Strength<br>• Higher validity due to in-depth data and/or analysis.<br>• Less ethical issues due to the use of several methods.<br><br>Weaknesses<br>• Less reliable due to the varied methodology.<br>• Possible ethical issues of anonymity or confidentiality due to studying an individual or small group.<br><br>• Any other appropriate content. | |
|---|---|
| **Marks** | **AO3** |
| **2** | • Reasonable explanation of one appropriate strength or weakness. |
| **1** | • Basic explanation of one appropriate strength or weakness. |
| **0** | • Inappropriate answer given.<br>• No response attempted. |

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6. (a) Briefly describe the results found by Milgram in his (1963) research 'Behavioural Study of Obedience'. [2]

Example answers:

Milgram found that 65% of his participants obeyed the experimenter and gave the 450-volt shock. Some participants were seen to sweat or dig their fingernails into their flesh. [2 marks]

26 participants or 65% of the participants displayed obedience; 35% of the participants were disobedient. [1 mark]

Milgram tested 40 males to see how many would be obedient; he found two-thirds of his sample were obedient. [1 mark]

- Any other appropriate content.

| Marks | AO1 |
|---|---|
| **2** | • Reasonable description. |
| **1** | • Basic description. |
| **0** | • Inappropriate answer given.<br>• No response attempted. |

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(b) Milgram conducted an observation of obedience using a volunteer (self-selected) sample in a laboratory environment. Evaluate the methodology, sample and location of research used by Milgram in his (1963) research '*Behavioural Study of Obedience*' [12]

Credit will be given for:

Evaluation of the sample:

- The sample was all male so prone to beta bias, meaning the findings could not be generalised to women but this was acceptable scientific research at the time.
- The sample contained a range of ages, occupations and backgrounds, but it was limited by location (New Haven, USA) meaning the findings cannot be generalised to other cultures; cross cultural studies have produced mixed findings.
- The sample was self-selecting which may have meant that the participants were more likely to take the research seriously; however, only certain people might volunteer for research.

Evaluation of the observation

- Several observers were used, increasing the internal reliability of the method but the observers did discuss their surprise at what they were witnessing which could have affected their interpretation of the behaviour.
- Objective measures recorded the behaviour of the participant, increasing validity but this does not give an insight as to how they were feeling or what they were thinking.

Evaluation of the location (laboratory)

- The research controlled for extraneous variables by using standardised procedures, such as the same confederate and prods. This allowed for the study to be repeated to test for reliability (e.g. Burger 2009) but critics claim that the standardised procedures were not maintained after the first few trials (Perry).
- The study lacks ecological validity as it is not an everyday task to be asked to administer electric shocks on command; but Milgram claimed that events such as the Holocaust were not everyday acts and soldiers were often in a unique situation.

- Any other appropriate content

**N.B.** Description of the issues will be limited to 1-3 marks

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| Marks | AO3 |
|---|---|
| **10-12** | • Thorough evaluation of the sample, observation and location.<br>• Evaluative comments are evidently relevant to the context.<br>• Structure is logical throughout.<br>• Depth and range included.<br>• A clear and appropriate conclusion is reached based on evidence presented. |
| **7-9** | • Reasonable evaluation of the sample, observation and location, but not in equal measure.<br>**OR**<br>• Thorough evaluation of two of the features above.<br>• Evaluative comments show some relevant to the context.<br>• Structure is mostly logical.<br>• Depth and range, but not in equal measure.<br>• A reasonably clear and appropriate conclusion is reached based on evidence presented. |
| **4-6** | • Basic evaluation of the sample, observation and location.<br>**OR**<br>• Reasonable evaluation of two of the features above.<br>• Evaluative comments are generic and not appropriately contextualised.<br>• Structure is reasonable.<br>• Depth or range.<br>• A basic conclusion is reached. |
| **1-3** | • Superficial evaluation of the sample, observation or location.<br>**OR**<br>• Basic evaluation of two of the features above.<br>**OR**<br>• Thorough evaluation of one feature.<br>• Answer lacks structure.<br>• No conclusion. |
| **0** | • Inappropriate answer given.<br>• No response attempted. |

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## Section B - Personal Investigations

### INVESTIGATION ONE: An experiment on helping behaviour.

7. (a) (i) State the operationalised experimental hypothesis used in your investigation. [2]

Exemplar answers:

- Girls are more likely to stop and help a student who is lost at college and asking for help than boys will. (2 marks)
- There will be a significant difference between how much help is offered to a teacher from boys and girls in the class. (2 marks)
- Boys will be less helpful in the classroom than girls. (1 mark)

- Any other appropriate content

| Marks | AO2 |
|---|---|
| **2** | • Appropriate hypothesis with both independent variable and dependent variable operationalised and linked to this research. |
| **1** | • Basic hypothesis with either independent variable or dependent variable operationalised and linked to this research. |
| **0** | • Inappropriate answer given.<br>• No response attempted. |

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(ii) Identify whether the hypothesis in (a) (i) is directional or non-directional and explain why you chose this for your experiment. [1+2]

Credit could be given for:

Correct identification of whether the hypothesis in (a)(i) is directional or non-directional.

| Marks | AO2 |
|---|---|
| **1** | • Accurate identification |
| **0** | • Inappropriate answer given.<br>• No response attempted. |

Exemplar answers:

- I chose a non-directional hypothesis as the previous research has suggested different results, with some studies suggesting that due to evolutionary factors, girls are more inclined to help others in a group whereas social psychological research has shown that gender is not a contributing factor and it depends on how you are brought up. (2 marks)
- I chose a directional hypothesis as the previous research suggested that girls are more helpful than boys. (1 marks)

- Any other appropriate content

| Marks | AO2 |
|---|---|
| **2** | • Appropriate explanation of the justification for the hypothesis for this research. |
| **1** | • Basic explanation of the justification for the hypothesis for this research. |
| **0** | • Inappropriate answer given.<br>• No response attempted. |

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(b) (i) Identify and explain **one** extraneous variable you considered in your experiment. [1+2]

Credit could be given for:

| Marks | AO2 |
|---|---|
| 1 | Identification of a plausible extraneous variable |

Exemplar answers:

One extraneous variable was time of day [1] because if the student was in a hurry to get to class, they may have been more worried about getting into trouble than stopping to help; this affects the validity of the findings. [2]

One extraneous variable was whether the student knew the confederate lying on the floor [1] as they might be more likely to help someone that they liked rather than someone they didn't like, affecting the validity/reliability of the study. [2]

One extraneous variable was the presence of a teacher [1] as the student may have though the teacher was going to help and they did not need to. [1]

One extraneous variable was the furniture in the common room [1] as they might not have seen the person on the floor. [1]

- Any other appropriate content

| Marks | AO2 |
|---|---|
| **2** | • Appropriate explanation of an extraneous variable with links to this research. |
| **1** | • Basic explanation of an extraneous variable linked to this research. |
| **0** | • Inappropriate answer given.<br>• No response attempted. |

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(ii) Explain how you dealt with the extraneous variable identified in (b) (i) [2]

Credit could be given for:

- Standardised procedures.
- Collecting data at the same time of day.
- Using a matched pairs design.

- Any other appropriate content.

Exemplar answers:

We controlled the extraneous variable by conducting the experiment in the common room at the same time of day so that the students were all on break or lunch and were not at risk of missing lessons. [2 marks]

We kept the common room the same for all participants so that they could all see the person needing help. [2 marks]

We asked the teachers not to come into the common room. [1 mark]

| Marks | AO2 |
|---|---|
| **2** | • Appropriate explanation of how the extraneous variable was controlled with links to this research. |
| **1** | • Basic explanation of how the extraneous variable was controlled with links to this research. |
| **0** | • Inappropriate answer given.<br>• No response attempted. |

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(c) Identify the experimental design and explain why it was appropriate in your experiment. [1+3]

Credit could be given for:

Identification of experimental design

- Independent groups.
- Repeated measures / repeated groups (not relevant for gender).
- Matched pairs.

- Any other appropriate content.

| Marks | AO2 |
|---|---|
| **1** | • Accurate identification. |
| **0** | • Inappropriate answer given.<br>• No response attempted. |

Exemplar answers:

- I chose an independent groups design as my independent variable was gender and I wanted to test the difference between the two groups of boys and girls. It would be impossible to use a repeated measures design as a boy could not then repeat the study as a girl in my experiment. [3 marks]
- I chose a matched pairs design as I wanted to test the difference between two groups of boys and girls, but I wanted to control for as many extraneous variables as I could. [2 marks]
- I chose an independent groups design as I had two groups – one group of boys and one group of girls and I couldn't use repeated measures. [1 mark]

- Any other appropriate content

| Marks | AO2 |
|---|---|
| **3** | • Thorough appropriate explanation of the choice of experimental design clearly linked to the research. |
| **2** | • Basic appropriate explanation of the choice of experimental design clearly linked to the research.<br>**OR**<br>• Thorough appropriate explanation of the choice of experimental design not clearly linked to the research. |
| **1** | • Superficial appropriate explanation of the choice of experimental design clearly linked to the research.<br>**OR**<br>• Basic appropriate explanation of the choice of experimental design not clearly linked to the research. |
| **0** | • Inappropriate answer given.<br>• No response attempted. |

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(d) Identify and fully justify the choice of inferential statistical test that you used to analyse the data in your experiment. [4]

*There will potentially be differences that reflect the research choices made by each candidate; credit the inferential statistical test choice if it is potentially an appropriate way of analysing the data collected in their experiment on helping behaviour.*

Exemplar answers:

- I used a Mann Whitney test to analyse my data as I was testing for a difference between two independent groups (participants were either male or female) and the level of measurement was interval (number of times they helped). [4 marks]
- Any other appropriate content.

**N.B.** Candidates who report selecting a Spearman's Rho or any other inferential test that would not be used for an experiment, cannot receive credit.

| Marks | AO2 |
|---|---|
| **4** | • Inferential statistical test identified.<br>**All of the following conditions included in the justification:**<br>• Test of difference noted and linked to research.<br>• Level of measurement noted and linked to research.<br>• Independent or related data noted and linked to research. |
| **3** | • Inferential statistical test identified.<br>**Two of the following conditions included in the justification:**<br>• Test of difference noted and linked to research.<br>• Level of measurement noted and linked to research.<br>• Independent or related data noted and linked to research. |
| **2** | • Inferential statistical test identified.<br>**One of the following conditions included in the justification:**<br>• Test of difference noted and linked to research.<br>• Level of measurement noted and linked to research.<br>• Independent or related data noted and linked to research. |
| **1** | • Inferential statistical test identified.<br>• No justification of the inferential statistical test chosen.<br>**OR**<br>• Incorrect justification of the inferential statistical test chosen. |
| **0** | • Inappropriate answer given.<br>• No response attempted. |

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(e) Explain **two** improvements you could make to your experiment. [4]

Exemplar answers:

Reliability issues could be improved with techniques such as standardisation, operationalising and carrying out a repeat of the experiment at a later date. [2 marks]

Validity issues could be improved by increasing control/conducting research in the laboratory not the field; increasing the realism of the task; using a more representative sample. [2 marks]

- Any other appropriate content.

| Marks | AO2 |
|---|---|
| **4** | • Reasonable explanation of two improvements clearly linked to this investigation. |
| **3** | • Basic explanation of two improvements linked to this investigation. |
| **2** | • Superficial explanation of two improvements linked to this investigation.<br>**OR**<br>• Reasonable explanation of one improvement clearly linked to this investigation. |
| **1** | • Two improvements are identified but not explained or linked.<br>**OR**<br>• Basic explanation of one improvement linked to this investigation |
| **0** | • Inappropriate answer given.<br>• No response attempted. |

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**INVESTIGATION TWO – An interview on the use of social media**

8. (a) Explain **one** strength and **one** weakness of using an interview in your investigation. [2+2]

Credit could be given for:

Strength
- Higher validity as the respondent can give detailed, in-depth answers.
- Can be more ethical as the interviewer can adjust any sensitive questions to suit the participants' responses.

Weakness
- Can be time consuming to collect and analyse data.
- Can be less reliable as participants' responses are unique.
- Can be less reliable as the analysis can be subject to bias.

- Any other appropriate content.

| Marks | AO2 |
|---|---|
| **2** | • Reasonable explanation of an appropriate strength or weakness clearly linked to this research. |
| **1** | • Basic explanation of an appropriate strength or weakness clearly linked to this research. |
| **0** | • Inappropriate answer given.<br>• No response attempted. |

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(b) Explain **one** ethical issue that you considered in your interview and explain how you dealt with this ethical issue. [2+2]

Credit could be given for:

Appropriate ethical issues
- Confidentiality
- Deception
- Risk of stress, anxiety, humiliation or pain
- Risk to the participants' values, beliefs, relationships, status or privacy
- Valid consent
- Working with vulnerable individuals (children)

Ways of dealing with the issue:
- Ethical committees
- Following ethical guidelines, e.g. BPS
- Debriefing
- Gaining fully informed consent
- Minimising risk

Exemplar answers:

- One ethical issue that I had to consider was valid consent. Because I was asking students in sixth form, they might not have understood what they were agreeing to and just thought it was a survey for college rather than a piece of psychological research into social media use. [2 marks] To deal with this issue, I made an information sheet to fully explain that this interview was part of my psychology A-level studies and their responses to the questions on social media would be analysed into a report for my teacher to read. [2 marks}
- One ethical issue was consent. The students might not have known that I was collecting data for a piece of research when they agreed to take part [1 mark]. To deal with this I made an information sheet and asked them to read it before agreeing to take part [1 mark].

- Any other appropriate content.

1 mark for explaining appropriate ethical issue.
1 mark for linking the ethical issue to the personal investigation.
1 mark for explaining an appropriate way of dealing with the ethical issue identified.
1 mark for linking the appropriate way of dealing with the ethical issue to the personal investigation.

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## Section C

9. A primary school headteacher received complaints from a few parents that a teacher was discriminating against the boys in her class. The parents complained the teacher was giving the boys more negative attention and less positive attention than the girls. The headteacher asked an educational psychologist to carry out a participant observation. Using event sampling, she recorded how many times the teacher paid attention to the pupils in the class, noting the gender of the pupil and whether the attention was negative or positive. The educational psychologist's findings are shown in the table below:

Fig.1. A table to show the number and gender of the pupils receiving positive attention and negative attention.

| | Male pupil | Female pupil |
|---|---|---|
| Number of pupils who received positive attention | 6 | 18 |
| Number of pupils who received negative attention | 12 | 4 |

(a) Describe what is meant by the term 'participant observation'. [2]

Exemplar answers:

A research method where the researcher takes on the role of a participant whilst observing other participants' behaviour around them (2 marks)

Where the researcher is part of the event being studied (1 mark)

Any other appropriate content.

| Marks | AO1 |
|---|---|
| **2** | • Reasonable description. |
| **1** | • Basic description. |
| **0** | • Inappropriate answer given.<br>• No response attempted. |

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(b) Describe what is meant by the term ‘event sampling’. [2]

| Exemplar answers:<br><br>Event sampling is a method of recording behaviour in an observation. The researcher records how many times a particular event occurs. [2 marks]<br><br>Event sampling is when the researcher counts how many times something happens [1 mark]<br><br>Any other appropriate content. | |
|---|---|
| **Marks** | **AO1** |
| **2** | • Reasonable description. |
| **1** | • Basic description. |
| **0** | • Inappropriate answer given.<br>• No response attempted. |

(c) Identify the level of measurement of the data collected by the researcher in this research. [1]

| Credit will be given for:<br><br>• Interval data<br>• Ratio data | |
|---|---|
| **Marks** | **AO2** |
| **1** | • Identification is accurate. |
| **0** | • Inappropriate answer given.<br>• No response attempted. |

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(d) The educational psychologist decided to write up a report about the observation for the headteacher. In the report she decided to convert the data in Fig. 1 into percentages.

Fig. 2 – A table to show the percentage and gender of the pupils receiving positive attention and negative attention.

| | Male pupil | Female pupil |
|---|---|---|
| Number of times pupils receive positive attention | 15% | (ii) |
| Number of times pupils receive negative attention | (i) | 10% |

(i) Showing your workings, calculate the percentage for the number of times negative attention was received by a male pupil. [2]

Credit will be given for:

- Correct percentage = 30%
- Correct calculation:
- 12 students divided by the total of 40 students multiplied by 100
- 12/40 x 100
- Any other appropriate content.

| Marks | AO2 |
|---|---|
| **2** | • Accurate working shown **and** accurate percentage calculated. |
| **1** | • Accurate workings **or** accurate percentage calculated. |
| **0** | • Inappropriate answer given.<br>• No response attempted. |

(ii) Showing your workings, calculate the percentage for the number of times positive attention was received by a female pupil. [2]

Credit will be given for:

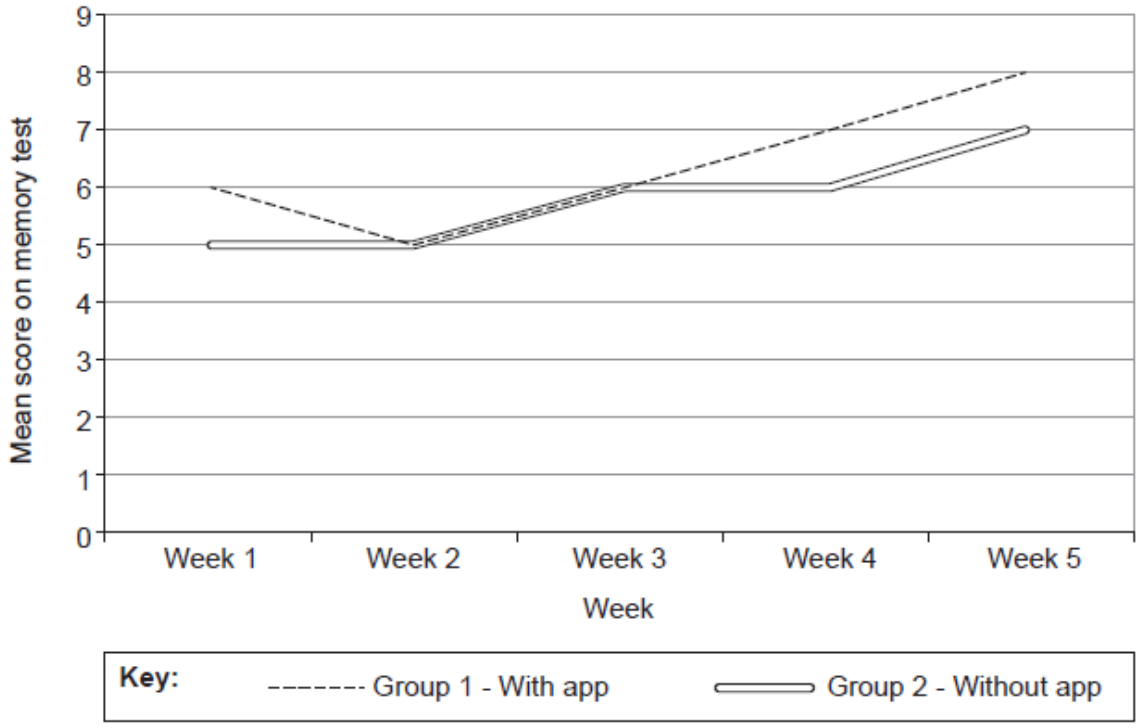
- Correct percentage = 45%
- Correct calculation:
- 18 students divided by the total of 40 students multiplied by 100
- 18/40 x 100
- Any other appropriate content.

| Marks | AO2 |
|---|---|
| **2** | • Accurate working shown **and** accurate percentage calculated. |
| **1** | • Accurate workings **or** accurate percentage calculated. |
| **0** | • Inappropriate answer given.<br>• No response attempted. |

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10. A psychologist investigated the claim a company had made about its brain training app. The company claimed that using the app every day could improve memory. He decided to conduct a matched pairs experimental design, using 20 pairs. Group One used the brain training app for 15 minutes every day, Group Two did not use the app at all. Each of the groups was given a memory test (on a scale of 0-10) once a week for five weeks. The memory test was administered in a laboratory. The psychologist calculated the mean score of each group for each of the weekly tests and the results are shown on the graph below.

Fig.3 – Mean scores on memory test with or without brain training app over five weeks.




(a) (i) Identify the graphical representation used by the psychologist in Fig.3. [1]

| Credit will be given for:<br>• A line graph.<br>• A line plot / line chart.<br><br>• Any other appropriate content. | |
|---|---|
| **Marks** | **AO2** |
| **1** | • Accurate identification of the graphical representation. |
| **0** | • Inappropriate answer given.<br>• No response attempted. |

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(ii) Explain why the graphical representation used by the psychologist in Fig.3. is appropriate in this research. [2]

Credit will be given for:
- Appropriate justification of why the line graph is appropriate.

Exemplar answer:

A line graph was used because the data is showing quantitative values of scores on a memory test over a specified time interval of five weeks [2 marks]

A line graph was used because the data is changing over time [1 mark]

- Any other appropriate content

| Marks | AO2 |
|---|---|
| **2** | • Appropriate justification clearly linked to the research. |
| **1** | • Appropriate justification not clearly linked to the research. |

(iii) What conclusion can be drawn from the information in Fig.3. [2]

Exemplar answers:

The improvement in the mean scores on the memory test over the five weeks for the group who used the app was the same (from 6 to 8) as for the group who did not use the app (from 5 – 7). [2 marks]

Both groups improved the same amount over the time period [1 mark]

- Any other appropriate content.

**N.B.** No credit for inferential conclusions (e.g. the brain training app did not make memory improve)

| Marks | AO2 |
|---|---|
| **2** | • Appropriate descriptive conclusion clearly linked to the research. |
| **1** | • Appropriate descriptive conclusion not clearly linked to the research. |
| **0** | • Inappropriate answer given.<br>• No response attempted |

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(b) Fully explain how the psychologist could have applied the matched pairs experimental design in this research. [3]

Credit will be given for:

- An appropriate explanation of the way the psychologist could have matched the pairs in this research; e.g. criteria for matching, how the pairing was decided and how they were allocated into the two groups.

Exemplar answers:

The researcher could have asked all 40 participants for their age and then matched each participant with another participant of a similar or close age, as this is a variable that may influence memory recall. The researcher would then allocate one of the pairs into group 1 to use the app for the five weeks and the other to group 2 to complete the tests without the app. [3 marks]

The researcher could have matched the participants on existing recall skills. He could have given all 40 participants a memory test as a baseline measure. The participants could then be matched into a pair with another participant who scored similar or the same baseline score. [2 marks]

The participants could have been matched for gender by putting one male participant and one female participant into each pair to be tested. [1 mark]

- Any other appropriate content.

| Marks | AO2 |
|---|---|
| **3** | • Appropriate reasonable explanation clearly linked to the research. |
| **2** | • Appropriate basic explanation clearly linked to the research.<br>**OR**<br>• Appropriate reasonable explanation not clearly linked to the research. |
| **1** | • Appropriate basic explanation not clearly linked to the research. |
| **0** | • Inappropriate answer given.<br>• No response attempted. |

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In the final week the psychologist compared the memory scores of the 20 pairs; in 18 of the pairs the participants had different memory scores. The psychologist used a Wilcoxon matched pairs signed ranks test.

(c) Apart from using a matched pairs experimental design, explain **two** reasons why a Wilcoxon matched pairs signed ranks test is appropriate to analyse the data in this research. [2+2]

Credit will be given for:
- Using two groups
- Ordinal data or above
- Test for difference

Exemplar answers:

A Wilcoxon test was appropriate because the test is looking for a difference between the mean scores of the memory test for the group who used the brain training app and the group who didn't use the app. [2 marks]

A Wilcoxon test was appropriate because the participants in each pair were matched for criteria such as age, as this variable may affect the memory test scores. [2 marks]

A Wilcoxon was appropriate because the scores are interval data. [1 mark]

- Any other appropriate content.

| Marks | AO2 |
|---|---|
| **2** | • Appropriate reason clearly linked to the research. |
| **1** | • Appropriate reason not clearly linked to the research. |
| **0** | • Inappropriate answer given.<br>• No response attempted. |

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(d) The researcher used a directional hypothesis and found that the observed (calculated) value was 53.

| n | 0.01 | 0.05 |
|---|---|---|
| 18 | 27 | 40 |
| 19 | 32 | 46 |
| 20 | 37 | 52 |
| 21 | 42 | 58 |
| 22 | 48 | 65 |

(i) Using the critical values table, identify which critical value is appropriate in this research. [1]

| Credit will be given for:<br>• The correct critical value of 40 (for n=18).<br>• Any other appropriate content. | |
|---|---|
| **Marks** | **AO2** |
| **1** | • Accurate identification of the correct critical value |
| **0** | • Inappropriate answer given.<br>• No response attempted. |

(ii) Explain why the psychologist should accept or reject the null hypothesis in this research. [2]

| Exemplar answers:<br><br>The researcher should accept the null hypothesis because the observed value of 53 is higher than the critical value of 40 for N=18. [2 marks]<br><br>The researcher should accept the null hypothesis because the observed value is higher than the critical value. [1 mark]<br><br>• Any other appropriate content | |
|---|---|
| **Marks** | **AO2** |
| **2** | • Reasonable explanation clearly linked to this research. |
| **1** | • Reasonable explanation not clearly linked to this research. |
| **0** | • Inappropriate answer given.<br>• No response attempted. |

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(e) Using your knowledge of psychology, briefly discuss why conducting research in a laboratory may be better than conducting research online. [4]

Credit will be given for:

- Higher level of control reduces the impact of extraneous variables.
- Use of standardised data collection may improve the reliability of the findings from laboratory research.
- Online research could be completed by anyone which may break ethical issues of consent for vulnerable participants.
- Online research could ask sensitive topics which may mean you cannot protect the participant from distress at the time.
- Any other appropriate content.

| Marks | AO3 |
|---|---|
| **3-4** | • Reasonable discussion of conducting research in a laboratory rather than online, with clear links to psychology. |
| **1-2** | • Basic discussion of conducting research in a laboratory rather than online, with clear links to psychology. |
| **0** | • Inappropriate answer given.<br>• No response attempted. |



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