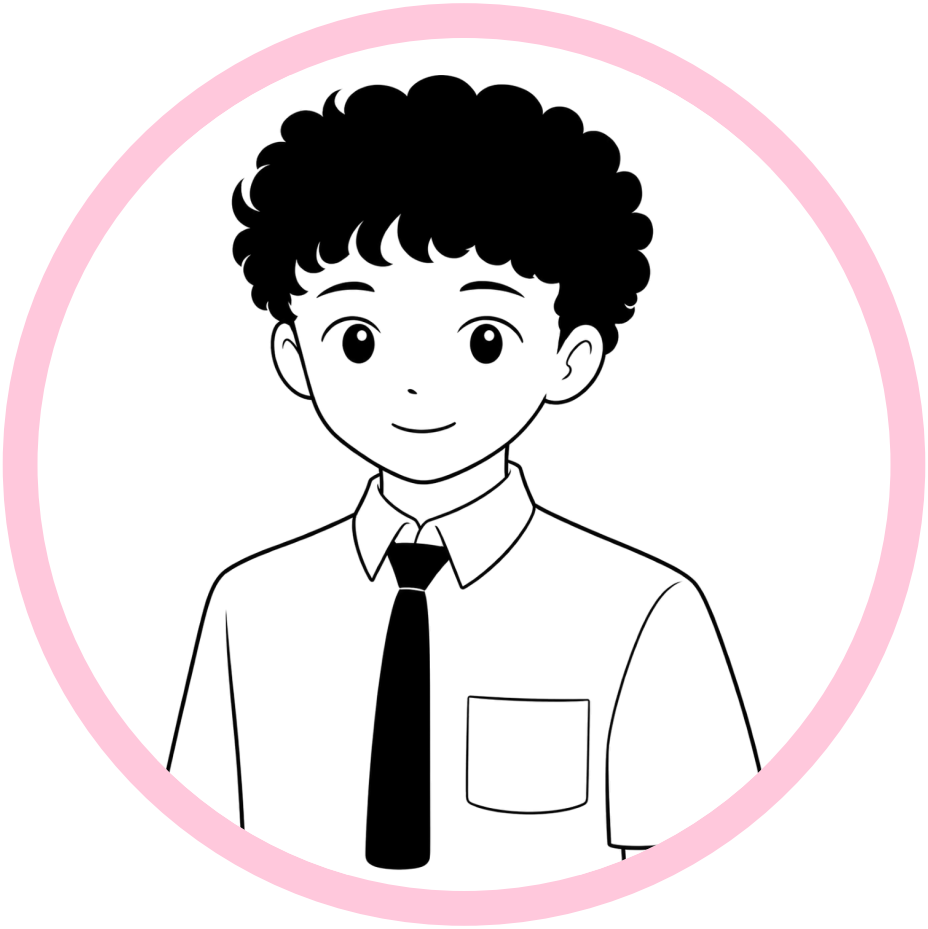
AQA A-LEVEL PSYCHOLOGY · 7182

PSYCHOLOGY



EXAM QUESTION PACK

3.2.3.1 RELIABILITY

SCORE	PERCENTAGE
/157	%

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Q1.

People's perception of how they spend their time at the gym is often not very accurate. Some spend more time chatting than on the treadmill. A psychologist decides to observe the actual behaviour of an opportunity sample of gym users at a local gym.

Explain why it is more appropriate for the psychologist to use an observation than a questionnaire in this case.

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(Total 3 marks)

Q2.

Design an observational study to investigate how people spend their time at the gym.

In your answer you will be awarded credit for providing appropriate details of:

- type of observation with justification
- operationalised behavioural categories
- use of time and/or event sampling with justification
- how reliability of data collection could be assessed.

(Total 12 marks)

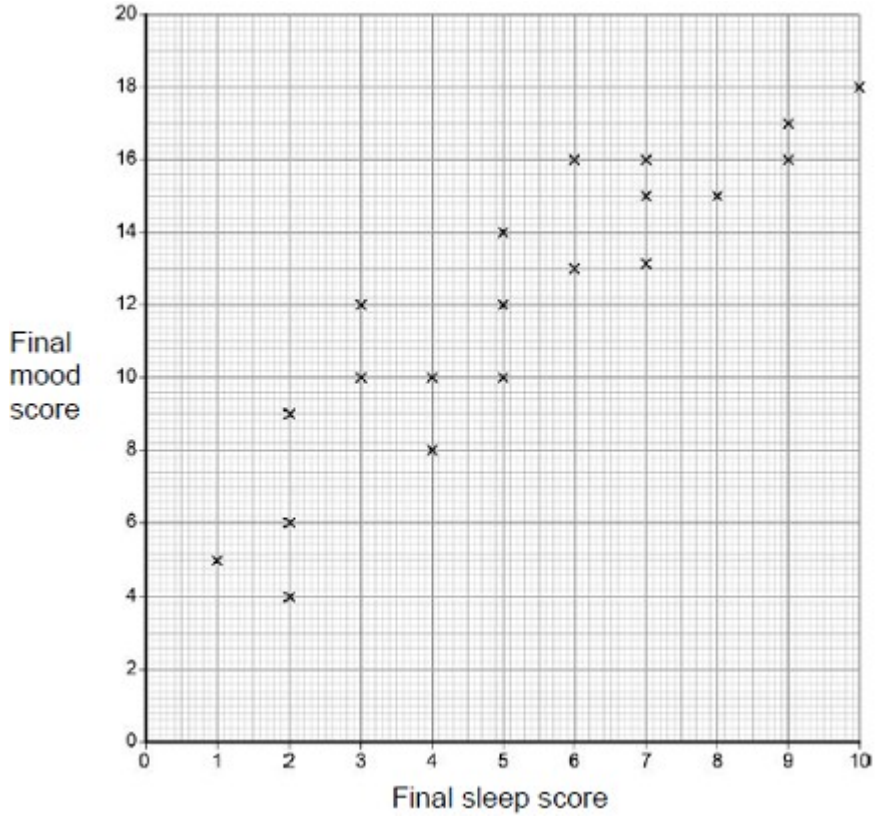
Q3.

Read the item and then answer the questions that follow.

Twenty depressed patients were treated using cognitive behavioural therapy. Over the course of the six-week treatment, each patient's mood was monitored every week using a self-report mood scale (where a score of 20 = extremely positive mood and a score of 0 = extremely negative mood). Each week they also completed a quality of sleep questionnaire which was scored from 10 = excellent sleep to 0 = very poor sleep.

At the end of the study the researchers correlated each patient's final mood score with his or her final sleep score. The results are shown in the graph below.

Scattergram to show the relationship between final mood scores and final sleep scores for 20 patients at the end of therapy



(a) Outline the type of relationship shown in the graph above and suggest why it would not be appropriate for the researchers to conclude that better sleep improves mood.

(2)

(b) Outline **one** way in which the researchers should have dealt with ethical issues in this study.

(2)

(c) The sleep questionnaire used by the researchers had not been checked to see whether or not it was a reliable measure of sleep quality.

Explain how this study could be modified by checking the sleep questionnaire for test-retest reliability.

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(4)

(Total 8 marks)

Q4.

Read the item and then answer the question that follows.

> The psychologist focused on fluency in spoken communication in her study. Other research has investigated sex differences in non-verbal behaviours such as body language and gestures.

Design an observation study to investigate sex differences in non-verbal behaviour of males and females when they are giving a presentation to an audience.

In your answer you should provide details of:

- the task for the participants
- the behavioural categories to be used and how the data will be recorded
- how reliability of the data collection might be established
- ethical issues to be considered.

(Total 12 marks)

Q5.

> Two researchers wanted to investigate the influence of early attachment on later relationships. They asked 20 teenagers aged 14-16 to write an essay on the importance of family and friends. Ten of the teenagers had been raised by their mother and father. The other ten had spent the first five years of their lives in care (and were then adopted).
>
> The researchers used content analysis to analyse the teenagers' essays. The researchers devised a set of categories to do this, two of which were 'references to love' and 'references to fear of rejection'.

(a) Explain **one** way in which the researchers may have checked whether their categories were reliable.

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(3)

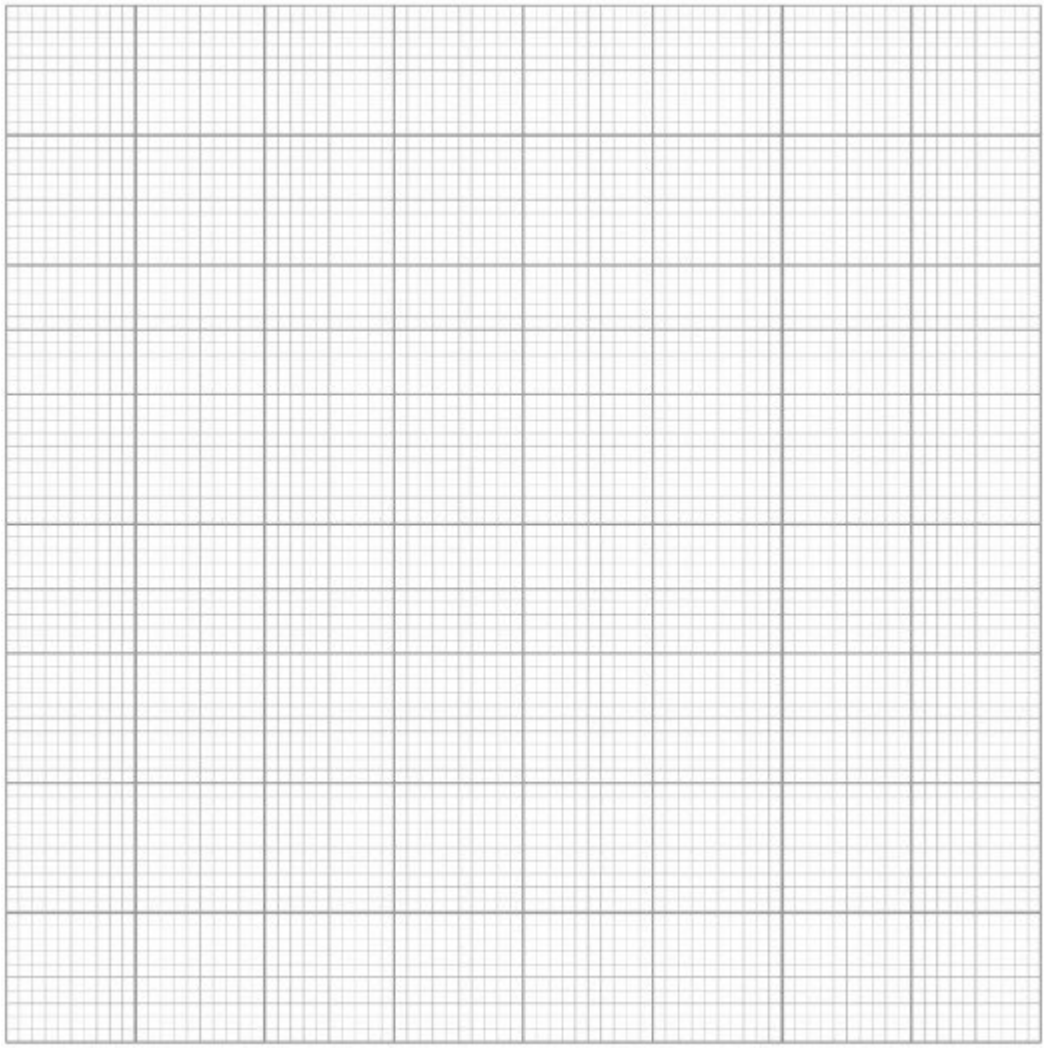
The results of the investigation for references to love and references to fear of rejection are shown in the table below:

The total number of references to love and references to fear of rejection in essays written by the care group and the non-care group

	Total number of references to love	**Total number of references to fear of rejection**
Non-care group	40	5
Care group	16	15

(b) Draw a suitable graphical display to represent the data in the table.

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(3)

(c) Express the total number of references to love in the essays written by the care group as a fraction of the total number of references to love in the essays overall. Show your calculations.

(3)

(d) The researchers decided to interview some of the teenagers about their early life experiences.

Explain how the data collected from the interview might have improved upon the data collected from the content analysis.

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(3)

(e) Explain Bowlby's monotropic theory. Refer to the data from the table in part (a) in your answer.

(6)

(Total 18 marks)

Q6.

Read the item and then answer the questions that follow.

Following previous research indicating the social benefits of green space in urban areas, two psychology students decided to observe social behaviour in public spaces. They focused on two neighbouring towns, Greensville where most public spaces were planted with flowers and vegetables, and Brownton where most public spaces were paved with concrete. The students compared the instances of considerate behaviours in the two towns. Considerate behaviour categories included putting litter in the bin, having a dog on a lead and riding a bike with care. The observations were carried out in four different areas of a similar size in each town on weekdays between the hours of 4.30pm and

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6.00pm. The students worked together to ensure inter-observer reliability, recording each target behaviour whenever it occurred.

(a) Should the hypothesis for this research be directional or non-directional? Explain your answer.

(2)

(b) Before the observation could begin, the students needed to operationalise the behaviour category 'riding a bike with care'.

Explain what is meant by operationalisation and suggest **two** ways in which 'riding a bike with care' could have been operationalised.

(4)

(c) The students thought that having a dog on a lead was a useful measure of considerate behaviour because it had face validity. Explain what is meant by face validity in this context.

(3)

(d) Identify and briefly outline **two** other types of validity in psychological research.

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(4)

(e) Identify the behaviour sampling method used by the students. Shade **one** box only.

A Time sampling ⬭

B Pair sampling ⬭

C Event sampling ⬭

D Target sampling ⬭

(1)

(f) Explain how inter-observer reliability could be ensured by working as a pair.

(3)

(g) The data for considerate behaviours is shown in the **Table 1**.

Table 1

Considerate behaviours			
	Litter in bin	Dog on lead	Riding bike with care
Greensville	23	23	10
Browntonn	10	17	9

The students noted that overall more considerate behaviours occurred in Greensville than in Brownton.

Calculate the ratio of considerate behaviours observed in Greensville to considerate

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behaviours observed in Brownton. Show your workings and present your answer in the simplest form.

(3)

(h) The students carried out a Chi-square test on their data.

Explain why the Chi-square test was an appropriate test to use in this case.

(3)

(i) In order to interpret the results of the Chi-square test the students first needed to work out the degrees of freedom. They used the following formula.

Degrees of freedom (df) = (r–1) x (c–1)
r = number of rows and c = number of columns

Calculate the degrees of freedom for the data in **Table 1**. Show your workings.

(2)

(j) The calculated value of Chi-square was 6.20. Referring to the **Table 2** below, state whether or not the result of the Chi-square test is significant at the 0.05 level of significance. Justify your answer.

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Table 2

df	*Levels of significance for a one-tailed test*			
	0.10	**0.05**	**0.025**	**0.01**
	Levels of significance for a two-tailed test			
	0.20	**0.20**	**0.05**	**0.02**
1	1.64	2.71	3.84	5.41
2	3.22	4.60	5.99	7.82
3	4.64	6.25	7.82	9.84
4	5.99	7.78	9.49	11.67

To be significant at the level shown the calculated value of Chi Square must be equal to or greater than the critical/table value

(3)

(k) In the discussion section of their report of the investigation the students wanted to further discuss their results in relation to levels of significance.

Write a short paragraph the students could use to do this.

(4)

(l) As a follow-up to their observation the students decided to interview some of their peers about inconsiderate behaviours in their 6th Form Centre. The interviews were recorded.

Explain how the students could develop their interview findings by carrying out a content analysis and why content analysis would be appropriate in this case.

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(3)

(m) Suggest **one** inconsiderate behaviour that the students might focus on in their content analysis.

_____

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(1)

(Total 36 marks)

Q7.

A maths teacher wondered whether there was a relationship between mathematical ability and musical ability. She decided to test this out on the GCSE students in the school. From 210 students, she randomly selected 10 and gave each of them two tests. She used part of a GCSE exam paper to test their mathematical ability. The higher the mark, the better the mathematical ability. She could not find a musical ability test so she devised her own. She asked each student to sing a song of their choice. She then rated their performance on a scale of 1–10, where 1 is completely tuneless and 10 is in perfect tune.

(a) Suggest a suitable non-directional hypothesis for this study.

(3)

(b) Why might the measure of musical ability used by the teacher lack validity?

(3)

(c) Explain how the teacher could have checked the reliability of the mathematical ability test.

(3)

(d) Explain why the teacher chose to use a random sample in this study.

The results of the study are given in the table below.

Mathematical ability test scores and musical ability ratings for 10 students

Student	Mathematical ability test score	Musical ability rating
1	10	10
2	2	9
3	9	3
4	6	6

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5	3	9
6	10	2
7	2	1
8	1	8
9	8	4
10	4	7

(2)

(e) In your answer book, sketch a graph to show the data in the table above. Give the graph an appropriate title and label the axes.

(3)

(f) Discuss what the data in the table above and the graph that you have sketched seem to show about the relationship between mathematical ability and musical ability.

(3)

(g) The teacher noticed that most of the students who were rated highly on musical ability were left-handed. The teacher is aware that her previous definition of musical ability lacked validity.

Design a study to test whether there is a difference in the musical ability of left-handed students and right-handed students. You have access to a sixth form of 200 students.

You should:

- identify the design that you would use
- explain an appropriate sampling method and justify your choice
- describe the procedure that you would use, including details of how you would assess musical ability
- write a suitable debrief for these participants.

(10)

(h) In your answer book, draw a table to show how you would record your results. Identify an appropriate statistical test to analyse the data that you would collect. Justify your choice.

(3)

(Total 30 marks)

Q8.

A study was carried out to test the effectiveness of a new anger management programme. The programme had been designed by a team of psychologists working in a young offenders' institution.

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Fifteen male offenders aged 17– 21 years took part in the programme. An anger score for each offender was obtained before the start of the programme. This score was based on a questionnaire designed by the psychologists. The questionnaire had 10 items. The maximum score was 50; the higher the score, the greater the level of anger.

The month-long programme of anger management involved 8 two-hour sessions.

Throughout the programme, the offenders were told to keep a diary of situations that made them angry and to record their anger in these situations. After the programme had ended, they were told to continue to keep their diary.

Two weeks later, after the programme had ended, a second anger score was obtained for each offender. The same questionnaire was used.

The data obtained are shown in **Table 1** below.

Table 1: Median anger scores and the ranges before and after the programme

	Before	**After**
Median	**35**	**24**
Range	**15**	**17**

(a) Explain why measures of dispersion are often used in addition to measures of central tendency to summarise data. Refer to the results of this study in your answer.

(2)

(b) A Wilcoxon signed ranks test was used to test for a significant difference between the anger scores at the start of the programme and after the programme had ended.

The calculated value of *T* was found to be 22.

Table 2: Critical values of *T*

Level of significance for two-tailed test	0.1	0.05	0.02
Critical value of *T* (when *N* = 15)	30	25	19

T must be equal to or less than the critical value to be significant.

Using **Table 2** above, explain whether or not the result is significant.

(2)

(c) Explain why the psychologists decided to use a Wilcoxon signed ranks test to analyse the data.

(3)

(d) Explain **two** possible reasons for asking each offender to keep a diary.

(4)

(e) An independent researcher reviewed the design of the study and noted that there was no control group.

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Explain how having a control group could have improved this study.

(3)

(f) The independent researcher was also concerned that the psychologists had not checked the reliability and validity of the questionnaire used to measure the level of anger.

Outline how the psychologists could check the reliability **and** the validity of the questionnaire.

(5)

(Total 19 marks)

Q9.

Two psychologists investigated the relationship between age and recall of medical advice. Previous research had shown that recall of medical advice tended to be poorer in older patients. The study was conducted at a doctor's surgery and involved a sample of 30 patients aged between 18 and 78 years. They all saw the same doctor, who made notes of the advice that she gave during the consultation.

One of the psychologists interviewed each of the patients individually, immediately after they had seen the doctor. The psychologist asked each patient a set of questions about what the doctor had said about their diagnosis and treatment. The patients' responses were recorded and then typed out. Working independently the psychologists compared each typed account with the doctor's written notes in order to rate the accuracy of the accounts on a scale of 1 – 10. A high rating indicated that the patient's recall was very accurate and a low rating indicated that the patient's recall was very inaccurate.

(a) The psychologists decided to propose a directional hypothesis. Why was a directional hypothesis appropriate in this case?

(1)

(b) Write a suitable directional hypothesis for this investigation.

(3)

(c) The psychologists were careful to consider the issue of reliability during the study. What is meant by reliability?

(1)

(d) Explain how the psychologists might have assessed the reliability of their ratings.

(3)

(e) This study collected both qualitative and quantitative data. From the description of the study above, identify the qualitative data and the quantitative data.

The psychologists used Spearman's rho to analyse the data from their investigation. They chose to use the 0.05 level of significance. The result gave a correlation coefficient of −0.52.

(2)

(f) Give **two** reasons why the psychologists used Spearman's rho to analyse the data.

(2)

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(g) Using the table below, state whether the result is significant or not significant and explain why.

(2)

Extract from a table of critical values of Spearman's rho (r_s)

Level of significance for a one-tailed test		
	0.05	0.01
Level of significance for a two-tailed test		
	0.10	0.02
N=29	0.312	0.433
30	0.306	0.425
31	0.301	0.418

Calculated r_s must equal or exceed the table (critical) value for significance at the level shown.

(h) Explain what is meant by a Type 1 error.

(2)

(i) Use the information in the table above to explain why the psychologists did not think that they had made a Type 1 error in this case.

(3)

(Total 19 marks)

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