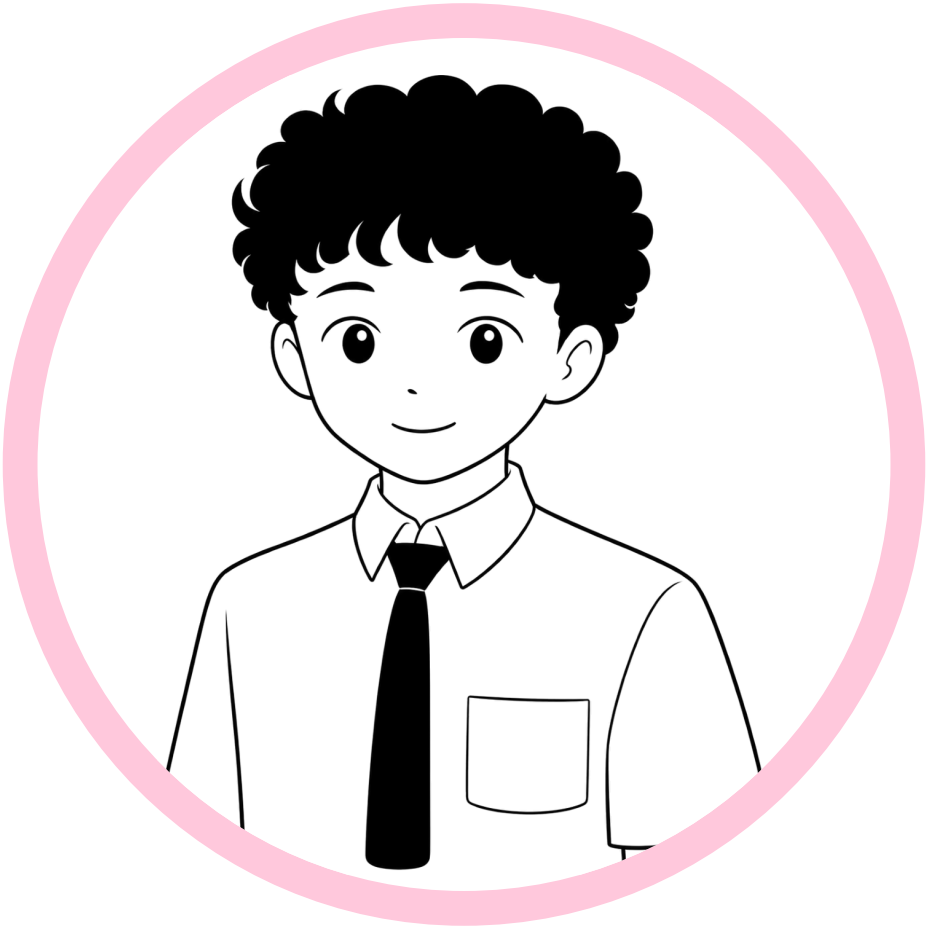
AQA A-LEVEL PSYCHOLOGY · 7182

PSYCHOLOGY



EXAM QUESTION PACK

3.2.3.1 VALIDITY

SCORE	PERCENTAGE
/171	%

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Q1.

A psychologist decided to conduct an experiment to investigate the effect of watching horror films before going to bed.

A volunteer sample of 50 university students consented to take part in the experiment.

The 50 students were randomly split into two groups. **Group 1** watched a horror film before going to bed each night for the first week then a romantic comedy before going to bed each night for the second week. **Group 2** watched the romantic comedy in the first week and the horror film in the second week.

When the students woke up each morning, each student received a text message that asked if they had had a nightmare during the night. They could respond 'yes' or 'no'.

(a) Write a brief consent form that would have been suitable for use in this experiment.

The consent form should:

- include some detail of what participants might expect to happen
- refer to ethical issues
- be in an appropriate format / style.

(6)

(b) The psychologist proposed a directional hypothesis.

Write a directional hypothesis for this experiment.

(3)

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(c) The psychologist used a repeated measures design in this experiment.

Explain why it was important to use a repeated measures design in this case.

(2)

(d) The psychologist used counterbalancing in this experiment.

Explain why it was appropriate to use counterbalancing in this experiment.

(2)

(e) Explain how the psychologist could have randomly split the sample of 50 students into the two groups.

(3)

The psychologist collated the responses of all the participants over the two-week period and calculated the mean and standard deviation for each condition.

Mean number of nightmares reported and the standard deviation for each condition

	Mean number of nightmares in 7 days	**Standard deviation**
Horror films	2.18	1.48
Romantic comedies	0.30	0.61

(f) What do the mean **and** standard deviation values in the table above suggest about

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the effect of the type of film watched on the occurrence of nightmares? Justify your answer.

(4)

(g) The psychologist found that the difference in the number of nightmares reported in the two conditions was significant at $p<0.05$.

Explain what is meant by 'significant at $p<0.05$' in the context of this experiment.

(2)

(h) The psychologist was concerned about the validity of the experiment.

Suggest **one** possible modification to the design of the experiment and explain how this might improve validity.

(3)

(Total 25 marks)

Q2.

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

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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.

(Total 3 marks)

Q3.

Read the item and then answer the questions that follow.

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

Mean number of verbal errors and standard deviations for both conditions

	Condition A (believed audience of 5 listeners)	**Condition B (believed audience of 100 listeners)**
Mean	11.1	17.2
Standard deviation	1.30	3.54

(a) What conclusions might the psychologist draw from the data in **the table**? Refer to the means **and** standard deviations in your answer.

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(6)

(b) Read the item and then answer the question that follows.

> The psychologist had initially intended to use the range as a measure of dispersion in this study but found that one person in **Condition A** had made an exceptionally low number of verbal errors.

Explain how using the standard deviation rather than the range in this situation, would improve the study.

(3)

(c) Name an appropriate statistical test that could be used to analyse the number of verbal errors in **the table** above. Explain why the test you have chosen would be a suitable test in this case.

(4)

(d) The psychologist found the results were significant at $p<0.05$. What is meant by 'the results were significant at $p<0.05$'?

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_____

(2)

(e) Briefly explain **one** method the psychologist could use to check the validity of the data she collected in this study.

_____

_____

_____

_____

(2)

(Total 17 marks)

Q4.

Read the item and then answer the questions that follow.

Researchers used a test to measure the mathematical reasoning ability of pairs of identical and non-identical twins. If both members of a pair had a similar score on the test, they were said to be 'concordant'. This type of study is known as a concordance study.

Outcome of the research with the concordance rates expressed as a percentage

Genetic relationship group	Concordance rate for mathematical reasoning ability
Identical twins (100% shared genes)	58%
Non-identical twins (50% shared genes)	14%

(a) Briefly explain the outcome of the study in relation to the nature-nurture debate.

(2)

(b) Some ways of establishing validity involve the use of a statistical test.

Outline how these researchers could have used a statistical test to establish **concurrent** validity of the mathematical reasoning ability test.

(4)

(Total 6 marks)

Q5.

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

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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 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.

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(3)

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

(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

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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 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.

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(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.

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

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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.

_____

_____

_____

_____

_____

_____

(3)

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

_____

_____

(1)

(Total 36 marks)

Q6.

A student teacher was interested in the relationship between empathy (consideration and feelings for others) and the time spent reading fiction. She decided to investigate whether or not such a relationship was present in children.

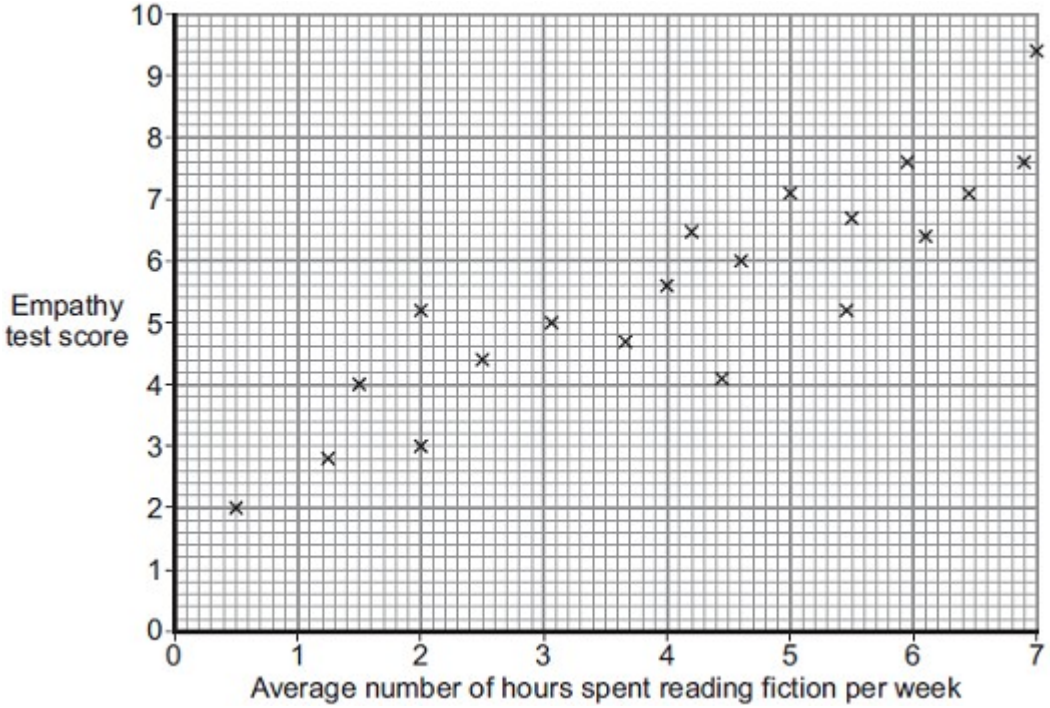
The student teacher designed her own questionnaire to measure empathy in 8-year-old children. The higher the score achieved, the greater the empathy. Twenty children, all from one school, took part. Each child completed the questionnaire individually.

The student teacher designed another questionnaire to measure 'time spent reading fiction'. Each child was given this questionnaire to take home and complete with his or her parents over a four-week period. 'Time spent reading fiction' included the time spent by parents reading to the child as well as the time the child spent reading independently. Using the responses to this questionnaire, the student teacher calculated how much time per week, on average, each child spent reading fiction.

The data obtained are shown in the graph below.

Scattergram of children's scores on a test of empathy and the average number of hours spent reading fiction per week.

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(a) Outline the relationship between empathy and the average number of hours spent reading fiction per week shown in the graph above.

(1)

(b) Name an appropriate test to determine whether or not there is a significant relationship between the two variables in the graph above. Justify your answer with reference to levels of measurement.

(2)

The student teacher decided to use a two-tailed test.

(c) Outline **one** way in which the student teacher could have assessed the validity of the empathy questionnaire.

(2)

(d) Apart from the issue of validity, identify and briefly explain **one** methodological limitation of the study.

(2)

(e) Explain why it was appropriate for the student teacher to use a correlation study rather than an experiment.

(3)

(f) The student teacher noticed that some students on her course commented that they were better able to recall information if they could read the information rather than listen to it in lectures.

Design an experiment to test the following hypothesis:

'People who are given written information will recall more than people who hear information in spoken form.'

In your answer, you should refer to the following and justify your design decisions:

- the variables to be considered

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- the experimental design to be used
- the sample
- relevant materials
- an outline of the proposed procedure.

(8)

(Total 18 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
5	3	9
6	10	2
7	2	1
8	1	8
9	8	4

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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.

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

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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.

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.

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(5)
(Total 19 marks)

Q9.

It is thought that colours might affect our performance when carrying out certain tasks. Research in this area has been inconclusive. Some studies have shown that red improves performance but others have found the opposite. It could be that these contradictory results have arisen because red is beneficial only for certain kinds of mental processing. Some psychologists tested this hypothesis in a series of independent-groups design experiments using students at a Canadian university.

The experiments involved computer tasks, with either a red, blue or neutral background appearing on the monitor. The researchers found that participants were better at a word-recall task and a spell-checking task when the screen background was red rather than blue or neutral. However, participants thought of more creative ideas when the screen was blue rather than red or neutral.

The researchers concluded that red is beneficial for tasks that require attention to detail whereas blue aids creativity.

(a) What were the researchers' aims in this study?

Imagine that you are writing up the report for this series of experiments.

(2)

(b) What is the purpose of the introduction section of a report?

A psychological report also contains a discussion section. Researchers are expected to consider their findings critically and discuss issues such as validity.

(2)

(c) What is meant by validity?

(1)

(d) In the discussion section, researchers are also expected to consider any possible applications of their research. Suggest **one** practical application that might arise from these findings.

In a further experiment, participants were given 20 blue shapes or 20 red shapes. They were then asked to pick 5 shapes and use them to make a toy suitable for a child aged between five and eleven years. They were given a limited time to carry out this task.
Participants given red shapes made toys that independent judges rated to be more practical but less original, whereas participants given blue shapes made more creative toys.

(2)

(e) Explain why the researchers asked independent judges to rate the toys.

(2)

(f) Write a set of standardised instructions that would be suitable to read out to participants in this experiment.

(5)
(Total 14 marks)

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Q10.

Explain why it might be better to carry out research into eyewitness testimony in the real world, rather than in a laboratory.

(Total 3 marks)

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