A2 Psychology Exam Preparation

Research Methods

Exam style questions and Mark Schemes

Beechen Cliff School

For your information;

This booklet contains exam questions from specimen papers and past papers from both the new specification and the old one for AS and A2. Several may be very similar, I just wanted to provide you with all of the questions I have available. Mark schemes are in question order at the back of this booklet.

Exam questions from the old spec are slightly different in phrasing and mark scheme but are still useful practice and preparation.

Old spec questions have RED boxes around them.

AS questions have BLUE boxes around them.

REMEMBER – the way many of these questions work you need to work your way through the whole section in order, repeatedly referring back to the scenario given at the start. You could also be asked a few RM questions in any section of the exam paper, so be prepared for them in every paper.
Read the item and then answer the questions that follow.

A psychologist wanted to see if verbal fluency is affected by whether people think they are presenting information to a small group of people or to a large group of people.

The psychologist needed a stratified sample of 20 people. She obtained the sample from a company employing 60 men and 40 women.

The participants were told that they would be placed in a booth where they would read out an article about the life of a famous author to an audience. Participants were also told that the audience would not be present, but would only be able to hear them and would not be able to interact with them.

There were two conditions in the study, Condition A and Condition B.

Condition A: 10 participants were told the audience consisted of 5 listeners.

Condition B: the other 10 participants were told the audience consisted of 100 listeners.

Each participant completed the study individually. The psychologist recorded each presentation and then counted the number of verbal errors made by each participant.

1. Identify the dependent variable in this study. [2 marks]

2. Write a suitable hypothesis for this study. [3 marks]

3. Identify one extraneous variable that the psychologist should have controlled in the study and explain why it should have been controlled. [3 marks]

4. Explain one advantage of using a stratified sample of participants in this study. [2 marks]

5. Explain how the psychologist would have obtained the male participants for her stratified sample. Show your calculations. [3 marks]

6. The psychologist wanted to randomly allocate the 20 people in her stratified sample to the two conditions. She needed an equal number of males in each condition and an equal number of females in each condition. Explain how she would have done this. [4 marks]
18

Read the item and then answer the questions that follow.

The results of the study are given in Table 1.

Table 1: Mean number of verbal errors and standard deviations for both conditions

<table>
<thead>
<tr>
<th></th>
<th>Condition A (believed audience of 5 listeners)</th>
<th>Condition B (believed audience of 100 listeners)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>11.1</td>
<td>17.2</td>
</tr>
<tr>
<td>Standard deviation</td>
<td>1.30</td>
<td>3.54</td>
</tr>
</tbody>
</table>

What conclusions might the psychologist draw from the data in Table 1? Refer to the means and standard deviations in your answer.

6 marks

19

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 marks

20

Name an appropriate statistical test that could be used to analyse the number of verbal errors in Table 1. Explain why the test you have chosen would be a suitable test in this case.

4 marks

21

The psychologist found the results were significant at p<0.05. What is meant by ‘the results were significant at p<0.05’?

2 marks

22

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

2 marks

23

Briefly explain one reason why it is important for research to undergo a peer review process.

2 marks
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.

[12 marks]
Read the item and then answer the questions that follow.

Researchers were interested in the spatial awareness skills of motorists. They decided to investigate a possible relationship between different aspects of spatial awareness. Motorists who had between ten and twelve years of driving experience and held a clean driving licence with no penalty points were asked to complete two sets of tasks.

Set 1: To follow a series of instructions and using a map, to identify various locations correctly. This provided a map reading score for each motorist with a maximum score of 20.

Set 2: To complete a series of practical driving tasks accurately. This involved tasks such as driving between cones, driving within lines and parking inside designated spaces. Each motorist was observed completing the Set 2 tasks by a single trained observer who rated each performance by giving the driver a rating out of 10.

The following results were obtained.

Table 1: The map reading scores and driver ratings of motorists

<table>
<thead>
<tr>
<th>Participant driver</th>
<th>Map reading score</th>
<th>Driver rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>17</td>
<td>9</td>
</tr>
<tr>
<td>2</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>15</td>
<td>7</td>
</tr>
<tr>
<td>4</td>
<td>12</td>
<td>6</td>
</tr>
<tr>
<td>5</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>6</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>7</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>8</td>
<td>14</td>
<td>6</td>
</tr>
<tr>
<td>9</td>
<td>19</td>
<td>10</td>
</tr>
</tbody>
</table>

Should the hypothesis be directional? Explain your answer. [2 marks]

Write a suitable hypothesis for this investigation. [3 marks]

Identify a suitable graphical display for the data in Table 1 and briefly explain why this display would be appropriate. [2 marks]

Using the data in Table 1, comment on the relationship between the map reading scores and the driver rating scores of the participants. [3 marks]
Briefly outline one problem of using a single trained observer to rate the participants' driving skills in the practical task. Briefly discuss how this data collection method could be modified to improve the reliability of the data collected.  

[6 marks]

The researchers decided to analyse the data using a Spearman’s rho test. Explain why this is a suitable choice of test for this investigation.  

[3 marks]

### Table 2: Table of critical values for a Spearman's rho test

<table>
<thead>
<tr>
<th></th>
<th>Level of significance for a two-tailed test</th>
<th>Level of significance for a one-tailed test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.10</td>
<td>0.05</td>
</tr>
<tr>
<td>N=</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>0.643</td>
<td>0.738</td>
</tr>
<tr>
<td>9</td>
<td>0.600</td>
<td>0.700</td>
</tr>
<tr>
<td>10</td>
<td>0.564</td>
<td>0.648</td>
</tr>
</tbody>
</table>

Calculated $r_s$ must EQUAL or EXCEED the critical value for significance at the level shown.

After analysis of the data the researchers obtained a calculated value of $r_s = 0.808$.

Using the information in Table 2 above, what conclusion can the researchers draw about the relationship between the map reading and driving skills of the motorists? Explain your answer.  

[4 marks]

Distinguish between a Type I error and a Type II error.  

[4 marks]
When the researchers looked at the data collected more closely they noticed possible gender differences in the results.

<table>
<thead>
<tr>
<th>Results table of means and standard deviations for the map reading scores of male and female motorists.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Map reading scores</td>
</tr>
<tr>
<td>Males</td>
</tr>
<tr>
<td>Mean</td>
</tr>
<tr>
<td>Sd</td>
</tr>
</tbody>
</table>

What do the mean and standard deviation values suggest about the male and female performances in the investigation?  

[4 marks]

In a replication of the part of the study in which map reading skills were investigated, 20 men and 20 women completed the original map reading task and the researchers obtained the following data:

<table>
<thead>
<tr>
<th>Male map reading scores</th>
<th>17, 20, 13, 12, 13, 11, 8, 17, 12, 15, 14, 18, 20, 17, 17, 13, 10, 5, 9.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female map reading scores</td>
<td>12, 8, 10, 11, 4, 2, 11, 18, 17, 12, 13, 10, 3, 15, 11, 9, 10, 11, 16, 10.</td>
</tr>
</tbody>
</table>

The mean map reading score for both groups together was 12.23.

What percentage of the male group scored above the mean score and what percentage of the female group scored above the mean score? Show your calculations.  

[4 marks]

Using your answers to both question 17 and question 18, comment on the performances of the male and the female participants in this study.  

[2 marks]
Briefly explain one reason why it is important for research to be replicated.
[2 marks]

Imagine you have been asked to design a study to investigate possible gender differences in card sorting behaviours. You decide you will ask participants to sort a shuffled pack of playing cards into their suits of hearts, clubs, diamonds and spades. You decide you will time the participants as they do this using a stop watch.

Discuss the following aspects of this investigation:
• with reference to the card sorting task, explain how you would ensure that this is made the same task for all participants
• one methodological issue you should take into account when obtaining suitable participants for this study and explain how you would deal with this issue
• how you would ensure that the experience of your participants is ethical.
[9 marks]

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

Should the hypothesis for this research be directional or non-directional? Explain your answer.
[2 marks]

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 marks]
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 marks]

Identify and briefly outline two other types of validity in psychological research. 

[4 marks]

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 mark]

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

[3 marks]

The data for considerate behaviours is shown in Table 1.

Table 1

<table>
<thead>
<tr>
<th>Considerate behaviours</th>
<th>Litter in bin</th>
<th>Dog on lead</th>
<th>Riding bike with care</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greensville</td>
<td>23</td>
<td>12</td>
<td>19</td>
</tr>
<tr>
<td>Browntonn</td>
<td>10</td>
<td>17</td>
<td>9</td>
</tr>
</tbody>
</table>

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

Calculate the ratio of considerate behaviours observed in Greensville to considerate behaviours observed in Browntonn. Show your workings and present your answer in the simplest form. 

[3 marks]

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 marks]
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.

\[ \text{Degrees of freedom (df)} = (r-1) \times (c-1) \]
\[ r = \text{number of rows and } c = \text{number of columns} \]

Calculate the degrees of freedom for the data in Table 1. Show your workings. [2 marks]

The calculated value of Chi-square was 6.20. Referring to 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

<table>
<thead>
<tr>
<th>df</th>
<th>0.10</th>
<th>0.05</th>
<th>0.025</th>
<th>0.01</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Levels of significance for a one-tailed test</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.20</td>
<td>0.10</td>
<td>0.05</td>
<td>0.02</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>1.64</td>
<td>2.71</td>
<td>3.84</td>
<td>5.41</td>
</tr>
<tr>
<td>2</td>
<td>3.22</td>
<td>4.60</td>
<td>5.99</td>
<td>7.82</td>
</tr>
<tr>
<td>3</td>
<td>4.64</td>
<td>6.25</td>
<td>7.82</td>
<td>9.84</td>
</tr>
<tr>
<td>4</td>
<td>5.99</td>
<td>7.78</td>
<td>9.49</td>
<td>11.67</td>
</tr>
</tbody>
</table>

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 marks]

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 marks]

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. [3 marks]

Suggest one inconsiderate behaviour that the students might focus on in their content analysis. [1 mark]
Design an experiment to investigate the effect of indoor plants on mood in office workers. For your measure of mood you should devise a measure that would give data suitable for testing at the ordinal level of measurement.

In your answer you should provide details of:

- Design – include reference to the experimental design, variables and controls
- Materials/Apparatus – describe any special materials required
- Data analysis that could be used – include reference to descriptive and inferential analysis.

Justify your choices.

[12 marks]

Read the item and then answer the questions that follow.

A psychologist wanted to see if creativity is affected by the presence of other people. To test this he arranged for 30 people to participate in a study that involved generating ideas for raising funds for a local youth club. Participants were randomly allocated to one of two conditions.

Condition A: there were 15 participants in this condition. Each participant was placed separately in a room and was given 40 minutes to think of as many ideas as possible for raising funds for a local youth club. The participant was told to write down his or her ideas and these were collected in by the psychologist at the end of the 40 minutes.

Condition B: there were 15 participants in this condition. The participants were randomly allocated to 5 groups of equal size. Each group was given 40 minutes to think of as many ideas as possible for raising funds for a local youth club. Each group was told to write down their ideas and these were collected by the psychologist at the end of the 40 minutes.

The psychologist counted the number of ideas generated by the participants in both conditions and calculated the total number of ideas for each condition.

Table 2: Total number of ideas generated in Condition A (when working alone) and in Condition B (when working in a group)

<table>
<thead>
<tr>
<th></th>
<th>Condition A Working alone</th>
<th>Condition B Working in a group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of ideas generated</td>
<td>110</td>
<td>75</td>
</tr>
</tbody>
</table>

Identify the experimental design used in this study and outline one advantage of this experimental design.

[3 marks]

Describe one other experimental design that researchers use in psychology.

[2 marks]
<table>
<thead>
<tr>
<th>Question</th>
<th>Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>12.3</td>
<td>Apart from using random allocation, suggest one way in which the psychologist might have improved this study by controlling for the effects of extraneous variables. Justify your answer. [2 marks]</td>
</tr>
<tr>
<td>12.4</td>
<td>Write a suitable hypothesis for this study. [3 marks]</td>
</tr>
<tr>
<td>12.5</td>
<td>From the information given in the description, calculate the number of participants in each group in Condition B. [1 mark]</td>
</tr>
<tr>
<td>12</td>
<td>Read the item and then answer the questions that follow.</td>
</tr>
<tr>
<td></td>
<td>The psychologist noticed that the number of ideas generated by each of the individual participants in Condition A varied enormously whereas there was little variation in performance between the 5 groups in Condition B. He decided to calculate a measure of dispersion for each condition.</td>
</tr>
<tr>
<td>12.6</td>
<td>Name a measure of dispersion the psychologist could use. [1 mark]</td>
</tr>
<tr>
<td>12.7</td>
<td>The psychologist uses the measure of dispersion you have named in your answer to question 12.6. State how the result for each condition would differ. [1 mark]</td>
</tr>
<tr>
<td>12.8</td>
<td>Explain how the psychologist could have used random allocation to assign the 15 participants in Condition B into the 5 groups. [3 marks]</td>
</tr>
</tbody>
</table>
Read the item and then answer the questions that follow.

This is a repeat of information given on page 12.

Table 2: Total number of ideas generated in Condition A (when working alone) and in Condition B (when working in a group)

<table>
<thead>
<tr>
<th>Total number of ideas generated</th>
<th>Condition A Working alone</th>
<th>Condition B Working in a group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>110</td>
<td>75</td>
</tr>
</tbody>
</table>

Using the information given in Table 2, explain how the psychologist could further analyse the data using percentages. [2 marks]

At the end of the study the psychologist debriefed each participant. Write a debriefing that the psychologist could read out to the participants in Condition A. [6 marks]
Two researchers obtained a sample of ten people whose ages ranged from 20-years-old to 60-years-old.

Each participant was asked to take part in a discussion of social care issues. This included discussion about who should pay for social care for elderly people and how to deal with people struggling with mental health problems. A confederate of the researchers was given a script to follow in which a series of discussion points was written for the confederate to introduce.

Each participant then came into a room individually and the discussion with the confederate took place. The maximum time allowed for a discussion was 30 minutes.

The researchers observed the discussions between the confederate and participants and rated the active engagement of the participants in the discussion. The ratings were between 1, (not at all interested) and 20, (extremely interested.) The researchers believed that the rating provided a measurement of the participants’ attitudes towards social care issues.

The following data were obtained in the study:

Table 2: The relationship between age and attitude to social care

<table>
<thead>
<tr>
<th>Age of participant</th>
<th>Attitude to social care issues rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>21</td>
<td>5</td>
</tr>
<tr>
<td>23</td>
<td>3</td>
</tr>
<tr>
<td>34</td>
<td>8</td>
</tr>
<tr>
<td>36</td>
<td>12</td>
</tr>
<tr>
<td>40</td>
<td>10</td>
</tr>
<tr>
<td>47</td>
<td>13</td>
</tr>
<tr>
<td>52</td>
<td>17</td>
</tr>
<tr>
<td>53</td>
<td>15</td>
</tr>
<tr>
<td>58</td>
<td>18</td>
</tr>
<tr>
<td>60</td>
<td>20</td>
</tr>
</tbody>
</table>

Use the graph paper below to sketch a display of the data given in Table 2 opposite. You do not need to give your display a title. [3 marks]

What does the display you have drawn in your answer in Question 12.1 suggest about the relationship between age and attitude to social care issues? Explain your answer. [2 marks]
12.3 The researchers rated the active engagement of the participants in the discussion on social care. They used this rating as a measure of each participant's attitude to social care issues.

Briefly explain how investigator effects might have occurred in this study. [2 marks]

12.4 Outline how the researchers could have avoided investigator effects having an impact on the study. [2 marks]

12.5 The researchers thought it might be interesting to investigate further the attitudes of the participants in the study. They decided to interview each participant. The researchers devised a questionnaire in order to collect the data they required. The questionnaire included both open and closed questions.

Briefly discuss the benefits for the researchers of using both closed and open questions on their questionnaire about attitudes to social care. [4 marks]

12.6 Write one question that you think the researchers might have put on their questionnaire. Explain which type of question you have written and why you think this would be a suitable question for this study. [3 marks]

12.7 The researchers have obtained both qualitative and quantitative data in the observations and interviews they have conducted.

Identify the qualitative and quantitative data collected in this study. Explain your answer. [4 marks]

12.8 Explain how the researchers should have addressed two ethical issues in the investigation. [4 marks]
Read the item and then answer the questions that follow.

Twenty primary school teachers were sent by their individual head teachers to attend a training course in classroom behaviour management run by educational psychologists at a local university. Before the training course, and again after training, the teachers were asked to say how confident they were in managing difficult classroom behaviour.

The researchers compared the before and after answers to see how many teachers rated their confidence as ‘better’, ‘worse’, or ‘the same’ as it had been at the start of the course.

The results are shown in Table 1 below:

Table 1

<table>
<thead>
<tr>
<th>Number of teachers</th>
<th>Confidence Better</th>
<th>Confidence Worse</th>
<th>Confidence Same</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>16</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

Which of A, B, C or D best describes this study? Shade one box only.

A laboratory experiment
B pilot experiment
C natural experiment
D controlled experiment

[1 mark]

What fraction of the teachers thought that their confidence was better after the course? Show your workings.

[2 marks]

What might the researchers conclude about the training course on the basis of the data in Table 1? Explain your answer.

[2 marks]

What is the operationalised dependent variable in this study?

[2 marks]

Which experimental design is being used in this study and why would it be an appropriate design in this case?

[3 marks]
The psychologists conducting the training decided to use the Sign Test to see whether there was a significant difference in confidence in managing difficult classroom behaviour before and after the course.

Give the calculated value of S in this study and explain how you arrived at this figure. [3 marks]

Explain why statistical testing is used in psychological research. [2 marks]

Following the training course, one of the researchers carried out an overt classroom observation of each teacher’s primary school class. The researcher wanted to record the frequency of difficult classroom behaviours shown by the pupils during a normal lesson.

He identified six categories of disruptive behaviour and decided to record the frequency of each of the six behaviours during the first ten minutes and the last ten minutes of the lesson.

Suggest two behavioural categories that the researcher could record during his observation. [2 marks]

Design a tally chart/record sheet the researcher could use to record his observations.

Show your tally chart/record in the box below. [3 marks]

Identify one problem that might have occurred during this observation and explain how the observation would be improved by addressing this problem. [4 marks]
3. A researcher investigated whether memory for words presented with pictures was better than memory for words presented without pictures. The researcher used an independent groups design.

In Condition 1, participants were given a limited time to learn a list of 20 words. They were then asked to recall the 20 words in any order.

In Condition 2, participants were given the same time to learn the same 20 words, but this time each word was presented with a picture. For example, the word ‘apple’ was presented alongside a picture of an apple. They were then asked to recall the 20 words in any order.

3 (a) A pilot study is a small-scale investigation carried out before the main study.

Explain why it would be appropriate for this researcher to use a pilot study. In your answer you must refer to details of the experiment given above.

3 (b) State a non-directional hypothesis for this experiment.

3 (c) Explain two reasons why it was more appropriate to use an independent groups design than a repeated measures design.

Table 1: The range and median number of words correctly recalled for participants shown words without pictures and for participants shown words with pictures

<table>
<thead>
<tr>
<th></th>
<th>Condition 1 Words without pictures</th>
<th>Condition 2 Words with pictures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median number of words</td>
<td>13</td>
<td>16</td>
</tr>
<tr>
<td>correctly recalled</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Range</td>
<td>11</td>
<td>13</td>
</tr>
</tbody>
</table>

3 (d) What do the scores in Table 1 show?

A psychologist wanted to investigate the effects of age of adoption on aggressive behaviour. He compared children who had been adopted before the age of two with children who had been adopted after the age of two. The children were observed in their school playground when they were six years old.

9 (a) Suggest two operationalised behavioural categories the psychologist could use in his observation of aggressive behaviour. Explain how the psychologist could have carried out this observation.
9 (b) Explain one ethical issue the psychologist would have needed to consider when carrying out this research. How could the psychologist have dealt with this issue?

The psychologist wanted to investigate how aggressive the children were when they were at home. He interviewed a sample of their parents to investigate this.

9 (c) Explain why using interviews might be better than using questionnaires in this situation.

2 A psychology student carried out a laboratory experiment to investigate encoding in STM. She used an opportunity sample of 20 participants.

Two lists of letters were read out to participants.

List 1  P  V  E  D  B  C  G  T  (letters that sound the same).
List 2  Y  Z  O  A  N  F  X  R  (letters that do not sound the same).

All 20 participants listened to list 1 and then tried to recall the letters. Next, they all listened to list 2 and then tried to recall these letters.

2 (a) Explain one advantage of using a laboratory experiment in psychology studies.

[2 marks]

2 (b) Write a non-directional hypothesis for this experiment.

[2 marks]

2 (c) Name the experimental design used in this experiment. Evaluate the choice of this design in this experiment.

[1 + 3 marks]

2 (d) The student used opportunity sampling to select the participants for this experiment.

Explain why random sampling might have been a better sampling technique.

[2 marks]
The results for the experiment are given in Table 1.

Table 1: The mean numbers of letters recalled and standard deviations for list 1 (letters that sound the same) and list 2 (letters that do not sound the same).

<table>
<thead>
<tr>
<th></th>
<th>List 1 – Letters that sound the same</th>
<th>List 2 – Letters that do not sound the same</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>4.9</td>
<td>6.4</td>
</tr>
<tr>
<td>Standard deviation</td>
<td>1.6</td>
<td>0.9</td>
</tr>
</tbody>
</table>

2 (e) Explain what the mean scores suggest about encoding in STM. [2 marks]

2 (f) What do the standard deviations in Table 1 suggest. [2 marks]

9 A researcher studied a group of children who had spent time in an institution before being adopted. Each child was observed by the researcher in their school playground and given a score for aggression. A high score indicated that the child was very aggressive. The research showed that the longer children had spent in the institution, the higher their aggression score.

9 (a) What type of correlation was found in this study? Tick the correct box. [1 mark]

Positive
Negative
Zero or no correlation

9 (b) Explain one limitation of correlational research. [2 marks]

9 (c) Explain one ethical issue and one methodological issue associated with using observation to assess children’s aggression. [2 + 2 marks]
1. An experiment tested the idea that music affects memory. Participants were asked to learn 20 words (list A) while they listened to music. They then recalled the words. They were also asked to learn 20 words (list B) in silence and to recall these words.

Select from the list below the phrase that describes the independent variable and the phrase that describes the dependent variable in this study.

A. The number of words correctly recalled
B. The number of words in list A and list B
C. The number of participants
D. Presence or absence of music
E. Type of music used

Write the appropriate letter, A, B, C, D, or E in each box to complete the table below.

<table>
<thead>
<tr>
<th>Type of variable</th>
<th>Letter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Independent variable</td>
<td></td>
</tr>
<tr>
<td>Dependent variable</td>
<td></td>
</tr>
</tbody>
</table>

[2 marks]

6. Psychologists have used case studies to investigate processes such as memory. Outline strengths and/or limitations of using case studies in psychological research. [4 marks]

9. A psychologist carried out research into the attachment types of children aged between 12 months and 18 months old who attended a large day nursery. The parents of these children had given permission for their child to take part in research. The psychologist used the ‘Strange Situation’.

9 (a) Explain how the psychologist could obtain a random sample of 10 children from the nursery to take part in her research. [2 marks]

9 (b) The psychologist chose to use a random sample rather than a volunteer sample in this study. Give one advantage of using a random sample rather than a volunteer sample. [2 marks]
In an observational study, 100 cars were fitted with video cameras to record the driver’s behaviour. Two psychologists used content analysis to analyse the data from the films. They found that 75% of accidents involved a lack of attention by the driver. The most common distractions were using a hands-free phone or talking to a passenger. Other distractions included looking at the scenery, smoking, eating, personal grooming and trying to reach something within the car.

**1.8** What is content analysis? (2 marks)

**1.9** Explain how the psychologists might have carried out content analysis to analyse the film clips of driver behaviour. (4 marks)

**2.0** Explain how the two psychologists might have assessed the reliability of their content analysis. (3 marks)

The psychologists then designed an experiment to test the effects of using a hands-free phone on drivers’ attention. They recruited a sample of 30 experienced police drivers and asked them to take part in two computer-simulated driving tests. Both tests involved watching a three-minute film of a road. Participants were instructed to click the mouse as quickly as possible, when a potential hazard (such as a car pulling out ahead) was spotted.

Each participant completed two computer-simulated driving tests:

- Test A, whilst chatting with one of the psychologists on a hands-free phone
- Test B, in silence, with no distractions.

The order in which they completed the computer tests was counterbalanced.

**2.1** Explain why the psychologists chose to use a repeated measures design in this experiment. (3 marks)

**2.2** Identify one possible extraneous variable in this experiment. Explain how this variable may have influenced the results of this experiment. (3 marks)

**2.3** Explain how one factor in this experiment might affect its external validity. (3 marks)
Explain one or more ethical issues that the psychologists should have considered in this experiment. (4 marks)

Write a set of standardised instructions that would be suitable to read out to participants, before they carry out Test A, chatting on a hands-free phone. (5 marks)

The computer simulator measured two aspects of driver behaviour:

- the number of hazards detected by each driver
- the time taken to respond to each hazard, in seconds.

The mean scores for each of these measures is shown in Table 1.

Table 1 Table to show the mean number of hazards detected and mean reaction times in seconds for Test A and Test B

<table>
<thead>
<tr>
<th>Mean scores</th>
<th>Test A: with hands-free phone</th>
<th>Test B: in silence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of hazards</td>
<td>26.0</td>
<td>23.0</td>
</tr>
<tr>
<td>detected</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reaction time in</td>
<td>0.45</td>
<td>0.27</td>
</tr>
<tr>
<td>seconds</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The psychologists then used an inferential statistical test to assess whether there was a difference in the two conditions.

Identify an appropriate statistical test to analyse the difference in the number of hazards detected in the two conditions of this experiment. Explain why this test of difference would be appropriate. (3 marks)

They found no significant difference in the number of hazards detected ($p > 0.05$), but there was a significant difference in reaction times ($p \leq 0.01$).

Explain why the psychologists did not think that they had made a Type 1 error in relation to the difference in reaction times. (2 marks)

Replication is one feature of the scientific method. The psychologists decided to replicate this experiment using a larger sample of 250 inexperienced drivers.

Explain why replication of this study would be useful. (3 marks)
Read this information very carefully as you will need to refer to it in later questions.

154 patients who suffered from panic attacks were asked by a psychologist to take part in a clinical trial to assess the effectiveness of cognitive behavioural therapy (CBT). In order to select suitable participants for the trial, each patient completed a questionnaire which measured the severity of their symptoms on a scale of 1 (mild) to 10 (severe).

60 patients who had moderate symptoms with scores of 7 or 8 were selected to take part. They were randomly allocated to one of three conditions.

- Condition 1: Traditional cognitive behavioural therapy – this consisted of 12 one-hour sessions over a 12-week period.
- Condition 2: Brief cognitive behavioural therapy – this consisted of 5 one-hour sessions over a 5-week period with homework assessments.
- Condition 3: Control condition – patients were placed on a 12-week waiting list for traditional cognitive behavioural therapy. This group did not receive any form of treatment during the 12 weeks.

One week after finishing the course of therapy, patients in condition 1 and condition 2 completed the questionnaire for a second time. Patients in condition 3 completed the questionnaire for a second time at the end of the 12-week period. The three scores from this questionnaire were compared to see if there were differences in the severity of symptoms.

16 What were the aims in this study? [2 marks]

17 Identify one variable which does not appear to have been controlled in this trial. Explain how this may have influenced the outcome. [3 marks]

18 What is meant by ‘validity’? How could the psychologist have assessed the validity of the questionnaire used to measure the severity of symptoms? [4 marks]

19 The psychologist asked the 60 patients for fully informed consent to take part in this trial. What should the psychologist have told the patients so that they were able to give their consent? [5 marks]
Table 1 Mean and standard deviation of severity of symptom scores after therapy

<table>
<thead>
<tr>
<th>Severity of symptom scores after therapy</th>
<th>Condition 1 Traditional CBT</th>
<th>Condition 2 Brief CBT</th>
<th>Condition 3 Waiting list</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>4.2</td>
<td>4.3</td>
<td>6.7</td>
</tr>
<tr>
<td>Standard deviation</td>
<td>1.2</td>
<td>2.4</td>
<td>1.3</td>
</tr>
</tbody>
</table>

The psychologist used a statistical test to assess the differences in severity of symptoms between patients in Condition 1 and Condition 2. The difference between traditional CBT and brief CBT was found to be non-significant (p > 0.05).

2.0 What do the data show about the effectiveness of the therapies for panic attacks? Refer to mean scores, standard deviations and the results of the statistical test in your answer. [6 marks]

2.1 Imagine that you are writing up the report for this experiment. What is the purpose of the abstract in a psychological report? [2 marks]

In the discussion section of a report, researchers are expected to consider possible practical applications and implications of their research.

2.2 Discuss applications and/or implications that might arise from this piece of research. [5 marks]

The psychologist wished to investigate which aspects of therapy were most useful. She decided to interview a sample of the patients. The purpose of the interviews was to encourage patients to talk freely and in detail about their experiences of therapy. Two of the questions used by the psychologist were:

- ‘Please tell me about the most important aspects of the therapy which helped you to improve’
- ‘Please tell me about any aspects of the therapy which were less helpful to you in dealing with your symptoms’.

2.3 Explain how you would record the data from these interviews and your reason for choosing this method. [3 marks]

2.4 Explain how you would analyse the qualitative data from the interviews. [5 marks]
Read this information very carefully as you will need to refer to it in later questions.

Empathy is the ability to understand the feelings and emotions of other people. Some studies have shown that people high in empathy, are more accurate at recognising facial expressions of emotions such as happy, sad, fearful, angry and surprised. A psychologist wanted to investigate this using a sample of 28 students from a local sixth form college.

In the first part of the study the psychologist used a questionnaire to measure empathy in the participants. The maximum possible empathy score was 60. She found that the lowest empathy score in her participants was 20, and the highest empathy score was 55.

In the second part of the study each participant was presented with a series of faces showing different emotional expressions. The emotions were happy, sad, fearful, angry and surprised. There were 20 examples of each emotion. Each of the 100 faces was presented randomly on a computer screen for 0.5 of a second. After each presentation the participant had to press the appropriate key to identify the emotion expressed. Once the key was pressed the next face was presented. The total number of emotional expressions correctly identified by the participants ranged from 14 to 92.

1. Identify an appropriate sampling technique for this study and justify your choice. [2 marks]

2. Explain why it would be important for the psychologist to carry out a pilot study in relation to the second part of the study. [4 marks]

3. What is meant by ‘reliability’? Explain how the psychologist might assess the reliability of her questionnaire. [1 mark + 3 marks]
2.1 The psychologist used Spearman’s Rho ($r_s$) to see if the correlation between empathy scores and recognition of facial expressions of emotions was significant. The calculated value of $r_s$ was +0.490.

State whether this calculated value of $r_s$ is significant. Using Table 1 below explain your answer.

[1 mark + 2 marks]

Table 1 – Critical values for Spearman’s Rho ($r_s$)

<table>
<thead>
<tr>
<th>N</th>
<th>0.1</th>
<th>0.05</th>
<th>0.01</th>
</tr>
</thead>
<tbody>
<tr>
<td>26</td>
<td>0.331</td>
<td>0.390</td>
<td>0.501</td>
</tr>
<tr>
<td>27</td>
<td>0.324</td>
<td>0.383</td>
<td>0.492</td>
</tr>
<tr>
<td>28</td>
<td>0.318</td>
<td>0.375</td>
<td>0.483</td>
</tr>
<tr>
<td>29</td>
<td>0.312</td>
<td>0.368</td>
<td>0.475</td>
</tr>
<tr>
<td>30</td>
<td>0.306</td>
<td>0.362</td>
<td>0.467</td>
</tr>
</tbody>
</table>

Table values are for a two-tailed test. To achieve significance, the calculated value of rho must be greater than the table value.

2.2 What is meant by a ‘Type 1 error’? Explain why the psychologist thought that she had not made a Type 1 error.

[1 mark + 3 marks]

2.3 The psychologist submitted her report on the study for peer review.

Discuss the purpose of peer review.

[6 marks]
The psychologist wanted to do a follow-up study to investigate whether those participants with high empathy scores differed from those with low empathy scores in relation to helping behaviour. In order to do this she needed to consider how to measure her dependent variable and how to analyse the data that she collected.

2.4 Identify the independent variable and the dependent variable in this follow-up study. [2 marks]

2.5 Explain how the psychologist might measure the dependent variable. [3 marks]

2.6 Identify an appropriate statistical test that the psychologist could use and justify your choice. [3 marks]

2.7 Identify ethical issues in this follow-up study and explain how the psychologist could deal with them. [4 marks]

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 Figure 1 below.

**Figure 1:** Scattergram of children’s scores on a test of empathy and the average number of hours spent reading fiction per week.

---

1. **2** Outline the relationship between empathy and the average number of hours spent reading fiction per week shown in Figure 1. 

   (1 mark)

2. **3** Name an appropriate test to determine whether or not there is a significant relationship between the two variables in Figure 1. Justify your answer with reference to levels of measurement. 

   (2 marks)

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

3. **4** Explain why she chose to use a two-tailed test. 

   (1 mark)

4. **5** Briefly explain one problem that might arise with the use of a two-tailed test. 

   (1 mark)

5. **6** Outline one way in which the student teacher could have assessed the validity of the empathy questionnaire. 

   (2 marks)

6. **7** Apart from the issue of validity, identify and briefly explain one methodological limitation of the study. 

   (2 marks)

7. **8** Explain why it was appropriate for the student teacher to use a correlation study rather than an experiment. 

   (3 marks)
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
- the experimental design to be used
- the sample
- relevant materials
- an outline of the proposed procedure. (8 marks)

Researchers were interested in children’s use of social networking sites, such as ‘Facebook’ and ‘Twitter’. They asked children to write an essay about their use of social networking. In their essays, the children were asked to consider how often they used social networking sites, who they communicated with and the main topics discussed.

There were 80 participants in the study: twenty children aged 13–14 years from each of four different schools in the Birmingham area. There were equal numbers of boys and girls.

Before the study began, the researchers devised a set of categories to be used to analyse the children’s essays. These included the following categories: number of social networking friends; daily use of sites; topics discussed.

1.4 The researchers used random sampling to obtain equal numbers of boys and girls aged 13–14 years from the four schools. Outline how random sampling could have been carried out in this study. [2 marks]

1.5 Briefly explain how far the results from this study can be generalised. [2 marks]

1.6 Briefly explain why this study is an example of content analysis. [2 marks]

1.7 Briefly explain one strength of content analysis. [1 mark]

1.8 Outline how the reliability of the analysis of the children's essays could be checked. [3 marks]
The researchers found a link between gender and daily use of social networking sites. This is shown in the table below.

Table 1  The number of boys and girls who say they do or do not use social networking sites daily

<table>
<thead>
<tr>
<th></th>
<th>Boys</th>
<th>Girls</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social networking sites used daily</td>
<td>11</td>
<td>34</td>
</tr>
<tr>
<td>Social networking sites not used daily</td>
<td>29</td>
<td>6</td>
</tr>
</tbody>
</table>

19 Identify an appropriate statistical test that the researchers could have used to analyse the data in Table 1. Justify your answer.   [3 marks]

20 The results of the statistical test were significant at the 5% level. Explain what this means in relation to this study.   [2 marks]

21 The researchers were interested in finding out detailed information about the children’s experiences of bullying and social networking. They decided to carry out individual interviews with eight volunteers from the original sample. The issue of consent was dealt with before the interviews took place.

Explain how the researchers could carry out the interviews. Justify your decisions. In your answer, you should include details of the following:

- the type of interview
- a sample question
- details of the procedure to be followed
- ethical considerations, other than consent.   [5 marks]
Health psychologists were researching levels of physical activity in pre-school children. They carried out naturalistic observations of 30 children (15 boys and 15 girls) aged four years at a nursery school. They were interested in recording the levels of physical activity during the afternoon outdoor break period.

Each child was observed at 30-second intervals during the 15-minute break period. The observers recorded four physical activity categories: running, walking, standing and sitting. Inter-observer reliability was assessed and a correlation of +0.95 was found between the data from the two observers.

After all the data had been collected, the observations from the 15-minute break were split into three time periods: the first five minutes, the middle five minutes, the last five minutes.

Table 2 The number of times children were recorded running, walking, standing or sitting during the three 5-minute periods

<table>
<thead>
<tr>
<th>5-minute periods</th>
<th>Running</th>
<th>Walking</th>
<th>Standing</th>
<th>Sitting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0–5 mins</td>
<td>142</td>
<td>67</td>
<td>61</td>
<td>30</td>
</tr>
<tr>
<td>6–10 mins</td>
<td>88</td>
<td>60</td>
<td>90</td>
<td>62</td>
</tr>
<tr>
<td>11–15 mins</td>
<td>35</td>
<td>58</td>
<td>98</td>
<td>109</td>
</tr>
</tbody>
</table>

1.3 What could you conclude about levels of physical activity from the data in Table 2? Justify your answer. [2 marks]

1.4 Identify one variable that might have been a confounding variable in this study. Justify your answer. [2 marks]

1.5 Explain what a correlation of +0.95 suggests about the reliability of the observations in this study. [2 marks]

1.6 Discuss one strength of a naturalistic observation. Refer to this study in your answer. [3 marks]
In the second part of the study, the psychologists analysed the data to see if there were differences in levels of activity between boys and girls. The psychologists looked at the first 30 seconds of outdoor play for each child. They classified the physical activity levels as either ‘active’ (running and walking) or ‘passive’ (standing and sitting). The results are set out in Table 3 below:

<table>
<thead>
<tr>
<th>Physical Activity Levels</th>
<th>Boys</th>
<th>Girls</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active</td>
<td>13</td>
<td>6</td>
</tr>
<tr>
<td>Passive</td>
<td>2</td>
<td>9</td>
</tr>
</tbody>
</table>

Write a suitable hypothesis for the second part of the study. [2 marks]

A Chi-square test was used to analyse the data in Table 3. The calculated value of Chi-square was 7.03.

Using Table 4 below, interpret the results of the study. Justify your answer. [3 marks]

Table 4 Critical values of Chi-square ($\chi^2$)

<table>
<thead>
<tr>
<th>df</th>
<th>0.1</th>
<th>0.05</th>
<th>0.01</th>
<th>0.001</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2.706</td>
<td>3.841</td>
<td>6.635</td>
<td>10.831</td>
</tr>
</tbody>
</table>

(The calculated value of Chi-square has to be equal to or greater than the table value for the result to be significant.)

The psychologists decided to carry out a further investigation into the effect of duration of outdoor breaks on activity levels. They predicted that children would take more steps during three short breaks than during one long break. Ten nursery children took part in the study. Each child wore a pedometer to measure the number of steps that he or she took during breaks. On the first day the children had their usual 15-minute break. The next day the children had three separate five-minute breaks.

Explain how the results from this study could be analysed. Give reasons for your answer. You should refer to the following:

- descriptive statistics that could be used to analyse the data
- the significance level
- whether the researchers would use a one-tailed or two-tailed test
- the statistical test that could be used to analyse the data, with justification. [6 marks]
12 Identify the dependent variable in this study. [2 marks]

Marks for this question: AO2 = 2

2 marks for identification of dependent variable operationalised: number of verbal errors.

1 mark for dependent variable not operationalised: verbal errors or fluency or mistakes.

13 Write a suitable hypothesis for this study. [3 marks]

Marks for this question: AO2 = 3

3 marks for an appropriate non-directional (or directional) operationalised hypothesis:

‘There is a difference in number of verbal errors made by participants who perceive/think/believe there are 5 listeners (there is a small audience) and by participants who perceive/think/believe there are 100 listeners (there is a large audience)’.

2 marks for a statement with both conditions of the IV and a DV that lacks clarity or has only one variable operationalised.

1 mark for a muddled statement with both conditions of the IV and a DV where neither variable is operationalised.

0 marks for expressions of aim/questions/correlational hypotheses or statements with only one condition.

Full credit can be awarded for a hypothesis expressed in a null form.
14. Identify one extraneous variable that the psychologist should have controlled in the study and explain why it should have been controlled.  

Marks for this question: AO2 = 3

1 mark for identification of one appropriate extraneous variable.

Plus

2 marks for explanation of why the variable should have been controlled — for full marks this should include clear explanation of how it would have affected the DV. Award one mark only for muddled or incomplete explanations, eg unelaborated reference to ‘avoiding confounding’.

Appropriate variables: can be controlled and need to stay constant to avoid affecting the dependent variable, eg same article/conditions/instructions for each participant.

Do not credit gender (this is controlled) or time to complete task (cannot be controlled).

15. Explain one advantage of using a stratified sample of participants in this study.  

Marks for this question: AO2 = 2

2 marks for clear and coherent explanation of one advantage of using a stratified sample in this study.

1 mark for a muddled answer with a relevant advantage and some explanation in relation to the study.

Possible advantage: ensures that this sample is truly representative because different types of people (males/females) working in this company are represented in the sample in the correct proportions.

Accept other relevant advantages.
15 Explain how the psychologist would have obtained the male participants for her stratified sample. Show your calculations.

Marks for this question: AO2 = 3

1 mark for each point as follows:

Manual method:
- put all 60 male names in a hat (or similar)
- determine the proportion of males needed to mirror the number of males in the target population as follows: 60%
- calculate 60% of 20 = 12 and draw out 12 names.

Random number table or computer method:
- assign each of the 60 men a number between 1 and 60
- determine the proportion of males needed to mirror the number of males in the target population as follows: 60%
- calculate 60% of 20 = 12 and moving horizontally or vertically through random number tables find 12 numbers between 1 and 60 for the sample OR generate 12 numbers between 1 and 60 using random number generation function on computer.

17 The psychologist wanted to randomly allocate the 20 people in her stratified sample to the two conditions. She needed an equal number of males in each condition and an equal number of females in each condition. Explain how she would have done this.

Marks for this question: AO2 = 4

Marks for a clear description of a practical way of randomly allocating the 12 men and 8 women to the two conditions as follows:

- give each man a number 1–12 (1 mark)
- put 12 numbers in a hat (1 mark)
- assign first six numbers drawn to Condition A with the remainder for Condition B (1 mark)
- repeat process for women – eight numbers in the hat and draw four for Condition A and remaining four go to Condition B (1 mark).

Accept other valid descriptions that would be practical and produce the same outcome.
What conclusions might the psychologist draw from the data in Table 1? Refer to the means and the standard deviations in your answer. [6 marks]

Marks for this question: AO2 – 2 and AO3 – 4

<table>
<thead>
<tr>
<th>Level</th>
<th>Marks</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>5–6</td>
<td>Conclusions in respect of both means and standard deviations are presented with clarity. Understanding of the relevance of each statistic is demonstrated. Justifications for each make good use of the values given.</td>
</tr>
<tr>
<td>2</td>
<td>3–4</td>
<td>Conclusions and justification in respect of both means and standard deviations are relevant, but there is some lack of clarity in both. Or, one is done well and justified appropriately (most usually this will be the mean).</td>
</tr>
<tr>
<td>1</td>
<td>1–2</td>
<td>One conclusion is drawn or two are partially correct. Any justification is limited. The answer lacks clarity.</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>No relevant content</td>
</tr>
</tbody>
</table>

**Means**
- Conclusion: when people believe they are presenting to a large audience they are less fluent in their spoken communication than when they believe the audience is small (or vice versa).
- Justification/Application: this is supported by the difference in the mean fluency scores which show more verbal mistakes (on average 6 more mistakes) when the audience is believed to be large (or vice versa).

**Standard deviations**
- Conclusion: performances of participants in Condition A where audience is believed to be small are less varied/dispersed/spread out than in Condition B where audience is believed to be large (or vice versa).
- Justification/Application: lower SD in Condition A suggests that individual performances in Condition A were more similar to each other and/or all quite close to the mean of 11.1.
19 Explain how using the standard deviation rather than the range, in this situation, would improve the study.  

[3 marks]

Marks for this question: AO3 = 3

1 mark – this would be an improvement because the SD is a measure of dispersion that was less easily distorted by a single extreme score.

Plus

1 mark – one that takes account of the distance of all the verbal error scores from the mean.

Plus

1 mark – not just the distance between the highest verbal error score and the lowest verbal error score.

20 Name an appropriate statistical test that could be used to analyse the number of verbal errors in Table 1. Explain why the test you have chosen would be a suitable test in this case.  

[4 marks]

Marks for this question: AO2 = 4

1 mark for naming the t-test for independent/unrelated groups or a Mann-Whitney test.

Plus

Up to 3 marks for explanation for unrelated t-test. Credit relevant points as follows:

- can assume interval data because verbal errors can be assumed to be of equal size (ie one verbal error is equivalent to any other verbal error)
- the experimental design is independent groups
- the psychologist is looking for a difference between the two conditions.

OR

Up to 3 marks for explanation for Mann-Whitney test. Credit relevant points as follows:

- data should be treated as ordinal. Cannot assume interval data because verbal errors cannot be assumed to be of equal size (ie one verbal error is not equivalent to any other verbal error)
- the experimental design is independent groups
- the psychologist is looking for a difference between the two conditions
- SDs are quite different.
21. The psychologist found the results were significant at p<0.05. What is meant by 'the results were significant at p<0.05'?

[2 marks]

Marks for this question: AO1 = 2

2 marks for a clear and appropriate definition as follows:
This means that there is a less than 5% likelihood that this difference would occur if there is no real difference between the conditions OR the researchers would have a 95% confidence level.

1 mark for a less clear answer which shows some understanding, e.g. this means the researcher can conclude that the difference was not due to chance.

Accept any other valid answer.

22. Briefly explain one method the psychologist could use to check the validity of the data she collected in this study.

[2 marks]

Marks for this question: AO2 = 2

2 marks for a clear and detailed explanation applied to this study.

1 mark for a partial or muddled explanation or one that is only loosely applied to the study.

Credit answers based on any type of validity. Most answers will refer to either face or concurrent as follows:
- asking other people if verbal errors are a good measure of verbal fluency (face validity)
- giving participants an alternative/established verbal fluency test and checking to see that the two sets of data are positively correlated (concurrent validity).

23. Briefly explain one reason why it is important for research to undergo a peer review process.

[2 marks]

Marks for this question: AO3 = 2

2 marks for a clear and coherent explanation of one reason.

1 mark for a partial or muddled explanation of one reason.

Possible content:
- prevents dissemination of irrelevant findings/unwarranted claims/unacceptable interpretations/personal views and deliberate fraud – improve quality of research
- ensures published research is taken seriously because it has been independently scrutinised
- increases probability of weaknesses/errors being identified – authors and researchers are less objective about their own work.

Accept other valid answers.
24. 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.

[12 marks]

Marks for this question: AO2 = 12

<table>
<thead>
<tr>
<th>Level</th>
<th>Marks</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>10–12</td>
<td>Suggestions are generally well detailed and practical, showing sound understanding of observational techniques. All four elements are present. There is sufficient information for most aspects of the study to be implemented with success. The answer is clear and coherent. Specialist terminology is used effectively. Minor detail and/or explanation sometimes lacking.</td>
</tr>
<tr>
<td>3</td>
<td>7–9</td>
<td>Suggestions are mostly sensible and practical, showing some understanding of observational techniques. At least three elements are present. Implementation of some aspects is possible. The answer is mostly clear and well organised. Specialist terminology is mostly used effectively.</td>
</tr>
<tr>
<td>2</td>
<td>4–5</td>
<td>Some suggestions are appropriate but others are impractical or inadequately explained. At least two elements are addressed. Implementation would be difficult based on the information given. The answer lacks clarity, accuracy and organisation on occasions.</td>
</tr>
<tr>
<td>1</td>
<td>1–3</td>
<td>At least one element is addressed but knowledge of observational techniques is limited. Implementation would be very difficult. The whole answer lacks clarity, has many inaccuracies and is poorly organised.</td>
</tr>
<tr>
<td>0</td>
<td></td>
<td>No relevant content.</td>
</tr>
</tbody>
</table>

Four elements of design to be credited:

- **The task for the participants** – detail of what the men and women in the study will have to do. This must go beyond ‘give a presentation to an audience’.

- **The behavioural categories to be used and how the data will be recorded** – detail of specific and observable behaviours to be recorded. This must go beyond the idea of global constructs such as ‘body language’ or ‘gesture’. Also detail of recording method to be used, eg record sheet.

- **How reliability of the data collection might be established**, eg using two observers/raters and comparing separate recordings, statistical comparison of data from both observers/raters.

- **Ethical issues to be considered**, eg specific or more general ethical considerations as applied to this study – protection of welfare, confidentiality and deception, respect or integrity.

Examples of possible tasks:

- presentation of findings from a school project
- presentation on ‘My Hobby’
- presentation on ‘My Holiday’.

Examples of suitable non-verbal behaviours include:

- arm movements
- smiling
- speech hesitations
- pointing etc.
9 Should the hypothesis be directional? Explain your answer.

Marks for this question: AO2 = 2

2 marks for explanation that a non-directional hypothesis is suitable or 'it should not be directional,' (1) as there is no reference to evidence that allows the researchers to predict the direction of the results (1).
1 mark for a muddled/limited explanation of why the hypothesis should be non-directional or 1 mark for stating non-directional.

10 Write a suitable hypothesis for this investigation.

Marks for this question: AO2 = 3

3 marks for an appropriate non-directional operationalised hypothesis:
‘There is a relationship between the map reading scores and the driving error ratings of motorists’.
2 marks for a non-directional statement with both key variables that lacks clarity or has only one variable operationalised.
1 mark for a muddled statement with some reference to variables.
0 marks for expressions of aim/questions/causal statements or statements with only one condition.

Full credit can be awarded for a hypothesis expressed in a null form.

11 Identify a suitable graphical display for the data in Table 1 and briefly explain why this display would be appropriate.

Marks for this question: AO2 = 2

1 mark for stating scattergraph or scattergram.

Plus
1 mark for explanation – because it shows a relationship between two variables.
12 Using the data in Table 1, comment on the relationship between the map reading scores and the driver rating scores of the participants. 

[3 marks]

Marks for this question: AO2 = 3

Possible content
• General pattern - if a participant scored highly on the map reading task then they are also rated highly on the practical driving task, (or vice versa)
• This suggests a person who has good map reading ability also has good driving skills so these spatial abilities are (positively) related/correlated

Accept other relevant comments

13 Briefly outline one problem of using a single trained observer to rate the participants’ driving skills in the practical task. Briefly discuss how this data collection method could be modified to improve the reliability of the data collected.

[5 marks]

Marks for this question: AO2 = 2 and AO3 - 4

<table>
<thead>
<tr>
<th>Level</th>
<th>Marks</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>5-6</td>
<td>Outline of the problem is clear and coherent. Discussion of how the method could be modified is appropriate and effective. The answer is clear and coherent. Specialist terminology is used effectively. One modification in detail can access this level.</td>
</tr>
<tr>
<td>2</td>
<td>3-4</td>
<td>Outline of the problem is clear. Discussion of how the method could be modified is mostly appropriate and effective. There is some appropriate use of specialist terminology.</td>
</tr>
<tr>
<td>1</td>
<td>1-2</td>
<td>Outline of the problem is vague/muddled. Discussion of how the method could be modified either lacks detail or is muddled. Specialist terminology is either absent or inappropriately used.</td>
</tr>
<tr>
<td>0</td>
<td></td>
<td>No relevant content.</td>
</tr>
</tbody>
</table>

Possible problems:
• Researcher bias – using one observer means objectivity/reliability/validity cannot be checked

Possible modifications:
• Increasing the number of observers of the driving task because then the data is less subject to individual bias – the observations could then be correlated
• Recording the driver performance so that the data is not lost but can be reviewed as often as required.

Credit other relevant information.
14 The researchers decided to analyse the data using a Spearman’s rho test. Explain why this is a suitable choice of test for this investigation.

[3 marks]

Marks for this question: A02 = 3

Possible content:
- The test determines the strength of a relationship between two variables which is what the researchers were looking for in their initial aim
- The data are in related pairs
- The variables under test are both ratings measured at the ordinal level.

Credit other relevant information

15 Using the information in Table 2 above, what conclusion can the researchers draw about the relationship between the map reading and driving skills of the motorists? Explain your answer.

[4 marks]

Marks for this question: A02 = 2 and A03 = 2

<table>
<thead>
<tr>
<th>Level</th>
<th>Marks</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>3–4</td>
<td>Explanation of an appropriate conclusion for this study is clear and mostly accurate. There is appropriate justification of the conclusion with reference to the critical values table. The answer is generally coherent with effective use of specialist terminology.</td>
</tr>
<tr>
<td>1</td>
<td>1–2</td>
<td>Some explanation of an appropriate conclusion is evident. There may be some justification of this with reference to the critical values table. The answer lacks accuracy and detail. Use of specialist terminology is either absent or inappropriate.</td>
</tr>
<tr>
<td>0</td>
<td></td>
<td>No relevant content.</td>
</tr>
</tbody>
</table>

Possible content:

Conclusion
- The null hypothesis should be rejected and the alternative hypothesis accepted
- There is a significant (positive) relationship between the map reading ability and the driving ability of the participants
- Drivers who are skilled at map reading are also skilled at driving

Justification
- This relationship is a strong positive one as the calculated value of $r_s$ of 0.808 exceeds the critical value for a two tailed test at $p=0.05$ where $n=9$ of 0.700.
16. Distinguish between a Type I error and a Type II error. [4 marks]

Marks for this question: AO1 = 4

1 mark each for a correct definition of both a Type I and a Type II error
Plus
Up to 2 marks for a clear distinction between these two errors.

Possible content:
• A Type I error occurs when a researcher claims support for the research hypothesis with a significant result when the results were caused by random variables
• A Type II error occurs when the effect the researcher was attempting to demonstrate does exist but the researcher claims there was no significance in the results erroneously accepts the null hypothesis
• The difference is that in a Type I error the null hypothesis is rejected when it is true and in a Type II error it is retained when it is false.

17. What do the mean and standard deviation values suggest about the male and female performances in the investigation? [4 marks]

Marks for this question: AO2 = 2 and AO3 = 2

2 marks for an accurate comment about the means for both males and females
Plus
2 marks for an accurate comment about the standard deviations for both sets of data

Possible content
Means: the mean score for males is almost 3 times larger than that of the females which suggests they are very much better at map reading than the females

Standard deviations: are quite similar to each other suggesting the spread of performances of the male participants and the female participants is similar within each group.

18. The mean map reading score for both groups together was 12.23. What percentage of the male group scored above the mean score and what percentage of the female group scored above the mean score? Show your calculations. [4 marks]

Marks for this question: AO2 = 4

Award 2 marks for a correct calculation of the percentage for the male participants and 2 marks for a correct calculation of the percentage for the female participants

If the calculation for one or both of the groups is incorrect but the procedure used is correct award 1 mark for each time this occurs to a maximum of 2 marks.

Males – 13/20 = 65%
Females 5/20 = 25%
19 Using your answers to both question 17 and question 18, comment on the performances of the male and the female participants in this study. [2 marks]

Marks for this question: AO2 = 2

Up to 2 marks for a clear comment on the data

Possible content: the difference in the percentages confirms the earlier suggestion that men are much better at map reading than women.

20 Briefly explain one reason why it is important for research to be replicated. [2 marks]

Marks for this question: AO1 = 2

Possible content:

- The likelihood of the same differences occurring twice (or more), by chance alone are much smaller than when they occur the first time.
- Effects that occur in a study are more likely to be reliable if they occur in a repeat of the study – replication therefore increases (external) reliability.

21 Discuss the following aspects of this investigation:

- with reference to the card sorting task, explain how you would ensure that this is made the same task for all participants
- one methodological issue you should take into account when obtaining suitable participants for this study and explain how you would deal with this issue
- how you would ensure that the experience of your participants is ethical.

[9 marks]

Marks for this question: AO2 = 9 marks

<table>
<thead>
<tr>
<th>Level</th>
<th>Marks</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>7-9</td>
<td>Suggestions are generally well detailed and practical, showing sound understanding of design of an experiment. All three elements are present. There is sufficient information for most aspects of the study as required to be implemented with success. The answer is clear and coherent. Specialist terminology is used effectively. Minor detail and/or explanation sometimes lacking.</td>
</tr>
<tr>
<td>2</td>
<td>4-6</td>
<td>Some suggestions are appropriate but there may be a lack of detail. At least two elements are addressed. Implementation may be difficult given the lack of information. The answer is mostly clear and organised. There is some appropriate use of specialist terminology.</td>
</tr>
<tr>
<td>1</td>
<td>1-3</td>
<td>At least one element is addressed but knowledge of task design or dealing with participants is limited. Successful implementation would be difficult given the information provided. There is substantial inaccuracy/muddle. Specialist terminology is either absent or inappropriately used.</td>
</tr>
<tr>
<td>0</td>
<td></td>
<td>No relevant content.</td>
</tr>
</tbody>
</table>

Possible content:

- The task: the answer must show an appreciation of the fact that the usual way of merely sorting a shuffled pack of cards into suits will have to be modified in order to ensure that each participant has exactly the same task. [Initial shuffle, record the order, reinstate that order for each participant]
- Suitability of participants: the answer must include information about how familiarity with cards could become a confounding variable if not controlled and how this could be controlled practically.
- Ethical issues: specific or more general ethical considerations as applied to this study – protection of welfare, confidentiality, respect or integrity.
13. Should the hypothesis for this research be directional or non-directional? Explain your answer. [2 marks]

Marks for this question: AO2 = 2
1 mark – the hypothesis should be directional
Plus
1 mark – because there is past research indicating the likely direction of the effect (or similar)

14. Explain what is meant by operationalisation and suggest two ways in which 'riding a bike with care' could have been operationalised. [4 marks]

Marks for this question: AO1 = 2 and AO3 = 2
2 marks for a clear and coherent explanation of operationalisation
1 mark for a brief or muddled explanation of operationalisation

Content: operationalisation involves clearly specifying/describing observable behaviours that represent the more general construct under investigation to enable the behaviour under investigation to be measured

Plus
1 mark each for two observable behaviours that could represent 'riding a bike with care'.
Examples: use of cycle lane/track, passing pedestrians at a distance of at least 1 metre, using bicycle bell
Credit any relevant observable behaviour.
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 marks]

Marks for this question: AO2 = 3

1 mark for knowledge of the term face validity – where a behaviour appears at first sight (on the face of it) to represent what is being measured

Plus

2 marks for clear and coherent application of the concept of face validity to the context
1 mark for brief or muddled application of the concept of face validity to the context

Application: Having a dog on a lead appears at first glance to be measuring considerate behaviour because if a dog is on a lead it is less able/likely to upset other people by coming close, frightening, chasing, biting, growling etc.

Credit other relevant applications.

Identify and briefly outline two other types of validity in psychological research. [4 marks]

Marks for this question: AO1 = 4

1 mark for each of two types of validity identified

Plus

1 mark each for a brief outline of each type of validity identified

Content:
- Concurrent – where performance on one measure correlates highly with performance on another measure of the same variable
- Ecological – where a measure of a behaviour accurately reflects the way in which the behaviour would occur in normal circumstances
- Temporal – where findings from research that took place at a certain point in time accurately reflect the way that behaviour would occur at a different point in time

Credit also other types of validity eg criterion, content, construct, population, predictive.
17 Identify the behaviour sampling method used by the students. Shade one box only. [1 mark]

Marks for this question: AO2 = 1
1 mark – C Event sampling

18 Explain how inter-observer reliability could be ensured by working as a pair. [3 marks]

Marks for this question: AO2 = 3
1 mark for each of the following:
- The student pair should discuss and agree beforehand their interpretation of the behavioural categories
- Each student should then observe the same people/spaces/target at the same time but record/tally independently
- Their respective recordings/tallies should be correlated using an appropriate statistical test to ascertain the level of agreement

19 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 marks]

Marks for this question: AO2 = 3
1 mark for the correct ratio: 3:2

Plus
2 marks for full workings: 
23 + 12 + 19 = 54 and 10 + 17 + 9 = 36
54:36 both divisible by 9 (or 18)
54 = 9 x 6 and 36 = 9 x 4
6:4 can be simplified to 3:2
1 mark for partial workings eg first 2 of the above stages
20 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 marks]

Marks for this question: A02 – 3
1 mark for each of the following:
- Data is categorical/nominal/frequency
- The students are looking for a difference or an association between two variables
- Design is independent/unrelated or categories are exclusive (observations cannot appear in more than one cell)

21 Calculate the degrees of freedom for the data in Table 1. Show your workings. [2 marks]

Marks for this question: A02 = 2
1 mark for the correct answer: df = 2
Plus
1 mark for correctly substituting values into the formula as follows:
\[(2 - 1) \times (3 - 1) = 1 \times 2 = 2\]

22 Referring to 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. [3 marks]

Marks for this question: A02 = 3
1 mark for each of the following:
- Yes, the result is significant
- Because the calculated value of Chi-square is more than critical/acceptable value of 4.88 at .05 for a one-tailed test
- Where df equals 2
23 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 marks]

Marks for this question: AC2 = 4

<table>
<thead>
<tr>
<th>Level</th>
<th>Marks</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>3–4</td>
<td>The paragraph is clear and coherent, showing sound understanding of the concept of levels of significance and effective application to the context. There is effective use of terminology.</td>
</tr>
<tr>
<td>1</td>
<td>1–2</td>
<td>The paragraph shows some understanding of the concept of levels of significance and/or some relevant application to the context. The answer lacks clarity and coherence. Terminology is either absent or inappropriately used.</td>
</tr>
<tr>
<td>0</td>
<td></td>
<td>No relevant content.</td>
</tr>
</tbody>
</table>

Possible content:
- Explanation of levels of significance as an indication of the measure of the influence/effect of chance/random factors on the findings.
- With the present results there is a 95% confidence in accepting the research hypothesis/confidence that any difference/effect is due to the variables under investigation, in this case the location of the public spaces.
- There is a 5% possibility that the same frequencies would occur if there was no real difference between the two towns.
- The calculated value in this case well exceeds the critical value at 0.05 but does not meet the more stringent level of significance of 0.01.
- Possibility of type one error.

Credit other relevant material.

24 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 marks]

Marks for this question: AC3 = 3

1 mark for explaining that content analysis is suitable because the students are analysing recordings which are a form of media.

Plus

2 marks for a clear, coherent account of how the content could be analysed
1 mark for a brief or muddled account of how the content could be analysed

Content:
Students could identify specific ideas/concepts that occur in the recordings.
They could then set up a system of categories and tally the ideas/concepts.
25 Suggest one inconsiderate behaviour that the students might focus on in their content analysis.

[1 mark]

Marks for this question: AO3 = 1

1 mark for any relevant inconsiderate behaviour e.g., leaving rubbish, leaving dirty mugs/plates, playing music loudly, throwing books, shouting

26 Design an experiment to investigate the effect of indoor plants on mood in office workers. For your measure of mood you should devise a measure that would give data suitable for testing at the ordinal level of measurement.

In your answer you should provide details of:

- Design – include reference to the experimental design, variables and controls
- Materials/Apparatus – describe any special materials required
- Data analysis that could be used – include reference to descriptive and inferential analysis

Justify your choices.

[12 marks]

Marks for this question: AO2 = 6 and AO3 = 6

<table>
<thead>
<tr>
<th>Level</th>
<th>Marks</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>10-12</td>
<td>All three elements are present. Suggestions are generally well detailed, practical and justified showing sound understanding of experimental design and data analysis. There is sufficient information for the study to be implemented. The answer is clear and coherent. Specialist terminology is used effectively. Minor detail and/or justification is sometimes lacking.</td>
</tr>
<tr>
<td>3</td>
<td>7-9</td>
<td>All three elements are present. Suggestions are mostly sensible and practical showing some understanding of experimental design and data analysis. There is some appropriate justification. Implementation of some aspects is possible but detail is lacking. The answer is mostly clear and organised. Specialist terminology is mostly used effectively.</td>
</tr>
<tr>
<td>2</td>
<td>4-6</td>
<td>At least two elements are present. Some suggestions are appropriate but others are impractical or inadequately explained. Justification is often incomplete or inappropriate. Implementation would be difficult. The answer lacks clarity, accuracy and organisation in places.</td>
</tr>
<tr>
<td>1</td>
<td>1-3</td>
<td>At least one element is present but knowledge is very limited. Justification is either absent or inappropriate. Implementation would not be possible. The answer as a whole lacks clarity, has many inaccuracies and is poorly organised.</td>
</tr>
<tr>
<td>0</td>
<td></td>
<td>No relevant content.</td>
</tr>
</tbody>
</table>
Three elements to be credited:

**Design**
- The experimental design to be used (repeated/independent/matched).
- IV and DV – note the DV must be suitable for ordinal level analysis.
- Any relevant aspect of control eg duration of study, control of relevant environmental variables eg office heating, noise pollution – note this need not be exhaustive.

**Materials/Apparatus**
- The self-devised instrument for measuring mood should be one that yields ordinal level data.
- A rating scale is the most suitable measure eg ratings from 1 – 10 where 1 = very unhappy and 10 = very happy. Statement(s) from the rating scale should be outlined.
- Alternatively, students could describe a questionnaire and give examples of suitable items.

(Note – although essential to the study plants need not be described)

**Data analysis**
- Descriptive statistics should include a measure of central tendency and dispersion (given the requirement for an ordinal level measure the most appropriate here would be the median and range but can award some credit for other measure of central tendency and dispersion).
- Suitable inferential analysis would be a test for differences between two conditions suitable for data at the ordinal level (Mann Whitney or Wilcoxon). Whichever test is chosen it should be consistent with the proposed experimental design.

(Note - descriptive statistics might also include appropriate graph/bar chart but this is not essential)
12.1 Identify the experimental design used in this study and outline one advantage of this experimental design. [3 marks]

Marks for this question: AO1 = 1 and AO3 = 2

1 mark for identification of the correct experimental design – independent groups/independent measures.

Plus

2 marks for a clear and coherent outline of an advantage using appropriate terminology.

OR

1 mark for a brief/vague/muddled outline of an advantage.

Possible advantages:
- performances not affected by order effects as people only do one condition
- demand characteristics less likely as participants only aware of own condition
- same task/materials can be used in both conditions as participants are always naïve to the task.

Credit other relevant advantages.

12.2 Describe one other experimental design that researchers use in psychology. [2 marks]

Marks for this question: AO1 = 2

2 marks for a clear and coherent outline of how participants are used in either a repeated measure or a matched pairs design.

1 mark for a vague, muddled or incomplete outline of a repeated measure or a matched pairs design.

If the answer to 12.1 is incorrect, credit a different design to that given.
12.3 Apart from using random allocation, suggest one way in which the psychologist might have improved this study by controlling for the effects of extraneous variables. Justify your answer.

[2 marks]

Marks for this question: AO3 = 2
1 mark for an appropriate and plausible suggestion.

PLUS
1 mark for an appropriate justification.

Likely suggestions:
- testing all participants in the same room
- making sure that all participants hear the same instructions
- ensuring that all participants are tested by the same researcher.

CREDIT other relevant suggestions.

12.4 Write a suitable hypothesis for this study.

[3 marks]

Marks for this question: AO2 = 3
3 marks for an appropriate non-directional (or directional) operationalised hypothesis: 'There is a difference in the number of ideas generated when participants work alone and when they work in groups.'

2 marks for a statement with both conditions of the IV and DV that lacks the clarity or has only one variable operationalised.

1 mark for a muddled statement with both conditions of the IV and DV where neither variable is operationalised.

0 marks for expressions of aim/questions/correlational hypotheses or statements with only one condition.

Full credit can be awarded for a hypothesis expressed in a null form.
12.5 From the information given in the description, calculate the number of participants in each group in Condition B.  
1 mark

Marks for this question: AO2 = 1
1 mark: 3 (in each group)

12.6 Name a measure of dispersion the psychologist could use.  
[1 mark]

Marks for this question: AO1 = 1
1 mark for naming a suitable measure of dispersion (range or standard deviation).

12.7 The psychologist uses the measure of dispersion you have named in your answer to question 12.6. State how the result for each condition would differ.  
[1 mark]

Marks for this question: AO2 = 1
1 mark for stating that the statistic calculated (either the range or the SD) would be greater in Condition A than in Condition B.
or written as
1 mark for stating that the statistic calculated (either the range or the SD) would be less in Condition B than in Condition A.

12.8 Explain how the psychologist could have used random allocation to assign the 15 participants in Condition B into the 5 groups.  
[3 marks]

Marks for this question: AO2 = 3
Marks for a clear description of a practical way as follows:
1 mark – all the participants allocated a number from 1 to 15.
1 mark – the 15 numbers are put in a hat.
1 mark – assign first three numbers drawn to a group and repeat process for other 4 groups.

Accept other valid descriptions that would be practical and produce the same outcome.
12.9 Using the information given in Table 2, explain how the psychologist could further analyse the data using percentages.

[2 marks]

Marks for this question: AO3 = 2

1 mark: for each condition, the overall number of ideas generated should be divided by the overall total of 185.

Plus

1 mark: the result for each condition should then be multiplied by 100 to give the percentage.

12.10 At the end of the study the psychologist debriefed each participant. Write a debriefing that the psychologist could read out to the participants in Condition A.

[6 marks]

Marks for this question: AO2 = 6

<table>
<thead>
<tr>
<th>Level</th>
<th>Marks</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>5–6</td>
<td>Both elements of required content are clear and mostly well detailed. The debrief is all in verbatim format.</td>
</tr>
<tr>
<td>2</td>
<td>3–4</td>
<td>Both elements of required content are present. The answer lacks detail and/or clarity in places. Some of the answer is in verbatim format.</td>
</tr>
<tr>
<td>1</td>
<td>1–2</td>
<td>There is some information about at least one element of required content. The answer lacks clarity. Verbatim format is lacking. For one mark there must be some relevant content, e.g., an optional point about ethics.</td>
</tr>
<tr>
<td>0</td>
<td>0</td>
<td>No relevant content.</td>
</tr>
</tbody>
</table>

Required content:
- explanation of the aim: to see if creativity is affected by the presence or absence of others
- information about the other condition — in an independent design people need to know about the condition in which they did not take part.

Optional content:
- specific ethical issues, e.g., right to withdraw data; be informed of results/check of welfare
- general ethical considerations, e.g., respect for participants.
12.1 Use the graph paper below to sketch a display of the data given in Table 2 opposite. You do not need to give your display a title.

Marks for this question: AO2 = 3
3 marks for the following points:

- Axes correctly labelled as Age of participant and Attitude to social care rating
- Scales are suitable
- Points plotted accurately.

12.2 What does the display you have drawn in your answer in Question 12.1 suggest about the relationship between age and attitude to social care issues? Explain your answer.

Marks for this question: AO2 = 2

2 marks for: there is a positive relationship between age and interest in social care issues as people get older their interest in social care increases (1) this is because as the values on one co-variable increase, so do the values on the other co-variable (1) OR as age increases so does attitude to social care rating/score.

12.3 Briefly explain how investigator effects might have occurred in this study.

Marks for this question: AO2 = 2

1 mark for knowledge of an investigator effect – this is when the person collecting the data has knowledge of what the research aim is/trait and that knowledge/those traits affect the data obtained.

1 mark for a brief explanation of how investigator effects might have occurred in this study.

If the researchers believed that older people would be more interested in social care they could have just given scores based on the age of the person.

12.4 Outline how the researchers could have avoided investigator effects having an impact on the study.

Marks for this question: AO3 = 2

2 marks for explaining how investigator effects could have been avoided in the study. The answer needs to explain what could be done and how that would decrease/eliminate the effect.

Possible content:

- Discussion of separate observation by the two researchers and comparison – inter-rater reliability
- Having ‘blind’ rating of the discussion by someone who is unaware of the aim or research hypothesis
- Filming the discussions so there is a permanent record that can be checked by peer review of the data to confirm the scores/ratings.

Credit other relevant procedures
12.5 Briefly discuss the benefits for the researcher of using both closed and open questions on their questionnaire about attitudes to social care.

[4 marks]

Marks for this question: AO2 = 4

<table>
<thead>
<tr>
<th>Level</th>
<th>Marks</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>3–4</td>
<td>Explanation of how closed and open questions are beneficial is clear. The answer is generally coherent with effective use of terminology.</td>
</tr>
<tr>
<td>1</td>
<td>1–2</td>
<td>There is limited/partial reference to the benefit(s) of closed and open questions. The answer lacks accuracy and detail. Use of terminology is either absent or inappropriate. OR answer only refers to either closed or open questions at Level 2.</td>
</tr>
<tr>
<td>0</td>
<td></td>
<td>No relevant content.</td>
</tr>
</tbody>
</table>

Possible points:
- Closed questions would present participants with options for their response so the researchers would be able to collate and display the information collected easily.
- Closed questions make it easy to compare specific response to questions the researchers wanted answered – they can be sure there will be certain information because they have restricted the options to include that information.
- Open questions allow respondents to interpret the question as they wish to and develop their response with detail or depth – so there is lots of information received.
- Open questions allow the researchers to pursue a line of enquiry that they may not have predicted but which comes to light because of a response by an interviewee.

Credit other relevant information.

12.6 Write one question that you think the researchers might have put on their questionnaire. Explain which type of question you have written and why you think this would be a suitable question for this study.

[3 marks]

Marks for this question: AO2 = 3

- 1 mark for an appropriate open or closed question – requiring information about a social care issue
- 1 mark for correct identification of this as an open or closed type of question
- 1 mark for a suitable explanation for why the choice was appropriate – this could relate to producing a type of data (closed – ease of analysis, open – lots of detail or depth to response) or it could focus on an issue of social care introduced by the candidate and not in the stem.
12.7 The researchers have obtained both qualitative and quantitative data in the observations and interviews they have conducted.

Identify the qualitative and quantitative data collected in this study. Explain your answer. [4 marks]

Marks for this question: AO1 = 2 AO2 = 2

AO2
1 mark: the responses to the open questions in the interview constitute qualitative data
Plus
1 mark: the attitudes ratings AND/OR the collated responses to the closed questions in the interview constitute quantitative data

AO1
1 mark: an explanation of how the responses to the open questions is qualitative data ie is non-numeric/descriptive/retains detail of actions/thoughts/feelings
Plus
1 mark: an explanation of how the ratings/collated responses to closed questions is quantitative data ie numerical such as a score/behaviour is represented in the form of a score on a scale

12.8 Explain how the researchers should have addressed two ethical issues in the investigation. [4 marks]

Marks for this question: AO3 = 4

2 marks for each explanation of how the chosen ethical issue could be dealt with.

1 mark for a brief muddled explanation.
2 marks for a clear explanation.

Consent – to be part of what is in essence two studies. Participants should be forewarned – a briefing.

Protection from harm – at the end of participation all will have to be fully aware that they were rated for their social care interest and a low score might indicate they are ‘uncaring’. They may wish to withdraw their data

Right to withdraw – being made aware that they can at any time stop participating and at the end of their participation they can withdraw detail of their behaviour in the research.

The explanation must demonstrate an appreciation that people should be dealt with, with respect and competence.

Credit other relevant ethical issues.
11 Which of A, B, C or D best describes this study? Shade one box only

[1 mark]

Marks for this question: A02 = 1

1 mark C

12 What fraction of the teachers thought that their confidence was better after the course? Show your workings.

[2 marks]

Marks for this question: A02 = 2

1 mark 4/5ths
1 mark for workings 16 divided by 4 = 4 and 20 divided by 4 = 5 (so 4/5ths)

13 What might the researchers conclude about the training course on the basis of the data in Table 1? Explain your answer.

[2 marks]

Marks for this question: A03 = 2

2 marks for a clear and coherent conclusion, plus relevant explanation based on the data.
1 mark for a vague/muddled conclusion.

Conclusion and explanation:
The training course appears to have a beneficial effect on teacher confidence as the majority of them (16 out of 20) say their confidence has improved.

14 What is the operationalised dependent variable in this study?

[2 marks]

Marks for this question: A02 = 2

2 marks for a clearly operationalised dependent variable: the DV is whether the teachers thought their confidence in managing difficult behaviour was better, worse or the same after the course.

1 mark for a dependent variable that is not fully operationalised eg teachers' confidence/how they felt after doing the course.
15 Which experimental design is being used in this study and why would it be an appropriate design in this case? [3 marks]

Marks for this question: AO2 = 3
1 mark repeated measures design

Plus
2 marks for a clear and coherent explanation of why this design is appropriate in this case
1 mark for a vague or muddled explanation of why this design is appropriate in this case

Content: It is important to ask the same participants to consider their level of confidence before and after taking part in the training in order to see whether their confidence has changed. It would not make sense to ask one group of people before training and another group of people after training because there may be individual differences in their levels of confidence anyway.

16 The psychologists conducting the training decided to use the Sign Test to see whether there was a significant difference in confidence in managing difficult classroom behaviour before and after the course.

Give the calculated value of S in this study and explain how you arrived at this figure. [3 marks]

Marks for this question: AO2 = 3
1 mark calculated value of S = 2

Plus two marks for any two of the following points:
1 mark this is determined by converting the differences or outcomes to signs + or -
1 mark then taking the numerical value for number of participants with the least common/frequent sign
1 mark any nil differences are ignored

17 Explain why statistical testing is used in psychological research. [2 marks]

Marks for this question: AO1 = 2

2 marks for a clear and coherent explanation
1 mark for a vague/muddled explanation

Content: researchers use statistical tests to determine the likelihood that the effect/difference/relationship they have found has occurred due to chance.
Following the training course, one of the researchers carried out an overt classroom observation of each teacher's primary school class. The researcher wanted to record the frequency of difficult classroom behaviours shown by the pupils during a normal lesson.

He identified six categories of disruptive behaviour and decided to record the frequency of each of the six behaviours during the first ten minutes and the last ten minutes of the lesson.

18 Suggest two behavioural categories that the researcher could record during his observation.

[2 marks]

Marks for this question: AO3 = 2

1 mark for each valid behavioural category suggested.
For credit the behaviour should be an observable behaviour that is disruptive or disobedient and would be likely to occur in a primary school classroom eg throwing something, shouting, banging on the desk.

19 Design a tally chart/record sheet the researcher could use to record his observations.

[3 marks]

Marks for this question: AO3 = 3

Award marks for a suitable record sheet/tally chart in table form.
1 mark for each bullet point addressed
- Table with spaces for tallies/recordings of instances
- Separate spaces for first and last 10 minutes
- Headed correctly with the six category spaces (may include the two used in answer to Q18 but names of categories not essential here)

No marks for drawing a bar chart or graph.

20 Identify one problem that might have occurred during this observation and explain how the observation would be improved by addressing this problem.

[4 marks]

Marks for this question: AO3 = 4

<table>
<thead>
<tr>
<th>Level</th>
<th>Marks</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>3–4</td>
<td>A relevant problem is clearly identified. The explanation of how the observation would be improved by addressing this problem is appropriate and effective. The answer is generally coherent with effective use of appropriate terminology.</td>
</tr>
<tr>
<td>1</td>
<td>1–2</td>
<td>A relevant problem is identified. There is partial/limited explanation of how the observation would be improved by addressing this problem. The answer lacks coherence and use of appropriate terminology.</td>
</tr>
<tr>
<td>0</td>
<td></td>
<td>No relevant content.</td>
</tr>
</tbody>
</table>

Relevant problems:
- observer effect (an observation is overt) means pupils would behave differently because they are aware that they are being observed – could be addressed by carrying out a covert observation
- observer bias/lack of objectivity because the researcher is working alone – could be addressed by working as part of a pair for inter-observer reliability
- limiting observations to first and last 10 minutes means the data may not be a valid representation of disruptive behaviour in lessons. Need to carry out observations at other times during the lesson too.
AO3 - 4 marks
Application of knowledge of research methods

In this experiment a pilot study could be used to:

- check how long the participant should be given to look at the stimulus material
- check whether the pictures were appropriate and clear
- check whether 20 is an appropriate number of words to use
- check whether the words were appropriate
- check that the participants understand the instructions and what they are required to do
- ask a few participants about their experience of taking part

Changes can then be made to the procedure if necessary, to avoid wasting time/money. There is a depth/breadth trade off. Candidates may cover one point in detail or more than one in less detail.

Vague or general statements which simply state "to save time/money", "to see if it works", "to see if there is a difference" = 0

To test/change the hypothesis = 0
AO3
Application of knowledge of research methods

4 marks Accurate and reasonably detailed
Accurate and reasonably detailed explanation that demonstrates sound knowledge and understanding of why a pilot study would be appropriate, including at least one detail from the experiment.

3 marks Less detailed but generally accurate
Less detailed but generally accurate answer that demonstrates sound knowledge and understanding of why a pilot study would be appropriate, including at least one detail from the experiment.

2 marks Basic
Basic answer that demonstrates some understanding of why a pilot study would be appropriate in this study, but lacks detail and may be muddled.

1 mark Very brief/flawed
Very brief or flawed answer demonstrating very little understanding of why a pilot study would be appropriate in this study.

0 marks
No creditworthy material.

Question 3 b

AO3 = 2 marks Knowledge and understanding of research methods

0 marks for a directional/correlational/null hypothesis.
1 mark for an appropriate non-directional hypothesis where either or both variables are not operationalised e.g. memory will be different in the two conditions and/or when the hypothesis is not written as a statement e.g. “To see if...” or “Is there...?”
2 marks for an appropriate non-directional hypothesis where both variables are operationalised e.g. there will be a difference in the number of words correctly recalled when words are presented with pictures and without pictures.

Question 3 c

AO3 = 2 + 2 marks Knowledge and understanding of research methods

Reasons for using an independent groups design rather than repeated measures include:
- There are no order effects because participants only do the task once.
- The same words can be used in both conditions so one set of words is no easier to recall than the other set of words.
- Demand characteristics are less likely because participants will be unaware of the other condition.
- Credit other appropriate reasons.

Simply stating IGD is quicker/saves time = 0.
In each case 1 mark for a very brief/slightly muddled potentially relevant reason that could explain the use of IGD.
2nd mark for some elaboration of a reason that is relevant/appropriate to this study.

Question 3 d

AO3 = 2 marks Knowledge and understanding of research methods
The focus of this question is on understanding the outcome of this experiment. Simply re-siting the data in table 1 = 0

e.g. The range for Condition 1 is 11 and for Condition 2 is 13.
Or The range is higher for Condition 1 than for Condition 2.
Or The median for Condition 1 is 13 and Condition 2 is 16.
Or The median for Condition 2 is higher than Condition 1.
1 mark for accurate reference to either median or range

...more words were correctly recalled with pictures than without pictures.
Or the spread/ dispersion of scores is larger with pictures than without pictures.
Or There is more individual variation with pictures than without.
2 marks for accurate reference to both difference and dispersion (spread) as above.

Question 9 a

A03 = 2 + 2 marks Knowledge and understanding of research methods

Suitable behavioural categories for investigating children's aggressive behaviour could be: pushing, hitting, biting, punching, swearing, etc.

Maximum 2 marks - 1 for each suitable behaviour category. Candidate may suggest recording playground behaviour on CCTV for later analysis by ticking a box when a relevant behaviour is shown by the child. Alternatively the researcher could watch each child's behaviour in the playground and tick the box when each behaviour is shown. In this case where the researcher stands and whether the children know they are being observed would be relevant.

1 mark for a very brief or slightly muddled explanation e.g. use a tally chart
2nd mark for accurate elaboration

Question 9 b

A03 = 4 marks Knowledge of research methods

There are no ethical issues named in the specification, so any potentially relevant issues in this research should be credited. Although the psychologist would not be responsible for the behaviour of the children in the playground he might consider his responsibility if he saw that one of the children was being harmed.

Likely ethical issues include informed consent, right to withdraw, confidentiality or respect. Ways of dealing will depend on the issue selected.

There are different routes to achieving 4 marks depending on the ethical issue selected, but for full marks both the ethical issue and how the psychologist could have dealt with it should be clear.

<table>
<thead>
<tr>
<th>A03</th>
<th>Knowledge of research methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 marks</td>
<td>Accurate and reasonably detailed answer that demonstrates sound understanding of one relevant ethical issue and how the psychologist could have dealt with this issue.</td>
</tr>
<tr>
<td>3 marks</td>
<td>Less detailed but generally accurate answer that demonstrates relevant understanding of one relevant ethical issue and how the psychologist could have dealt with this issue. or Accurate and reasonably detailed answer that demonstrates sound understanding of one relevant ethical issue and how the psychologist could have dealt with this issue.</td>
</tr>
<tr>
<td>2 marks</td>
<td>Basic answer that demonstrates some relevant understanding of one relevant ethical issue and/or how the psychologist could have dealt with an ethical issue, but lacks detail and may be muddled.</td>
</tr>
<tr>
<td>1 mark</td>
<td>Very brief/flawed answer demonstrating very little understanding of a relevant ethical issue and/or how the psychologist could have dealt with an issue.</td>
</tr>
<tr>
<td>0 marks</td>
<td>No creditworthy material.</td>
</tr>
</tbody>
</table>
Question 9 c

AO3 = 4 marks  Knowledge of research methods

There are different routes to full marks in this question. Candidates explain one advantage in reasonable detail or more advantages in less detail.
Advantages of using an interview rather than a questionnaire could include it would allow the interviewer to clarify questions and answers; it might be easier to see if participants were answering honestly because their reactions could be observed; it is easier to collect detailed qualitative data.

<table>
<thead>
<tr>
<th>AO3</th>
<th>Knowledge of research methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 marks</td>
<td>Accurate and reasonably detailed</td>
</tr>
<tr>
<td></td>
<td>Accurate and reasonably detailed answer that demonstrates sound understanding of one or more advantages of using interviews rather than questionnaires in this situation.</td>
</tr>
<tr>
<td>3 marks</td>
<td>Less detailed but generally accurate</td>
</tr>
<tr>
<td></td>
<td>Less detailed but generally accurate answer that demonstrates relevant understanding of one or more advantages of using interviews rather than questionnaires in this situation.</td>
</tr>
<tr>
<td>2 marks</td>
<td>Basic</td>
</tr>
<tr>
<td></td>
<td>Basic answer that demonstrates some relevant understanding of one or more advantages of using interviews rather than questionnaires in this situation, but lacks detail and may be muddled</td>
</tr>
<tr>
<td>1 mark</td>
<td>Very brief/flawed</td>
</tr>
<tr>
<td></td>
<td>Very brief or flawed answer demonstrating very little understanding of one or more advantages of using interviews rather than questionnaires in this situation.</td>
</tr>
<tr>
<td>0 marks</td>
<td>No creditworthy material.</td>
</tr>
</tbody>
</table>

Question 02 a

AO3 = 2 marks  Knowledge and understanding of research methods

High levels of control of extraneous variables
High replicability
Can conclude a change in the IV causes a change in the DV
1 mark for a very brief advantage eg “control of variables” or “can be repeated”
2 marks for accurate elaboration eg “someone else could repeat the experiment to check the results are reliable”

Question 02 b

AO3 = 2 marks  Knowledge and understanding of research methods

0 marks for a directional, correlational or null hypothesis
1 mark if slightly muddled or not operationalised, eg “There will be a difference in memory for list 1 and list 2.” “There will be a difference between the two conditions”.
2 marks for eg “There will be a difference in number of letters recalled for list 1 and list 2.”

Question 02 c

AO3 = 4 marks  Knowledge and understanding of research methods

Repeated measures design = 1 mark (Accept repeated/within participants)
0 marks for related or for simply stating participants take part in both conditions.
Evaluation could include strengths of a repeated measures design (each participant acts as their own control reduces the effect of individual differences) limitations of the design (interference/order effects) or comparison with other designs.
1 mark for identifying a relevant evaluation point eg participants are compared with themselves.
Up to 2 further marks for accurate elaboration, and/or for identifying other relevant points.
2 marks eg participants are compared with themselves so individual differences are held constant
3 marks eg participants are compared to themselves so there are fewer problems with individual differences than if an independent design was used.
(3 marks can be awarded for elaboration of one issue or for identifying three issues that could be relevant to this experiment.)
Question 02 d
AO3 = 2 marks Knowledge and understanding of research methods
A random sample is likely to be more representative of the target population than an opportunity sample and therefore findings are more likely to be generalisable.
1 mark for a very brief or slightly muddled answer eg an opportunity sample is biased.
2 marks for accurate elaboration.

Question 08 a
AO3 = 1 marks Knowledge and understanding of research methods
Positive correlation 1 mark
If more than one box is ticked, zero marks

Question 08 b
AO3 = 2 marks Knowledge and understanding of research methods
A main limitation is that there is no manipulation of an IV so it cannot be assumed that a change in one variable caused a change in the other, so cause and effect cannot be established.
Other variables may affect both measured variables.
Correlations only measure linear relationships.
Accept all correct answers including those which refer to statistical significance, number of pairs of scores and distortions caused by outliers.
1 mark for a very brief or slightly muddled answer eg it doesn't show cause and effect.
2 marks for accurate elaboration.

Question 08 c
AO3 = 4 marks Knowledge and understanding of research methods
Likely ethical issues relating to observation include obtaining informed consent from parents and children; possible deception if parents and/or children are not aware their aggressive behaviour is being observed; maintaining confidentiality etc.
Likely methodological issues include deciding how to categorise aggressive behaviour; children behaving differently when being observed etc.
Accept all correct answers.
For each issue 1 mark for a very brief or slightly muddled answer eg “Is pushing aggressive?”
2nd mark for accurate elaboration.

Question 1
Select from the list below the phrase that describes the independent variable and the phrase that describes the dependent variable in this study.

A The number of words correctly recalled
B The number of words in list A and list B
C The number of participants
D Presence or absence of music
E Type of music used

Write the appropriate letter, A, B, C, D or E in each box to complete the table below.

[2 marks]
Question 6

Psychologists have used case studies to investigate processes such as memory. Outline strengths and/or limitations of using case studies in psychological research. [4 marks]

AO3 = 4 marks Knowledge and Understanding of Research Methods

Case studies are based on real life situations so have the advantage of realism. When used to investigate human behaviour they allow situations to be studied which could not be set up deliberately for ethical reasons. Because no two cases are the same they cannot be replicated and the findings cannot be generalised to other people. Merely stating a characteristic of case studies eg in-depth research is not credit worthy.

<table>
<thead>
<tr>
<th>AO3 Application of knowledge of research methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 marks - Effective outline of strengths and/or limitations</td>
</tr>
<tr>
<td>Outline demonstrates sound outline of at least one strength and / or limitation of using case studies in psychological research.</td>
</tr>
<tr>
<td>3 marks - Reasonable outline of strengths and/or limitations</td>
</tr>
<tr>
<td>Outline demonstrates reasonable outline of at least one strength and / or limitation of using case studies in psychological research.</td>
</tr>
<tr>
<td>2 marks - Basic outline of strengths and/or limitations</td>
</tr>
<tr>
<td>Outline demonstrates basic outline of at least one strength and / or limitation of using case studies in psychological research.</td>
</tr>
<tr>
<td>1 mark - Rudimentary outline of strengths and/or limitations</td>
</tr>
<tr>
<td>Outline demonstrates rudimentary, muddled outline of at least one strength and / or limitation of using case studies in psychological research.</td>
</tr>
<tr>
<td>0 Marks - No creditworthy material</td>
</tr>
</tbody>
</table>
Question 9 (a)

Explain how the psychologist could obtain a random sample of 10 children from the nursery to take part in her research.

[2 marks]

AO3 = 2 marks  Knowledge and understanding of research methods

Put the names of all the children aged from 12 to 18 months who attend the nursery into a container and pull out the number required in an unbiased way.
Give a number to all the children aged from 12 to 18 months who attend the nursery and select the numbers required in an unbiased way by using random number tables or a random number generator on a computer.
0 marks for defining a random sample e.g. every member of the population has an equal chance of being chosen.
1 mark for a very brief or slightly muddled answer e.g. put all the names into a hat or pull ten names out of a hat.
2nd mark for accurate elaboration which includes how the selection would take place.

Question 9 (b)

The psychologist chose to use a random sample rather than a volunteer sample in this study. Give one advantage of using a random sample rather than a volunteer sample.

[2 marks]

AO3 = 2 marks  Knowledge and understanding of research methods

A random sample is likely to be more representative of the target population than a volunteer sample.
1 mark for a very brief or slightly muddled answer eg a volunteer sample is biased.
2 marks for clear elaboration as above.
Question 16

AO1 = 2 marks

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

Award 1 mark for a brief statement and a further mark for elaboration.

Question 19

AO3 = 4 marks

- The psychologist could have begun by watching some of the film clips of driver behaviour.
- This would enable the psychologist to identify potential categories which emerged from the data of the different types of distractions seen in the film.
- Such categories/themes might include: passenger distractions, gadget distractions, etc.
- The psychologists would then have watched the films again and counted the number of examples which fell into each category to provide quantitative data.

Credit variations in so far as they explain the process.

Note: maximum 1 mark if no engagement with the stem.

AO3 Mark bands

<table>
<thead>
<tr>
<th>Marks</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Effective explanation of the processes involved in content analysis referring to some or all of the above points.</td>
</tr>
<tr>
<td>2 - 3</td>
<td>Reasonable accurate coverage of the processes involved.</td>
</tr>
<tr>
<td>1 mark</td>
<td>Basic identification of the processes involved in content analysis (“watching the films and counting”).</td>
</tr>
<tr>
<td>0 marks</td>
<td>No creditworthy material.</td>
</tr>
</tbody>
</table>

Question 20

AO3 = 3 marks

1 mark for identification of an appropriate way of assessing reliability in this investigation. By far the most likely answers here are inter-rater reliability or test-retest reliability.

2 marks for some explanation/elaboration: ‘the two psychologists could carry out content analysis of the films separately and compare their answers’ or ‘they could re-code the films at a later date and compare the two sets of data’.
3 marks for an accurate and clear explanation which refers to deriving the categories and checking the data. “The two psychologists could watch the films separately and devise a set of categories. They could compare these and use categories they both agreed on. They could carry out content analysis of the films separately and compare their answers looking for agreement”.

Question 21
AO3 = 3 marks

Candidates can cover one reason explained in detail here or several reasons in less detail.

A repeated measures design was chosen in this experiment:

- to remove the effects of individual differences in reaction times which would occur if an independent groups design was used
- to avoid the potential difficulties involved in matching participants
- to reduce the number of participants required for the experiment.

Question 22
AO3 = 3 marks

This is a repeated measures design and is counter-balanced hence points about order effects and individual differences will not gain credit.

There are a range of potential extraneous variables here including:

- the nature and content of the conversation with the psychologist on the hands-free phone
- interaction between the sex of the psychologist and sex of participant which could influence the type of conversation
- the number of hazards in the computer-based test, hence difficulty of the tests
- the presence of the hands-free headset could have produced distraction.

Award 1 mark for basic identification of a confounding variable and a further 2 marks for elaboration of how this could have affected the dependent variable.

Example: The chat with the psychologist was not controlled (1 mark) so the difficulty or number of questions could have varied (2 marks). This would influence the DV as more or less attention would be required (3 marks).

Question 23
AO3 = 3 marks

External validity refers to how far the findings of the experiment can be generalised to real-life situations. The most likely answer here is that the hazard perception test was done using a computer test which does not resemble real-life driving situations. (No noise, stress, etc.)

Award 1 mark for a brief answer (test lacks ecological validity) and 2 further marks for appropriate explanation contextualised within the scenario.
Question 24

A03 = 4 marks

There are several potential ethical issues here. Candidates can focus on one in detail or several in less detail.

- Protection of participants from harm whilst studying the effects of a hands-free phone on driving. Two key issues here are the use of a computer-based test with no risk attached and of an experienced sample of police drivers.
- Informed consent: Participants should be given full information about the nature of both tasks before deciding whether or not to participate.
- Debriefing: A full debriefing should take place at the end of the experiment. This should provide feedback on performance and allow participants to ask questions if they wish to.
- Freedom to withdraw: Participants should be made aware of their freedom to withdraw before and during the experiment. They should be made aware of their right to withdraw their data after the experiment.
- Confidentiality: Individuals should not be identified, but should retain anonymity (use of numbers or initials instead of names).

Lists of ethical issues with no elaboration 1 mark.

A03 Mark bands

<table>
<thead>
<tr>
<th>4 marks</th>
<th>Sound</th>
</tr>
</thead>
<tbody>
<tr>
<td>An appropriate ethical issue is identified and explained in detail. Material is accurate – or several issues are identified and discussed accurately in less detail.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2 - 3 marks</th>
<th>Reasonable</th>
</tr>
</thead>
<tbody>
<tr>
<td>One or more appropriate ethical issues are identified and discussed. The answer is generally accurate</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1 mark</th>
<th>Basic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic identification of an ethical issue (e.g. ‘right to withdraw’) or very brief answers which lack detail</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>0 marks</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>No creditworthy material</td>
<td></td>
</tr>
</tbody>
</table>

Question 25

A03 = 5 marks

The standardised instructions should include the following information:

a. You will take part in a simulated driving test which will last for three minutes.

b. Your task will be to identify potential hazards on the road ahead.

c. When you see a hazard, you should press the mouse button as quickly as possible.

d. Whilst you are doing the test, I will chat to you on a mobile phone and I would like you to reply using the hands-free mobile phone headset.

e. Do you have any questions?

For full marks, the instructions should adopt an appropriate formal tone. Instructions which are not suitable to be read out should be awarded a maximum mark of 2.
**AO3 Marks bands - Standardised instructions**

<table>
<thead>
<tr>
<th>Marks</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Effective</td>
</tr>
<tr>
<td></td>
<td>The standardised instructions provide accurate detail of the procedure in a clear and concise form and participants' understanding is checked.</td>
</tr>
<tr>
<td>4-3</td>
<td>Reasonable</td>
</tr>
<tr>
<td></td>
<td>The standardised instructions provide sufficient detail of the procedure in a reasonably clear form.</td>
</tr>
<tr>
<td>2</td>
<td>Basic</td>
</tr>
<tr>
<td></td>
<td>The standardised instructions provide some details of the procedure though these may not be clear.</td>
</tr>
<tr>
<td>1</td>
<td>Rudimentary</td>
</tr>
<tr>
<td></td>
<td>The standardised instructions provide few details of the procedure and may be muddled and or inaccurate. Omissions in the instructions compromise the procedure.</td>
</tr>
<tr>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>No creditworthy material is presented.</td>
</tr>
</tbody>
</table>

**Question 26**

**AO3 = 3 marks**

Students are required to identify an appropriate test and are asked to justify their choice.

Award 1 mark for identification of the Wilcoxon (signed ranks) test. Candidates could receive credit for Sign test or related t test. Note that reasons/justification must be correct for the test supplied.

If an incorrect test is identified no marks can be awarded.

Award 1 mark for basic statement of a reason, and a further mark for elaboration, within the context of the experiment or a further reason.

* e.g. for Wilcoxon test:
  * A repeated measures design was used (1 mark) as drivers take part in both the hands-free phone and non-phone (silent) conditions (1 mark).
  * A repeated measures design was used (1 mark) and the data can be treated as ordinal (1 mark).

Test of difference cannot gain credit.

**Question 27**

**AO3 = 2 marks**

Students are told that the difference in reaction times was significant at the $p \leq 0.01$ level.

Award 1 mark for a basic understanding of this ('the result is highly significant') and a further mark for elaboration e.g. identifying that the probability of a Type 1 error here is less than 1/100.

**Question 28**

**AO3 = 3 marks**

Replication is an important tool in the scientific method. It allows scientists to check findings and ensure that they are robust. In this study, replication is important, as the original sample is small (30 people) and specific (experienced police drivers). For this reason, replication on a larger sample will be used to check if findings apply outside this specific group.

Award 1 mark for a general answer on the importance of replication to check findings.
Question 16

What were the aims in this study? (2 marks)

AO3 = 2 marks

Credit is awarded for an understanding of why this study has been carried out. This could be phrased in different ways (eg statement, question). Award two marks for an accurate answer which refers to comparing the effectiveness of long and short forms of CBT OR to comparing different forms of CBT with a control group.

Award one mark for an incomplete or muddled answer ('to assess the effectiveness of CBT').

Award 0 marks for any form of hypothesis.

Question 17

Identify one variable which does not appear to have been controlled in this trial. Explain how this may have influenced the outcome. (3 marks)

AO3 = 3 marks

Award one mark for identifying one variable which was not controlled and two further marks for explaining how this could influence the outcome of the therapy.

Possible answers could include:

- The length of time before second assessment of symptoms was 12 weeks in conditions 1 & 3 compared to 5 weeks in condition 2
- Use of different therapists in conditions 1 & 2
- The interaction between sex of therapist and patient
- Whether or not patients carried out homework tasks
- Individual differences such as age and gender
- Whether patients were receiving other forms of therapy or medication.

Credit any appropriate suggestion.

Eg: 'An extraneous variable was the length of time before second assessment of symptoms (1 mark). This was 12 weeks in conditions 1 & 3 compared to 5 weeks in condition 2. This could have influenced the outcome of the study as the benefits of brief CBT have less time to show than the other two conditions (1 mark). This could lead to its effectiveness being underestimated (1 mark).
Question 10

What is meant by validity? How could the psychologist have assessed the validity of the questionnaire used to measure the severity of symptoms? (4 marks)

AO3 = 4 marks

Award one mark for a definition of validity.

Three further marks for describing how validity of the questionnaire could be assessed. Possible methods include:

- Taking another measure of symptoms from the same participants (e.g., doctor or family member) and comparing the two sets of scores. If the scores agree, the questionnaire has high validity (concurrent validity).
- Ask an expert(s) in the field to assess the questions to see if they are an accurate measure of panic attacks (content validity).
- Assess how closely the questions relate to underlying theoretical constructs (i.e., how well they relate to panic symptoms) — construct validity.

Less rigorous methods include looking at the questions to see if they appear valid 'on the face of it' (face validity).

Students can achieve two marks by providing information about one or more appropriate methods in outline. Three marks can be awarded when answers provide clear description of the entire process of checking validity.

E.g.: 'Validity refers to whether or not the questionnaire measures what it is supposed to measure (1 mark). Concurrent validity would involve getting a family member to assess the symptoms (1 mark) and seeing how closely they match the score on the questionnaire (1 mark). If the two matched, the questionnaire would have high validity (1 mark).

No marks for simply naming types of validity.'
Question 19

The psychologist asked the 60 patients for fully informed consent to take part in this trial. What should the psychologist have told the patients so that they were able to give their consent? (5 marks)

AO3 = 5 marks

In order to gain fully informed consent for this trial, patients should be informed of key information provided in the stem about the clinical trial.

- They will be allocated to one of the conditions and they may not receive therapy
- If they do receive therapy it will be Cognitive Behavioural
- The time period for the study (is up to 12 weeks)

In addition, students could refer to other relevant ethical information such as:

- Data should be anonymised so they are not identifiable in the results
- Patients should be made aware that they are free to withdraw themselves or their data from the clinical trial if need be
- They may be asked to complete homework assignments outside the therapy sessions.

For five marks, students must cover the top three bullet points. Answers focus only on generic ethical issues (freedom to withdraw, confidentiality) can gain a maximum of two marks.

AO3 mark bands

<table>
<thead>
<tr>
<th>Marks</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Sound</td>
</tr>
<tr>
<td>4-3</td>
<td>Reasonable</td>
</tr>
<tr>
<td>2</td>
<td>Basic</td>
</tr>
<tr>
<td>1</td>
<td>Rudimentary</td>
</tr>
<tr>
<td>0</td>
<td>No creditworthy material.</td>
</tr>
</tbody>
</table>
Question 20

What do the data show about the effectiveness of the therapies for panic attacks? Refer to mean scores, standard deviations and the results of the statistical test in your answer.

(6 marks)

AO3 = 6 marks

The main findings/conclusions are as follows:

- The mean scores show that both types of CBT lead to some improvement in symptoms and appear superior to being allocated to a waiting list.
- The SD score is larger for the brief CBT than the other groups, showing that the scores are more spread out in this condition than the other two groups. Hence, there was more variation in response to the short version of CBT.
- The statistical tests show no significant difference between short and long versions of CBT.
- The waiting list condition also demonstrated a minor improvement in symptoms. Students could refer to spontaneous remission here.

AO3 mark bands

<table>
<thead>
<tr>
<th>Marks</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>Sound</td>
</tr>
<tr>
<td>5-4</td>
<td>Reasonable</td>
</tr>
<tr>
<td>3-2</td>
<td>Basic</td>
</tr>
<tr>
<td>1</td>
<td>Rudimentary</td>
</tr>
<tr>
<td>0</td>
<td>No creditworthy material</td>
</tr>
</tbody>
</table>

Answer draws accurate findings/conclusions from mean scores, SD’s and statistical test. Organization and structure of the answer are coherent.

Answer draws accurate findings/conclusions from two out of three data sources. Third finding may be omitted or inaccurate. Organization and structure of the answer are reasonably coherent.

Answer includes one or two accurate findings/conclusions but these lack detail. At the bottom of the band, the answer may be muddled. Organization and structure of the answer are basic.

Very little information is provided about the findings/conclusions. Lacks organization and structure.

No creditworthy material.
Question 21

Imagine that you are writing up the report for this experiment. What is the purpose of the abstract in a psychological report? (2 marks)

A03 = 2 marks

Award one mark for a brief answer ("the purpose of an abstract is to provide a short summary of the study") and two marks for a detailed answer referring to providing sufficient information to establish if the full report is worth reading.

Question 22

Discuss applications and/or implications that might arise from this piece of research. (5 marks)

A03 = 5 marks

There are a number of implications and applications in the results of this study. Students can gain credit by discussing one or two of these in depth or several in less detail.

- If brief CBT works as well as traditional CBT, this has practical applications. It would save time for those taking part and for therapists delivering CBT.
- The wider spread of results in the brief CBT condition implies that this form of therapy may be more effective for some people than others. Clinicians need to assess patients carefully to decide who might be suitable and complete homework.
- Psychological problems can improve with the passage of time without treatment (spontaneous remission) meaning that there may be some merit in asking people to wait for treatment if their symptoms are not severe.
- An important implication is cost effectiveness. If brief CBT works as well as the longer traditional format, this would have a number of advantages including reducing costs for the NHS.

Credit any other relevant implications or applications.

A03 mark bands

<table>
<thead>
<tr>
<th>Marks</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Sound</td>
</tr>
<tr>
<td></td>
<td>Discussion of implications/applications is accurate and well detailed. Organization and structure of the answer are coherent.</td>
</tr>
<tr>
<td>4-3</td>
<td>Reasonable</td>
</tr>
<tr>
<td></td>
<td>Discussion of implications/applications is generally accurate and reasonably detailed. Organization and structure of the answer are reasonably coherent.</td>
</tr>
<tr>
<td>2</td>
<td>Basic</td>
</tr>
<tr>
<td></td>
<td>Discussion of implications/applications is basic/relatively superficial or brief. Organization and structure of the answer are basic.</td>
</tr>
<tr>
<td>1</td>
<td>Rudimentary</td>
</tr>
<tr>
<td></td>
<td>Discussion of implications/applications is muddled and/or inaccurate. Lacks organization and structure.</td>
</tr>
<tr>
<td>0</td>
<td>No creditworthy material.</td>
</tr>
</tbody>
</table>
Question 23

Explain how you would record the data from these interviews and your reason for choosing this method. (3 marks)

A03 = 3 marks

Three marks are available for a description of how to collect and record the data from the interviews. Possible methods include:

- Audio recording
- Video recording (filming)
- Making written notes during the interview.

Award one mark for identifying a method, one mark for explaining why the method would be used and a third mark for elaboration of either.

Eg: I would choose to audio record the data using my phone (1 mark). This would be less intrusive than filming the patient (1 mark) so they would be more likely to agree to take part or be honest (1 mark).

Question 24

Explain how you would analyse the qualitative data from the interviews. (5 marks)

A03 = 5 marks

Five marks are awarded for the explanation of how the qualitative data would be analysed. A maximum of one mark should be awarded for identifying one or more appropriate methods and a further four marks for explanation of how the analysis would be carried out.

There are many different methods for analysing qualitative data and examiners should read the material presented carefully.

Two common methods include:

- Content analysis: this method would involve identifying important categories from a sub sample of interview responses (for example references to homework or warmth in the therapist). The researchers would then work through the written data, counting the number of occurrences of each of the categories to produce quantitative data
- Thematic analysis: This method would involve reading and rereading (familiarisation) the written transcripts carefully. Coding would involve looking for words which cropped up repeatedly in transcripts. These could then be combined to reduce the number of codes into three or four themes. The data would stay in qualitative format and would not be reduced to numbers.
18 Identify an appropriate sampling technique for this study and justify your choice. [2 marks]

AC3 = 2 marks

1 mark for identification of an appropriate sampling technique.
1 further mark for a justification appropriate to the technique selected.

Possible responses include:
- Opportunity sample – quicker and easier than a random sample
- Random sample – participant selection is less biased because every student in the college stands an equal chance of being selected
- Volunteer sample – participants would be interested in the task and likely to take it seriously.

Note that the second mark is for the justification rather than a description of the technique. For credit “quick and easy” must be qualified eg comparison

Credit other relevant responses

19 Explain why it would be important for the psychologist to carry out a pilot study in relation to the second part of the study. [4 marks]

AC3 = 4 marks

Possible responses might include checking:
- Whether the faces were clear representations of the various facial expressions
- Whether the order of presentation of faces is important, eg presentation should be random
- Whether the exposure time was appropriate, avoiding ceiling and floor effects
- Whether the number of stimuli was appropriate – sufficient to give reliable data, not too many to produce fatigue, ie the length of the study
- Whether the software recording correct identifications was working reliably.

Answers with no engagement with the second part of the study max 1 mark

There is no credit for describing a pilot study.
AO3 4 marks knowledge and understanding

| 4 marks Sound | Knowledge and understanding of the purposes of a pilot study in relation to the second part of the study are accurate and well detailed. |
| 3 marks Reasonable | Knowledge and understanding of the purposes of a pilot study in relation to the second part of the study are generally accurate and reasonably detailed. |
| 2 marks Basic | Knowledge and understanding of the purposes of a pilot study in relation to the second part of the study are basic/relatively superficial. |
| 1 mark Rudimentary | Knowledge and understanding of the purposes of a pilot study are rudimentary and may be very brief, muddled and/or inaccurate or there is no engagement with the second part of the study. |
| 0 marks | No creditworthy material. |

2 0 What is meant by ‘reliability’? Explain how the psychologist might assess the reliability of her questionnaire. [1 mark + 3 marks]

AO1 = 1 mark; AO3 = 3 marks

The two parts of the question need not be linked, so that students who outline one form of reliability and then assess another form may receive marks across the scale.

1 mark for a definition of reliability.

Generic definitions of reliability, eg linking reliability to consistency of findings, data, or participant responses, sufficient for 1 mark. Reliability may also be defined in terms of types of reliability eg internal or external. Merely naming internal/external reliability is not creditworthy.

Up to 3 marks for explaining how (ie explaining the procedure for assessing) reliability of the questionnaire can be assessed.

Internal reliability means that the items making up the questionnaire are assessing the same characteristic; external reliability means that the same person taking the questionnaire at two different times produces the same score.

Possible answers might include:

- Split-half (internal reliability): scores on half the items (1 mark), are correlated with scores on the other half (1 mark) and the higher the correlation the more reliable the questionnaire (1 mark).
- Test-retest (external reliability): the questionnaire is given to the same participants again (1 mark). The scores on the two tests are correlated (1 mark) and the higher the correlation the more reliable the questionnaire (1 mark).

Students who do not use the terms internal and external but who clearly understand the term ‘reliability’ as reflected in their answer may be credited.

No credit for merely naming a method used to assess reliability eg split half, test retest.
2.1 State whether the calculated value of $r_s$ is significant. Using Table 1 below explain your answer.

AO3 = 3 marks

1 mark for correctly stating that the results are significant.
If the decision is incorrect or no decision provided no marks can be awarded for the explanation.

2 further marks for explaining the decision in relation to the table.
  - 1 mark for an explanation that makes an appropriate reference to the table, e.g., the calculated value of rho is greater than table value.
  - 2 marks for a detailed explanation, e.g., the calculated value (+0.490) for N = 28 is significant at the $p<0.01$ level as it is greater than the critical value of 0.483.

The result is significant at both $p<0.05$ and $p<0.01$ levels, reference to either is acceptable.

2.2 What is meant by a ‘Type 1 error’? Explain why the psychologist thought that she had not made a Type 1 error.

AO1 = 1 mark; AO3 = 3 marks

1 mark for definition

A Type 1 error is when the results are accepted as significant when in fact they are not; the alternative hypothesis is accepted when it is false. Accept definitions in terms of null hypothesis.

Up to 3 marks for explanation which might include:
- The results are significant at $p<0.01$
- $p<0.01$ is a stringent level of significance.
- The more stringent the significance level the less the chance of a Type 1 error.
- The likelihood of the psychologist making a Type 1 error is 1 in 100 or less.

1 mark for brief explanation, e.g., ‘the results had a high level of significance’.
Additional marks for showing a coherent understanding of Type 1 error, link to level of significance, and reference to actual p values.
The psychologist submitted her report on the study for peer review.

Discuss the purpose of peer review. [6 marks]

AO1/AO3 = 6 marks

The term 'discuss' implies that students should consider the purpose of peer review and its strengths and/or limitations.

In peer review research reports are checked in terms of suitability for publication, appropriateness of the theoretical background, methodology, statistics and conclusions. Definitions of peer review are only creditworthy in so far as they outline the purpose.

Discussion is likely to focus on

- The work is methodologically sound, valid and does not involve e.g. plagiarism of other people's research
- The findings are novel, interesting and relevant, and add to knowledge of a particular research area
- The authors are not making unjustified claims about the importance of their findings
- Peer review ensures research is reviewed by fellow experts
- Peer review maintains the standards of published work and allows University research departments to be rated and funded in terms of their quality;
- It helps to ensure that poor quality work is not published in reputable journals
- Bias – it has been established that a publication bias occurs towards prestigious researchers and research departments
- Bias towards positive findings - negative findings and replications are rarely published, though these can be critical in establishing whether important findings are reliable
- Bias in favour of 'established' research areas – novel or unusual research is hard to publish
- Time consuming and expensive – peer review can take months, or in some cases where revisions are necessary, years, so delaying publication of important findings
- As reviewers are usually working in the same field as the submitted work and competing for limited research funds, there is a temptation to delay or even prevent the publication of competing research
- Peer review sometimes fails to prevent scientific fraud

Answers that merely outline the purpose of the peer review process can receive a maximum of 2 marks
6 marks Sound
Discussion demonstrates sound knowledge, understanding, analysis and interpretation. The answer is well focused and shows coherent elaboration. Ideas are well structured and expressed clearly and fluently. Consistently effective use of psychological terminology. Appropriate use of grammar, punctuation and spelling. Reference to a range of relevant points.

5-4 marks Reasonable
Discussion demonstrates reasonable knowledge, understanding and analysis. The answer is generally focused and shows reasonable elaboration. Most ideas are appropriately structured and expressed clearly. Appropriate use of psychological terminology. Reference to at least two relevant points.

3-2 marks Basic
Discussion demonstrates basic, superficial knowledge and understanding. The answer is sometimes focused and shows some evidence of elaboration. Expression of ideas lacks clarity. Limited use of psychological terminology.

1 mark Rudimentary
Discussion is rudimentary demonstrating a very limited knowledge and understanding. The answer is weak, muddled and incomplete. Material is not used effectively and may be mainly irrelevant.

0 marks
No creditworthy material is presented.

2 4
Identify the independent variable and the dependent variable in this follow-up study. [2 marks]

AO3 = 2 marks

1 mark for independent variable. High or low empathy scores. Accept ‘empathy score’.
1 mark for dependent variable. Scores on a measure of helping behaviour. Accept ‘helping behaviour’.

2 5
Explain how the psychologist might measure the dependent variable. [3 marks]

AO3 = 3 marks

1 mark for a practical idea, 2 further marks for increasingly detailed outline of how the DV would be measured. 3 marks for a practical idea that is fully explained.

Dependent variable: this is a measure of helping behaviour, so there is a range of possibilities. Eg Friends and family could be asked to rate the helpfulness of the participant eg on a scale from 1-10; alternatively a scenario could be set up without the participants knowledge to observe their helping behaviour e.g. a confederate of the researcher drops books, and the number of people helping/not helping is recorded. There are further ways of operationalizing helping behaviour, but they must be practical and feasible to receive credit.

Merely naming a research method eg interview, questionnaire receives not credit.

No credit can be awarded for unethical suggestions or really impractical suggestions.
2.6 Identify an appropriate statistical test that the psychologist could use and justify your choice.

[3 marks]

If the answer to Q25 does not provide recognisable data no credit can be awarded for Q25.

AC3 = 3 marks

1 mark for the identification of an appropriate test, 2 further marks for the justification.

- A test of difference is required.
- An independent groups design.
- A test appropriate to the level of measurement. If the data can be treated as at least ordinal then a Mann Whitney U test would be appropriate; if the data can be categorised then a Chi Square could be used. Credit also appropriate reference to the independent t-test.

The test must be correct for justification for marks to be awarded.

2.7 Identify ethical issues in this follow-up study and explain how the psychologist could deal with them.

[4 marks]

AC3 = 4 marks

There are a range of ethical issues that may be relevant, depending upon the design of the study. If the dependent variable is based on ratings by friends, for instance, then ethical issues in relation to the participant may include lack of informed consent, lack of confidentiality of data, and not being allowed the right to withdraw at any time.

Additional issues of deception and participant psychological harm may come into play.

Marks may only be awarded where ethical issues are clearly relevant to the stem and/or the material presented in their response to Q25.

1 mark for identifying one or more ethical issues.
3 further marks for outlining methods of dealing with them, eg:

- Lack of informed consent: informed consent, obtained through using a consent letter that the participant must sign
- Consent letter containing outline details of the study (informed consent) and referring to the right to withdraw and confidentiality of data.
- In cases of deception, presumptive consent may be used, and full debriefing would be essential.

- Deception: debriefing, explaining the purpose of the study and why deception was necessary
- Deception: presumptive consent, asking non-participants if they would be happy to do the study
- Protection from harm eg if participants are categorised as “low empathy” they should be offered counselling.

Students may cover one ethical issue in detail (e.g., deception, covering debriefing and presumptive consent) or more than one in less detail.

For full marks there must be explicit linkage to either the stem or the student’s response to Q25.
Question 12
[A03 = 1]

AO3 One mark for answers either:
- referring to the strength and the direction of the relationship — a positive correlation between the number of hours spent reading fiction and the empathy test score.
-or:
- describing the relationship — the more hours spent reading fiction, the greater the empathy test score.

No credit for just stating type of correlation eg strong positive.

Question 13
[A03 = 2]

AO3 One mark for naming a test: Spearman’s rank order correlation/\( \rho \) or Pearson’s product moment correlation.
One mark for justification. For Spearman’s rank order correlation accept: not all data is interval — data collected for empathy test score most likely treated at ordinal level of measurement due to self-report.
For Pearson accept: Pearson’s product moment correlation is a robust test, even if not all data can be treated as truly interval.

Just stating ordinal/interval no credit. Accept ordinal or interval providing this is justified with reference to at least one variable.

Unlikely but allow for an informed argument made for treating both sets of data at interval level.

Question 14
[A03 = 1]

AO3 One mark for a reason for choosing a two-tailed test: no direction of relationship predicted; no previous research findings in evidence.

Question 15
[A03 = 1]

AO3 One mark for a problem with the use of a two-tailed test: it is more difficult to achieve significant results; the minimum 5% probability of chance is halved to cover each tail. Increase probability of Type 2 error.

Question 16
[A03 = 2]

AO3 1 mark for a knowledge of a way (not just naming a type of validity) and 2nd mark for explaining how this would be implemented in this case. Most likely answers will address face validity or concurrent validity, but accept any other way such as construct validity, content validity, criterion validity and predictive validity.
For full marks, the answer must refer to either the empathy questionnaire or empathy test items. The ‘way’ need not be named or defined.

Question 17
[AO3 = 2]

AO3 One mark for the identifying a methodological limitation of the study.
Likely answers: size/composition of sample/one school only; for test of empathy – no evidence of testing reliability; parental involvement in ‘time spent reading questionnaire’; self-report measures; correlation study.
One mark for a brief explanation.
Suggested explanations might cover: limits to generalisation; confidence in a test and its findings; rate on if being deemed reliable; social desirability of parental responses and consequent bias; honesty of reporting/memory recall; cause and effect issues in correlation studies.
Accept any other plausible answers.

Question 18
[AO3 = 3]

AO3 Up to three marks for a discussion of reasons for correlation studies rather than experiments when investigating behaviour.
Likely answers: unethical/impossible to manipulate these variables (reading and empathy in children) to investigate cause and effect; impractical to sometimes do an experiment; may discover a link between two existing variables which might suggest future research ideas; interested in relationships rather than a causal explanation.
Accept comparison with the experimental approach.
For full marks, the answer must be coherent and applied to this study.
Maximum of two marks for general answers not applied to this study.

Question 19
[AO3 = 8]

AO3 Up to 8 marks for answers demonstrating an ability to design an experiment effectively. Answers should refer to:

- clearly identified independent and dependent variables and at least one extraneous variable identified and control suggested;
- the experimental design – independent groups, repeated measures or matched pairs;
- detail of sample;
- materials required for carrying out the research, eg task for assessing levels of recall, timing device if needed;
- sufficient procedural details to carry out a replication (might include standard instructions, ethics, etc.)

Note: standardised instructions and ethical issues are not required for full marks.
Question 14

The researchers used random sampling to obtain equal numbers of boys and girls aged 13-14 years from the four schools. Outline how random sampling could have been carried out in this study. [2 marks]

AO3 = 2 marks

One mark for reference to selection by male/female or separate schools with reference to randomness
Two marks for reference to selection by male/female and separate schools with reference to randomness

For example:
For each school, all 13-14 year old girls would be given a number which would be entered onto a computer programme. Ten numbers would then be randomly generated for each of 4 schools to make a sample of 40 girls. This would be repeated for boys.
Credit answers that explain using other methods eg box, hat.

Question 15

Briefly explain how far the results from this study can be generalised. [2 marks]

AO3 = 2 marks

One mark for very brief answer eg only to 13/14 year olds OR only to Birmingham
Two marks for expansion eg not representative of other age groups OR people from other locations.

Can base answer on age/location/use of social networking sites/limited number of schools.
Question 16
Briefly explain why this study is an example of content analysis. [2 marks]

AO3 = 2 marks
One mark each for appropriate point OR can award maximum marks for one point elaborated.
Both marks should refer to this study

For example:
This study is an example of content analysis because a systematic analysis of the essays is
carried out to identify/code features such as the frequency of use of social networking by boys and
girls.

Question 17
Briefly explain one strength of content analysis. [1 mark]

AO3 = 1 mark
Answers might focus on the qualitative nature of content analysis – thematic (this gives more
detailed information), OR categorising material to make it quantitative (as in this study) which is a
strength as statistical analysis can be carried out.
Strengths also include: ability to analyse a wide range of materials without the necessity for direct
contact with participants; fewer ethical/practical problems, validity etc.

Question 18
Outline how the reliability of the analysis of the children’s essays could be checked. [3 marks]

AO3 = 3 marks
One mark for knowledge of inter-/intra-rater (observer) reliability (this may be named or implicit in
the application)

Plus up to two marks for applying knowledge of how reliability of the category system could be
assessed in the study.
If more than one way of checking reliability is presented, can credit two marks for one way and one
mark for the other.

For example:
The consistency between the recordings of two researchers would be assessed by asking each
researcher to categorise the essays independently into the pre-selected categories. The categories
would then be compared and if similar then the analysis is reliable.
Question 19

Identify an appropriate statistical test that the researchers could have used to analyse the data in Table 1. Justify your answer [3 marks]

AO3 = 3 marks

One mark for identifying a test – Chi Square
Two marks for justification – any 2: nominal data, independent design, looking for differences/association.
N.B. If the test is wrongly named but the rationale is correct in relation to this study, 2 marks can be gained.

Question 20

The results of the statistical test were significant at the 5% level. Explain what this means in relation to this study. [2 marks]

AO3 = 2 marks

Award one mark for brief explanation
Second mark for elaboration
There must be a link to the study for full marks

For example:
Because the researchers have found significant results, this means there is only a 5% probability (or less) that any difference between girls and boys is due to chance can accept the research hypothesis (can credit the following – reject the null hypothesis).
The answer might focus on explaining that the frequencies differ from what would have been expected by chance.
Candidates might refer to the possibility of a Type 1 error.

Question 21

Explain how the researchers could carry out the interviews. Justify your decisions. In your answer, you should include details of the following:

- the type of interview
- a sample question
- details of the procedure to be followed
- ethical considerations, other than consent. [5 marks]

AO3 = 5 marks

Candidates should:
- Refer to a particular type of interview (e.g. structured/unstructured/semi-structured/formal/informal) with appropriate justification.
- Include at least one sample question (linked to the study).
- Include any detail of the procedure. For example location, how the interview was conducted e.g. face to face, telephone, in private, individually, quiet room, etc.
- Include ethical considerations.

1-2 marks At least 1 point addressed with some expansion/detail
3 marks 2 points addressed fully with detail/justification or 3 points addressed with some detail/justification
4 marks 4 points addressed, may lack full detail/justification
5 marks All 4 points addressed with detail/justification (ethics must include at least two from confidentiality, protection and debrief that includes the aim/purpose of the study)
13. What could you conclude about the levels of physical activity from the data in Table 2? Justify your answer.

[2 marks]

[AO3 = 2 marks]
Award one mark for a sensible, global conclusion and a 2nd mark for some justification. The conclusion is that physical activity levels decline with increased duration of outdoor play (1) because there were 142 recordings of ‘running’ at the beginning of play and only 35 recordings by the final 5 minutes of play. (1) Alternatively, answers might focus on the increase in ‘sitting’ behaviour as the break progresses.

14. Identify one variable that might be a confounding variable in this study. Justify your answer.

[2 marks]

[AO3 = 2 marks]
Award 1 mark for identification of appropriate variable. Answers might include: weather; children hungry/tired/poorly; demand characteristics etc. Award 1 mark for the justification e.g. reference to change over the 15 minute observation. Accept other valid answers.

15. Explain what a correlation of +0.95 suggests about the reliability of the observations in this study.

[2 marks]

[AO3 = 2 marks]
Award 1 mark for the notion that .95 is a strong positive correlation and 2nd mark for expansion. Eg this means the data recording is very reliable / both observers are recording behaviour categories in the same way (or similar).
15. Discuss one strength of a naturalistic observation. Refer to this study in your answer. [3 marks]

[AO3 = 3 marks]
Award 1 mark for the identification of an appropriate strength of a naturalistic observation. Award 1 mark for application to the study. Award 1 mark for discussion of why this is or is not a strength. Max 2 marks if not related to study.

For example:
One strength of a naturalistic observation is that it has ecological validity (takes place in a real-life setting). This is a strength because children are behaving in their normal manner in the pre-school playground. However, this is provided that the observers remain unobtrusive, as behaviour may not be realistic if the children are aware they are being watched.

17. Write a suitable hypothesis for the second part of the study. [2 marks]

[AO3 = 2 marks]
Award 2 marks if the hypothesis is a testable statement about difference or association, with operationalised IV and DV. No marks for a correlational hypothesis. If either IV or DV is not operationalised 1 mark (for DV accept reference to both ‘active’ and ‘passive’; physical activity levels). Accept directional, non-directional OR null hypothesis.

For example: Significantly more boys than girls will engage in ‘active’ physical activities (running and walking) than ‘passive’ physical activities (standing and sitting).

18. A Chi-square test was used to analyse the data in Table 3. The calculated value of Chi-square was 7.03. Using Table 4 below, interpret the results of the study. Justify your answer. [3 marks]

[AO3 = 3 marks]
Award 1 mark for stating this is a significant result, n.b. this is significant at $p < 0.05$ and $p < 0.01$. 
Award 1 mark for justification, for comparing calculated value of 7.03 to the table [critical] value of 3.84 or 6.64.
Award 1 mark for stating the H1 would be supported and/or the H0 rejected.

19. Explain how the results from this study could be analysed. Give reasons for your answer. [6 marks]

[AO3 = 6 marks]

- Descriptive statistics should refer to both a suitable measure of central tendency and/or suitable measure of dispersion. This data would illustrate the strength and direction of the results between the two conditions: C1 = 1 x 15 minute break and C2 = 3 x 5 minute breaks. Accept levels of measurement as justification or other valid points.
- Significance level of $P \leq 0.05$ or $P \leq 0.01$ should be stated with reason(s). For example, $P < 0.05$ as this is the conventional level and there is no reason to set a more stringent level, $P < 0.01$ as one can then be more certain that the results are not due to chance; Accept appropriate reference to type 1 error and or type 2 error.
- Would use 1-tailed test as a directional hypothesis has been set.
- Appropriate statistical test (e.g., Related t-test/Wilcoxon) and reasons. Answers may refer to parametric criteria. Justification: Related t-test as the design is repeated measures, the study is looking for a difference and the data collected (number of steps taken) should be treated as ordinal (as steps are not a recognised units of measurement) etc.

1-2 marks  At least 1 point addressed accurately and with some justification/explanation or 2/3 points with minimal/no justification/explanation
3-4 marks  Award 3 marks if 2 points are fully justified; award 4 marks for at least 3 points addressed with some justification/explanation.
5-6 marks  All 4 points addressed and mostly justified/explained for 5 marks.
   For 6 marks the answer should include all 4 points with justification/explanation and little misunderstanding.