Please check the examination details below before entering your candidate information

Candidate surname	Other names
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Pearson Edexcel
International Advanced Level

Centre Number	Candidate Number

Monday 18 May 2020

Afternoon (Time:1 hour 30 minutes)	Paper Reference **WPS03/01**

Psychology

International Advanced Level
Paper 3: Applications of Psychology

You do not need any other materials.

Total Marks

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **ALL** questions in Section A, and **ALL** questions from **EITHER** Option 1 criminological psychology **OR** Option 2 health psychology.
- Answer the questions in the spaces provided
  – *there may be more space than you need.*

Information

- The total mark for this paper is 64.
- The marks for **each** question are shown in brackets
  – *use this as a guide as to how much time to spend on each question.*
- The list of formulae and statistical tables are printed at the start of this paper.
- Candidates may use a calculator.

Advice

- Read each question carefully before you start to answer it.
- Check your answers if you have time at the end.

Turn over ▶

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FORMULAE AND STATISTICAL TABLES

Standard deviation (sample estimate)

$$\sqrt{\left(\frac{\sum(x-\bar{x})^2}{n-1}\right)}$$

Spearman's rank correlation coefficient

$$1-\frac{6\sum d^2}{n(n^2-1)}$$

Critical values for Spearman's rank

	Level of significance for a one-tailed test				
	0.05	**0.025**	**0.01**	**0.005**	**0.0025**
	Level of significance for a two-tailed test				
N	**0.10**	**0.05**	**0.025**	**0.01**	**0.005**
5	0.900	1.000	1.000	1.000	1.000
6	0.829	0.886	0.943	1.000	1.000
7	0.714	0.786	0.893	0.929	0.964
8	0.643	0.738	0.833	0.881	0.905
9	0.600	0.700	0.783	0.833	0.867
10	0.564	0.648	0.745	0.794	0.830
11	0.536	0.618	0.709	0.755	0.800
12	0.503	0.587	0.678	0.727	0.769
13	0.484	0.560	0.648	0.703	0.747
14	0.464	0.538	0.626	0.679	0.723
15	0.446	0.521	0.604	0.654	0.700
16	0.429	0.503	0.582	0.635	0.679
17	0.414	0.485	0.566	0.615	0.662
18	0.401	0.472	0.550	0.600	0.643
19	0.391	0.460	0.535	0.584	0.628
20	0.380	0.447	0.520	0.570	0.612
21	0.370	0.435	0.508	0.556	0.599
22	0.361	0.425	0.496	0.544	0.586
23	0.353	0.415	0.486	0.532	0.573
24	0.344	0.406	0.476	0.521	0.562
25	0.337	0.398	0.466	0.511	0.551
26	0.331	0.390	0.457	0.501	0.541
27	0.324	0.382	0.448	0.491	0.531
28	0.317	0.375	0.440	0.483	0.522
29	0.312	0.368	0.433	0.475	0.513
30	0.306	0.362	0.425	0.467	0.504

The calculated value must be equal to or exceed the critical value in this table for significance to be shown.

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Chi-squared distribution formula

$$X^2 = \sum \frac{(O-E)^2}{E} \qquad df = (r-1)(c-1)$$

Critical values for chi-squared distribution

	Level of significance for a one-tailed test					
	0.10	**0.05**	**0.025**	**0.01**	**0.005**	**0.0005**
	Level of significance for a two-tailed test					
df	**0.20**	**0.10**	**0.05**	**0.025**	**0.01**	**0.001**
1	1.64	2.71	3.84	5.02	6.64	10.83
2	3.22	4.61	5.99	7.38	9.21	13.82
3	4.64	6.25	7.82	9.35	11.35	16.27
4	5.99	7.78	9.49	11.14	13.28	18.47
5	7.29	9.24	11.07	12.83	15.09	20.52
6	8.56	10.65	12.59	14.45	16.81	22.46
7	9.80	12.02	14.07	16.01	18.48	24.32
8	11.03	13.36	15.51	17.54	20.09	26.12
9	12.24	14.68	16.92	19.02	21.67	27.88
10	13.44	15.99	18.31	20.48	23.21	29.59
11	14.63	17.28	19.68	21.92	24.73	31.26
12	15.81	18.55	21.03	23.34	26.22	32.91
13	16.99	19.81	22.36	24.74	27.69	34.53
14	18.15	21.06	23.69	26.12	29.14	36.12
15	19.31	22.31	25.00	27.49	30.58	37.70
16	20.47	23.54	26.30	28.85	32.00	39.25
17	21.62	24.77	27.59	30.19	33.41	40.79
18	22.76	25.99	28.87	31.53	34.81	42.31
19	23.90	27.20	30.14	32.85	36.19	43.82
20	25.04	28.41	31.41	34.17	37.57	45.32
21	26.17	29.62	32.67	35.48	38.93	46.80
22	27.30	30.81	33.92	36.78	40.29	48.27
23	28.43	32.01	35.17	38.08	41.64	49.73
24	29.55	33.20	36.42	39.36	42.98	51.18
25	30.68	34.38	37.65	40.65	44.31	52.62
26	31.80	35.56	38.89	41.92	45.64	54.05
27	32.91	36.74	40.11	43.20	46.96	55.48
28	34.03	37.92	41.34	44.46	48.28	56.89
29	35.14	39.09	42.56	45.72	49.59	58.30
30	36.25	40.26	43.77	46.98	50.89	59.70
40	47.27	51.81	55.76	59.34	63.69	73.40
50	58.16	63.17	67.51	71.42	76.15	86.66
60	68.97	74.40	79.08	83.30	88.38	99.61
70	79.72	85.53	90.53	95.02	100.43	112.32

The calculated value must be equal to or exceed the critical value in this table for significance to be shown.

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Wilcoxon Signed Ranks test process

- Calculate the difference between two scores by taking one from the other
- Rank the differences giving the smallest difference Rank 1

  Note: do not rank any differences of 0 and when adding the number of scores, do not count those with a difference of 0, and ignore the signs when calculating the difference
- Add up the ranks for positive differences
- Add up the ranks for negative differences
- T is the figure that is the smallest when the ranks are totalled (may be positive or negative)
- N is the number of scores left, ignore those with 0 difference

Critical values for the Wilcoxon Signed Ranks test

	Level of significance for a one-tailed test		
	0.05	0.025	0.01
	Level of significance for a two-tailed test		
n	0.1	0.05	0.02
N=5	0	-	-
6	2	0	-
7	3	2	0
8	5	3	1
9	8	5	3
10	11	8	5
11	13	10	7
12	17	13	9

The calculated value must be equal to or less than the critical value in this table for significance to be shown.

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SECTION A

DEVELOPMENTAL PSYCHOLOGY

Answer ALL questions. Write your answers in the spaces provided.

1 Ainsworth investigated attachment using the strange situation procedure.

(a) State the research method used for the strange situation procedure.

(1)

A structured (controlled) observation, carried out in a laboratory playroom.

(b) Explain **one** weakness of the strange situation procedure.

(2)

The strange situation takes place in an artificial, unfamiliar laboratory room with set episodes, which is not how a mother and baby normally interact. This reduces the ecological validity of the behaviours recorded, as they may not reflect natural mother and baby interactions at home.

(Total for Question 1 = 3 marks)

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2 Kieron is 3-years-old. He knows a range of words and can form new sentences using these words. Kieron recently said "I like pizza and cake for lunch" even though he had not heard anyone else say the sentence to him.

(a) Describe, using Chomsky's theory of language, how Kieron can form sentences he has never heard before.

(2)

Chomsky would say Kieron has an innate language acquisition device (LAD), which lets him combine words he already knows, like pizza, cake and lunch, into new sentences. He does not need to have heard anyone say "I like pizza and cake for lunch", because he has an innate understanding of universal grammar, such as the correct word order of a sentence.

(b) Explain **one** strength of using Chomsky's theory of language to explain Kieron's language development.

(2)

An innate LAD plausibly explains how Kieron can create a new sentence using words like cake and lunch that he has never heard said together. This makes it a more credible explanation of how grammatical language develops than imitation, as it does not require Kieron to be exposed to every possible sentence first.

(Total for Question 2 = 4 marks)

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3 Toby is investigating attachment using a questionnaire with open-ended questions. He asks adult participants about current relationships with their romantic partners, and their childhood relationships with caregivers.

(a) Give **one** open-ended question Toby could include in his questionnaire about attachment.

(1)

"Describe how you feel about the person who looked after you the most when you were a child."

(b) Toby used an opportunity sampling technique to gather the adult participants for his investigation into attachment. He visited a local shopping centre and asked passers-by if they would be willing to complete his questionnaire.

Explain **one** weakness of Toby using opportunity sampling in his investigation about attachment.

(2)

The adults who agree to complete his questionnaire at the shopping centre, eg people with free time, may not be representative of the different types of relationship experiences in the population. So his findings about childhood attachment and adult relationships may lack generalisability to the wider adult population.

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(c) Toby plans to analyse the responses to his open-ended questions using thematic analysis.

Explain **one** strength and **one** weakness of Toby using thematic analysis to analyse the responses to his open-ended questions about attachment.

(4)

Strength

Toby will be able to categorise the responses about childhood and adult relationships into recurring themes, finding common points about experiences and behaviours, eg trust. This allows him to condense the detailed qualitative responses into a summary of the attachment themes in his data, while keeping their depth.

Weakness

Toby may be biased when interpreting the responses, looking for the attachment themes and concepts he expects to find. So his analysis may lack objectivity, as the themes he decides on are subjective to his own ideas about adult relationships and childhood attachment.

(d) Explain **one** improvement Toby could make to his questionnaire about attachment.

(2)

Toby could add closed questions about childhood and adult relationships, eg rating scales of how close they felt to their caregiver and partner, to give quantitative data. He could then statistically analyse the results to see if there is a significant relationship between childhood experience and adult behaviour.

(Total for Question 3 = 9 marks)

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4 Wahida is 6-months-old and cries when her favourite toy is hidden from her sight. When the toy is given back, Wahida is excited and often puts the toy in her mouth.

Her brother, Khalid, is 3-years-old. He points to objects and names them, such as a table or chair. He describes the object to Wahida, for example if it is big or small. Khalid likes dinosaurs and he says that Wahida likes them as well even though she does not.

Discuss, using Piaget's stages of development, the cognitive development shown by Wahida and Khalid.

You **must** make reference to the context in your answer.

(8)

Piaget said children pass through invariant stages of cognitive development. In the sensorimotor stage, from birth to about 2 years, the infant learns about the environment through their senses and motor actions, building simple schemas. A key achievement is object permanence, realising that an object still exists when it cannot be seen, which develops at around 8 months.

At 6 months old, Wahida is in the sensorimotor stage. She puts her toy in her mouth because she is learning about objects through sensory exploration, assimilating the toy into her sucking schema. She cries when her favourite toy is hidden because she has not yet developed object permanence, so she does not understand that the toy still exists; to her it has gone. When it is given back she is excited, as it seems to have reappeared.

In the pre-operational stage, from about 2 to 7 years, thinking is symbolic, language develops rapidly, and understanding of the world is dominated by the appearance of objects. Children are also egocentric: they cannot understand that other people may see things differently to them, as shown in Piaget's three mountains task. Khalid, aged 3, uses words as symbols to name objects such as a table or chair, and describes them by how they look, such as big or small. When he says Wahida likes dinosaurs just because he does, he shows egocentrism, as he cannot see that she perceives the world differently.

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Piaget's theory fits both children well, which gives it credibility. However, Baillargeon (1987) used the violation of expectation method and found infants of 3.5 to 4.5 months showed some understanding of object permanence, so Wahida's crying may reflect frustration at losing her toy rather than a belief that it has stopped existing; Piaget's search tasks relied on motor skills she may lack. Hughes (1975) found most children aged 3.5 to 5 could hide a boy doll from a policeman doll, so Khalid may be less egocentric than Piaget claims when a task makes sense to him.

In conclusion, Piaget's stages explain the behaviour of Wahida and Khalid well, but he may have underestimated their abilities, so the stage ages should be seen as approximate.

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(Total for Question 4 = 8 marks)

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5 Evaluate the 44 Juvenile Thieves study (Bowlby, 1944) using the British Psychological Society (BPS) code of ethics and conduct (2009).

(8)

Bowlby (1944) worked at the London Child Guidance Clinic, where he gathered his sample. He studied 44 juvenile thieves aged 5 to 16 who had been referred to the clinic for stealing, and compared them with a control group of 44 children also referred to the clinic for emotional problems who did not steal. Bowlby interviewed the children himself and interviewed their mothers separately, and also obtained reports from their schools. He found 17 of the thieves had experienced prolonged early separation from their mother, compared with 2 of the controls, and diagnosed 14 thieves as affectionless psychopaths, 12 of whom had been separated. He judged that 42 of the thieves had abnormal characters and, without treatment, were likely to continue offending or develop mental health problems later in life.

The BPS (2009) code requires confidentiality. This was maintained to some extent, as the children were given pseudonyms, but the location of the clinic and detailed case histories were published, so the thieves could have become identifiable to people who knew them.

Informed consent was also a problem. The children were under 16, so parental consent was needed, but the families were attending the clinic for treatment of the children's mental health, so agreeing to the research may not have been a completely free choice. Similarly, the thieves had been referred for their behaviour and may have felt pressured to take part in interviews to show they would behave better, limiting their right to withdraw.

The code also requires protection of participants' wellbeing. Interviews about painful early separations could cause distress, and labelling children as affectionless psychopaths could harm them. Their wellbeing may have been superseded by the research aims if their problems were not fully treated. However, the children were receiving clinical help, and Bowlby was a qualified

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psychiatrist, so he was competent to manage their distress.

In conclusion, the study breaks several BPS principles, especially consent, confidentiality and right to withdraw. However, it was carried out in 1994, long before the 2009 code existed, and it was done in a therapeutic setting that benefited the children, so it was ethical by the standards of its time but would not meet today's BPS requirements.

(Total for Question 5 = 8 marks)

TOTAL FOR SECTION A = 32 MARKS

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SECTION B

Answer ALL questions from EITHER OPTION 1: CRIMINOLOGICAL PSYCHOLOGY

OR OPTION 2: HEALTH PSYCHOLOGY.

Indicate which option you are answering by marking a cross in the box ☒. If you change your mind, put a line through the box ☒ and then indicate your new option with a cross ☒.

If you answer the questions in Option 1 put a cross in the box ☒ .

OPTION 1: CRIMINOLOGICAL PSYCHOLOGY

6 Describe what is meant by a 'self-fulfilling prophecy'.

A self-fulfilling prophecy is when a person is labelled, eg as criminal, and internalises the expectations that others have of them because of the label. They then behave in a way that fulfils those expectations, demonstrating the expected criminal behaviour, so the prediction comes true.

(Total for Question 6 = 2 marks)

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7 Sonia investigated the influence of post-event information on the reliability of eyewitness recall. She had two groups of participants.

- Group A: watched a video of a crime and were then interviewed about what they saw.
- Group B: watched a video of a crime and then read a newspaper article about the crime before being interviewed about what they saw.

(a) Describe the experimental research design used by Sonia in this investigation.

(2)

Sonia used an independent measures (independent groups) design, as different participants were in each condition. One group (Group B) experienced the post-event information by reading the newspaper article, and a different group (Group A) recalled the crime without any post-event information.

Sonia counted the number of accurate and inaccurate points about the crime recalled by the participants in their interviews.

The results of Sonia's investigation are shown in **Table 1**.

Group	Total number of accurate points recalled about the crime	Total number of inaccurate points recalled about the crime
Group A did not read the newspaper article	124	36
Group B did read the newspaper article	81	64

Table 1

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(b) There were 11 participants in Group B.

Calculate the mean score for **inaccurate** points recalled by Group B.

You **must** give your answer to two decimal places.

(1)

Space for calculations

Total inaccurate points for Group B = 64

Mean = 64 ÷ 11 = 5.818... = 5.82

Mean score for **inaccurate** points recalled by Group B ..... *5.82* .....

(c) Calculate the **accurate** points recalled as a percentage of the total number of points recalled by both groups.

You **must** give your answer to two decimal places.

(1)

Space for calculations

Accurate = 124 + 81 = 205

Total = 124 + 36 + 81 + 64 = 305

205 ÷ 305 × 100 = 67.213... = 67.21%

Percentage ..... *67.21%* .....

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Sonia asked the participants to state whether or not they would be confident in identifying the criminal from the video.

The results are shown in **Table 2**.

	Confident in identifying the criminal	**Not confident in identifying the criminal**
Group A did not read the newspaper article	6	6
Group B did read the newspaper article	7	4

Table 2

(d) Sonia decided to carry out a chi-squared test to see if there was a significant difference in the confidence of participants in identifying the criminal.

Calculate the chi-squared for the data gathered by Sonia by completing **Table 3**.

Your answers should **all** be correct to **two** decimal places.

(4)

		Observed	**Expected**	**O-E**	**$(O-E)^2$**	**$(O-E)^2/E$**
Group A did not read the newspaper article	**Confident in identifying the criminal**	6	6.78	−0.78	0.61	0.09
	Not confident in identifying the criminal	6	5.22	0.78	0.61	0.12
Group B did read the newspaper article	**Confident in identifying the criminal**	7	6.22	0.78	0.61	0.10
	Not confident in identifying the criminal	4	4.78	−0.78	0.61	0.13
					chi-squared =	0.44

Table 3

$(O - E)^2 = 0.78^2 = 0.6084 = 0.61$

$\chi^2 = 0.09 + 0.12 + 0.10 + 0.13 = 0.44$

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(e) Determine, using the data in **Table 3**, whether the results are significant for a non-directional (two-tailed) test at P≤0.05 where *df*=1.

(1)

The calculated value of 0.44 is less than the critical value of 3.84 for a two-tailed test at P≤0.05 where df=1, so the result is not significant.

(f) Suggest **two** conclusions that Sonia could make from her investigation of the influence of post-event information.

(2)

1 *Post-event information leads to more inaccuracy in recall of a crime, as Group B recalled 64 inaccurate points compared with 36 for Group A.*

2 *Post-event information does not significantly influence the confidence of eyewitnesses in identifying the criminal, as the chi-squared result was not significant.*

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(g) Sonia evaluated her investigation and believed that using cognitive interview techniques to ask the participants about what they saw on the video could have improved her investigation.

Justify how a cognitive interview technique could have improved Sonia's investigation.

(3)

A cognitive interview uses four retrieval techniques, such as context reinstatement and reporting every detail, which would enable the participants to recall more accurate detail from the video of the crime. Using cognitive interview techniques would also make the interviews more realistic, as they reflect the police techniques used to interview real witnesses. Sonia could then apply her findings about post-event information to real-life interviews of eyewitnesses, giving her results stronger ecological validity.

(Total for Question 7 = 14 marks)

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8 Assess whether the 'other race' effect can influence eye-witness reliability.

(8)

The 'other race' effect is the finding that people are less able to accurately recognise faces of people from a different ethnic background to their own. One explanation is that people have more experience of recognising same-race faces, which increases accuracy for own-race faces but means they have weaker sensitivity to the unique features of 'other race' faces, so these faces seem more alike. This could reduce eyewitness reliability when a witness has to identify a suspect of a different race. Much of the research takes place in laboratories with mock witnesses and fake suspects.

There is evidence that the effect does influence real eyewitness reliability. Scheck, Neufeld and Dwyer (2000) looked at 77 mistaken eyewitness identifications and found 35% involved white victim-witnesses misidentifying black suspects, which shows the effect can contribute to wrongful convictions. Brigham et al. (1982) used shop cashiers as participants in a field study, where customers of different races entered the shop, and found cashiers were less accurate at recognising 'other race' customers. As this was a natural setting, it suggests the effect is not just a laboratory artefact.

However, most evidence comes from laboratory studies using photographs, which lack ecological validity, as real witnesses are emotionally involved and know the consequences of their identification, so the size of the effect may not reflect real crimes. The effect also does not apply equally to everyone. Hancock and Rhodes (2008) found that more contact with 'other race' groups was associated with a smaller 'other race' effect and better recognition of 'other race' faces, so witnesses who live in diverse communities may be reliable. Other factors, such as weapon focus, stress and leading questions, may influence reliability more than race.

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In conclusion, the 'other race' effect can reduce eyewitness reliability, as shown by both real cases and field research, but its influence depends on the witness's level of contact with other races, so it is one of several factors that affect eyewitness reliability rather than a fixed effect.

(Total for Question 8 = 8 marks)

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9 Evaluate the factors that can influence jury decision-making.

(8)

Juries should decide a verdict objectively, based only on the evidence presented in court, but several factors may influence their decisions. Pre-trial publicity in the media about the defendant, crime or victim can bias jurors before the trial starts. Evidence from experts or witnesses held in high regard, such as police officers, may carry more weight, and jurors may be influenced by how confident a witness appears. The race of jurors and defendants may affect perceptions. Characteristics of the defendant also matter: Dion, Berscheid and Walster (1972) claimed attractiveness is associated with socially desirable traits, so 'what is beautiful is good'.

There is supporting evidence for these factors. Ruva, McEvoy and Bryant (2007) found negative pre-trial publicity had a biasing effect on mock jurors' impressions of the defendant, making guilty verdicts more likely. Penrod and Cutler (1989) found jurors were influenced by the confidence of eyewitnesses, even though confidence is a poor predictor of accuracy, so decisions are not objective. Bradbury and Williams (2013) analysed real trials and found juries with a high percentage of white jurors were more likely to convict black defendants. Landy and Aronson (1969) found attractive defendants were sentenced less harshly than unattractive defendants, even when judged similarly guilty.

However, much of the research uses mock juries reading or watching simulated trials, which lacks ecological validity. Real jurors know their verdict has serious consequences for a real person, so they may be more careful than mock jurors. Real juries also deliberate as a group for a long time, which may cancel out individual biases, and judges direct jurors to ignore pre-trial publicity. On the other hand, Bradbury and Williams used real trial data, which gives stronger evidence that bias occurs in real courts.

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In conclusion, there is consistent evidence from both mock and real trials that pre-trial publicity, witness confidence, race and attractiveness can influence jury decision-making, although group deliberation and legal safeguards may reduce their effect in real trials.

(Total for Question 9 = 8 marks)

TOTAL FOR SECTION B OPTION 1 = 32 MARKS

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SECTION B

If you answer the questions in Option 2 put a cross in the box ☒ .

OPTION 2: HEALTH PSYCHOLOGY

10 Describe what is meant by 'personality traits'.

Personality traits are the relatively stable characteristics of an individual, such as their attitudes and typical behaviours, eg being competitive or hostile. These traits influence how the person thinks about and reacts to situations, such as how stressed they become when facing a stressor.

(Total for Question 10 = 2 marks)

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11 Sonia investigated the influence of life events on the level of stress people report. She had two groups of participants.

- Group A: were interviewed about their levels of stress in the previous week.
- Group B: were made to wait an hour before being interviewed about their levels of stress in the previous week.

(a) Describe the experimental research design used by Sonia in this investigation.

(2)

Sonia used an independent measures (independent groups) design, as different participants were in each condition. One group (Group B) experienced a one hour delay before being interviewed about their stress, and a different group (Group A) was interviewed without any delay.

Sonia counted the number of times participants reported feeling stressed or not stressed.

The results of Sonia's investigation are shown in **Table 4**.

Group	Total number of times participants reported feeling not stressed in a week	Total number of times participants reported feeling stressed in a week
Group A not delayed before the interview	124	36
Group B delayed for one hour before the interview	81	64

Table 4

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(b) There were 11 participants in Group B.

Calculate the mean score for feeling **stressed** reported by Group B.

You **must** give your answer to two decimal places.

(1)

Space for calculations

Total stressed reports for Group B = 64

Mean = 64 ÷ 11 = 5.818... = 5.82

Mean score for feeling **stressed** in Group B *5.82*

(c) Calculate the reports of feeling **not stressed** as a percentage of the total number of feelings reported by both groups.

You **must** give your answer to two decimal places.

(1)

Space for calculations

Not stressed = 124 + 81 = 205

Total = 124 + 36 + 81 + 64 = 305

205 ÷ 305 × 100 = 67.213... = 67.21%

Percentage *67.21%*

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Sonia asked the participants to state whether or not they believed their level of stress influenced how well they remembered events from the previous week.

The results are shown in **Table 5**.

	Stress does influence how well they remembered events from the previous week	**Stress does not influence how well they remembered events from the previous week**
Group A not delayed before the interview	6	6
Group B delayed for one hour before the interview	7	4

Table 5

(d) Sonia decided to carry out a chi-squared test to see if there was a significant difference in whether participants believed stress influenced how well they remembered events.

Calculate the chi-squared for the data gathered by Sonia by completing **Table 6**.

Your answers should **all** be correct to **two** decimal places.

(4)

		Observed	**Expected**	**O-E**	**$(O-E)^2$**	**$(O-E)^2/E$**
Group A not delayed before the interview	**Stress does influence how well they remember events from the previous week**	6	6.78	−0.78	0.61	0.09
	Stress does not influence how well they remember events from the previous week	6	5.22	0.78	0.61	0.12
Group B delayed for one hour before the interview	**Stress does influence how well they remember events from the previous week**	7	6.22	0.78	0.61	0.10
	Stress does not influence how well they remember events from the previous week	4	4.78	−0.78	0.61	0.13
					chi-squared =	0.44

Table 6

$(O - E)^2 = 0.78^2 = 0.6084 = 0.61$ $\chi^2 = 0.09 + 0.12 + 0.10 + 0.13 = 0.44$

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(e) Determine, using the data in **Table 6**, whether the result is significant for a non-directional (two-tailed) test at P≤0.05 where *df*=1.

(1)

The calculated value of 0.44 is less than the critical value of 3.84 for a two-tailed test at P≤0.05 where df=1, so the result is not significant.

(f) Suggest **two** conclusions that Sonia could make from her investigation about the influence of life events on stress.

(2)

1 *Being made to wait for an hour leads to more reports of feeling stressed, as Group B reported feeling stressed 64 times compared with 36 times for Group A.*

2 *There is no significant difference between the groups in whether participants believe their stress influenced how well they remembered events from the previous week.*

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(g) Sonia evaluated her investigation and believed that using the Holmes and Rahe stress scale for life events instead of her own interview questions would have improved her investigation.

Justify how using the Holmes and Rahe stress scale could have improved Sonia's investigation.

(3)

The Holmes and Rahe stress scale (SRRS) is a standardised measure that has been used many times to test stress, so it would make Sonia's measure of life events more reliable than her own interview questions. It would also add internal validity, as it has been shown to measure life events consistently, with fixed life change unit scores, so every participant is measured in the same way. Sonia would then have a baseline measure of how much stress there was in each participant's life before the one hour delay, so she could check the groups were similar and that any difference was due to the delay.

(Total for Question 11 = 14 marks)

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12 Assess whether coping strategies can help individuals deal with stress.

(8)

Coping strategies are the ways people try to manage stressors. Problem-focused strategies aim to reduce the stressor itself by learning how to manage the problem and looking for alternatives or solutions, such as making a revision timetable before exams. Emotion-focused strategies try to manage the emotional reaction to the stressor, such as using relaxation techniques. Seeking social support is an emotion-focused strategy that acts as a buffer, limiting the impact of life events on mental health. Appraisal-focused strategies aim to challenge assumptions and change the way a person thinks about the stressor.

Problem-focused coping can help because it deals with the cause of the stress, so it can remove the stressor in the long term. However, there are individual differences in its use: Nes and Segerstrom (2006) found that a disposition for optimism was positively associated with problem-focused coping, so it may help optimistic people more than others. It also only works when the stressor can be controlled, eg it cannot help someone cope with a bereavement.

Emotion-focused coping can reduce the immediate symptoms of stress, but it may not be a long-term solution, as it does not encourage the person to deal with the stressor itself. Carver et al. (1989) found that venting of emotions was dysfunctional, so seeking social support could lead to negative coping that reduces a person's ability to manage stress. Appraisal-focused coping recognises that factors such as religion, gender or age influence how a person interprets a stressor, so it allows for individual differences in how stress is managed.

In conclusion, coping strategies can help individuals deal with stress, but how well they work depends on the person and on whether the stressor is controllable. Problem-focused coping is most effective for controllable stressors, while emotion-focused coping is better as a short-term

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strategy.

(Total for Question 12 = 8 marks)

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13 Evaluate brain regions as an explanation of stress.

(8)

Brain regions explain stress as a biological response. When a stressor is perceived, the amygdala, which is involved in emotional responses, mediates the fear response and signals the hypothalamus. The hypothalamus triggers activity in the hypothalamic-pituitary-adrenal (HPA) axis, leading to the release of cortisol. The prefrontal cortex (PFC) regulates thoughts, actions and emotions through its connections with other brain regions, such as calming the amygdala. The vulnerability hypothesis suggests a reduced hippocampal volume is not a consequence of stress but a genetic risk factor for stress-related disorders.

A strength is that the explanation is supported by scientific evidence. Sripada et al. (2012) investigated the role of the amygdala in patients with PTSD using neuroimaging, which is objective and gives scientific credibility to findings about the brain regions involved in stress. Gilbertson et al. (2002) supports the vulnerability hypothesis, finding that a genetically predisposed smaller hippocampal volume is associated with susceptibility to stress, so brain regions could play a causal role in stress. The explanation is also less reductionist than hormones alone, as the HPA axis links brain functioning to the release of cortisol.

However, the PFC is sensitive to stress exposure, with even mild stress causing a loss of prefrontal cognitive abilities, so dysfunction in brain regions may be a result of stress rather than a cause. Neuroimaging studies are correlational, so cause and effect cannot be established. The explanation is also reductionist, as it ignores cognitive appraisal and life events: two people with similar brains may react differently to the same stressor depending on how they appraise it.

In conclusion, brain regions are a credible, scientifically supported explanation of the stress

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response, but it is unclear whether brain differences cause stress or result from it, so the explanation is most complete when combined with hormonal and cognitive explanations.

(Total for Question 13 = 8 marks)

TOTAL FOR SECTION B OPTION 2 = 32 MARKS
TOTAL FOR PAPER = 64 MARKS

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