Please check the examination details below before entering your candidate information

Candidate surname	Other names
StemUp Model Solution	

Pearson Edexcel
International Advanced Level

Centre Number | Candidate Number

Monday 20 May 2019

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.

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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**
4	1.000	1.000	1.000	1.000	1.000
5	0.700	0.900	0.900	1.000	1.000
6	0.657	0.771	0.829	0.943	0.943
7	0.571	0.679	0.786	0.857	0.893
8	0.548	0.643	0.738	0.810	0.857
9	0.483	0.600	0.683	0.767	0.817
10	0.442	0.564	0.649	0.733	0.782
11	0.418	0.527	0.609	0.700	0.755
12	0.399	0.504	0.587	0.671	0.727
13	0.379	0.478	0.560	0.648	0.698
14	0.367	0.459	0.539	0.622	0.675
15	0.350	0.443	0.518	0.600	0.654
16	0.338	0.427	0.503	0.582	0.632
17	0.327	0.412	0.482	0.558	0.606
18	0.317	0.400	0.468	0.543	0.590
19	0.308	0.389	0.456	0.529	0.575
20	0.299	0.378	0.444	0.516	0.561
21	0.291	0.369	0.433	0.503	0.549
22	0.284	0.360	0.423	0.492	0.537
23	0.277	0.352	0.413	0.482	0.526
24	0.271	0.344	0.404	0.472	0.515
25	0.265	0.337	0.396	0.462	0.505
26	0.260	0.330	0.388	0.453	0.496
27	0.255	0.323	0.381	0.445	0.487
28	0.250	0.317	0.374	0.437	0.479
29	0.245	0.312	0.367	0.430	0.471
30	0.241	0.306	0.361	0.423	0.463

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 In developmental psychology you will have learned about the following contemporary study in detail:

- Cassibba et al. (2013).

(a) Explain **two** strengths of Cassibba et al. (2013).

(4)

1 *Publication bias was avoided, because Cassibba et al. included unpublished studies as well as published ones. Studies with negative or inconclusive findings are often not published, so including them makes the results more representative of Italian attachment research as a whole.*

2 *The attachment classifications are likely to be reliable, because only studies where at least one of the authors was a trained, reliable coder of the Adult Attachment Interview or the Strange Situation Procedure were included. This means the attachment types in different studies were judged in a consistent way, so they can be fairly compared.*

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(b) Explain **one** improvement that could be made to the study by Cassibba et al. (2013).

(2)

The study only compared Italian samples with mainly Western (eg American) norms. It could be improved by comparing Italian attachment types with non-Western cultures where childrearing differs, eg collectivist cultures, which would improve the generalisability of conclusions about whether attachment types are universal.

(Total for Question 1 = 6 marks)

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2 Nina investigated the influence of mindfulness on emotional development. She wanted to see the impact of a school-based mindfulness programme on levels of empathy in children.

Participants took part in a mindfulness programme for 10 weeks. At the end of the programme they were assessed on their levels of empathy.

The same participants then took part in a non-mindfulness social responsibility programme for a further 10 weeks. They were then assessed on their levels of empathy.

Empathy was measured on a scale of 0-28, where 28 was extremely high empathy.

The data gathered by Nina is shown **in Table 1**.

Participant	Empathy score after mindfulness programme	Empathy score after non-mindfulness social responsibility programme
A	25	24
B	20	22
C	22	12
D	19	16
E	27	20
F	10	10
G	19	11
H	24	19
I	16	5
J	18	14

Table 1

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(a) Complete **Table 2** and calculate the Wilcoxon Signed Ranks test for Nina's data.

The formulae and statistical tables can be found at the front of the paper.

(4)

Participant	Empathy score after mindfulness programme	Empathy score after non-mindfulness social responsibility programme	Difference	Ranked Difference
A	25	24	1	1
B	20	22	−2	2
C	22	12	10	8
D	19	16	3	3
E	27	20	7	6
F	10	10	0	–
G	19	11	8	7
H	24	19	5	5
I	16	5	11	9
J	18	14	4	4

Table 2

Space for calculations

F has a difference of 0, so it is not ranked: N = 9

Sum of positive ranks = 1 + 8 + 3 + 6 + 7 + 5 + 9 + 4 = 43

Sum of negative ranks = 2 (participant B)

T = the smaller total = 2

T value ..... 2 .....

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(b) Nina collected data from 1000 participants who had experienced the school-based mindfulness programme. She presented the data in a histogram to illustrate the distribution of empathy scores after 10 weeks of the mindfulness programme.

Nina's histogram is shown in **Figure 1**.

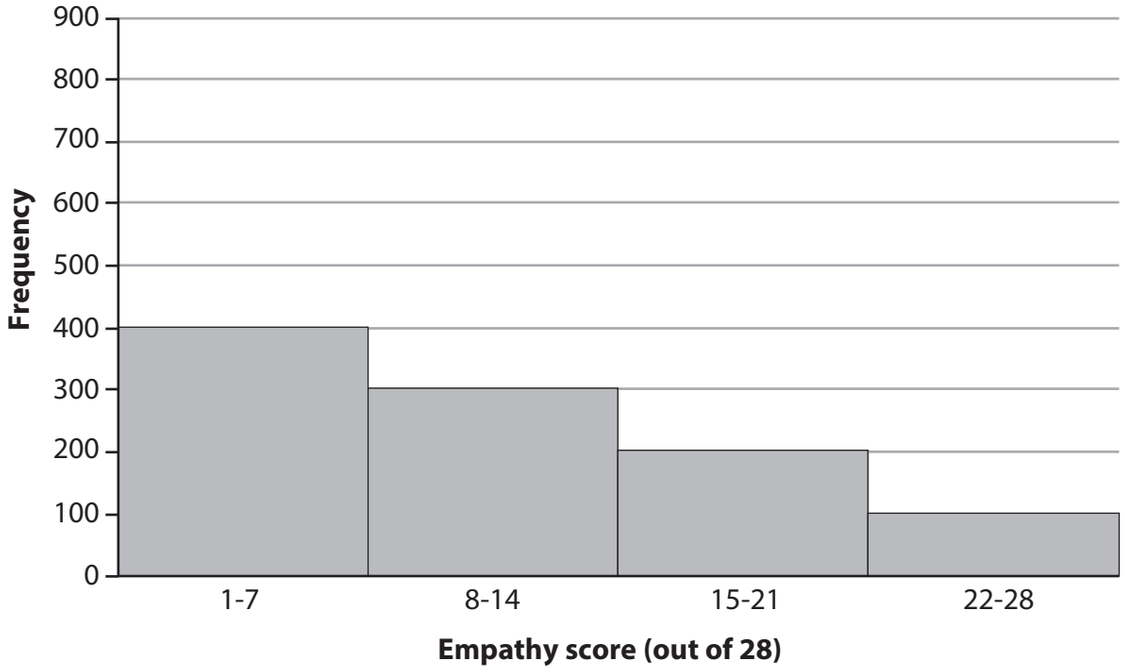


Figure 1

Interpret the data shown in the histogram in **Figure 1**.

(1)

The distribution is positively skewed: most children had low empathy scores (400 scored 1-7) and the frequency falls in each higher band, with only 100 children scoring 22-28.

(Total for Question 2 = 5 marks)

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3 Precious wanted to investigate the universality of attachment types cross-culturally. She decided to use a meta-analysis.

(a) Describe how Precious would carry out a meta-analysis into the universality of attachment types.

(3)

Precious would search databases for research studies into attachment types carried out in different countries, eg studies using the Strange Situation Procedure. She would set inclusion and exclusion criteria, eg only including studies of infants under 2 years old that classify children as type A, B or C, and excluding studies not written in English or with very small samples. She would then pool the data and carry out a statistical analysis, calculating an effect size, to compare the proportions of each attachment type across cultures and conclude whether attachment types are universal.

(b) Explain **one** weakness of Precious using a meta-analysis to investigate the universality of attachment types cross-culturally.

(2)

The studies Precious selects may have used slightly different procedures, eg a male or female stranger in the Strange Situation, which could change the child's attachment behaviour. So the findings may not be reliable or comparable, and differences between cultures could be due to the method rather than attachment.

(Total for Question 3 = 5 marks)

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QUESTION 4 BEGINS ON THE NEXT PAGE.

4 Evaluate the 44 Juvenile Thieves study carried out by Bowlby (1944).

(8)

Bowlby (1944) studied 88 children at a London child guidance clinic: 44 juvenile thieves and a control group of 44 emotionally disturbed children who did not steal. Each child was given mental tests by a psychologist, and a social worker interviewed the mother to record the child's early history, so a detailed case history was built up for each child. Bowlby then interviewed the children and their mothers himself.

14 of the thieves were identified as affectionless psychopaths, lacking guilt or concern for others, and 12 of these 14 had experienced prolonged separation from their mother (maternal deprivation) in their early years. Only 2 of the 44 controls had experienced a similar separation. Bowlby concluded that maternal deprivation damages emotional development and can lead to affectionless psychopathy and delinquency.

A strength is that the case histories gave rich, detailed data, and the use of an independent social worker as well as a psychologist meant information was gathered from several sources, so it is more likely to be accurate and valid. The control group also allowed a comparison, strengthening the link between separation and affectionless psychopathy.

However, Bowlby carried out the interviews and made the diagnoses himself, knowing which children were thieves, so there may be researcher bias in how he interpreted the data. The data on separation was also retrospective, relying on mothers' memories of events years earlier, which may be inaccurate.

The study is correlational, so it does not show cause and effect: the reason for the separation, such as family conflict, illness or poverty, may have caused the emotional problems rather than

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the separation itself. The sample of children attending one clinic is also not representative of all children.

On the other hand, the findings had important practical applications, leading to better hospital policies that allowed parents to visit their children more often. Overall, the study was influential and useful, but because of possible researcher bias and its correlational design, it cannot prove that maternal deprivation causes affectionless psychopathy.

(Total for Question 4 = 8 marks)

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5 Assess whether the classic study by Van iJzendoorn and Kroonenberg (1988) is scientific.

(8)

Van IJzendoorn and Kroonenberg (1988) carried out a meta-analysis of 32 studies from 8 countries that had used the Strange Situation Procedure with infants and their mothers, covering nearly 2000 infants. They set strict criteria for including studies, eg excluding samples of children over 2 years old and samples of children with special needs. They used Ainsworth's (1978) distribution of attachment types as a baseline to compare against, and found secure attachment was the most common type in every country, with variation within cultures about 1.5 times greater than variation between them.

The study has scientific features. The Strange Situation is a controlled, standardised observation of measurable attachment behaviours, such as proximity seeking and reaction to reunion, so the data is empirical and the procedure can be replicated. The researchers also used statistical analysis, including chi-squared tests, to check whether the distribution in each sample differed significantly from the baseline, which is an objective, evidence-based approach. The strict inclusion criteria also controlled variables such as age, making comparisons fairer.

However, there are reasons to doubt its scientific status. The overall distribution in the US studies did not match Ainsworth's original sample, so the baseline was not a reliable standard, which limits comparability and replication. The Strange Situation also relies on observers interpreting the child's reactions, which involves some subjectivity, so the original studies may lack objectivity. The procedure was developed in the USA, so it may not be a valid measure of attachment in other cultures, and some countries were represented by only one or two studies.

Overall, the study is largely scientific because it uses standardised, quantitative data and statistical testing, but subjectivity in the observations and the lack of a dependable baseline

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mean it is not fully scientific.

(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 (a) State what is meant by the 'other race' effect in terms of eye-witness memory.

(1)

The other race effect is when an eyewitness is less accurate at recognising or identifying a suspect of a different ethnicity (race) to their own than a suspect of their own ethnicity.

(b) When studying eye-witness memory researchers sometimes use an experiment.

Explain **two** strengths of using experiments to study eye-witness memory.

(4)

1 *Laboratory experiments on eyewitness memory are replicable, so they can be tested for reliability, because they use a standardised, carefully controlled procedure, eg every participant watches the same video of a car crash and is asked the same questions.*

2 *Experiments have high internal validity, because the controlled setting minimises extraneous variables, eg distractions, so researchers can be more confident that the IV (eg a leading question) caused the change in eyewitness recall, showing cause and effect.*

(Total for Question 6 = 5 marks)

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7 Karim is in court and has been accused of stealing.

Karim was raised in a wealthy neighbourhood and has a difficult relationship with his parents. He has had a history of mental illness and his sister died six months ago.

Kylian is a forensic psychologist who has been asked by the court to create a psychological (case) formulation for Karim and indicate the risk he poses to the public.

(a) Describe how Kylian would use psychological (case) formulation for Karim.

(4)

Kylian would gather information from many sources to build up a picture of Karim and explain why he may have stolen, and assess the risk that he will reoffend. He would investigate Karim's difficult relationship with his parents to see if this could be a reason for his stealing. He would interview Karim about his sister's death six months ago and how he interpreted this major life event, eg whether grief or stress led to the offence. He could ask mental health experts to contribute their view on whether Karim's history of mental illness contributed to the stealing. Kylian would then combine this into a formulation that the court can use to decide on sentencing and any treatment Karim needs.

(b) Explain **one** weakness of Kylian using psychological (case) formulation for Karim.

(2)

Creating a case formulation for Karim is costly and time-consuming, because many different people would need to be involved, such as mental health experts and his family, and everyone involved, not just Kylian, would need to be trained. The formulation also relies on Kylian's interpretation, so it could be subjective.

(Total for Question 7 = 6 marks)

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8 Ernesto was investigating the weapon focus effect.

He used volunteer sampling to recruit participants from his local village. He decided to show participants either video A or video B and ask them to identify the suspect.

Video A contained a woman who shouted at someone in a shop and then pointed a gun at a member of staff in an attempt to steal from the shop.

Video B contained a woman who shared a joke with someone in a shop and then gave a member of staff money to pay for her shopping.

Participants were asked to identify the woman they had seen in the video from a selection of photographs. They were either correct or incorrect in their identification of the woman.

(a) Identify the level of measurement used by Ernesto in this study.

(1)

Nominal data, as each participant's identification was either correct or incorrect.

(b) A chi-squared test was used to calculate statistical significance for Ernesto's study into weapon focus. The calculated value was 2.90 for a two-tailed test at $p<0.05$, when the df = 1.

Analyse this data to decide whether this result is significant or not.

The critical value table can be found in the formulae and statistical tables at the front of the paper.

(2)

The result is not significant, so there is no significant difference in correct identification of the woman between participants who watched video A and video B. This is because the calculated value of 2.90 is lower than the critical value of 3.84 (df = 1, two-tailed, p<0.05).

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(c) Explain **one** weakness of Ernesto's study in terms of validity.

(2)

Watching a video of a crime is not like witnessing a real crime, so the study lacks ecological validity. The participants would not feel the same fear or stress as when a real gun is pointed in a real robbery, so their identification may not reflect how real eyewitnesses respond to a weapon.

(Total for Question 8 = 5 marks)

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9 Evaluate the use of cognitive interview techniques with witnesses.

(8)

The cognitive interview, developed by Fisher and Geiselman, uses four main techniques to improve witness recall. First, the interviewer asks the witness to mentally reinstate the context, recalling cues from the environment and how they felt at the time. Second, the witness reports everything they can remember in their own words without interruption, even details that seem unimportant. Third, they recall the event in a different order, eg from the end to the start. Fourth, they recall the event from different perspectives, eg from the viewpoint of another witness or the victim.

Research supports its effectiveness. Geiselman et al. (1985) found the cognitive interview led to more correct information being recalled than a standard police interview. This is useful as it gives police more accurate detail to identify suspects. Holliday (2003) also found cognitive interviews were more effective than standard interviews with children, so the technique can be used with vulnerable witnesses.

However, Geiselman et al. (1985) also found the cognitive interview led to slightly more incorrect items being recalled, possibly because witnesses are encouraged to report everything, so some details may be guessed. This means police must still check information against other evidence. Kohnken et al. (1999) reached a similar conclusion in a meta-analysis, finding more correct details but also a small increase in errors.

There are also practical issues. Cognitive interviews take longer and need specially trained interviewers, which increases the expense, so they tend to be used only for serious crimes. Some techniques, such as changing perspective, may also confuse witnesses or lead them to imagine details.

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Overall, the cognitive interview is a well-supported method that improves the amount of accurate recall, but because it can also increase errors and is costly to use, it should be used carefully by trained officers alongside other evidence.

(Total for Question 9 = 8 marks)

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10 Bashir enjoys playing violent video games. In these games the player is given the task of fighting other characters in the game from a first-person perspective.

Recently Bashir has been playing violent video games every day and has won an online competition for being the most successful player.

However, Bashir has also recently been involved in more fights at school and with his brother at home. Where he used to be calm and patient, Bashir is now short-tempered and aggressive.

Discuss how social learning from the media could account for Bashir's recent behaviour.

You must make reference to the context in your answer.

(8)

Social learning theory (Bandura) suggests aggression is learned by observing and imitating role models, which can include characters in the media. Bashir may see the characters in the violent video games as role models because they are strong and powerful, and he identifies with them and wants to be like them. Playing from a first-person perspective may increase this identification, as he is acting as the character himself.

For learning to take place, Bashir must first pay attention to the role model's behaviour. As he plays every day, he pays close attention to the fighting moves of the characters and how they are performed. He then retains these actions in memory, and because he has played so often, the aggressive behaviour is likely to be well remembered.

Reproduction requires that Bashir is able to carry out the behaviour. When he finds himself in a threatening or frustrating situation at school or with his brother at home, he has the opportunity to use the fighting moves he has seen, explaining his recent fights.

Motivation determines whether the behaviour is repeated. In the games, characters are rewarded for fighting and showing greater aggression, eg by winning, so Bashir experiences vicarious reinforcement and expects aggression to bring rewards. He has also been directly

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rewarded by winning the online competition for being the most successful player, which may reinforce aggressive thinking, explaining why he is now short-tempered rather than calm and patient.

This is supported by Bandura, Ross and Ross (1963), who found children who watched a filmed model behaving aggressively towards a Bobo doll imitated the aggression, showing media models can be imitated in a similar way to live models. Anderson and Dill (2000) also found that playing violent video games was linked to increased aggression.

However, social learning may not fully explain Bashir's behaviour. Many people play violent games without becoming aggressive, so individual differences such as personality or biological factors like testosterone may be involved. His fights with his brother could also be due to family conflict or the frustration of other events in his life rather than the games, and the link between gaming and aggression is correlational, so it does not prove cause and effect.

Overall, social learning from the media offers a strong explanation for Bashir's change in behaviour, as his daily gaming gives him models, attention and reinforcement for aggression, but other factors are likely to contribute too.

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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

11 (a) State what is meant by an 'emotion-focusing' coping strategy.

(1)

Emotion-focusing coping is when a person tries to manage their emotional reaction to a stressor rather than the stressor itself, eg by avoiding the stressor or distracting themselves from it.

(b) When studying coping strategies in health psychology, researchers sometimes use focus groups.

Explain **one** strength and **one** weakness of using focus groups in health psychology.

(4)

Strength

Focus groups can investigate complex issues such as coping with stress in greater depth than a closed questionnaire. This lets the health psychologist explore people's reasons for using different coping strategies, giving a greater understanding of why people use different strategies for the same stressor.

Weakness

A focus group can be dominated by one person or a few people, and others may conform to their opinion. So the data gathered about coping strategies may lack validity, because what members say in the group may not reflect their true opinion or how they really cope.

(Total for Question 11 = 5 marks)

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12 Karim is at a health clinic and says he is experiencing high stress.

Karim was raised in a wealthy neighbourhood and has a difficult relationship with his parents. He has had a history of mental illness and his sister died six months ago.

Kylian is a health psychologist who has been asked by the health clinic to assess how much stress Karim has experienced and indicate the risk to his health.

(a) Describe how Kylian could use the Holmes and Rahe stress scale to measure the stress experienced by Karim.

(4)

Kylian would use the Holmes and Rahe Social Readjustment Rating Scale to measure the stress Karim has experienced in the past year. He would explain to Karim that he needs to indicate which of the 43 life events on the scale he has experienced, and each event corresponds to a number of life change units (LCUs), eg the death of a close family member such as his sister is worth 63 LCUs. Kylian would then add up the total number of LCUs for Karim, with a higher score showing higher stress. He would interpret the score, with 300+ LCUs meaning a high risk of stress-related illness, 150 to 299 a moderate risk and below 150 a slight risk, and inform Karim of his risk.

(b) Explain **one** strength of Kylian using the Holmes and Rahe stress scale to understand Karim's experience of stress.

(2)

The scale gives a more objective measure of Karim's stress than just asking him how stressed he feels, because Kylian counts the number of life change units Karim has experienced, which is a quantitative score that can be compared with others and with the risk categories.

(Total for Question 12 = 6 marks)

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13 Ernesto was investigating whether there was a difference between internet-based cognitive behavioural therapy (CBT) and face-to-face CBT for patients with a variety of anxiety disorders.

He used volunteer sampling to recruit participants from his local village. He decided to give participants either internet-based CBT or face-to-face CBT and ask them to rate their symptoms after the treatment.

- Internet-based CBT involved 10 weekly one-hour sessions answering questions on the computer.
- Face-to-face CBT involved 10 weekly one-hour sessions answering questions with a therapist.

Participants were asked to rate the severity of their symptoms after their treatment. Their symptoms were rated as either 'better than' or 'worse than' they were before the treatment.

(a) Identify the level of measurement used by Ernesto in this study.

(1)

Nominal data, as symptoms were rated as either 'better than' or 'worse than' before.

(b) A chi-squared test was used to calculate statistical significance for Ernesto's study into the possible difference between internet-based CBT and face-to-face CBT. The calculated value was 2.90 for a two-tailed test at $p<0.05$, when the df = 1.

Analyse this data to decide whether this result is significant or not.

The critical value table can be found in the formulae and statistical tables at the front of the paper.

(2)

The calculated value of 2.90 is lower than the critical value of 3.84 for a two-tailed test at $p<0.05$ with df = 1. This means the result is not significant: there is no significant difference in symptoms after internet-based CBT and face-to-face CBT.

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(c) Explain **one** weakness of Ernesto's study in terms of validity.

(2)

Patients rated their own symptoms as 'better than' or 'worse than' before, which is a subjective self-report judgement. Patients may actually have improved but not see it that way, or give socially desirable answers to please the therapist, so the data may not accurately measure the effectiveness of the treatments.

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14 Evaluate the use of selective serotonin reuptake inhibitors (SSRIs) as a treatment for anxiety.

(8)

Selective serotonin reuptake inhibitors (SSRIs), such as paroxetine and sertraline, are antidepressants that are also used to treat anxiety disorders. They work by blocking the reuptake of serotonin into the presynaptic neuron, so more serotonin remains in the synapse to stimulate the postsynaptic neuron, which reduces anxiety. SSRIs are prescribed at the lowest dose thought necessary to improve symptoms. They affect neurochemistry straight away but usually need to be taken for two to four weeks before the patient feels the benefit. They can be used on their own or combined with psychological treatments such as CBT.

There is evidence that SSRIs are effective. Kapczinski et al. (2003) carried out a review and found antidepressants, including the SSRI paroxetine, were more effective than a placebo in treating Generalised Anxiety Disorder. Walkup et al. (2008) conducted a randomised controlled trial with 488 children aged 7 to 17 and found the SSRI sertraline was more effective than a placebo (about 55% improved compared with 24%). As RCTs use random allocation and a placebo, this gives strong evidence that the drug itself reduces anxiety.

However, Walkup et al. (2008) also found combined treatment with CBT was the most effective (80.7%), which suggests SSRIs alone are not the best treatment, as they reduce symptoms without tackling the causes of the anxiety, so relapse may occur when the patient stops taking them.

Even at a low dose, side effects can occur, such as dizziness, nausea and blurred vision, which may lead patients to stop taking them. SSRIs must also be used with caution in patients with health problems such as diabetes, and may react unpredictably with other medicines, so they are not suitable for everyone. The delay of several weeks before benefits appear can also be

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difficult for patients in distress.

Overall, SSRIs are an effective, well-researched and easy to administer treatment for anxiety, but because of side effects and their limited long-term impact, they are best used alongside a psychological therapy such as CBT.

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15 Bashir has recently visited his doctor complaining of high levels of stress, after being promoted at work, and becoming a new father.

During the initial weeks after his promotion, Bashir found he could function effectively at work through remembering more and being able to focus on tasks easily.

However, after some months he found himself becoming more forgetful and frequently unwell. Bashir began to make quick, impulsive decisions at work and at home and even became angry with his partner and work colleagues.

Discuss how brain regions could account for Bashir's experiences.

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

(8)

Bashir's promotion and becoming a new father are stressors. When stress is detected, the hypothalamus activates the HPA axis: it releases CRH, which causes the anterior pituitary gland to secrete ACTH, and this stimulates the adrenal cortex to release cortisol. In brief or moderate amounts, cortisol can enhance memory, and it prepares the body for fight or flight, increasing alertness and attention.

This explains why, in the first weeks after his promotion, Bashir could remember more and focus on tasks easily. The short-term release of cortisol during the resistance stage enhanced his memory, and his prefrontal cortex, which controls attention and planning, was working effectively while the amygdala was not yet dominating his responses.

However, stress from his new job and new baby continued for months, so it became chronic. Prolonged cortisol increases metabolic activity in the hippocampus, making its cells more vulnerable, so toxins or overactivation can damage or kill neurons there. As the hippocampus is important for forming memories, this explains why Bashir became more forgetful. Long-term cortisol also suppresses the immune system, explaining why he was frequently unwell, which is supported by Kiecolt-Glaser et al. (1984), who found exam stress reduced immune functioning in students.

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Chronic stress also leads to high levels of catecholamines such as noradrenaline, which weaken the dorsal prefrontal cortex but strengthen the amygdala and striatum. This means primitive, habitual and emotional responses take over from considered, rational thinking. This explains why Bashir began making quick, impulsive decisions at work and at home, and why the amygdala, which processes emotions such as anger, led him to become angry with his partner and colleagues.

However, brain regions may not fully explain Bashir's experiences. Lack of sleep from caring for a new baby could also cause forgetfulness and irritability, and cognitive factors such as how he appraises his new role may affect how stressed he feels. Much of the evidence on the hippocampus comes from animal studies, which may not generalise to humans.

Overall, the effects of short-term and chronic cortisol on the hippocampus, prefrontal cortex and amygdala give a convincing explanation for the change from Bashir's improved focus and memory to his forgetfulness, illness and impulsive anger, although lifestyle factors are likely to contribute too.

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