Please check the examination details below before entering your candidate information

Candidate surname: StemUp Model Solution

Other names:

Centre Number | Candidate Number

Pearson Edexcel International Advanced Level

Tuesday 21 May 2024

Afternoon (Time: 2 hours)

Paper reference **WPS02/01**

Psychology

International Advanced Subsidiary
UNIT 2: Biological Psychology, Learning Theories and Development

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.
- Answer the questions in the spaces provided – *there may be more space than you need.*

Information

- The total mark for this paper is 96.
- 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 value 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.
- Try to answer every question.
- 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

Biological Psychology

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

1 In your studies on biological psychology, you will have learned about one of the following contemporary studies:

- McDermott (2008)
- Hoefelmann et al. (2006).

Chosen study *McDermott (2008)*

(a) State **two** conclusions of your chosen contemporary study.

(2)

1 *People with the low activity version of the MAOA gene (MAOA-L) are more aggressive, as they gave more hot sauce to an opponent who took their money.*

2 *Genes and the environment interact in aggression, as aggression increased most when people with MAOA-L were highly provoked.*

(b) Explain **one** improvement that could be made to the sample used in your chosen contemporary study.

(2)

McDermott (2008) only used male participants, so the sample could have included females as well. This would make the results about MAOA activity and aggression more generalisable, as the findings on willingness to punish others with hot sauce would be representative of both genders.

(Total for Question 1 = 4 marks)

2 Herbert conducted a study to see if there was a relationship between playing computer games and quality of sleep. He gathered his participants from one university and asked them to fill in a questionnaire.

One of the questions Herbert asked was 'How many hours a day do you spend playing computer games?'. He also asked his participants to rate their quality of sleep, from 1 being very poor quality of sleep to 7 being an excellent quality of sleep.

(a) State a fully operationalised non-directional (two-tailed) hypothesis for Herbert's study.

(2)

There will be a relationship between the number of hours a day spent playing computer games and the self-rated quality of sleep, rated on a scale from 1 (very poor quality of sleep) to 7 (excellent quality of sleep).

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Herbert analysed his data using the Spearman's rank test.

(b) Calculate Spearman's rank for the data gathered by Herbert by completing **Table 1**.

Your answers **must** be to **two** decimal places.

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

You **must** show your working out.

(4)

Number of hours a day spent playing computer games	Rank 1	Quality of sleep	Rank 2	d	d^2
2	2.5	6	5.5	–3	9
3.5	4	5	4	0	0
6	6	3	2	4	16
4	5	2	1	4	16
2	2.5	4	3	–0.5	0.25
1	1	6	5.5	–4.5	20.25
				Total for d^2	61.5

Table 1

Space for calculations

$\Sigma d^2 = 9 + 0 + 16 + 16 + 0.25 + 20.25 = 61.5$

$6\Sigma d^2 = 6 \times 61.5 = 369$

$n(n^2 - 1) = 6 \times (6^2 - 1) = 6 \times 35 = 210$

$\frac{6\Sigma d^2}{n(n^2 - 1)} = \frac{369}{210} = 1.757... = 1.76$

$r_s = 1 - 1.76 = -0.76$

Spearman's rank ..... −0.76 .....

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(c) Explain **one** reason why Herbert used the Spearman's rank test for his data.

(2)

Herbert's quality of sleep data is ordinal, as it was rated on a scale from 1 to 7. The gaps between points on the scale are not equal and two participants with the same quality of sleep may give it a different score, so a test using ranks, such as Spearman's rank, is needed for a correlation.

(d) Explain **one** weakness of Herbert's study about computer games and quality of sleep.

(2)

Herbert's study is correlational, so he cannot say that playing computer games causes poor quality of sleep. It may be that people who sleep badly spend longer playing computer games because they cannot sleep, or a third variable such as stress could affect both.

(Total for Question 2 = 10 marks)

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3 Kaiko has a regular menstrual cycle. She menstruates every 29 days. Kaiko notices that she finds certain types of men more attractive at different times throughout the 29 days. Her friends say that she becomes angrier about a week before she menstruates, but she quickly calms down when menstruation begins.

Describe the role of infradian rhythms on Kaiko's menstrual cycle.

An infradian rhythm is a biological rhythm that lasts longer than 24 hours, such as Kaiko's 29-day menstrual cycle, which is controlled by hormones. In the first half of the cycle oestrogen rises and an egg is released at ovulation. Women prefer more masculine faces around their fertile time, which is why Kaiko finds different types of men attractive at different times of her cycle. After ovulation progesterone and oestrogen are high, thickening the lining of the womb ready for a fertilised egg, which may be why Kaiko becomes angrier about a week before she menstruates. If the egg is not fertilised, oestrogen and progesterone levels drop and menstruation begins, which could explain why Kaiko quickly calms down.

(Total for Question 3 = 4 marks)

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4 Twin studies are often used by psychologists when researching aggression.

(a) Describe how a twin study research method could be used in biological psychology, such as when researching aggression.

(4)

A twin study compares monozygotic (MZ) twins, who share 100% of their genes, with dizygotic (DZ) twins, who share about 50%, to see whether aggression is due to nature or nurture. The researcher measures the aggression of both twins in each pair, for example through observations, questionnaires or ratings from teachers and peers. The concordance rate, how often both twins are aggressive, is then calculated for the MZ pairs and the DZ pairs and compared. If the concordance rate for aggression is higher for MZ twins than DZ twins, aggression is at least partly genetic, as both types of twin are assumed to share a similar environment.

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(b) Explain **one** strength and **one** weakness of using a twin study research method in biological psychology.

(4)

Strength

Twins are brought up together, sharing the same environment in the womb and a very similar environment after birth, so confounding variables are better controlled. This means differences between MZ and DZ concordance rates are more likely to be due to genes, giving twin studies higher internal validity.

Weakness

Twins are sometimes classed as MZ or DZ by how similar they look rather than by a DNA test. Some twins may be wrongly labelled, which would distort the concordance rates for aggression and reduce the validity of conclusions about the role of genes.

(Total for Question 4 = 8 marks)

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5 Assess the role of hormones as an explanation of aggression.

(8)

Testosterone is a hormone linked to aggression, especially in males. Exposure to excess testosterone in the womb can affect the developing brain, making a person more prone to aggression. After birth, testosterone sensitises some neural circuits and stimulates cell growth, including in the amygdala, which is involved in fear and threat responses, so a person may react aggressively to provocation. Cortisol is also involved: low levels of cortisol lead to an under-aroused autonomic nervous system, so a person may behave aggressively to increase their arousal. Adrenaline, released by the adrenal glands, activates the fight or flight response, and if the person chooses to fight this leads to aggression.

There is evidence to support the role of hormones. Chang et al. (2012) found that in fish, levels of testosterone and cortisol before the study were positively correlated with aggressive displays towards their own mirror image. Dabbs et al. (1987) found that prisoners who had committed violent crimes had higher levels of testosterone than those who had committed non-violent crimes. Research into hormones is also scientific, as hormone levels and aggressive acts can be measured objectively, so it is more credible than untestable explanations such as Freud's.

However, many studies are carried out on animals, such as fish, which do not have the complex social behaviour of humans, so the findings may not generalise to human aggression. Most human studies are correlational, so it may be that aggression and winning dominance contests raise testosterone, rather than testosterone causing aggression. Hormones are also not a complete explanation, as Dabbs and Morris (1990) found that testosterone had less effect on aggression in men from higher social classes, showing that socio-economic factors and learning, such as imitating aggressive role models, also matter.

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Overall, hormones such as testosterone and cortisol are a credible part of the explanation of aggression, as they are supported by measurable evidence. However, because the effect of hormones depends on social and environmental factors, they are best seen as making aggression more likely rather than being its sole cause.

(Total for Question 5 = 8 marks)

TOTAL FOR SECTION A = 34 MARKS

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SECTION B

Learning Theories and Development

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

6 In your studies about learning theories and development, you will have learned about operant conditioning.

(a) Define, using an example, what is meant by the term 'positive reinforcement' as used in operant conditioning.

(2)

Positive reinforcement is when a behaviour is strengthened because it is followed by receiving something pleasant or desired. For example, a child is given a sweet after tidying their bedroom, so they are more likely to tidy their bedroom again.

(b) Define, using an example, what is meant by the term 'negative reinforcement' as used in operant conditioning.

(2)

Negative reinforcement is when a behaviour is strengthened because it removes or avoids something unpleasant. For example, a student revises for a test to avoid getting a poor grade, so they are more likely to revise again.

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(c) Explain **one** strength of operant conditioning as an explanation of behaviour.

(2)

Operant conditioning is a more complete explanation of behaviour than classical conditioning, which only explains how reflexive behaviours become associated with stimuli. Operant conditioning explains how new, voluntary behaviours are learned through their consequences, so it can explain a wider range of behaviour, making it more credible.

(Total for Question 6 = 6 marks)

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7 Sophia conducted an observation to see whether children at different stages of development played games differently. She gathered her participants from a local school that had children from a variety of different ethnic backgrounds. She used a stratified sampling technique to gather her participants.

Sophia used a structured observation where she set up a room with a variety of toys. She observed the children playing through a one-way mirror. Sophia put the children into age groups and let them play with the toys for half an hour.

Sophia recorded the age of the children and whether they played next to each other or played together.

(a) Describe how Sophia could have used a stratified sampling technique to gather the children for her investigation.

(2)

Sophia would get a list of all the children at the local school and work out what percentage of children came from each ethnic background. She would then randomly select children from each ethnic background so that her sample had the same percentages of each ethnic background as the school.

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(b) Explain **one** strength and **one** weakness of Sophia using a stratified sampling technique for her observation.

(4)

Strength

Sophia's sample has the same proportions of children from each ethnic background as the school, so it is representative of the target population. This means her results about how children at different stages of development play are more generalisable to all the children at the school.

Weakness

Some children may have parents from two different ethnic backgrounds, so Sophia would have to decide which ethnic group to put them in. This is a subjective decision, which could make her groupings inaccurate and her sample less representative.

(c) Explain **one** reason why Sophia may have chosen to use a structured observation.

(2)

In a structured observation Sophia can control the variables while the children play, such as the toys available and having no distractions from other children. This means she can be more certain that any differences in whether children play next to each other or together are due to their stage of development and not confounding variables.

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(d) Explain **one** improvement Sophia could make to her observation.

(2)

Sophia could have a second observer behind the one-way mirror also recording whether each child played next to others or played together. They could then compare their records, and if both observers agreed this would show inter-rater reliability, increasing the reliability of her findings.

(Total for Question 7 = 10 marks)

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QUESTION 8 BEGINS ON THE NEXT PAGE.

8 In your studies on learning theories and development you will have learned about the contemporary study by Capafóns et al. (1998).

(a) State **one** aim of the study by Capafóns et al. (1998).

(1)

To confirm that systematic desensitisation is an effective treatment for a phobia, the fear of flying.

(b) Describe the sample used in the study by Capafóns et al. (1998).

(3)

There were 41 participants, all of whom had a fear of flying, who volunteered by responding to a media campaign. 20 participants were in the treatment group and received systematic desensitisation for their fear of flying, and the other 21 formed a waiting-list control group. The treatment and control groups were matched in terms of how afraid of flying they said they were.

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(c) Explain **two** weaknesses of the study by Capafóns et al. (1998).

(4)

1 *Capafóns et al. (1998) only used participants who were afraid of flying, so the results may not be the same for other phobias, such as a fear of spiders. This means the findings cannot be generalised to show that systematic desensitisation is effective for all phobias.*

2 *The participants volunteered by replying to a media campaign, so the sample may be biased. Only people who were motivated and ready to have their fear of flying treated may have responded, which could exaggerate how effective the therapy seems.*

(d) Explain **one** application of the findings from the study by Capafóns et al. (1998).

(2)

People with a fear of flying can be treated using a combination of imaginary tasks and real tasks, such as using a flight simulator. This is because the combination of both techniques led to a reduced fear of flying for 90% of the treatment group.

(Total for Question 8 = 10 marks)

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9 Earl has a phobia of needles and injections. His phobia developed after he had been to the dentist and had an injection that caused him severe pain. If Earl sees a needle on the television, he must look away as it makes him feel sick. Earl once fainted at the doctors' surgery because he saw his daughter having an injection.

Earl has to travel to another country for his work and needs to have some injections to be able to enter the country. Earl has decided to try systematic desensitisation as a treatment for his phobia of needles.

Discuss systematic desensitisation as a treatment for Earl's phobia of needles.

You must make reference to the context in your answer.

(8)

Systematic desensitisation is based on classical conditioning. Earl's phobia was learned when the painful injection at the dentist was associated with the needle, so needles now trigger fear. The therapy aims to replace this with a feeling of calm, through reciprocal inhibition, as a person cannot feel relaxed and afraid at the same time. The aim is for Earl to be calm enough to have the injections he needs to enter the other country for work.

First, Earl would be taught relaxation techniques, such as breathing in for a count of three, holding it for three and breathing out for three, or imagining a calm, safe place. This matters for Earl, as his fear is so strong that needles make him feel sick and he has even fainted.

Earl and the therapist would then create a hierarchy of fear, from the least to the most frightening situation. The least frightening might be seeing a needle on the television, then holding a capped needle, then watching someone such as his daughter have an injection, and the scariest would be having an injection himself.

Starting at the bottom, Earl would use his relaxation technique while watching a needle on the television without looking away. He would only move up to the next step once he was totally relaxed at the current one, so he would not see a real needle until he was calm at the television stage. If he became anxious he would go back a step, so he stays in control.

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This should suit Earl, as his phobia has a clear learned cause and a specific feared object, and Capafóns et al. (1998) found that systematic desensitisation reduced fear of flying. However, working through the hierarchy takes several sessions, so Earl would need to start soon to be ready for his injections before he travels.

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(Total for Question 9 = 8 marks)

TOTAL FOR SECTION B = 34 MARKS

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SECTION C BEGINS ON THE NEXT PAGE.

SECTION C

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

10 To what extent has research been effective in explaining the circadian sleep-wake cycle?

(12)

The circadian sleep-wake cycle is a biological rhythm that lasts about 24 hours. It is controlled by an internal body clock, the suprachiasmatic nucleus (SCN), and reset by external cues called zeitgebers, mainly light. Research has used several methods to explain it.

Siffre (1975) carried out a case study on himself, spending six months in a cave with no external cues such as daylight or clocks. He found that his sleep-wake cycle changed to about 25 hours on average, showing there is an internal clock that is normally reset by light. Case studies like this gather rich, detailed quantitative and qualitative data about sleep patterns, so they can be valid. However, Siffre was only one person, and an unusual one, so his results may not be true for everyone, which limits how effectively this research explains the sleep-wake cycle in general.

Czeisler et al. (1986) compared a woman's circadian rhythm before and after she was exposed to bright light for four hours on seven evenings in a row, and found that the timing of her rhythm shifted. This research was empirical, as the level of light and the change in her rhythm were measured objectively, so it is a scientific way of showing that light acts as a zeitgeber. However, it also only used one participant, so it is hard to generalise.

Animal experiments, for example on mice, control variables such as living conditions and food so that only the amount of light or darkness changes. This shows cause and effect between light and the sleep-wake cycle, and mice have similar genes regulating their biological clock, so the findings may apply to humans. However, such controlled conditions do not exist in

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everyday life, so the findings may lack validity for natural human sleep.

Aledavood et al. (2022) studied about 400 students and found a correlation between high mobile phone use in the morning or at night and the times they woke up or went to sleep. This has high ecological validity as it uses real behaviour. However, as it is correlational, it cannot show whether phone use affects the sleep-wake cycle or the sleep-wake cycle affects phone use.

In conclusion, research has been fairly effective in explaining the circadian sleep-wake cycle. Together, case studies, experiments and correlations consistently show that it is controlled by an internal clock and reset by light. However, each method has weaknesses, such as small samples, use of animals or lack of causation, so the explanation is strongest when these different types of evidence are combined.

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(Total for Question 10 = 12 marks)

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QUESTION 11 BEGINS ON THE NEXT PAGE.

11 Eliza and Fred are brother and sister. Eliza is in trouble at home for shouting at Fred. Fred was upset by the argument and so he was given some sweets by his mother to try and calm him down. Eliza said it was Fred's fault, as he threw a plate at her when they were arguing, and that was why she was shouting at him.

Eliza is also in trouble at school for throwing some food at another girl during an argument.

Their mother blames their father for the children's aggression. The father was recently reported to the police for arguing with a neighbour and threatening to hit the neighbour.

Evaluate genes and social learning theory as an explanation of Eliza and Fred's aggression.

You must make reference to the context in your answer.

(16)

Genes may explain Eliza and Fred's aggression. The MAOA gene codes for the enzyme monoamine oxidase A, which breaks down neurotransmitters such as serotonin and noradrenaline. A dysfunction in this gene, such as the low activity version MAOA-L, means these neurotransmitters are not broken down properly, so the person may go into the fight or flight response more readily, increasing impulsive aggression. As the father was reported to the police for threatening to hit a neighbour, he may have a dysfunctional MAOA gene which Eliza could have inherited, explaining why she threw food at another girl.

Brunner et al. (1993) found that males in a Dutch family with a mutation in the MAOA gene showed impulsive aggression, supporting this. Eusebi et al. (2020) found that a more aggressive breed of cattle had fewer repetitions of the nucleotide 'C' in the MAOA gene, which could explain the children's aggression. However, the MAOA gene is on the X chromosome, and a son inherits his X chromosome from his mother, not his father, so Fred could not have inherited a faulty MAOA gene from his father. Also, as females have two X chromosomes, MAOA-L is very rare in women, so it may not fully explain Eliza's aggression either, making it an incomplete explanation.

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Fred's impulsive behaviour, throwing a plate at Eliza in an argument, could be explained by XYY syndrome, as males with an extra Y chromosome are thought to be more impulsive and antisocial. Theilgaard (1984) found that XYY males produced more aggressive content in their stories on the Thematic Apperception Test, supporting this. However, XYY is rare and many XYY men are not aggressive, and it cannot explain Eliza's aggression at all, as she is female.

Social learning theory says that aggression is learned by observing and imitating role models. Role models are people we identify with because they are similar to us or have power. The father is powerful in the family, and for Fred he is a same-sex role model, so Fred may have imitated his father's threats and aggression towards the neighbour when throwing a plate at Eliza. Through vicarious reinforcement, if a model is rewarded for aggression the observer is more likely to imitate it. Eliza saw Fred given sweets after the argument in which he threw a plate, so she may have learned that aggression is rewarded, and then threw food at a girl at school expecting a similar reward.

Bandura, Ross and Ross (1963) found that children who saw a cartoon character behave aggressively showed a mean of 99 aggressive acts, compared with 54 in a control group, supporting the idea that the children copied aggressive models. However, Charlton et al. (2000) found that the introduction of television to the remote island of St Helena did not significantly increase children's aggression, so observing aggression does not always lead to imitation. Social learning theory also ignores biology, such as damage to the prefrontal cortex or genes, so it cannot explain why one child copies aggression and another does not.

Social learning theory explains the context better than genes, as it accounts for both children and for the specific behaviours, such as Eliza being rewarded indirectly through Fred's sweets, while the genetic explanation struggles with Fred inheriting MAOA from his father and Eliza

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being female. However, genes may give the children a vulnerability to aggression that the father's behaviour and the reward of sweets then trigger. Therefore the best explanation of Eliza and Fred's aggression is an interaction between their genes and what they have learned from their family.

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(Total for Question 11 = 16 marks)

TOTAL FOR SECTION C = 28 MARKS
TOTAL FOR PAPER = 96 MARKS

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