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

Friday 12 January 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 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

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

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.

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 of biological psychology, you will have learned about the classic study by Raine et al. (1997).

(a) State **one** conclusion of Raine et al. (1997).

(1)

Raine et al. (1997) concluded that murderers pleading not guilty by reason of insanity (NGRI) have differences in brain functioning (glucose metabolism), such as reduced prefrontal cortex activity, compared with controls.

(b) Explain **one** weakness of Raine et al. (1997) in terms of generalisability.

(2)

The sample only included murderers who had pleaded not guilty by reason of insanity, which is a biased sample, so the brain differences found may not be representative of murderers who did not plead insanity or of people who are violent but have not killed, so the findings cannot be generalised to all violent offenders.

(Total for Question 1 = 3 marks)

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2 Sienna conducted an investigation to see if changing the time that mice were exposed to bright light altered their sleeping pattern. She used two separate groups of mice and recorded when they slept during the investigation.

- Condition A: The mice were exposed to bright light between the hours of 7am and 7pm.
- Condition B: The mice were exposed to bright light between the hours of 7pm and 7am.

When the mice were not exposed to bright light, the mice were kept in dark conditions.

Sienna recorded how many mice slept between the hours of 7am and 7pm, and how many mice slept between the hours of 7pm and 7am.

(a) Identify the independent variable (IV) in Sienna's investigation.

(1)

Whether the mice were exposed to bright light between 7am and 7pm (Condition A) or between 7pm and 7am (Condition B).

Sienna recorded whether the mice slept between 7am to 7pm or between 7pm to 7am.

Her results are shown in **Table 1**.

	Number of mice	**Number of mice**
	Slept between 7am and 7pm	**Slept between 7pm and 7am**
Condition A: Exposed to bright light between 7am and 7pm	24	1
Condition B: Exposed to bright light between 7pm and 7am	5	20

Table 1

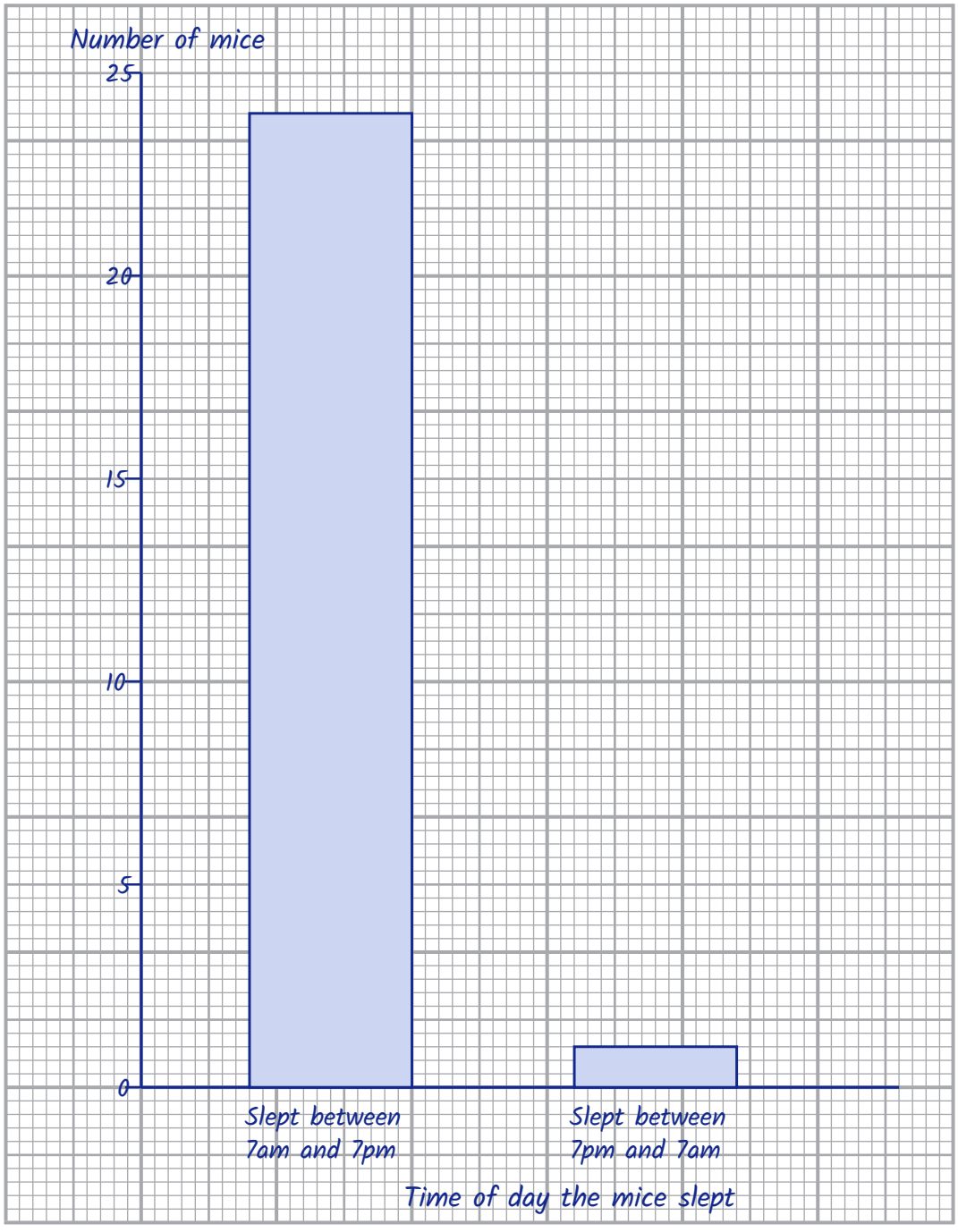
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(b) Draw a suitable graph for the sleeping patterns of the mice who were exposed to bright light between 7am and 7pm as shown in **Table 1**.

(3)

Title *A bar chart to show when the mice exposed to bright light between 7am and 7pm slept*



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(c) Explain **one** conclusion that can be made from the data in **Table 1**.

(2)

Exposure to bright light affects when mice sleep, as they sleep in the period when it is dark. In Condition A, 24 mice slept between 7am and 7pm (when it was light) but in Condition B only 5 mice slept between 7am and 7pm, which is 19 fewer, as 20 of them slept between 7pm and 7am instead.

(d) Explain **one** reason why Sienna used mice instead of humans as participants in her investigation.

(2)

It would be unethical to expose humans to bright light at unusual times to alter their sleeping pattern, as this could disrupt their sleep and cause harm, and humans should leave a study in the same state as they entered it. Mice can be kept in controlled light and dark conditions for the whole investigation.

(Total for Question 2 = 8 marks)

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3 (a) Describe the role of hormones in aggression.

(3)

Testosterone is a male sex hormone. Exposure to testosterone in the womb affects how the brain develops, including areas linked to aggression such as the amygdala and hypothalamus, so males may be more prone to aggression. At puberty males release much more testosterone, which increases dominance and competitive responses, so aggression can increase. Cortisol, the stress hormone, is also involved: people with low cortisol levels may have low arousal and become aggressive to raise their arousal, and cortisol may normally reduce the effect of testosterone, so low cortisol plus high testosterone can lead to more aggression.

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(b) Explain **one** strength and **one** weakness of the role of hormones as an explanation of aggression.

(4)

Strength

There is research evidence that supports the role of hormones, giving it credibility. Dabbs et al. (1987) measured testosterone in saliva samples from male prisoners and found that those convicted of violent crimes had higher levels of testosterone than prisoners convicted of non-violent crimes.

Weakness

A lot of the research on hormones and aggression has been carried out on animals, such as castrating male mice, so the results may not apply to humans, because humans have more complex cognitive abilities and can reason that aggression is not a good strategy, so social factors also affect aggression.

(Total for Question 3 = 7 marks)

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4 In your studies of biological psychology you will have learned about light therapy as it is used for seasonal affective disorder.

(a) Describe light therapy as a treatment for seasonal affective disorder.

(4)

Light therapy involves the patient sitting in front of a light box that gives off very bright light, simulating sunlight, usually for about 30 minutes to an hour each morning during the autumn and winter months. The light box should give at least 10 000 lux of light and the person sits about 41 to 61 cm away from it, with eyes open but not looking directly into the light, so they can read or eat breakfast at the same time. The bright light suppresses the production of melatonin by the pineal gland, so patients do not feel as tired and lethargic, and it resets the circadian rhythm that has been disrupted by the shorter days. It also increases serotonin levels, a neurotransmitter that regulates mood, so the patient should feel less depressed.

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(b) Explain **one** weakness of light therapy as a treatment for seasonal affective disorder.

(2)

Light therapy can cause side effects in some patients, such as headaches, eye strain, nausea or difficulty sleeping, which means it may not be suitable for everyone with seasonal affective disorder, as it could make them feel worse, so they may stop the treatment before it works.

(c) Explain **one** reason why light therapy may be more effective than one other therapy for treating seasonal affective disorder.

(2)

Light therapy may be more effective than cognitive behavioural therapy because patients are more likely to engage with it, as it does not need them to be very motivated: they do not have to leave the house or talk to a therapist about their thoughts, and it can start working within a week or two.

(Total for Question 4 = 8 marks)

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5 Assess how well brain functioning can explain aggression as a human behaviour.

(8)

Brain functioning explains aggression through the structure and activity of particular brain areas. The amygdala, part of the limbic system, processes internal and external stimuli and decides whether we react to a situation with fear or aggression. If the amygdala is damaged or overactive, people may misinterpret information from their senses, for example seeing a neutral face as a threat, so they behave aggressively when this is not appropriate. The hypothalamus regulates the release of hormones, so if it does not function correctly it can lead to excess testosterone being produced, increasing aggression. The prefrontal cortex controls impulses and decision making, so damage to it may lead to an inability to delay gratification of impulses, so aggressive impulses are acted on.

There is supporting evidence. Raine et al. (1997) used PET scans and found that murderers pleading not guilty by reason of insanity had reduced activity in the prefrontal cortex and abnormal asymmetry in the amygdala compared with controls. Lin et al. (2011) found that the ventromedial hypothalamus processes information from the senses and motor activity that underlies aggression, as stimulating this area in mice caused attacks, so the hypothalamus may play a role in human aggression too. The explanation is also scientific, as it uses empirical data such as brain scans and areas of damage, so it may be a better explanation than Freud's theory, as unconscious thought processes cannot be directly observed.

However, brain functioning is a reductionist explanation, as it ignores nurture, such as learning aggression by observing role models (Bandura, Ross and Ross, 1961), so it is not a complete explanation of human aggression. Much evidence comes from case studies such as Phineas Gage, whose behaviour changed after damage to his frontal lobe, and these are not representative of other people with brain damage, so the results may not generalise to all

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human aggression. Brain scan evidence is also correlational, so the brain differences may be a result of aggression or of other factors, such as childhood abuse, rather than its cause, and research on mice may not apply to humans, who can reason before acting.

Overall, brain functioning can explain aggression to some extent, as there is consistent scientific evidence that the amygdala, hypothalamus and prefrontal cortex are involved. However, it cannot fully explain human aggression on its own, so an interactionist explanation that also includes hormones, genes and learning from the environment is more complete.

(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 of learning theories and development you will have learned about classical conditioning.

(a) Define, using an example, what is meant by the term 'unconditioned stimulus (UCS)' as used in classical conditioning.

(2)

An unconditioned stimulus is a stimulus in the environment that naturally (without learning) causes an innate reflex response. For example, food is an unconditioned stimulus as it causes the unconditioned response of salivation in a dog.

(b) Define, using an example, what is meant by the term 'conditioned stimulus (CS)' as used in classical conditioning.

(2)

A conditioned stimulus was a neutral stimulus that, after being repeatedly paired with the unconditioned stimulus, now produces the conditioned response on its own. In Pavlov's study the metronome became the conditioned stimulus as it caused the dogs to salivate.

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(c) Explain **one** strength of classical conditioning.

(2)

Classical conditioning is supported by scientific evidence, so it is credible. Pavlov (1927) found that pairing the sound of a metronome with the presentation of food led to dogs salivating when they heard the metronome alone, showing that learning by association can be produced and measured in controlled conditions.

(Total for Question 6 = 6 marks)

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7 Reece conducted an observation to investigate the effect of rewards on the behaviour of boys and girls. He went to a local school that used a points system to reward children who did as the teacher requested. Reece used a random sampling technique to select his sample of boys and girls from the local school.

He split the boys and girls into two conditions:

- Condition A: Those who only got 1 point or less during the day.
- Condition B: Those who got 5 or more points during the day.

Reece observed the children during one day using an overt observation. He noted down how many points the boys and girls received.

(a) Describe how Reece could have used a random sampling technique to gather his participants for his investigation.

(2)

Reece would get a list of the names of all the boys and girls who attend the local school and put them into a random number generator on a computer (or put the names in a hat). He would then pick names until he had enough boys and girls for his observation on the effect of rewards, so every child has an equal chance of being chosen.

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Reece analysed his data using chi-squared.

(b) (i) Calculate the chi-squared for the data gathered by Reece by completing **Table 2**.

Your answers should all be correct to **one** decimal place.

(4)

		Observed	Expected	O–E	$(O–E)^2$	$(O–E)^2/E$
Condition A: 1 point or less during the day	Boys	3	6	-3	9	1.5
	Girls	8	5	3	9	1.8
Condition B: 5 points or more during the day	Boys	9	6	3	9	1.5
	Girls	2	5	-3	9	1.8
				Chi-squared =		6.6

Table 2

Space for calculations

$O - E$: $3 - 6 = -3$, $8 - 5 = 3$, $9 - 6 = 3$, $2 - 5 = -3$

$(O - E)^2$: $(-3)^2 = 9$, $3^2 = 9$, $3^2 = 9$, $(-3)^2 = 9$

$(O - E)^2/E$: $9 \div 6 = 1.5$, $9 \div 5 = 1.8$, $9 \div 6 = 1.5$, $9 \div 5 = 1.8$

$\chi^2 = 1.5 + 1.8 + 1.5 + 1.8 = 6.6$

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(ii) Determine, using your answer for 7(b)(i), whether Reece's results are significant at $p \leqslant 0.05$ for a one-tailed test where *df*=1.

(2)

Reece's results are significant, so there is a significant difference between the number of boys and girls who got 1 point or less and those who got 5 points or more, as the calculated value of 6.6 is greater than the critical value of 2.71 (p ≤ 0.05, one-tailed, df = 1).

(c) Explain **two** improvements Reece could make to his observation.

(4)

1 *Reece could use a covert observation, with the teacher's and parents' consent, instead of an overt one when observing whether the boys and girls did as the teacher requested, as the children would not know they were being watched, so they would not change their behaviour (demand characteristics) and the number of points they got would be more realistic.*

2 *Reece could observe the boys and girls and record their points over a longer time period, such as a full school week, instead of one day, as the points from a single day could be affected by the children's mood or an unusual event, so a longer observation would give more valid and reliable data.*

(Total for Question 7 = 12 marks)

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8 In your studies of learning theories and development you will have learned about Freud's psychosexual stages of development.

(a) Name **two** of Freud's psychosexual stages of development.

(2)

1 *The oral stage*

2 *The anal stage*

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(b) Patti is five years old. She has become very clingy to her father and wants to be with him all the time. She follows him round the house and says she wants to be a nurse when she grows up as that is what her father does.

Patti seems to be angry at her mother. She frequently shouts at her mother and tells her 'No' when asked to get ready for bed. Patti recently told her father that she wished her mother would go away.

Describe Freud's psychosexual stages of development in relation to Patti's behaviour.

(4)

Patti is five years old, so she is in the phallic stage (about 3 to 6 years), where the libido is focused on the genitals and girls go through the Electra complex. Patti has unconscious desires for her father, which explains why she is clingy and wants to be with him all the time. She wants to be a nurse like her father because of her unconscious desire to be like him, due to penis envy. Patti blames her mother for her not having a penis and sees her as a rival for her father's attention, which is why she shouts at her mother, tells her 'No' and wishes her mother would go away. To resolve the complex she should eventually identify with her mother.

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(c) Explain **one** weakness of Freud's psychosexual stages of development as an explanation of Patti's behaviour.

(2)

Freud's theory lacks empirical evidence, so assumptions have to be made about why Patti shouts 'No' at her mother, as concepts such as the unconscious and the Electra complex cannot be directly observed, so their effects must be inferred, and her behaviour could simply be a normal bedtime tantrum.

(Total for Question 8 = 8 marks)

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9 Igor wanted to conduct an experiment using pigeons. He wanted to teach the pigeons how to play basketball. Igor had two groups of 20 pigeons. The pigeons would be kept in individual cages, apart from 20 minutes a day when he conducted his experiment. The pigeons would have regular access to food and water throughout the experiment.

Igor aimed to use behaviour shaping on one group of 20 pigeons where they were rewarded for each successive action. They would be rewarded with food when they picked up the mini basketball. They would be rewarded again when they carried it towards the hoop and again when they tried to put it in the hoop and finally when the ball went through the hoop.

The other group of pigeons would only be rewarded if they successfully put the ball through the hoop.

Discuss the use of ethical issues Igor must consider when carrying out his experiment.

You must make reference to the context in your answer.

(8)

Igor must follow the guidelines for using animals in research, such as the Animals (Scientific Procedures) Act (1986), and he would need a licence from the Home Office. To get a licence the research must be likely to have scientific or educational value that justifies the use of animals. Teaching pigeons to play basketball may not have clear scientific value, so Igor may not be given a licence, unless he can show that it tells us something useful, for example whether behaviour shaping is more effective than only rewarding the final behaviour, which could help to improve training methods for animals and humans.

Igor should use the minimum number of animals possible to get valid results (reduction). He is using two groups of 20 pigeons, so 40 pigeons in total, and he could have used fewer pigeons per group and still had valid results. He should also consider replacement, whether the experiment could be done without live animals, although behaviour shaping needs a real animal so pigeons may be justified, and pigeons have been used successfully in this type of research before, for example by Skinner.

Any pain or distress caused should be kept to a minimum (refinement), and enrichment is

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preferred. Igor is not causing pain, as the pigeons have regular access to food and water throughout and are rewarded with food for playing basketball rather than punished for not playing, so the procedure is fairly ethical. However, the group only rewarded for getting the ball through the hoop may rarely be rewarded and become frustrated, so Igor should watch for signs of distress and stop if they occur.

Caging must be suitable for the species, large enough and, for social animals, they should be housed in groups. Pigeons tend to live in flocks, but Igor plans to keep each pigeon in an individual cage apart from 20 minutes a day, which may cause stress, so he should house them in groups or in larger cages with enrichment when they are not taking part.

Overall, Igor's experiment is ethical in some ways, as there is no pain and food and water are provided, but he must justify its scientific value, reduce the number of pigeons and improve their housing before he could be allowed to carry it out.

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(Total for Question 9 = 8 marks)

TOTAL FOR SECTION B = 34 MARKS

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SECTION C

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

10 Maud likes to watch her local hockey team play. She has noticed that they play more aggressively, hitting their opponents on the legs, when the referee is not looking. They also deliberately hit the ball at the opponents in an attempt to scare them. Maud has told her friend that the opposing teams are attacking less and seem scared. The local hockey team have started to win more games.

Maud recently played for her school hockey team. She deliberately hit a ball at an opponent. Maud's friends praised her for helping her team win the match. The hockey coach has told Maud she will not be picked to play in the next hockey match due to her aggressive playing.

Evaluate social learning theory as an explanation of Maud's behaviour.

You must make reference to the context in your answer.

(12)

Social learning theory (Bandura) states that we learn behaviour by observing role models and imitating their actions when a relevant situation presents itself. For learning to happen four mediating processes are needed: attention to the model, retention of the behaviour in memory, reproduction (being physically able to copy it) and motivation to perform it. We are more likely to imitate a role model who is relevant to us, for example similar in age, gender or interests, or who has high status. Vicarious reinforcement is when we see the role model being rewarded for a behaviour, which makes it more likely that we will imitate it, and once we imitate it, direct reinforcement makes it more likely to be repeated.

Maud regularly watches her local hockey team, so she has paid attention to how they play, including hitting opponents on the legs when the referee is not looking and deliberately hitting the ball at them. The team are relevant role models to Maud because she also plays hockey for her school team, and as a successful local team they have status. She has observed that their aggression works, as the opposing teams attack less and seem scared and the team has started winning more games, which is vicarious reinforcement. She retained this behaviour and, when she played for her school team, she was able to reproduce it by deliberately hitting a ball at an opponent. Maud was then directly reinforced, as her friends praised her for helping

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her team win the match, so she is more likely to repeat the behaviour in future games.

There is research evidence that supports social learning theory, giving it credibility. Bandura, Ross and Ross (1961) found that children who observed an adult model being physically and verbally aggressive towards a Bobo doll imitated those aggressive actions and words, and boys especially imitated a same-sex model, which supports the idea that Maud imitated aggressive models she identifies with. The theory can also explain why Maud is aggressive on the pitch but may not be elsewhere, as the behaviour was learned and rewarded in the specific context of hockey.

Social learning theory is also a better explanation of Maud's behaviour than operant conditioning, because it explains how she learned aggression without being rewarded first: she had never been praised for hitting the ball at an opponent before she did it, she learned it by watching. It also includes cognitive factors such as motivation, so it can explain why Maud may stop: her coach has said she will not be picked for the next match, which is a punishment, and if she expects to be punished, social learning theory predicts she will be less likely to repeat the aggression.

However, there are weaknesses. Bandura, Ross and Ross used a Bobo doll, which is designed to be hit and cannot hit back, so it lacks ecological validity and may not show how real aggression towards people, such as Maud's opponents, is learned. Charlton et al. (2000) found that when television was introduced to St Helena children did not become more aggressive, which suggests that watching aggressive models does not always lead to imitation, so Maud's aggression may not be due to watching her local team. There are also other explanations: Maud could have high testosterone or differences in brain functioning, such as in the amygdala, that make her more competitive and aggressive, so social learning theory ignores

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biological factors and may not be a complete explanation.

In conclusion, social learning theory explains Maud's behaviour well, as it accounts for each step, observing a relevant role model, seeing them rewarded, imitating them and being praised by her friends. However, it is not a complete explanation, as biological factors may also play a part and, as the coach's punishment shows, the consequences she expects will affect whether she continues to play aggressively.

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(Total for Question 10 = 12 marks)

11 In your studies you will have learned about Brendgen et al. (2005) and Watson and Rayner (1920).

Evaluate Brendgen et al. (2005) and Watson and Rayner (1920) in terms of ethics and reliability.

(16)

Brendgen et al. (2005) aimed to see to what extent social and physical aggression in six-year-old twins were due to genetics, shared environment or non-shared environment. To decide if same-sex twins were monozygotic (MZ) or dizygotic (DZ), some twins had their DNA tested and the others were classified by how similar they looked at 18 months old. Teachers completed questionnaires on each child's aggression (the Preschool Social Behaviour Scale and the Direct and Indirect Aggression Scale) and peers circled photographs of classmates who best fitted behavioural descriptions. They found that physical aggression was mainly explained by genetic factors, whereas social aggression was mostly explained by environmental factors.

Watson and Rayner (1920) studied Little Albert, a nine-month-old boy, to see if he could be classically conditioned to fear a white rat. At nine months he showed no fear of a white rat. At 11 months, in a laboratory room in the hospital, a hammer was struck on a metal bar behind him whenever he reached for the rat. After conditioning Albert cried and moved away from the rat, and the fear generalised to other white fluffy objects such as a rabbit, a dog and a fur coat.

In terms of ethics, Brendgen et al. (2005) gained fully informed consent from the parents of the six-year-old twins, as the children were too young to consent themselves, so the study is ethical. The teacher questionnaires also did not involve any manipulation of the children. However, the peer rating method could cause distress if a child learned that classmates had circled their photograph for negative descriptions such as hitting others, so there is a possible

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issue of psychological harm and confidentiality.

Watson and Rayner (1920) is far less ethical. They intentionally caused Little Albert distress by pairing the loud noise with the white rat, so he cried and crawled away, which breaks protection from harm. Albert's mother worked as a wet nurse at the same hospital, so it is debatable whether she gave fully informed consent or felt she had to agree. It has been argued that Watson and Rayner planned to decondition Albert at the end of the study, so his distress would not have been permanent, but he left the hospital before this happened, so the fear may have stayed with him.

In terms of reliability, Brendgen et al. (2005) used established, standardised questionnaires for the teacher ratings, so other researchers could use the same questionnaires to replicate the study and check for consistent results. The teacher and peer ratings both produced quantitative data that did not need interpretation, and using two sources of ratings meant they could check that the ratings agreed, which increases reliability. However, deciding zygosity from how similar the twins looked is less reliable than DNA testing, as different researchers might classify the same twin pair as MZ or DZ differently, which could affect the estimates of genetic influence.

Watson and Rayner (1920) used a standardised procedure, striking the metal bar with a hammer when the rat was presented, and they recorded how many pairings took place, so the procedure could in principle be replicated, increasing reliability. However, it was a single case of one child, so it is not known whether the same results would be found with other children, and the study cannot be repeated today because it would be unethical. There may also be a lack of reliability in the results, as Watson and Rayner had to decide themselves which of Albert's behaviours showed fear, such as crying or moving away, and another observer might

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have interpreted his behaviour differently.

Comparing the two, Brendgen et al. (2005) is the more ethical study, as consent was gained and no deliberate harm was caused, while Watson and Rayner deliberately caused fear in a baby. Brendgen et al. is also more reliable, as it used a large sample, established questionnaires and two sources of quantitative data, whereas Watson and Rayner relied on one participant and subjective judgements of fear. However, Watson and Rayner had a more controlled, standardised procedure than the subjective judgements of zygosity used for some twins in Brendgen et al. Overall, Brendgen et al. (2005) is stronger in terms of both ethics and reliability, while the findings of Watson and Rayner (1920) should be treated with caution.

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

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