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

Thursday 18 October 2018

Afternoon (Time: 2 hours)	Paper Reference **WPS02/01**

Psychology

International Advanced Subsidiary
Paper 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.
- 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 (a) State **one** neurotransmitter that affects human behaviour.

(1)

Serotonin.

(b) Explain **one** weakness of using neurotransmitters to explain human behaviour.

(2)

Explaining behaviour through neurotransmitters is reductionist, as it reduces complex behaviour such as aggression to the action of one chemical and ignores environmental influences such as upbringing. This means it is not a complete explanation of human behaviour.

(Total for Question 1 = 3 marks)

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2 (a) Describe how a CAT scan is used in biological psychology.

(2)

A CAT scan passes many X-rays through the head from different angles, and a computer combines them to build up a 3D image of the brain in slices. Psychologists use CAT scans to detect whether there are any abnormalities in the brain, such as tumours or damage, that may be causing a specific behaviour such as aggression.

(b) Explain **one** strength and **one** weakness of the use of CAT scans in biological psychology.

(4)

Strength

CAT scans give objective data, as the image of the brain is produced by a computer rather than relying on the researcher's opinion. This means the results are not subjective, so they are reliable and could be checked by other researchers.

Weakness

CAT scans expose the person to radiation from the X-rays, so they can be harmful. For example, they could harm a foetus if a woman does not know she is pregnant, so they cannot be used freely in research and repeated scans should be avoided.

(Total for Question 2 = 6 marks)

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3 Gabriella is going to another country for a holiday; it is eight hours behind the time of her home country. She is concerned she will want to sleep during the day for the first few days of her holiday.

Gabriella plans to eat her usual evening meal when she arrives, even though it will be early morning. Her friend suggests she uses external zeitgebers to help regulate her sleep-wake cycle.

(a) Describe how Gabriella can use external zeitgebers to regulate her sleep-wake cycle while she is on holiday.

(3)

Gabriella should use the light and dark of her holiday country as her main zeitgeber. When she arrives in the early morning she should stay awake and go outside in the daylight, even though she feels tired because her home country is eight hours ahead, and only go to bed when it is dark in the evening there. She should not eat her usual evening meal when she arrives, but eat breakfast because it is early morning, and then eat lunch and dinner at local times. She could also set her watch and phone clock to local time as soon as she lands so she follows the new time for all her activities.

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(b) Explain **one** strength and **one** weakness of Gabriella using external zeitgebers to regulate her sleep-wake cycle.

(4)

Strength

External zeitgebers are easily accessible, as Gabriella can simply use daylight and clocks set to local time. Folkard et al. (1985) found participants adjusted their sleep-wake cycle when the clock they used was changed, showing clocks can reset the cycle.

Weakness

Gabriella's internal pacemakers, such as her body temperature cycle, will still be set to her home time. So for the first few days her body will still tell her to sleep during the day, and external zeitgebers may not stop her wanting to sleep immediately.

(Total for Question 3 = 7 marks)

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4 Tau has investigated whether there is a correlation between the average amount of sleep students have in a week and their performance in exams. He put a notice up in the local school and asked for people who were interested in taking part in his investigation to add their name to the notice.

(a) Give **two** operationalised variables Tau may have used in his investigation.

(2)

1 *The average number of hours each student slept per night over one week.*

2 *Each student's exam performance as a percentage of marks out of 100%.*

(b) Identify the sampling technique Tau used in his investigation.

(1)

A volunteer (self-selected) sample, as he put up a notice in the school.

(c) Explain **one** weakness of the investigation Tau carried out in terms of generalisability.

(2)

Tau's sample is biased, as all the volunteers came from one local school and volunteers may be more motivated students. Therefore his results may not be the same for students from other schools or areas, so they cannot be generalised to a wider population.

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Tau used a Spearman's rank test on his data to decide whether his results were significant or not.

(d) Give **two** reasons why Tau used a Spearman's rank test on his data.

(2)

1 *Tau was looking for a relationship (correlation) between sleep and exam performance, not a difference.*

2 *His data (hours slept and exam scores) is at least ordinal, as the students' scores can be ranked.*

Tau used $p \leq 0.01$ as his level of significance for a one-tailed test. Tau had twenty participants.

(e) Identify the critical value for a Spearman's rank test for Tau's data.

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

(1)

0.520

Tau made a type II error when deciding whether his results were significant or not.

(f) Explain why Tau made a type II error.

(2)

Tau used a very strict level of significance, $p \leq 0.01$, so the probability of his results being due to chance had to be 1% or less. This made it more likely that he would retain the null hypothesis and say there is no correlation between sleep and exam performance, when in fact there really was a correlation.

(Total for Question 4 = 10 marks)

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5 Evaluate the role of infradian rhythms on the menstrual cycle.

(8)

Infradian rhythms are biological rhythms with a cycle longer than 24 hours, and the menstrual cycle is an example, lasting about 28 days. It is controlled internally by hormones. The pituitary gland releases FSH, which stimulates a follicle in the ovary to mature an egg. Oestrogen is at its lowest on the first day of the cycle and gradually rises as the egg matures, thickening the lining of the womb. A surge of LH causes ovulation at around day 14, and progesterone then keeps the lining ready for a fertilised egg. If the egg is not fertilised, oestrogen and progesterone levels fall, so the lining of the womb is shed.

Moos et al. (1969) found that menstrual symptoms, mood and sexual arousal changed consistently across the menstrual cycle, suggesting the cycle is controlled internally by an infradian rhythm. Reinberg (1967) studied a woman who spent three months in a cave with only dim light, and her cycle shortened to under 26 days. This shows the rhythm continues without normal cues, although it also suggests light affects it.

However, Russell et al. (1980) found that women's menstrual cycles became synchronised with the cycle of a donor woman when her sweat was rubbed on their upper lip. This suggests pheromones, an external factor, also regulate the cycle, so the infradian rhythm is not the only influence. It is also hard to separate infradian rhythms from all external zeitgebers, such as light and other people, so research may not be valid when trying to isolate them. Many studies also have small samples, such as Reinberg's single case, so they are hard to generalise.

On the other hand, understanding the hormone changes has practical applications, for example they have been used in court cases to explain why some women have attacked

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other people just before menstruation.

In conclusion, infradian rhythms play a major role in the menstrual cycle through regular hormone changes, but evidence such as Russell et al. (1980) shows that external factors also influence the cycle, so it is best explained by both internal and external factors working together.

(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 (a) Describe the process of classical conditioning.

(4)

Classical conditioning is learning through association, where a new reflex response is learned. Before conditioning, an unconditioned stimulus (UCS), such as food, causes an unconditioned response (UCR), such as salivation, without any learning. A neutral stimulus (NS), such as a bell, produces no response. During conditioning, the neutral stimulus is repeatedly paired with the UCS, for example the bell is rung just before the food is given. After conditioning, the neutral stimulus has become a conditioned stimulus (CS) and produces the reflex on its own, which is now called the conditioned response (CR), so the bell alone causes salivation, as Pavlov found with dogs. If the CS is repeatedly presented without the UCS, the response gradually stops (extinction), but it may return later (spontaneous recovery).

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(b) Explain **one** strength and **one** weakness of classical conditioning.

(4)

Strength

Studies supporting classical conditioning, such as Pavlov's research with dogs, are laboratory experiments, so they are scientific. They take place in controlled conditions and measure objective, observable behaviour such as the amount of saliva, so cause and effect can be established.

Weakness

Classical conditioning only explains reflexive, involuntary behaviour. It cannot explain voluntary behaviour such as putting on make-up, and most human behaviour is not based on reflexes, so it is not a complete explanation of human behaviour.

(Total for Question 6 = 8 marks)

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7 Jayant carried out an observation on children's behaviour with the permission of their parents.

He gathered qualitative data about the children's play, such as whether they played games with rules or played games without rules. Jayant also recorded how the children interacted with each other in terms of their body language and what they said.

(a) Describe how Jayant would carry out a thematic analysis on his qualitative data.

(4)

Jayant would first read through his notes on the children's play several times, so he becomes familiar with the data. As he reads, he would look for ideas that keep recurring and identify themes, such as children arguing about the rules of a game, children playing alone, or friendly body language like smiling. Once he has decided on his themes, he could create a tally chart with categories, for example types of play (games with rules or without rules) and body language. He would then re-read his notes and record every time each theme occurs on the tally chart, and he could support each theme with examples of what the children actually said. Finally he would review the themes to check they fit all the data.

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Jayant also observed whether children of different ages played in same sex groups or mixed sex groups. He recorded this information in the form of quantitative data.

- In Condition A, he observed children aged three years old and below.
- In Condition B, he observed children aged six years old and above.

Jayant's results are shown in **Table 1**.

	Number of children playing in same sex groups	**Number of children playing in mixed sex groups**
Condition A Children aged three years and below.	3	8
Condition B Children aged six years and above.	9	2

Table 1

(b) Calculate the percentage of children who played in mixed sex groups for Condition A.

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

(1)

Space for calculations.

Total in Condition A = 3 + 8 = 11

(8 ÷ 11) × 100 = 72.7272...

= 72.73%

Percentage of children who played in mixed sex groups for Condition A ..... 72.73% .....

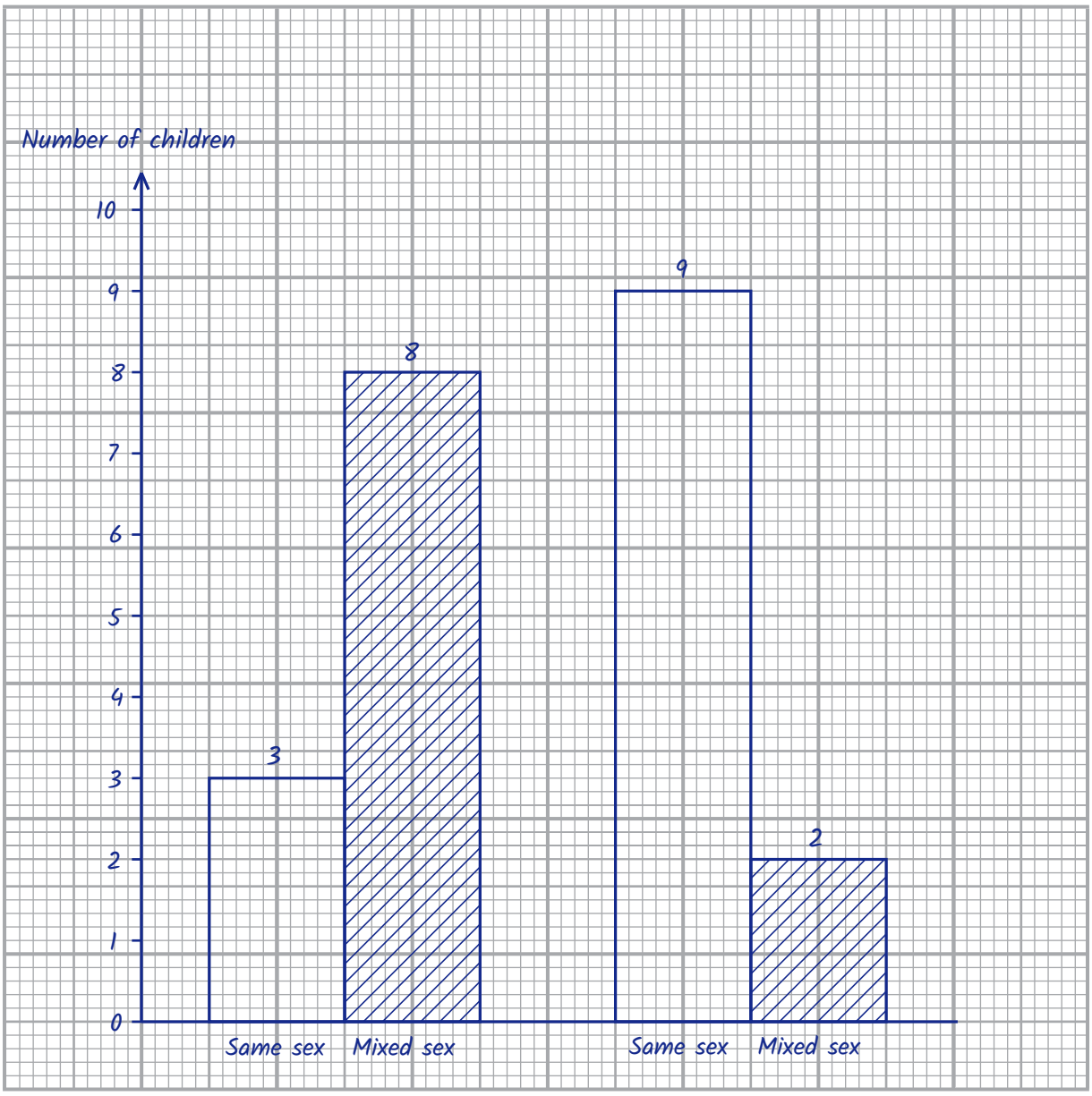
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(c) Draw an appropriate graph for the data in **Table 1**.

(3)

Title *Bar chart to show the number of children aged three and below and aged six and above playing in same sex groups and mixed sex groups*



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(d) Explain **one** conclusion that Jayant could have drawn from the data in **Table 1**.

(2)

Jayant could conclude that as children get older they are less likely to play in mixed sex groups and more likely to play with children of their own sex. This is because 8 children aged three and below played in mixed sex groups compared with only 2 children aged six and above, which is six fewer, while same sex play rose from 3 to 9 children.

(Total for Question 7 = 10 marks)

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QUESTION 8 BEGINS ON THE NEXT PAGE.

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8 In your studies of learning theories and development, you will have learned about one of the following contemporary studies in detail.

- Prot (2014)
- Bastian et al. (2011)

(a) Explain **two** strengths of your chosen contemporary study in terms of reliability.

(4)

Chosen study

Bastian et al. (2011)

Strength 1

Bastian et al. (2011) had a controlled, standardised procedure, as all the participants played on the same wireless Xbox console. This means extraneous variables, such as the type of games console, could not affect the results, and the procedure can be repeated exactly, so increasing reliability.

Strength 2

The video games used, such as Mortal Kombat, are commercially available and were not designed by the researchers. Therefore other researchers can replicate the study using the same games to see if they get the same results, so the reliability of the findings can be checked.

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

(2)

Bastian et al. could have used participants from a variety of ages and occupations rather than only undergraduate students. The results could then be said to be true of a greater range of people, who may or may not be influenced by violent video games in the same way, increasing generalisability.

(c) Explain **one** way the credibility of the data gathered could be improved in your chosen contemporary study.

(2)

Instead of only asking the participants how they felt about themselves on a questionnaire, they could have observed their behaviour after playing the video games. This would increase credibility, as what people say about themselves may be affected by social desirability and may not reflect how they actually behave.

(Total for Question 8 = 8 marks)

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9 Tammy lives in Spain and has just been arrested for stealing a car. Once she had been arrested, the police realised that her sister was also on police files for stealing cars. When the police interviewed Tammy she admitted that this was not the first time she had stolen a car, and that she gets excited when driving stolen cars.

Discuss social learning theory as an explanation of Tammy's behaviour.

You must refer to the context in your answer.

(8)

Social learning theory (Bandura) states that behaviour is learned by observing and imitating role models. Tammy is likely to have observed her sister stealing cars, and her sister is a relevant role model as she is the same sex and a close family member, so Tammy identifies with her and is more likely to imitate her.

For imitation to happen there must be attention, retention, reproduction and motivation. Tammy must have paid attention to how her sister stole cars and retained the actions in memory, such as how to break into a car and which tools to use. She must also be able to reproduce the behaviour, which she can, as she has stolen more than one car. Motivation may come from vicarious reinforcement: if Tammy saw her sister enjoy driving stolen cars or gain status from it, she would expect a similar reward and copy her.

Bandura et al. (1961) supports this, as children who watched an adult model behave aggressively towards a Bobo doll imitated the specific actions, showing behaviour can be learned through observation, just as Tammy may have learned from her sister.

However, social learning theory cannot fully explain Tammy's behaviour. Tammy now gets excited when she drives stolen cars, so she is directly reinforced by the thrill herself, and this operant conditioning may explain why she keeps stealing cars rather than vicarious reinforcement. Also, Tammy and her sister share genes, so their similar criminal behaviour could have a biological cause, such as a thrill-seeking personality, rather than learning. Her

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sister was caught by the police, which is vicarious punishment, yet Tammy still stole cars, which the theory would not predict. Bandura's research was also with children in a laboratory, so it may not generalise to an adult committing serious crime in Spain.

In conclusion, social learning theory explains how Tammy may have learned to steal cars from her sister, but her continued car theft is better explained by direct reinforcement from the excitement, together with possible genetic factors.

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

Evaluate the contemporary study by Capafóns et al. (1998).

(12)

Capafóns et al. (1998) investigated whether systematic desensitisation could treat fear of flying. They used a sample of 41 participants from Spain, with 20 in the treatment group and 21 in a waiting-list control group. Participants were volunteers who responded to advertisements on the radio, on television and in the press. Fear of flying was measured in several ways, including the EPAV-A fear of flying scale, other questionnaires and physiological measures of heart rate, muscle tension and skin temperature, taken before and after treatment. The treatment group created a hierarchy of fear with the therapist and were taught relaxation techniques. They then worked through their hierarchy by imagining different aspects of a flight, such as boarding or take-off, while staying relaxed. The treatment group showed a significant reduction in fear of flying compared with the control group.

One strength is that fear was measured in several different ways. The questionnaire and physiological results can be cross-referenced to see if they agree, which increases reliability and credibility. The physiological measures, such as heart beats per minute, are objective, so they are not open to interpretation by the researcher and are not affected by social desirability. Another strength is that the study used a control group, so the researchers could compare the treatment group with people who had not yet been treated, making it more likely that the reduction in fear was caused by the therapy and not simply by time passing. Using a waiting list was also ethical, as the control group could receive treatment later. The treatment also has validity, as relaxation techniques and a hierarchy

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are the standard parts of systematic desensitisation, so the study tested the therapy as it is used in practice.

However, the treatment group had only 20 participants, which is a small sample, so it is hard to generalise the results to everyone with a fear of flying. The participants were volunteers, who tend to be a minority and may have been especially motivated to overcome their fear, for example because they needed to fly for work, so the therapy may appear more effective than it would be with other people. The questionnaires are self-report, so participants may have reported less fear to please the researchers. Also, imagining being on a flight is not the same as actually flying, so the treatment may not be effective when participants have to get on a real aeroplane, which reduces ecological validity.

In conclusion, Capafóns et al. (1998) is a reliable study with objective, cross-checked measures and a control group, giving good evidence that systematic desensitisation reduces fear of flying. However, its small volunteer sample and use of imagined rather than real flights mean the findings should be generalised to real-life flying with some caution.

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(Total for Question 10 = 12 marks)

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11 Xia has recently been in trouble for fighting. In the latest incident, Xia hit a shop worker when the shop worker tried to stop her leaving the shop without paying for the food she had in her bag. The shop worker called the police.

Xia says that she cannot help her aggression as her father is also aggressive and she has inherited his genes. Xia's friends think that she can help her aggression and she is only aggressive because she gets rewarded for her behaviour.

Assess the role of genes and operant conditioning as explanations of Xia's aggression.

You must make reference to the context in your answer.

(16)

One biological explanation of aggression is genes. The MAOA gene controls production of the enzyme monoamine oxidase A, which breaks down neurotransmitters such as serotonin and dopamine. A low-activity version of the gene means less of the enzyme, so these neurotransmitters are not broken down normally, which is linked to impulsive aggression. Xia says she has inherited her aggression from her father, so she may have inherited a low-activity MAOA gene from him, meaning she cannot control her impulse to hit the shop worker. Another genetic explanation is having an extra Y chromosome (XYY), but this cannot explain Xia's aggression as she is female, so her sex chromosomes are XX.

Twin studies support a genetic role. McGuffin and Gottesman (1985) found an 87% concordance rate for aggression in monozygotic twins compared with 72% in dizygotic twins, suggesting genes play a part. Beaver et al. (2014) found that people with the low-activity MAOA gene were more likely to have stabbed or shot someone, linking the gene to extreme aggression. However, concordance is not 100%, so environment must also matter, and Brendgen et al. (2005) found that a non-shared environment had more influence on social aggression, so the role of genes depends on the type of aggression. Xia's father may also have taught her aggression through his behaviour, so the similarity could be learned rather than inherited. The genetic explanation is also deterministic, as it suggests Xia cannot help her behaviour, which could be used to excuse it.

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Operant conditioning explains aggression as learned through consequences. If aggressive behaviour is reinforced it is more likely to be repeated. Positive reinforcement is when something pleasant is gained, and negative reinforcement is when something unpleasant is avoided. Xia's friends believe she is rewarded for aggression. By hitting the shop worker she may have kept the food in her bag without paying, which is positive reinforcement. If her fighting has previously helped her escape being caught or avoid trouble, this is negative reinforcement, so she has learned that hitting people works and repeats it.

Whitaker and Bushman (2012) support the role of reinforcement, as participants who played a violent shooting game in which hitting targets was rewarded were later more accurate when shooting at a mannequin. Operant conditioning is also optimistic, as it suggests Xia could learn to stop being aggressive if aggression is punished, for example by the police being called. However, it cannot explain why some people stay aggressive even when they are not rewarded or are punished. Xia has been in trouble for fighting several times, yet she is still aggressive, so reinforcement alone does not explain her behaviour. Much of the evidence for operant conditioning also comes from animals, which may not generalise to complex human aggression.

In conclusion, both explanations can be applied to Xia, but neither is complete on its own. Genes may give Xia a predisposition to impulsive aggression, but the 72% concordance for non-identical twins and the importance of the environment suggest learning is also important. As Xia gains food and avoids trouble through aggression, operant conditioning may explain why she keeps fighting, so the best explanation is an interaction between an inherited predisposition and reinforcement from her environment.

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(Total for Question 11 = 16 marks)

TOTAL FOR SECTION C = 28 MARKS
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