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

Tuesday 15 January 2019

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.

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 one of the following contemporary studies in detail:

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

Chosen study

McDermott (2008)

(a) State **one** aim from the contemporary study you have chosen.

(1)

To investigate whether there is a genetic basis (the MAOA gene) for individual differences in giving punishment (aggression) when provoked.

(b) Describe the results from the contemporary study you have chosen.

(3)

Of the participants who had 80% of their earnings taken (high provocation), 66% gave hot sauce to their opponent as a punishment. Of the MAOA-L participants who had only 20% of their earnings taken (low provocation), 40% gave hot sauce to their opponent. Overall, participants with the low activity MAOA-L gene were significantly more likely to give the maximum amount of hot sauce to their opponents than MAOA-H participants, especially under high provocation.

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(c) Justify **one** improvement that could be made to the contemporary study you have chosen.

(2)

The punishment could be given to someone the participant had actually seen rather than an anonymous opponent on a computer, because in real life aggression is usually aimed at people we know or can see, so this would make the study more realistic and increase its ecological validity.

(Total for Question 1 = 6 marks)

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2 Vanessa researched genetic relatedness and aggression. She used a twin study to determine if aggression was linked to genes.

(a) Describe how Vanessa might have carried out a twin study to investigate genetic relatedness and aggression.

(4)

Vanessa could gather a sample of monozygotic (MZ) twin pairs and same-sex dizygotic (DZ) twin pairs, where one twin in each pair has been in trouble for aggression. She could check the fingerprints and blood type of each pair to confirm whether they are MZ or DZ. She could operationalise aggression as the number of times each twin has been arrested for fighting. Vanessa would then see how many of the second twins in each pair had also been in trouble for aggression and work out the concordance rate for MZ and DZ pairs. If the concordance rate for MZ twins (100% shared genes) is higher than for DZ twins (about 50% shared genes), this suggests aggression is linked to genes.

(b) Explain **one** weakness of using twin studies to investigate genetic relatedness.

(2)

MZ twins are usually brought up in the same environment and also shared the same pre-natal environment, and they are often treated more alike than DZ twins. Therefore it is hard to tell whether a higher concordance for aggression is due to their genes or to their shared environment.

(Total for Question 2 = 6 marks)

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3 Kylie experiences seasonal affective disorder. When it is winter time she feels more depressed and no longer feels pleasure when doing activities she enjoys in the summer time. She often wants to stay in bed.

Kylie researched biological explanations about why she experiences seasonal affective disorder every year.

(a) Describe why Kylie experiences seasonal affective disorder.

(3)

In winter there is less daylight, so Kylie may be producing less serotonin, which is why she feels more depressed and no longer gets pleasure from the activities she enjoys in summer. Because the nights are longer, her pineal gland produces more melatonin for longer, which makes her feel tired and sleepy. The shorter days may also disrupt Kylie's internal body clock (circadian rhythm), so it is out of sync with the time of day, meaning she wants to stay in bed for longer.

(b) Explain **one** reason why light therapy may be considered an effective treatment for seasonal affective disorder.

(2)

Light therapy uses a light box to increase the amount of bright light a person receives each day, which decreases the level of melatonin produced. The decrease in melatonin reduces the sleepiness and tiredness felt by the patient, so it should be effective in reducing the symptoms of SAD.

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(c) Explain **one** difference between the use of light therapy and the use of one other therapy for seasonal affective disorder.

(2)

Light therapy aims to treat the symptoms of SAD by changing melatonin levels, whilst CBT tries to change the negative thought processes behind the depression. Therefore CBT may be more effective in the long term because it addresses the reasons behind the symptoms rather than just removing them, so the effects should last after therapy ends.

(Total for Question 3 = 7 marks)

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4 Sacha carried out correlational research. He investigated whether there was a relationship between the number of hours sleep a person had per week and the number of hours they spent doing homework per week.

He found a negative correlation.

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

Participant	Average number of hours sleep per week	Average number of hours homework per week
A	45.0	15.0
B	42.5	18.0
C	40.0	20.0
D	37.5	22.0
E	35.0	24.0

Table 1

(a) Complete **Table 1** and estimate the average number of hours per week spent on homework by Participant E.

(1)

(b) Sacha carried out a Spearman's rank test. He wanted to see if his results were significant at $p \leq 0.05$.

Define what is meant by $p \leq 0.05$.

(2)

p≤0.05 means the probability that the results are due to chance is equal to or less than 5% (0.05), so we can be at least 95% confident that the relationship between sleep and homework is not due to chance.

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(c) Sacha compared his results to results from previously published studies that researched the relationship between sleep and the amount of work carried out.

Give **two** differences between primary and secondary data.

(2)

1 *Primary data is gathered first-hand by the person conducting the study (Sacha), whilst secondary data has already been gathered by other researchers.*

2 *Secondary data may come from a larger number of participants as it combines several studies, whilst primary data comes from just one study, Sacha's own sample.*

(d) Explain **one** reason why cause and effect is an issue in correlational research.

(2)

Correlations only look for a relationship between two variables and do not manipulate an IV, therefore we cannot tell whether one variable causes the other (eg more homework causing less sleep) or whether a third variable, such as stress, affects both.

(Total for Question 4 = 7 marks)

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5 Assess how far the role of hormones can explain aggression.

(8)

High levels of testosterone are associated with increased aggression. Exposure to high levels of testosterone in the womb also affects the developing brain, which can lead to more aggression later in life. Low levels of cortisol are linked to an under-aroused autonomic nervous system (ANS), so the person may become aggressive to increase their arousal. Low levels of oxytocin are thought to decrease trust in others and so may increase aggression.

There is evidence supporting a role for testosterone. Chang et al. (2012) found that the more testosterone a fish had in its blood, the more aggressive it was, showing that aggression and testosterone are linked. Dabbs et al. (1987) also found that prisoners with higher testosterone levels had more often committed violent crimes. However, Chang et al. used fish, so the findings may not generalise to humans, whose aggression is affected by social and cognitive factors. Also, the research is correlational, so it may be that aggression increases testosterone rather than testosterone causing aggression.

McBurnett et al. (2000) found that boys with lower levels of cortisol in their saliva were three times more aggressive than boys with higher cortisol, so cortisol does seem to play a role. However, the evidence for oxytocin is weaker: studies show that more oxytocin increases trust, but they have not shown that a lack of oxytocin causes aggression, so it may not be a factor.

In conclusion, hormones can explain aggression to a large extent, as there is consistent evidence for testosterone and cortisol. However, they cannot fully explain it because the link may run in both directions and hormones ignore environmental factors such as copying aggressive role models, so hormones are best seen as one factor that interacts with others.

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(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 Julio has a fear of bread. He is about to start work as a chef, so he needs to reduce his fear. Julio goes to a therapist who uses systematic desensitisation.

(a) Describe how the therapist could use systematic desensitisation to reduce Julio's fear of bread.

(4)

First the therapist would ask Julio what triggers his fear of bread. Together they would make a hierarchy of fear, starting with the least fearful situation, such as looking at a picture of a loaf of bread, through to seeing a real loaf across the room, then touching it, up to the most fearful situation of kneading and baking bread as a chef. Julio would then be taught how to relax, for example through deep breathing and muscle relaxation. Julio would work up his hierarchy one step at a time, relaxing at each stage and only moving on when he is calm, until he can handle bread without fear. Because relaxation and fear cannot exist together (reciprocal inhibition), bread becomes associated with relaxation instead of fear.

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(b) Explain **one** strength and **one** weakness of systematic desensitisation.

(4)

Strength

Systematic desensitisation is seen as more ethical than flooding, another treatment for phobias, because the client is exposed gradually and in control of the pace, so they are not made as anxious and are not as distressed during therapy.

Weakness

Toozandehjani et al. (2011) found that the effects of systematic desensitisation did not last for more than three months when used for social phobia, therefore it may not be effective in the long term and other treatments may be better.

(Total for Question 6 = 8 marks)

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7 Yoko carried out an observation in a local park. She observed how males and females interacted with other people, to see if there was a difference. She observed how long males spoke to males (Condition A) and how long females spoke to females (Condition B). Yoko observed if they spoke for less than 5 minutes or for 5 minutes or more.

Yoko recorded her data using event sampling.

(a) Describe how Yoko may have carried out the observation using event sampling.

(3)

Yoko would create a tally chart before the observation with four categories: males speaking to males for less than 5 minutes, males speaking to males for 5 minutes or more, and the same two categories for females speaking to females. During the observation in the park, every time she saw a same-sex conversation end she would time it and put a tally in the correct category, as she is event sampling (recording each time the behaviour occurs rather than at set time intervals). After the observation Yoko would total the number of tallies for each category for males and for females.

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(b) Yoko carried out a chi-squared test on her data.

Calculate chi-squared for the data gathered by Yoko by completing **Table 2**.

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

(4)

		Observed	Expected	O-E	$(O-E)^2$	$(O-E)^2/E$
Condition A: males spoke to males	Less than 5 minutes	3	5.5	−2.5	6.25	1.14
	5 minutes or more	7	4.5	2.5	6.25	1.39
Condition B: females spoke to females	Less than 5 minutes	8	5.5	2.5	6.25	1.14
	5 minutes or more	2	4.5	−2.5	6.25	1.39
					Chi-squared =	5.06

Table 2

Space for calculations

$O - E$: $3 - 5.5 = -2.5$, $7 - 4.5 = 2.5$, $8 - 5.5 = 2.5$, $2 - 4.5 = -2.5$

$(O - E)^2$: $(\pm 2.5)^2 = 6.25$ for every cell

$(O - E)^2/E$: $6.25 \div 5.5 = 1.14$, $6.25 \div 4.5 = 1.39$

$\chi^2 = \Sigma(O - E)^2/E = 1.14 + 1.39 + 1.14 + 1.39 = 5.06$

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(c) Yoko gathered quantitative data. Another type of data is qualitative data.

Define what is meant by the term 'qualitative data'.

(1)

Qualitative data is descriptive data, usually in the form of words, such as what people said or a detailed description of their behaviour, rather than numbers.

(Total for Question 7 = 8 marks)

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8 In your studies of learning theories and development, you will have conducted a practical investigation using an observational method.

You will have gathered quantitative and qualitative data and carried out a thematic analysis on your qualitative data.

(a) Describe the results of your learning theories and development practical investigation.

(4)

We carried out a naturalistic observation of helping behaviour (holding a door open) by males and females at our school canteen entrance during lunchtime. When totalling our tally chart we found that males were about two times more helpful than females: the mean number of helping acts per observation session was 8.2 for males and 4.1 for females. A chi-squared test showed our results were significant, as the calculated value was higher than the critical value, so we rejected the null hypothesis. From our thematic analysis of the qualitative notes, the most common theme was holding doors open for someone carrying something, which occurred a total of 17 times, and a second theme was that females helped more often when the other person was someone they knew.

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(b) Explain **two** strengths of your learning theories and development practical investigation.

(4)

1 *We had a large sample of 53 people in our observation, so our sample was more representative of the target population of students. Therefore we can be more confident that our results about male and female helping behaviour can be generalised.*

2 *Before the observation we created operational definitions of helping behaviour, such as holding the door open for someone, so all observers knew exactly what to record. This increased inter-observer reliability as it reduced subjectivity about what counts as helping.*

(c) Explain **one** improvement that may be made to your learning theories and development practical investigation.

(2)

We should have carried out the observation at different times of day rather than just at lunchtime, as people around at other times may be less rushed and so more helpful. This would make the results more representative of helping behaviour in general.

(Total for Question 8 = 10 marks)

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9 Evaluate Freud's use of the case study as a research method.

(8)

Freud used case studies of individual clients, such as Little Hans (1909), to gather in-depth data. He saw clients individually, often with them lying on a couch while he sat behind them. He used free association, where the client says whatever comes into their mind so that something from the unconscious reveals itself. He used dream analysis to uncover the latent meaning behind symbols in the client's dreams, and he took note of slips of the tongue, where the client says something they did not mean, as these reveal unconscious wishes.

A strength is that free association and dream analysis gather a lot of detailed, in-depth qualitative data, giving a richer understanding of the client's issues than an experiment could. Also, by using these methods to uncover the root cause of a problem, the client's issue can be resolved and they can be cured, unlike therapies that only deal with the behaviour and not its cause.

However, each case study is on one unique individual, often from a narrow group of Viennese patients, so it is hard to generalise the results to everyone. Interpretation is also subjective, as different analysts may find different meanings behind the same dream, so the findings lack reliability. In Little Hans, most data came from his father, a supporter of Freud, so there may have been bias. Freud's concepts, such as the unconscious, cannot be measured or falsified.

In conclusion, Freud's case studies were useful for generating detailed insights and new theory, but their subjectivity and lack of generalisability mean the conclusions he drew should be treated with caution.

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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 To what extent does operant conditioning explain human behaviour?

(12)

Operant conditioning, developed by Skinner, states that voluntary behaviour is learned through its consequences: if a behaviour is reinforced it is more likely to be repeated. Positive reinforcement is when a behaviour is rewarded with something desired, such as praise or money. Negative reinforcement is when a behaviour is rewarded by removing or avoiding something unpleasant, such as taking a painkiller to stop a headache. Punishment can be used to stop an undesired behaviour, but it does not teach a new behaviour. Reinforcement can be given every time (continuous) or on schedules such as a fixed ratio, after a set number of behaviours. Complex behaviours can be shaped by breaking them into smaller steps and rewarding each step.

Operant conditioning is a better explanation of human behaviour than classical conditioning, as it explains how new voluntary behaviours are learned rather than just reflexive responses. There is evidence that it works on humans: Ramesh et al. (2011) found that using positive and negative reinforcement in a neonatal intensive care unit reduced the noise levels made by staff. It also has useful applications, for example token economies in prisons and schools, which reward desired behaviour with tokens that can be exchanged for privileges.

Vaughan et al. (2014) found that calves could learn to urinate in a particular stall when they were rewarded, showing that rewards can teach a specific behaviour. However, much of the evidence, including Skinner's own work with rats and pigeons and Vaughan et al.'s study on calves, uses animals, so there are problems generalising the results to humans, who think about the consequences of their actions. Some human behaviour also goes against operant conditioning: Cheng et al. (2014) found that people who received negative down votes on social media posted more comments in the future than those who received positive up votes, which the theory

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cannot explain, as punishment should reduce the behaviour.

Operant conditioning also ignores other influences. It cannot explain behaviour that is learned without direct reinforcement, such as imitating a role model in social learning theory, where cognitive factors like attention and motivation matter. It also ignores biological factors, such as the influence of testosterone on aggression, so it is reductionist.

In conclusion, operant conditioning explains a lot of human behaviour, especially how voluntary behaviours are learned and changed, and it is supported by real-world applications. However, it does not offer a complete explanation, because it ignores cognitive and biological factors and relies heavily on animal research, so it explains human behaviour only to a moderate extent.

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(Total for Question 10 = 12 marks)

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11 Hugo is seeing a therapist to try and cope with his aggression. He finds that he often gets into arguments where he punches and kicks other people.

The therapist thinks Hugo's aggression is caused by the fact that his parents are also aggressive and Hugo is simply copying the actions of his parents, such as punching someone in an argument.

Hugo's partner thinks that Hugo's aggression is due to the fact that he has played a lot of contact sport, which resulted in him having several head injuries.

Evaluate social learning theory and brain functioning as explanations of Hugo's aggression.

You must make reference to the context in your answer.

(16)

Social learning theory (SLT) explains aggression as learned by observing and imitating the aggressive behaviour of role models. Hugo's parents are aggressive and act as role models for him, so he may have watched them punch people in arguments and then imitated this. Hugo is more likely to imitate his father than his mother, as role models who are the same sex and relevant to us are imitated more. For imitation to happen Hugo must pay attention to the behaviour, retain it, be able to reproduce it and be motivated to do so. If Hugo saw his parents being reinforced for their aggression, for example winning the argument, he would experience vicarious reinforcement and be more likely to copy it.

Bandura, Ross and Ross (1961) support SLT, as children who watched an adult model act aggressively towards a Bobo doll imitated the specific aggressive acts, and boys imitated the male model more, which fits Hugo copying his father. Bandura (1965) found that children who saw the model rewarded were more aggressive than those who saw the model punished, supporting vicarious reinforcement. Anderson and Dill (2000) also found that people who played more violent video games were more aggressive. However, this is correlational, as people who are naturally more aggressive may choose violent games. Also, Bobo doll studies used a doll that is designed to be hit, so they may not show real aggression towards people like Hugo's punching and kicking.

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Brain functioning explains aggression through damage to areas such as the amygdala and the prefrontal cortex. The amygdala regulates emotions such as fear and anger, so if it is damaged it cannot regulate them as effectively and a person may process a non-threatening situation as dangerous, triggering the fight or flight response. The prefrontal cortex controls the amygdala and impulsive behaviour, so damage to it leads to less control over aggression. Hugo's head injuries from contact sport may have damaged his amygdala or prefrontal cortex, so he may process arguments as dangerous situations and respond impulsively by punching and kicking.

Raine et al. (1997) support this, as PET scans showed that murderers pleading not guilty by reason of insanity had reduced activity in the prefrontal cortex and abnormal activity in the amygdala compared to controls. The case of Phineas Gage, whose personality became more aggressive and impulsive after damage to his frontal lobe, also supports the explanation. However, head injuries rarely damage only one specific area, so it is hard to know exactly which part of Hugo's brain is responsible. Also, brain functioning ignores environmental factors such as Hugo's aggressive parents, so it may not be a complete explanation.

Comparing the two, SLT explains why Hugo uses the specific actions his parents use, such as punching in an argument, whereas brain damage only explains a general lack of control. However, brain functioning has more scientific, objective evidence from scans, whereas SLT studies lack ecological validity. SLT also cannot explain why not everyone with aggressive parents becomes aggressive.

In conclusion, neither explanation is complete on its own. It is likely that Hugo learned aggressive behaviours from his parents, and his head injuries reduced his ability to control his emotions and impulses, so he acts on these learned behaviours. An interactionist explanation

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combining both is therefore the best explanation of Hugo's aggression.

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