

Please check the examination details below before entering your candidate information

Candidate surname <i>StemUp Model Solution</i>		Other names	
Pearson Edexcel		Centre Number	Candidate Number
Level 3 GCE			
Time 2 hours	Paper reference	9PS0/01	
Psychology Advanced PAPER 1: Foundations in Psychology			
You do not need any other materials.			Total Marks

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided
– *there may be more space than you need.*

Information

- The total mark for this paper is 90.
- 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.
- Good luck with your examination.

Turn over ►



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

N	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				
	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.



Chi-squared distribution formula

$$X^2 = \sum \frac{(O-E)^2}{E}$$

$$df = (r - 1)(c - 1)$$

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.



Mann-Whitney U test formulae

$$U_a = n_a n_b + \frac{n_a(n_a+1)}{2} - \sum R_a$$

$$U_b = n_a n_b + \frac{n_b(n_b+1)}{2} - \sum R_b$$

(U is the smaller of U_a and U_b)

Critical values for the Mann-Whitney U test

N_a	N_b															
	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
$p \leq 0.05$ (one-tailed), $p \leq 0.10$ (two-tailed)																
5	4	5	6	8	9	11	12	13	15	16	18	19	20	22	23	25
6	5	7	8	10	12	14	16	17	19	21	23	25	26	28	30	32
7	6	8	11	13	15	17	19	21	24	26	28	30	33	35	37	39
8	8	10	13	15	18	20	23	26	28	31	33	36	39	41	44	47
9	9	12	15	18	21	24	27	30	33	36	39	42	45	48	51	54
10	11	14	17	20	24	27	31	34	37	41	44	48	51	55	58	62
11	12	16	19	23	27	31	34	38	42	46	50	54	57	61	65	69
12	13	17	21	26	30	34	38	42	47	51	55	60	64	68	72	77
13	15	19	24	28	33	37	42	47	51	56	61	65	70	75	80	84
14	16	21	26	31	36	41	46	51	56	61	66	71	77	82	87	92
15	18	23	28	33	39	44	50	55	61	66	72	77	83	88	94	100
16	19	25	30	36	42	48	54	60	65	71	77	83	89	95	101	107
17	20	26	33	39	45	51	57	64	70	77	83	89	96	102	109	115
18	22	28	35	41	48	55	61	68	75	82	88	95	102	109	116	123
19	23	30	37	44	51	58	65	72	80	87	94	101	109	116	123	130
20	25	32	39	47	54	62	69	77	84	92	100	107	115	123	130	138



N_a	N_b															
	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
$p \leq 0.01$ (one-tailed), $p \leq 0.02$ (two-tailed)																
5	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
6	2	3	4	6	7	8	9	11	12	13	15	16	18	19	20	22
7	3	4	6	7	9	11	12	14	16	17	19	21	23	24	26	28
8	4	6	7	9	11	13	15	17	20	22	24	26	28	30	32	34
9	5	7	9	11	14	16	18	21	23	26	28	31	33	36	38	40
10	6	8	11	13	16	19	22	24	27	30	33	36	38	41	44	47
11	7	9	12	15	18	22	25	28	31	34	37	41	44	47	50	53
12	8	11	14	17	21	24	28	31	35	38	42	46	49	53	56	60
13	9	12	16	20	23	27	31	35	39	43	47	51	55	59	63	67
14	10	13	17	22	26	30	34	38	43	47	51	56	60	65	69	73
15	11	15	19	24	28	33	37	42	47	51	56	61	66	70	75	80
16	12	16	21	26	31	36	41	46	51	56	61	66	71	76	82	87
17	13	18	23	28	33	38	44	49	55	60	66	71	77	82	88	93
18	14	19	24	30	36	41	47	53	59	65	70	76	82	88	94	100
19	15	20	26	32	38	44	50	56	63	69	75	82	88	94	101	107
20	16	22	28	34	40	47	53	60	67	73	80	87	93	100	107	114

N_a	N_b															
	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
$p \leq 0.025$ (one-tailed), $p \leq 0.05$ (two-tailed)																
5	2	3	5	6	7	8	9	11	12	13	14	15	17	18	19	20
6	3	5	6	8	10	11	13	14	16	17	19	21	22	24	25	27
7	5	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34
8	6	8	10	13	15	17	19	22	24	26	29	31	34	36	38	41
9	7	10	12	15	17	20	23	26	28	31	34	37	39	42	45	48
10	8	11	14	17	20	23	26	29	33	36	39	42	45	48	52	55
11	9	13	16	19	23	26	30	33	37	40	44	47	51	55	58	62
12	11	14	18	22	26	29	33	37	41	45	49	53	57	61	65	69
13	12	16	20	24	28	33	37	41	45	50	54	59	63	67	72	76
14	13	17	22	26	31	36	40	45	50	55	59	64	67	74	78	83
15	14	19	24	29	34	39	44	49	54	59	64	70	75	80	85	90
16	15	21	26	31	37	42	47	53	59	64	70	75	81	86	92	98
17	17	22	28	34	39	45	51	57	63	67	75	81	87	93	99	105
18	18	24	30	36	42	48	55	61	67	74	80	86	93	99	106	112
19	19	25	32	38	45	52	58	65	72	78	85	92	99	106	113	119
20	20	27	34	41	48	55	62	69	76	83	90	98	105	112	119	127



N_a	N_b															
	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
$p \leq 0.005$ (one-tailed), $p \leq 0.01$ (two-tailed)																
5	0	1	1	2	3	4	5	6	7	7	8	9	10	11	12	13
6	1	2	3	4	5	6	7	9	10	11	12	13	15	16	17	18
7	1	3	4	6	7	9	10	12	13	15	16	18	19	21	22	24
8	2	4	6	7	9	11	13	15	17	18	20	22	24	26	28	30
9	3	5	7	9	11	13	16	18	20	22	24	27	29	31	33	36
10	4	6	9	11	13	16	18	21	24	26	29	31	34	37	39	42
11	5	7	10	13	16	18	21	24	27	30	33	36	39	42	45	48
12	6	9	12	15	18	21	24	27	31	34	37	41	44	47	51	54
13	7	10	13	17	20	24	27	31	34	38	42	45	49	53	56	60
14	7	11	15	18	22	26	30	34	38	42	46	50	54	58	63	67
15	8	12	16	20	24	29	33	37	42	46	51	55	60	64	69	73
16	9	13	18	22	27	31	36	41	45	50	55	60	65	70	74	79
17	10	15	19	24	29	34	39	44	49	54	60	65	70	75	81	86
18	11	16	21	26	31	37	42	47	53	58	64	70	75	81	87	92
19	12	17	22	28	33	39	45	51	56	63	69	74	81	87	93	99
20	13	18	24	30	36	42	48	54	60	67	73	79	86	92	99	105

The calculated value must be equal to or less than 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

<i>n</i>	Level of significance for a one-tailed test		
	0.05	0.025	0.01
	Level of significance for a two-tailed test		
	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.



Answer ALL questions.

SECTION A

Social Psychology

1 In your studies of social psychology, you will have learned about prejudice.

(a) Using an example, describe what is meant by 'prejudice'.

(2)

Prejudice is a preconceived, usually negative, attitude or opinion about a person based only on their membership of a group, often based on stereotypes rather than experience. For example, believing that a wife should be responsible for all the domestic tasks at home.

(b) Explain **one** way that individual differences in personality could affect prejudice.

(2)

Someone with an authoritarian personality may be more likely to see groups as 'us and them' and be prejudiced towards people of a different social or ethnic group. Adorno et al. (1950) found that people scoring high on the F-scale were more likely to be hostile to out-group members seen as being of inferior status.

(c) Explain **one** way that culture could affect prejudice.

(2)

Collectivist cultures, which emphasise loyalty to the in-group, may result in more prejudice towards other groups than individualist cultures. Al-Zahrani and Kaplowitz (1993) found that Saudis (collectivist) showed more out-group derogation than Americans (individualist).

(Total for Question 1 = 6 marks)



- 2 Francis has recently joined a new dance team. His friend Jason is in a different dance team. The regional semi-final of a major dance competition is taking place at the weekend, and both teams are taking part.

Francis has started making disrespectful comments about Jason on social media and in college. Jason retaliated and told students at the college that Francis's team would never win the competition as Francis cannot dance.

Using realistic conflict theory, describe the behaviour of Francis and Jason.

Realistic conflict theory states that when two groups compete for a limited resource

that only one group can win, intergroup conflict and prejudice develop. Winning the

regional semi-final is a limited resource, as it brings status that only one dance team

can have, so Francis's team and Jason's team are in conflict over it.

When Francis joined his new dance team he formed a new in-group, with Jason now

part of a different group (the out-group), even though they are friends.

Francis's disrespectful comments about Jason on social media and in college are signs

of intergroup conflict and hostility caused by the competition.

Jason's retaliation, telling students that Francis's team will never win because Francis

cannot dance, shows bias against Francis as a member of the out-group, which

indicates that Jason now sees his own team as the in-group and is derogating the

out-group to protect its status.

(Total for Question 2 = 4 marks)



3 Evaluate the use of questionnaires for research in social psychology.

(8)

A questionnaire is a self-report method for gathering data from respondents (or their peers) about their attitudes, such as prejudice or obedience. Closed-ended questions, such as Likert scales, gather quantitative data, for example self-rated prejudice scores, while open questions let participants expand on their answers, such as why they would follow certain instructions, producing qualitative data. Once created, a questionnaire can easily be replicated, so all respondents receive the same standardised questions.

A strength is reliability. Adorno et al.'s (1950) F-scale scores how far respondents agree with statements to give an objective score for authoritarian personality, and as everyone answers the same questions, it can be retested to check for consistency.

Similarly, Cohrs et al. (2012) used standardised questionnaires to measure personality traits such as Right Wing Authoritarianism (RWA), increasing the reliability of the data in their research.

Questionnaires can also be given to large samples quickly and cheaply, e.g. by post or online, so findings are more generalisable. Closed questions produce data that can be statistically analysed and compared, which makes social psychology more scientific.

Open questions give in-depth answers with rich detail about why individuals hold their beliefs about others, increasing the validity of the data gathered by social psychology researchers.

However, self-report data may be subject to social desirability bias, where respondents falsely present their views on prejudice or authority in a way that makes them appear more favourable, such as denying that they are prejudiced. This reduces the validity of the data. Closed questions also force respondents to choose answers that may not reflect their true views, and the F-scale was criticised for acquiescence bias because all items were worded in the same direction.



Cohrs et al. (2012) addressed this by using peer ratings as well as self-reports, which shows that questionnaires can be improved to reduce bias.

In conclusion, questionnaires are a reliable, efficient and replicable way to gather large amounts of data on social attitudes, but because they rely on honest self-reports their validity can be limited, so they are best used alongside other methods, such as peer reports or observations.

(Total for Question 3 = 8 marks)

TOTAL FOR SECTION A = 18 MARKS



SECTION B

Cognitive Psychology

- 4 During a psychology lesson, Saima was asked to recall the contents of her history classroom. Some of the items she recalled included; 15 tables, a clock, paper, and a calendar. However, her history classroom did not contain a clock or a calendar.
- (a) Using reconstructive memory, describe why Saima incorrectly recalled some items from her history classroom.

(2)

Saima will have an existing schema for a classroom, based on her prior knowledge of classrooms she has been taught in, which includes a clock and a calendar. When recalling her history classroom she filled in the gaps in her memory with items expected from this schema, so she believed a clock and a calendar were present.

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(b) Explain **one** strength and **one** weakness of reconstructive memory as an explanation of Saima's recall of the items from her history classroom.

(4)

Strength

Brewer and Treyens (1981) support this, finding that an 'office schema' significantly affected the accuracy of participants' recall of objects in an office (e.g. recalling books that were not there). Therefore Saima's recall of a calendar that was not in the classroom shows that she actively reconstructed her memory based on her prior expectations of a classroom.

Weakness

Saima's errors could instead be because she did not rehearse the items in her history classroom, as she was paying attention to the teacher, not the room. The multi-store model suggests rehearsal is needed to transfer information from STM to LTM, so her mistakes may be due to items not being stored rather than her schema.

(Total for Question 4 = 6 marks)



P 6 5 4 4 9 A 0 1 3 3 2

- 5 Ken is planning to research whether the time of day has an impact on working memory processing speed. He intends to use high school students from the city where he lives for his research.

(a) Describe how Ken would gather a stratified sample for his research.

(2)

Ken would first identify the strata (subgroups) in the population of high school students across his city, such as gender and year group, and work out the proportion of students in each, e.g. 52% female and 48% male in each year group.

He would then randomly select students from each stratum in the same proportions as they occur in the city's high school population, so his sample reflects the target population.

- (b) To test working memory processing speed, Ken intends to ask his participants to complete a series of mathematical calculations in the morning. They will then return to complete another set of mathematical calculations in the afternoon.

Ken will time (in seconds) how long each participant takes to complete the task in the morning and in the afternoon to see if there is a difference.

Explain which statistical test Ken would use for his data.

(2)

Ken would use a Wilcoxon signed ranks test because he is looking for a difference between morning and afternoon working memory processing speed, using a repeated measures design (the same participants do both conditions), and the times in seconds are at least ordinal data.

(Total for Question 5 = 4 marks)



6 Evaluate the multi-store model of memory (Atkinson and Shiffrin, 1968).

(8)

The multi-store model (MSM) proposes that memory consists of three separate stores with information flowing through them in a linear way. The sensory register (SR) acts as a buffer for input from the five senses, using modality specific encoding, and holds information for less than about 2 seconds. If attention is paid, information passes to the short-term store (STS), which has a limited capacity of 5 to 9 items (7 ± 2) and a limited duration of up to 30 seconds, and Atkinson and Shiffrin suggested it encodes information acoustically. Rehearsal transfers information to the long-term store (LTS), which stores unlimited information indefinitely using semantic encoding.

Peterson and Peterson (1959) support the MSM. They found that correct recall of trigrams dropped rapidly between 15 and 18 seconds when rehearsal was prevented by counting backwards, supporting the idea that, without rehearsal, decay occurs in STM within 30 seconds. Bahrick et al. (1975) found that identification of names from a high school yearbook remained accurate for up to 48 years, supporting the claim that LTM can store information indefinitely. The case of HM also supports separate STM and LTM stores, as after brain surgery his STM was intact but he could not form new long-term memories.

However, the MSM can be considered reductionist, as it views human memory merely as a system of information processing that is oversimplified into three distinct stores.

Baddeley and Hitch (1974) argue that STM can actively process acoustic, visual and spatial information in separate components, so it is not the single, basic store proposed in the MSM. HM could also learn procedural skills such as mirror drawing, suggesting LTM is not one unitary store. The MSM also claims rehearsal is needed for transfer to LTM, yet people remember many events, such as flashbulb memories, without rehearsing them.



Much of the supporting evidence comes from laboratory experiments with artificial stimuli such as trigrams, so it may lack ecological validity.

In conclusion, the MSM is well supported by evidence for separate short-term and long-term stores, but it is oversimplified, as later models such as working memory show that the stores are more complex than it proposes.

(Total for Question 6 = 8 marks)

TOTAL FOR SECTION B = 18 MARKS



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SECTION C

Biological Psychology

- 7 Oscar investigated whether there was a relationship between attitudes to recreational drug use and parts of the personality (id, ego and superego) according to Freud.

Participants completed a personality questionnaire to determine how strongly they were dominated by the 'id'. The questionnaire was scored out of 10, with 10 being strongly dominated by the 'id'.

They also completed a questionnaire about how they felt about recreational drug use in society. The questionnaire was scored out of 10, with 10 being completely in favour of recreational drug use.

- (a) Complete **Table 1** and calculate the Spearman's rank correlation coefficient for Oscar's study.

(4)

Personality score	Rank 1	Attitude to recreational drug use score	Rank 2	d	d ²
2	1	3	1.5	-0.5	0.25
8	6	9	7	-1	1
5	3	6	4	-1	1
6	4.5	7	6	-1.5	2.25
9	7.5	10	8	-0.5	0.25
3	2	3	1.5	0.5	0.25
6	4.5	6	4	0.5	0.25
9	7.5	6	4	3.5	12.25
Total:					17.5

Table 1

SPACE FOR CALCULATIONS

$$\Sigma d^2 = 0.25 + 1 + 1 + 2.25 + 0.25 + 0.25 + 0.25 + 12.25 = 17.5$$

$$r_s = 1 - (6 \times \Sigma d^2) \div (n(n^2 - 1)) = 1 - (6 \times 17.5) \div (8 \times (64 - 1))$$

$$r_s = 1 - 105 \div 504 = 1 - 0.2083 = 0.7917 = 0.792 \text{ (3 d.p.)}$$

Spearman's rank correlation coefficient 0.792



- (b) Using the critical values table for Spearman's rank, determine the lowest level of significance Oscar could use for his results to be significant for a directional (one-tailed) hypothesis.

(2)

$p \leq 0.025$ is the lowest level Oscar could use. With $N = 8$ and a one-tailed test, his calculated value (0.792) exceeds the critical value at $p \leq 0.025$ (0.738), so the result is significant. It is lower than the critical value at $p \leq 0.01$ (0.833), so it is not significant at that level.

(Total for Question 7 = 6 marks)



- 8 In your studies of biological psychology, you will have learned about **one** adoption study.

Explain **one** strength and **one** weakness of your chosen adoption study.

(4)

Chosen study

Heston (1966)

Strength

The 47 adopted children born to mothers with schizophrenia were carefully matched with a control group on sex, type of eventual placement and length of time in childcare. This meant Heston could be more confident that having a mother with schizophrenia was the only difference affecting the participants and the controls.

Weakness

Heston only found a 10.6% concordance rate (5 of the 47 children developed schizophrenia), which does not provide cause and effect conclusions for genetic predisposition, as other variables, such as drug use or stressful adoptive environments, could have influenced the mental health of the children adopted away from their birth family.

(Total for Question 8 = 4 marks)



- 9 Rachael is in prison for assault. She has a history of aggressive behaviour such as fighting and shouting abuse at people.

Rachael was exercising with a group of other prisoners, but has been placed in solitary confinement for pushing over another prisoner who had tried to take her trainers.

She told a prison officer that she often feels very stressed and angry with other people, but is unable to manage her aggression.

Discuss the role of hormones as an explanation of Rachael's behaviour.

(8)

Hormones are chemical messengers produced by glands of the endocrine system and carried in the bloodstream to target organs, where they transmit information that results in behaviours. Testosterone is produced in the testes in males and in the ovaries and adrenal glands in females, and high levels have been associated with aggression and dominance. Cortisol is released by the adrenal glands when facing stressors, and low levels of cortisol have been associated with aggression. Adrenaline is linked to the 'fight or flight' response to a threatening stimulus, which triggers the body to be physically fast or strong.

Rachael may have an imbalance in hormones, such as high testosterone or adrenaline, resulting in her history of aggressive tendencies, such as fighting and shouting abuse at people. As hormone levels are biological, Rachael would not be able to control excessive testosterone in her body, which would explain why she tells the prison officer that she is unable to manage her aggression. This is supported by Dabbs and Hargrove (1997), who found that female prison inmates with higher testosterone levels had committed more violent crimes and broke more prison rules.

Rachael may also not be producing sufficient cortisol to combat her feelings of stress. Cortisol normally regulates the stress response, so low cortisol could explain why she says she often feels very stressed and continues to feel angry with other people.

When the other prisoner tried to take her trainers, this was a threat, so an increase in adrenaline may have triggered Rachael's 'fight' response, where she pushed the prisoner



over rather than reasoning with them. This also explains why it happened during exercise, when adrenaline levels are already raised.

However, hormones may not be the only explanation of Rachael's behaviour. Research into testosterone is mainly correlational, so it could be that aggression and the stressful prison environment raise her testosterone, rather than testosterone causing aggression.

Social learning theory suggests Rachael may have learned aggression by observing role models, and in prison, aggression may be reinforced because it protects her possessions, as pushing the prisoner stopped her trainers being taken.

Overall, hormones offer a convincing explanation of Rachael's stress, anger and lack of control, but her behaviour is likely to result from an interaction between her hormone levels and the prison environment.

(Total for Question 9 = 8 marks)

TOTAL FOR SECTION C = 18 MARKS



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SECTION D

Learning Theories

- 10 Zoë investigated the use of operant conditioning in training two different animals. She trained squirrels and mice to successfully complete a maze that she had designed.

Zoë used positive reinforcement with the squirrels and mice, by giving each animal two acorns every time it found the way out of the maze. She recorded the length of time it took each animal to complete the maze successfully.

- (a) Using the Scientific Procedures Act (1986), state **two** considerations Zoë would have made for her research with squirrels and mice.

(2)

1 *Zoë would have used the minimum number of squirrels and mice needed for her to achieve accurate results.*

2 *She would have had to ensure the squirrels and mice were housed in appropriate cages, with suitable food, water and care, and that her project was licensed.*

- (b) State a fully operationalised directional (one-tailed) experimental hypothesis for Zoë's investigation.

(2)

Mice will take less time in seconds to complete Zoë's maze successfully than squirrels will take to complete the same maze when both are given two acorns as positive reinforcement each time they find the way out.

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(c) Explain **one** strength of Zoë's research in terms of reliability.

(2)

The maze is the same for each animal and each animal receives the same reinforcement (two acorns), so positive reinforcement is the only variable affecting the time taken. The results would not be skewed by differences in the complexity of the maze, so the study could be replicated, giving Zoë reliable findings.

(d) Explain **one** improvement that could be made to Zoë's investigation in terms of validity.

(2)

The squirrels and mice could be trained to complete a more real-life behaviour, such as finding their way between two points in a woodland area of trees, which would improve the validity of the findings about positive reinforcement, as their behaviour would be more natural than in an artificial maze.

(Total for Question 10 = 8 marks)



11 Evaluate the classic study by Watson and Rayner (1920).

(8)

Watson and Rayner (1920) aimed to see if they could condition an emotional fear reaction in an infant, Little Albert, through classical conditioning. At about 9 months old, Albert was first tested with stimuli such as a white rat, a rabbit, a dog and burning newspaper to see what he was naturally afraid of, as a baseline measure; he showed no fear of any of them, but cried when a steel bar was struck loudly behind him.

At 11 months, Albert was presented with the white rat and when he reached to touch it, the researchers hit a metal bar with a hammer behind him, causing an unconditioned fear response to the loud bang. After seven pairings, Albert showed a conditioned fear response, crying and crawling away when the white rat was presented without the bang of the hammer on the metal bar. His fear also generalised to similar objects such as a rabbit, a fur coat and a Santa Claus mask, and was still present a month later.

A strength is that there were strict controls during the experiment, such as the timing of hitting the metal bar and the baseline tests, so the study is replicable and the results could be retested for reliability. Albert's behaviour was also filmed, providing objective evidence for the conditioned response.

The findings are useful, as they show emotional reactions such as phobias can be learned, which helped to develop therapies like systematic desensitisation to treat phobias by pairing the phobic object with a relaxation response.

However, Little Albert was the only infant studied, so the findings may not be representative of other children or the adult population. There is also debate about whether Albert was a fully healthy baby, as he was described as unusually placid, so the results may not be a valid outcome for conditioned reactions in typical children.



The study is also unethical: Albert was deliberately caused distress and his fear was never extinguished, as he left the hospital before this could happen.

In conclusion, Watson and Rayner (1920) provide controlled evidence that fear can be classically conditioned, with useful applications, but the single participant and ethical problems limit the generalisability and acceptability of the study.

(Total for Question 11 = 8 marks)

TOTAL FOR SECTION D = 16 MARKS



SECTION E

Issues and Debates

- 12 Discuss the practical issues you considered in the design and implementation of your social psychology practical investigation.

(8)

Practical issues affect the choices researchers make when selecting measures to meet the aims of a study. For my social psychology practical, we designed a questionnaire to gather both quantitative and qualitative data on the relationship between personality (authoritarianism) and obedience.

Gathering a sample, such as random, volunteer or opportunity, depends on the access a researcher has to the target population. We wanted a range of ages, but we did not have access to this within college, so we used an opportunity sample, where each student took five questionnaires home to family members. This was quick and practical, but it means our sample may not be representative of the wider population.

Deciding what apparatus or materials to use depends on the time and money available. We designed our questionnaire using items from Adorno et al.'s F-scale to increase the reliability of our measure of personality, as a validated scale was free to use and saved time compared with writing our own items. We also included open questions so participants could explain why they would obey, which took longer to analyse but gave qualitative data.

Pilot studies are needed to check the materials work. Our questionnaire was piloted with two teachers to check they understood the items, but our deadline did not allow time to ask more than two people, so some questions may still have been ambiguous.

Ethical issues, such as gaining fully informed consent, must be weighed against the potential for demand characteristics that affect the findings. To meet ethical guidelines, we included an explanation of the questionnaire and how the data would be used, so our family members could read this and decide whether or not to complete it. We also

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gave them the right to withdraw and kept their answers anonymous by not asking for names. However, as the participants were family members, they may have answered in a socially desirable way to help us.

Overall, practical issues of access, time and resources shaped our sampling and materials, which made the study possible to complete but limited how far our findings could be generalised.

(Total for Question 12 = 8 marks)



13 In cognitive psychology and learning theories you will have learned about the use of psychological knowledge in society, including key questions of relevance in society.

Evaluate the use of psychological knowledge from cognitive psychology and learning theories in society.

You must use concepts, theories and/or research from cognitive psychology and learning theories in your answer.

(12)

Psychological knowledge from cognitive psychology and learning theories can be used to solve problems and improve life in society.

Cognitive psychology explains how individuals process, store and retrieve information in short-term and long-term memory, which helps us understand individual differences in memory functioning. Understanding processes in working memory has been applied in practical solutions, such as 'Cogmed' interventions that help people with dyslexia improve their processing speed. Dunning et al. (2012) showed that verbal working memory improved in children who used working memory tasks and computer programs, so cognitive psychology can be applied well to improving educational attainment. However, it is not clear that these gains transfer to wider skills such as reading, so the benefit to society may be limited.

Reconstructive memory (Bartlett, 1932) shows how new information may be assimilated into existing memories, causing people to recall events incorrectly. Loftus and Palmer (1974) found that leading questions such as 'smashed' changed estimates of speed, so police questioning techniques have improved, e.g. the cognitive interview, to prevent leading questions manipulating the memory trace of witnesses and to increase the accuracy of testimonies, reducing wrongful convictions. However, Yuille and Cutshall (1986) found that eyewitnesses to a real-life crime were more accurate than laboratory experiments suggest, so cognitive research into memory accuracy may not be useful if it does not reflect real-life situations.

Social learning theory explains how people imitate the behaviours of role models they



identify with, as Bandura et al. (1961) found when children copied aggression towards a Bobo doll. As a result, the media can limit access to unsuitable role model behaviours, such as aggression, through age-restricted content like film classifications and computer game ratings. Eron et al. (1972) measured the level of violence in television programmes watched by seven to eight year olds and their aggressiveness, finding a positive correlation, so this helps society tackle aggression in the media. However, the data are correlational, so we cannot be certain that media violence causes aggression.

Operant conditioning shows that positive reinforcement rewards desired behaviour so it is repeated. Institutions such as schools use merit systems, house points and certificates to encourage desired behaviour in their students, and token economies are used in prisons and hospitals. However, it could be considered unethical to manipulate the behaviour of vulnerable people, such as children, through behaviour modification without them being fully aware of it, which limits how far learning theories can be used in society. Behaviour may also stop once rewards are removed.

In conclusion, both approaches have produced valuable applications in education, the legal system and the media, based on scientific research. However, their use is limited by low ecological validity in some cognitive research, correlational evidence and ethical concerns, so psychological knowledge should be applied carefully and its effectiveness evaluated in real-life settings.



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(Total for Question 13 = 12 marks)

TOTAL FOR SECTION E = 20 MARKS

TOTAL FOR PAPER = 90 MARKS

