

Write your name here

Surname

StemUp Model Solution

Other names

Pearson Edexcel
Level 3 GCE

Centre Number

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Candidate Number

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Psychology

Advanced

Paper 3: Psychological Skills

Thursday 22 June 2017 – Afternoon

Time: 2 hours

Paper Reference

9PS0/03

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 80.
- 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 critical value tables are printed at the start of this paper.
- Candidates may use a calculator.

Advice

- Read each question carefully before you start to answer it.
- Try to answer every question.
- Check your answers if you have time at the end.

Turn over ►

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P 5 2 2 0 3 A 0 1 2 8

FORMULAE AND CRITICAL VALUE 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.



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: RESEARCH METHODS

1 The iPhone Effect

Researchers wanted to investigate whether the presence of mobile phones influences the quality of in-person social interactions. In a field experiment, 100 pairs of participants were observed during the course of a 10-minute conversation.

The researchers recorded whether participants placed a mobile phone on the table or held it in their hand. The researchers measured the level of connectedness and empathetic concern at the end of the conversation for those with a mobile phone present and those where it was absent.

(Source: adapted from Mirsa et al. (1999))

- (a) State a two-tailed (non-directional) hypothesis for the iPhone effect study.

(2)

There will be a difference in the level of empathetic concern and connectedness (rated on a 1 to 7 scale) at the end of a 10-minute conversation between pairs where a mobile phone is present (on the table or in the hand) and pairs where a mobile phone is absent.

- (b) Explain why the experimental/research design used in the iPhone effect study was appropriate.

(2)

They used an independent groups design, as different pairs of participants were in each condition: a mobile phone was either present or absent during their conversation. This was appropriate because it allowed comparisons of empathetic concern and connectedness to be drawn between the two conditions, which could not have been done without a group with no device (a control group), and each pair only had one 10-minute conversation, so there were no order effects.



(c) Explain **one** strength of using a field experiment for this study.

(2)

A field experiment allowed real-life behaviour to be assessed regarding empathy and mobile phone use, as the pairs had an everyday conversation, for example in a cafe, and naturally chose whether to put their phone on the table or hold it.

This increases ecological validity, as participants were in a natural setting for the conversations with a mobile phone present or absent, so the findings are more likely to reflect how phones affect real social interactions.

(d) To measure connectedness and empathetic concern ranked scale questions were used where 1 indicated not close (connectedness) or no concern (empathetic concern) and 7 indicated very close (connectedness) or high concern (empathetic concern).

Explain **two** weaknesses of using ranked scale questions in the iPhone effect study.

(4)

One weakness is that the participants may not have similar opinions on what each number on the 1 to 7 scale means, for example what counts as high concern, as one person's 5 may be another person's 7.

This reduces the validity of the scale because the same level of empathy or connectedness could be rated as different numbers depending on the respondent, so comparing the phone present and phone absent groups may not be fair.

A second weakness is that the scale does not allow the participant to expand on their view of how empathetic their conversation partner was or why they felt close or not close to them, as they can only choose a number.

This means the ranked scale lacks validity as it is not truly measuring that person's level of empathy, and the researchers cannot know whether the mobile phone, or something else in the conversation such as the topic, caused a low rating.



(e) The results of the study are given below in **Table 1**.

	Mobile phone present		Mobile phone absent	
	Mean	Standard deviation	Mean	Standard deviation
Empathetic concern	3.54	0.91	5.85	0.66
Connectedness	5.05	0.76	5.36	0.64

Table 1

Analyse the data in **Table 1** to explain **three** conclusions that the researchers might draw from these results.

(6)

Conclusion 1

Participants felt lower empathetic concern for their conversation partner when a mobile phone was present, as the mean empathetic concern was 3.54 with a phone present compared with 5.85 when it was absent, a difference of 2.31.

Conclusion 2

The presence of a mobile phone does not have a large impact on how connected someone feels to their partner, as the mean connectedness was 5.05 with a phone present and 5.36 with it absent, a difference of only 0.31.

Conclusion 3

There was more disagreement between participants about empathetic concern when a phone was present, as the standard deviation was larger (0.91) than when a phone was absent (0.66), so scores were more spread out from the mean.

(Total for Question 1 = 16 marks)



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QUESTION 2 BEGINS ON THE NEXT PAGE.



P 5 2 2 0 3 A 0 1 1 2 8

- 2 Researchers wanted to test the effect of prenatal alcohol exposure on the development of the hippocampus in the brain. They administered repeated 1g/kg doses of pure alcohol (ethanol) in a nutritionally adequate liquid diet to pregnant rats. Control groups were fed the same liquid diet except for the substitution of sucrose (sugar) for pure alcohol (ethanol).

The brains of 60-day-old offspring were investigated and those that were exposed to alcohol were found to have 20% fewer hippocampal cells compared to the control groups. Prenatal exposure to pure alcohol (ethanol) permanently reduced the number of hippocampal neurones without altering physical growth.

(Source: adapted from Barnes and Walker (1981))

- (a) Explain **one** practical application of the above study.

(2)

One practical application is that the government and doctors should advise women to abstain from alcohol completely during pregnancy, for example through health campaigns and warnings on alcohol labels.

This is because the rats exposed to ethanol before birth had 20% fewer hippocampal cells than the controls given sucrose, a permanent reduction, which suggests drinking during pregnancy has negative consequences for the developing brain and memory.

- (b) Justify whether the use of animals in this study was appropriate.

(6)

Using animals in this study was appropriate in some ways. Research using animals can be easily controlled, such as the exact dose of alcohol given to the rats (repeated 1g/kg doses of pure ethanol) and the nutritionally adequate liquid diet, with the control group differing only in having sucrose instead of ethanol. This high level of control means the study can be repeated to test for reliability, and the researchers can be confident that alcohol caused the 20% reduction in hippocampal cells.

Another justification is ethics. The study administered alcohol to pregnant rats, which could permanently damage their offspring, and the offspring's brains were then removed and examined at 60 days old. Such a procedure cannot ethically be carried out with pregnant women or babies, so using rats is the only way to establish a causal link between prenatal alcohol and hippocampal damage. Rats also have a short gestation



period, so the effects on offspring can be studied quickly.

However, giving pregnant rats alcohol to see the effect on their offspring may not be a valid comparison, as rats have a different number of chromosomes and a less complex brain structure than humans, and they metabolise alcohol differently, so the effects of alcohol may not occur in the same way in humans. Rats were also given pure ethanol in a liquid diet, which is not how humans drink, which lowers the validity of generalising the findings.

There are also ethical issues, as the rats and their offspring suffered permanent harm and were killed, so researchers should follow the 3Rs (replace, reduce, refine). Overall, the use of animals was appropriate, as the possible benefit of protecting human babies outweighs the harm, and the research could not have been done on humans.

(Total for Question 2 = 8 marks)

TOTAL FOR SECTION A = 24 MARKS



SECTION B: REVIEW OF STUDIES

3 Superman vs The Joker

Playing computer video games is a very popular pastime, which has been suggested to have an influence on human behaviour. The characters within the games may encourage people to act in particular ways after engaging with the game for a period of time.

To assess the influence of computer video game characters on behaviour researchers recruited the help of 60 students aged 17 to 37 years old. The participants were divided into two groups where they played a violent computer video game as either Superman (a hero) or The Joker (a villain). Those assigned as Superman (a hero) had to protect another character from threats (prosocial behaviour) whereas those assigned as The Joker (a villain) had to attack another character (antisocial behaviour).

After 15 minutes participants were thanked and they left the laboratory where an apparently lost letter was lying on the floor. Researchers noted the number of participants who posted the letter in a postbox, which was close by, and those who ignored the letter. Those who posted the letter were considered to be acting in a prosocial manner whereas those who ignored the letter did not act prosocially.

(Source: adapted from Happ, 2013))

(a) The results of the Superman vs The Joker study are given below in **Table 2**.

	Superman (hero)	The Joker (villain)
Pick up and post letter	14	6
Ignore letter	16	24

Table 2

The researchers carried out a chi-squared (χ^2) test and found an observed value of 4.8 for a 5% level of significance with a one-tailed test.

Explain what this shows in terms of prosocial behaviour for those assigned to play as either Superman (hero) or The Joker (villain).

(2)

The observed value of 4.8 is greater than the critical value of 2.71 ($df = 1$, $p \leq 0.05$, one-tailed), so the result is significant. This means those who played as Superman (hero) showed more prosocial behaviour, posting the letter, than those who played as The Joker (villain).



- (b) Explain how useful social learning theory could be in accounting for the findings of the Superman vs The Joker study.

(6)

Social learning theory (Bandura) suggests that behaviour is learned by observing and imitating role models. The participants may have seen the hero or the villain as a role model, as they controlled the character for 15 minutes and identified with it. Superman protected another character (prosocial behaviour), so those playing as Superman may have imitated this by helping a stranger and posting the lost letter, whereas The Joker attacked another character, so his players may have imitated antisocial behaviour by ignoring it. This fits the findings, as 14 out of 30 Superman players posted the letter compared with only 6 out of 30 Joker players.

Bandura et al. (1961) supports this, as they showed that children looked up to and imitated an adult role model acting aggressively towards a Bobo doll, which could explain the Joker players not posting the letter. However, Bandura's participants were young children, whereas Happ's were students aged 17 to 37, so his findings may be less useful for explaining adult behaviour.

When playing the game, participants will have paid attention to and remembered (retention) the prosocial or antisocial behaviour of the hero or villain. Whilst Bandura's experiments showed that children retained the role model's actions, they were conducted in a laboratory setting with a doll, so they are less useful in accounting for posting a letter in the real world, as they lack ecological validity.

The prosocial behaviour of the hero may have encouraged those assigned to Superman to pick up the letter, as they were able to carry out the helping behaviour (motor reproduction) and may have been motivated by the vicarious reinforcement of Superman being rewarded in the game. However, 16 of the Superman players still ignored the letter, and participants may have been genetically predisposed to being prosocial or antisocial, so social learning theory is not a complete explanation. Also, the effect was



immediate, so it may be short-term priming rather than learning.

Overall, social learning theory is useful in accounting for the difference between the two groups, but individual differences mean it cannot fully explain the findings.

(Total for Question 3 = 8 marks)



- 4 Psychology is the scientific study of the human mind and behaviour. The findings of psychological research have been used to help solve major problems across the world. However, it has been suggested that the findings of psychological research may have cultural and gender issues.

Evaluate the cultural and gender issues of Sherif et al. (1954/1961) and Rosenhan (1973), with reference to their methods and implications for the real world.

(16)

Cultural bias occurs when research findings are generalised to all cultures when they only reflect one. Ethnocentric implications are those that can apply to only one culture or set of people, and Eurocentric implications are those that apply to European and Western concepts. Gender bias occurs when research only reflects one gender, for example androcentrism, where male behaviour is taken as the norm, and male researchers may selectively use information to promote stereotypical differences between the sexes. Sherif et al. (1954/1961) used only 11-year-old white, middle-class American boys at a summer camp in Robbers Cave State Park, Oklahoma, to study how prejudice is created and reduced. The boys were split into two groups, the Eagles and the Rattlers, and competitive tasks such as tug of war and collecting beans led to hostility between the groups. Prejudice was reduced by superordinate goals, such as when the truck got 'stuck' and when the water supply 'failed', which required the groups to work together. Rosenhan (1973) had eight sane pseudopatients, three women and five men, who tried to gain admission to 12 hospitals in five American states with a variety of funding and conditions. They complained of hearing voices saying 'empty', 'hollow' and 'thud', and all were admitted, most with a diagnosis of schizophrenia. In terms of methods, Sherif experienced both Turkish and American cultures, so he may have interpreted his findings with a more varied understanding of cultural differences, which reduces the risk of cultural bias. However, he was working in the USA and was still likely to have interpreted the findings using an individualist outlook, so the study may be ethnocentric or Eurocentric, as the boys' competitive behaviour may reflect American values. On the other hand, the cooperative tasks Sherif used, such as collecting



beans and tug of war, may be applicable to both individualist and collectivist cultures, which suggests the procedure itself is not strongly culturally biased.

Rosenhan's choice of hospitals would have been representative of American psychiatric hospitals in the 1970s, as they included old and new, public and private hospitals.

However, these may have been very different to hospitals in collectivist cultures, so the study could be considered ethnocentric. Hearing voices, the symptom the pseudopatients reported, may not be seen as a symptom of mental illness in some cultures, where it may be seen as a spiritual experience, so the method could be considered culturally biased.

In terms of gender, as Sherif et al. used only males, their research into how prejudice can be created may not apply to females, who may be less competitive or resolve conflict differently, so the study could be considered androcentric. In contrast, Rosenhan had a mix of male and female pseudopatients, so his research is more representative of mental health diagnosis and treatment for both genders, although with only three women it is hard to compare how male and female patients were treated.

Turning to the implications for the real world, Sherif et al. was carried out in an American state park, so the implication that prejudice can be reduced through cooperation and superordinate goals may only be representative of US or Western culture, which limits its use in reducing conflict between groups in other cultures. These implications may also not be relevant to females, so using superordinate goals to reduce prejudice in, for example, girls' schools could be considered androcentric. However, the idea of working towards shared goals has been applied in the jigsaw classroom, which suggests the findings are useful more widely.

The implications about the reliability and validity of diagnosis from Rosenhan relate to the DSM, which is an American system and not a universal diagnostic tool, as many countries use the ICD. This means his conclusions about the inaccuracy of diagnosis may

be ethnocentric. However, problems with the reliability and validity of diagnosing mental disorders affect both genders, so the implications of Rosenhan's study, such as the dangers of labelling, may be accurate and useful for all patients.

In conclusion, both studies show some cultural bias, as they were carried out in the USA with an individualist outlook, so their findings and implications may be ethnocentric. Sherif et al. is more gender biased than Rosenhan, as it only studied boys, whereas Rosenhan included both sexes, making his implications more generalisable across genders. Therefore, the implications of both studies should be applied cautiously outside Western cultures.



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TOTAL FOR SECTION B = 24 MARKS



SECTION C: ISSUES AND DEBATES

- 5 Companies that enable people to meet potential romantic partners are becoming increasingly popular. Some companies include a series of questions during registration that assist them in recommending which people are a potential 'match'.

Mandy decides to use a company to meet a potential romantic partner and is recommended a number of 'matches' who have similar interests. Mandy's mother disagrees with this approach and tells Mandy that romantic relationships are purely biological in basis.

Evaluate how far the biological approach can explain human behaviour such as meeting potential romantic partners. You must make reference to Mandy's situation in your response.

(12)

The biological approach explains behaviour through genes, evolution, brain structure, neurotransmitters and hormones. Evolution is the process of change in all forms of life over generations, through natural and sexual selection. Personality theory suggests there is a biological basis to personality, which affects human behaviour, hormones such as testosterone contribute to behaviour, and the limbic system has a reward pathway that provides pleasure for behaviours such as eating, exercise and sex.

Mandy's mother would argue that evolutionary theory explains Mandy's search for a partner, as the survival and continuation of the species is of utmost importance, so Mandy would choose a potential partner who can provide healthy children and resources. This may be why she is attracted to some matches more than others, for example those who appear healthy and successful in their profiles.

Personality may also be important. People may be more attracted to others with similar personality characteristics, so the company's questions, which recommend matches with similar interests, could be picking up on biologically based traits. If Mandy is an extrovert, two extroverts may be more compatible and desirable to one another, which would support both the company and her mother.

Inherited or acquired hormone levels such as testosterone may influence Mandy's choice of potential partner, for example attraction to more masculine faces, as well as

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aggressive behaviour in relationships. If Mandy meets a match she likes, he may stimulate the reward pathway in her brain, producing dopamine, which will reinforce her desire to continue the relationship with that person.

There is research support for evolutionary explanations of relationship behaviour. Daly et al. (1982) linked domestic abuse to men trying to dissuade romantic partners from infidelity, which suggests aggression is an evolved solution to adaptive problems such as paternity uncertainty. Burger (2009) found evidence that personality characteristics such as empathy and desire for control were linked to obedience, which supports the influence of personality on human behaviour, and so could also apply to partner choice.

However, research linking hormones like testosterone to human behaviour is correlational, so it may be that other factors, such as upbringing or social expectations, are more responsible for Mandy seeking a romantic partner. Evidence supporting the role of the reward pathway (e.g. Olds and Milner, 1954, who found that rats would press a lever repeatedly to stimulate it) used animals, which may not be generalisable to complex human relationships.

The biological approach is also reductionist and deterministic, as it ignores the role of choice and culture. Mandy is using a company and choosing matches based on shared interests, such as hobbies and values, which are learned through experience rather than inherited. In collectivist cultures, partners may be chosen by families, which shows that social factors also matter. Social learning theory could also explain how Mandy has learned what is desirable in a partner from her parents and the media.

In conclusion, the biological approach can explain some of the attraction behind meeting a partner, such as the reward and hormonal processes Mandy may feel, but it cannot fully explain why she chooses matches based on similar interests. Therefore, Mandy's mother is only partly right, as romantic relationships are best explained by an interaction of biological and social factors.



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6 Assess the extent to which psychology could be considered a science.

(20)

A science uses the scientific method, with data collection and hypothesis testing to progress knowledge in a research area. According to Popper, scientific hypotheses must be falsifiable, meaning they can be tested and potentially proven wrong. Kuhn argued that a science should have an overarching paradigm, a set of shared assumptions and methods agreed by the whole field. Science also aims to be objective, with subjectivity making research less scientific, and it often studies concepts in a reductionist rather than holistic manner, breaking behaviour down into its simplest parts. Methods such as laboratory experiments are seen as fulfilling scientific criteria, as they are controlled, replicable and produce empirical, quantitative data.

Biological psychology is the area that most clearly meets these criteria. It uses animals where all conditions can be carefully and closely controlled, leaving little opportunity for confounding variables to affect the results, so cause and effect can be established. It uses physiological measurements to collect quantitative data, such as blood tests for hormone levels or brain scans, which are objective. As biological experiments collect empirical data that can be tested using statistical tests, hypotheses can be refuted or not, which is scientific. Biological psychology can also reduce human behaviour such as aggression to genetic factors, such as the MAOA gene, so it could be considered reductionist and therefore more scientific.

However, reductionism may be a weakness, as reducing aggression to a single gene ignores social and cultural factors, so a scientific approach may lack validity for complex human behaviour. Animal research may also not generalise to humans, which questions how far these findings tell us about the human mind.

Cognitive psychology takes a nomothetic stance in the search for general laws of how memory works, which is a scientific approach. Experiments are used to show that people

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are the same in their processes and strategies, for example the multi-store model of memory (Atkinson and Shiffrin, 1968), which was tested through controlled laboratory experiments on the capacity and duration of short-term memory. Case studies of brain-damaged patients, such as HM, can also be useful in falsifying theories, as HM's ability to learn new skills showed that long-term memory is not a single store, which is a feature of science. Learning theories, such as Skinner's research on operant conditioning, also adopt experimental methods which can be seen as objective and therefore scientific.

On the other hand, cognitive psychology has difficulties, as it is attempting to measure mental processes and brain functioning that cannot be directly observed, which is somewhat subjective and less scientific, as processes must be inferred from behaviour.

Laboratory experiments on memory also often lack ecological validity, so being scientific may come at the cost of telling us how memory works in everyday life.

Social psychology is less scientific. It can see the influence of obedience and prejudice, but finds it difficult to operationalise these concepts, which could be considered unscientific. Social psychology also uses experiments in natural settings, such as Sherif et al.'s (1954/1961) field experiment, so results can be affected by extraneous variables. It also uses unstructured interviews and analyses qualitative data to explore concepts such as prejudice, and these are less controlled and empirical than experiments, so interpretation can be subjective, which is less scientific. However, social psychologists such as Milgram (1963) used controlled laboratory procedures with quantitative measures, such as the voltage level reached, so parts of social psychology are scientific.

The psychodynamic approach is often seen as the least scientific approach within psychology, as so much of it is difficult to test and subjective. Concepts such as the id, ego and superego, though they may seem intuitively reasonable, cannot be proven to exist, so they are unfalsifiable, which is unscientific. Freud's evidence came from case



studies such as Little Hans, which were interpreted by Freud himself and cannot be replicated.

Psychology also lacks a single paradigm, as different approaches such as the biological, cognitive, learning and psychodynamic approaches have different assumptions and methods, so according to Kuhn it would be a pre-science. However, it could be argued that this variety is needed, as human behaviour is too complex to be explained by one approach. There is also a replication crisis, as many famous findings have failed to replicate, which is a problem for a field claiming to be scientific.

In conclusion, psychology can be considered a science to a large extent, as biological, cognitive and learning approaches use the scientific method, falsifiable hypotheses, objective measures and controlled experiments. However, social psychology and especially the psychodynamic approach use more subjective and qualitative methods, and psychology has no single paradigm, so overall psychology is a science in some areas but not all. This may be a strength, as qualitative methods give valid insights into the human mind that a purely scientific approach would miss.



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TOTAL FOR SECTION C = 32 MARKS

TOTAL FOR PAPER = 80 MARKS

