Please check the examination details below before entering your candidate information

Candidate surname	Other names

Centre Number | Candidate Number

Pearson Edexcel Level 3 GCE

Monday 3 June 2024

Afternoon (Time: 2 hours)

Paper reference **9PS0/03**

Psychology

Advanced

PAPER 3: Psychological Skills

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

Advice

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

Turn over ▶

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F:1/1/1/1

P 7 5 7 7 0 R A 0 1 3 2

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FORMULAE AND STATISTICAL TABLES

Standard deviation (sample estimate)

$$\sqrt{\left(\frac{\sum(x-\bar{x})^2}{n-1}\right)}$$

Spearman's rank correlation coefficient

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

Critical values for Spearman's rank

	Level of significance for a one-tailed test				
	0.05	**0.025**	**0.01**	**0.005**	**0.0025**
	Level of significance for a two-tailed test				
N	**0.10**	**0.05**	**0.025**	**0.01**	**0.005**
5	0.900	1.000	1.000	1.000	1.000
6	0.829	0.886	0.943	1.000	1.000
7	0.714	0.786	0.893	0.929	0.964
8	0.643	0.738	0.833	0.881	0.905
9	0.600	0.700	0.783	0.833	0.867
10	0.564	0.648	0.745	0.794	0.830
11	0.536	0.618	0.709	0.755	0.800
12	0.503	0.587	0.678	0.727	0.769
13	0.484	0.560	0.648	0.703	0.747
14	0.464	0.538	0.626	0.679	0.723
15	0.446	0.521	0.604	0.654	0.700
16	0.429	0.503	0.582	0.635	0.679
17	0.414	0.485	0.566	0.615	0.662
18	0.401	0.472	0.550	0.600	0.643
19	0.391	0.460	0.535	0.584	0.628
20	0.380	0.447	0.520	0.570	0.612
21	0.370	0.435	0.508	0.556	0.599
22	0.361	0.425	0.496	0.544	0.586
23	0.353	0.415	0.486	0.532	0.573
24	0.344	0.406	0.476	0.521	0.562
25	0.337	0.398	0.466	0.511	0.551
26	0.331	0.390	0.457	0.501	0.541
27	0.324	0.382	0.448	0.491	0.531
28	0.317	0.375	0.440	0.483	0.522
29	0.312	0.368	0.433	0.475	0.513
30	0.306	0.362	0.425	0.467	0.504

The calculated value must be equal to or exceed the critical value in this table for significance to be shown.

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.

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_b															
	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
N_a																
***p* ≤ 0.05 (one-tailed), *p* ≤ 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* ≤ 0.005 (one-tailed), *p* ≤ 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

	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.

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

SECTION A

Research Methods

1 Pets and social media study

Researchers wanted to investigate the perceptions of people with pets on social media websites.

Some people use social media websites/apps to look for new friends and others to connect with existing friends. Researchers wanted to investigate how women perceive men on social media websites in relation to a pet being in the profile picture.

The researchers devised a questionnaire to assess how men were perceived in two pictures by women. One picture was a man alone and the other was the same man holding a cat. Women aged 18–24 were asked a number of questions regarding personality characteristics of the man in the two pictures. The women rated the man in the two different pictures for extraversion, agreeableness and conscientiousness.

- Extraversion (categorised by active, sociable, talkative behaviour) included statements such as 'the man would be outgoing'.
- Agreeableness (categorised by cooperative, compliant, good-natured behaviour) included statements such as 'the man would sympathise with others' feelings'.
- Conscientiousness (categorised by careful, thorough, organised behaviour) included statements such as 'the man would pay attention to details'.

Each participant rated the man on a scale from 1 (strongly disagree) to 7 (strongly agree), as shown in **Figure 1**.

	Strongly disagree	**Moderately disagree**	**Slightly disagree**	**Neither agree nor disagree**	**Slightly agree**	**Moderately agree**	**Strongly agree**
The man would be outgoing	1	2	3	4	5	6	7

Figure 1

(Source: adapted from Kogan and Volsche (2020))

The researchers compared the mean scores given by the participants for the two pictures for the different personality characteristics.

The results of the personality ratings for the two pictures are shown in **Table 1**.

	Extraversion (1–7)	**Agreeableness (1–7)**	**Conscientiousness (1–7)**
Man alone	4.23	3.59	3.53
Man holding a cat	2.96	4.67	3.50

Table 1

(a) Explain **two** conclusions you can make using the data in **Table 1**.

(4)

1 .....

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In a later question, the participants were asked about how likely they would be to add the man as a friend on their social media profile.

The likelihood of adding the man as a friend on their social media profile was rated on a scale from 1 to 10, where 1 indicated 'they would not consider it' and 10 indicated 'absolutely yes'.

Once the researchers had the data, they decided to conduct a Wilcoxon Signed Ranks test to determine whether there was a difference in the likelihood of adding the man as a friend on their social media profile in the two pictures.

(b) Complete **Table 2** and calculate the Wilcoxon Signed Ranks test for the pets and social media study.

(4)

Participant	Likelihood of adding the man alone as a friend	Likelihood of adding the man with a cat as a friend	Difference	Rank	Rank if positive	Rank if negative
A	7	5				
B	8	7				
C	5	6				
D	10	3				
E	7	7				
F	4	5				
G	6	3				
H	6	2				
				Total:		

Table 2

SPACE FOR CALCULATIONS

Wilcoxon T value .....

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(c) Explain **one** strength and **one** weakness of using a questionnaire in the pets and social media study.

(4)

Strength

Weakness

(Total for Question 1 = 12 marks)

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2 Laptop versus longhand study

Researchers wanted to investigate the effectiveness of different forms of note-taking on achievement.

The researchers noticed that students were more often using laptops to record lecture notes compared to the traditional longhand pen and paper method. As such, they wanted to compare how effective each form of note-taking was for a group of participants.

37 university students from an American university were recruited for the study and were required to attend a lecture as part of their university course on educational psychology. The pre-recorded lecture lasted 23 minutes and consisted of text and images to remember and took place in their usual lecture hall.

The participants were split into two groups.

- Group A – Laptop note-taking (N=20)
- Group B – Longhand note-taking (N=17)

Both groups saw the same lecture separately and were given a filler/distracter task. The filler/distracter task involved vocabulary multiple choice questions to ensure any information from the lecture had entered their long-term memory.

After the filler/distracter task, participants were given 15 minutes to review their notes and were then tested on the lecture material. Testing of the groups involved 37 multiple choice questions based on the lecture material, which included assessment on 'image' and 'text-related' information.

(Source: adapted from Luo et al. (2018))

(a) Describe how the researchers of the laptop versus longhand study could have used a stratified sampling technique to recruit the participants.

(2)

The mean results for the test are shown in **Table 3**.

Group	Text-related performance (% correct responses)	Image-related performance (% correct responses)
Group A: laptop note-taking (N=20)	69	53
Group B: longhand note-taking (N=17)	70	67

Table 3

(b) Explain **one** conclusion you can make using the data in **Table 3**.

(2)

(c) The researchers in the laptop versus longhand study carried out a Mann Whitney U test to see if there was a difference in the overall performance of the groups of participants. They used a two-tailed (non-directional) test with a 1% level of significance and their observed/calculated value was 84.

Explain what this shows in terms of the overall performance of the groups in the laptop versus longhand study.

(2)

(d) The researchers in the laptop versus longhand study used a field experiment.

Explain **one** strength of using a field experiment for the laptop versus longhand study.

(2)

(e) Explain **two** improvements that could have been made to the laptop versus longhand study.

(4)

1

2

(Total for Question 2 = 12 marks)

TOTAL FOR SECTION A = 24 MARKS

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SECTION B

Review of Studies

3 Screen advertising and children study

Researchers wanted to investigate the effect of screen advertising on what food or drink children consumed.

They conducted a meta-analysis on studies conducted from 1980 to 2018 on children aged between 2–18 years old in terms of how different forms of screen advertising affected what they consumed.

Screen advertising included TV and internet sites or internet adverts when playing games. They included all languages and countries in their inclusion criteria for the study, but excluded adults, non-screen advertising, and studies prior to 1980.

The researchers compared the findings from studies about food advertising to non-food advertising, such as for toys. 11 studies about food advertising on TV and 5 studies for internet-based food advertising were included in their analysis.

The researchers looked at two different methodologies:

- Experimental evidence, where children watched adverts embedded in TV or the internet and were offered food immediately afterwards, with studies varying the types of food available.
- Non-experimental evidence, through studies using various surveys/ questionnaires to consider the impact of screen advertising on body mass index (BMI).

For the experimental evidence, it was found that food advertising increased the immediate dietary intake of the children, where they consumed on average 60 calories more than children exposed to non-food advertising. In the non-experimental evidence, there was a significant positive association between the amount of food advertising children were exposed to and their body mass index (BMI).

The study concluded that exposure to unhealthy food advertising on TV and the internet increased the calorie consumption and body mass index (BMI) in children.

(Source: adapted from Russell et al. (2018))

(a) Explain **one** weakness of using a meta-analysis for the screen advertising and children study.

(2)

(b) Using research evidence, explain how far learning theories can account for the findings of the screen advertising and children study.

(6)

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(Total for Question 3 = 8 marks)

4 Evaluate Baddeley (1966b) and Rosenhan (1973) in terms of their scientific status.

(16)

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(Total for Question 4 = 16 marks)

TOTAL FOR SECTION B = 24 MARKS

SECTION C

Issues and Debates

5 Carli and Anthony are at their sixth form college and they are looking at social media pictures of Carli's recent 18th birthday party on Carli's mobile phone.

The pictures show that Carli's cake said 'Happy 18th Birthday' with no candles and there was a dry ice machine and no balloons. Carli was wearing jeans and a t-shirt. Anthony is confused as he thought the cake had Carli's name and 18 candles on it and thought there were pink balloons and that Carli wore a dress.

Carli laughs at Anthony, so he gets annoyed and he aggressively knocks the phone out of her hand and runs out of the classroom to the school field.

Evaluate the extent to which cognitive psychology can explain human behaviour, such as the situation regarding Carli and Anthony.

You must make reference to the context in your answer.

(12)

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(Total for Question 5 = 12 marks)

6 Assess the use of psychology in social control.

(20)

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(Total for Question 6 = 20 marks)

TOTAL FOR SECTION C = 32 MARKS
TOTAL FOR PAPER = 80 MARKS

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