

Please check the examination details below before entering your candidate information

Candidate surname

Other names

Centre Number

Candidate Number

Pearson Edexcel Level 3 GCE

Thursday 25 May 2023

Afternoon (Time: 2 hours)

Paper
reference

9PS0/02

Psychology

Advanced

PAPER 2: Applications of 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 in Section **A**.
- Answer ALL questions from **one** of the three options in Section **B**.
- 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.
- Try to answer every question.
- Check your answers if you have time at the end.

Turn over ►

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FORMULAE AND STATISTICAL TABLES

Standard deviation (sample estimate)

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

Spearman's rank correlation coefficient

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

Critical values for Spearman's rank

N	Level of significance for a one-tailed test				
	0.05	0.025	0.01	0.005	0.0025
N	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.

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Chi-squared distribution formula

$$X^2 = \sum \frac{(O-E)^2}{E} \quad df = (r-1)(c-1)$$

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																	

 $p \leq 0.05$ (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



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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



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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.



SECTION A

Clinical Psychology

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

1 In your studies of clinical psychology, you will have learned about classification systems for mental health.

(a) Define the term 'reliability' in relation to classification systems used for diagnosing mental health.

(1)

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(b) Explain **two** reasons why classification systems for mental health may not be valid.

(4)

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2 Charles conducted an investigation to see whether therapy delivered online was as effective as therapy delivered face to face (in person). If people were interested in taking part in Charles's investigation, they could contact him.

His participants came from a variety of different therapists and had a range of different mental health disorders. The participants were separated into two groups.

- Condition A: the therapy was delivered online.
- Condition B: the therapy was delivered face to face (in person).

Every participant had completed eight weeks of therapy and Charles asked them if their mental health disorder had improved, stayed the same, or deteriorated.

(a) Identify the dependent variable (DV) in Charles's investigation.

(1)

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(b) Charles used a volunteer sampling technique.

Explain **one** weakness of Charles using a volunteer sampling technique in his investigation.

(2)

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(c) Once Charles had collected his data, he conducted a chi-squared test.

State **one** reason why Charles used a chi-squared test to analyse his data.

(1)

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(d) Charles found an observed/calculated value of 3.23 where $df = 2$ when he calculated the chi-squared test for his investigation.

Explain whether Charles's results were significant for a one-tailed (directional) hypothesis when $p \leq 0.05$.

(2)

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(e) Explain **one** improvement Charles could make to his investigation.

(2)

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(Total for Question 2 = 8 marks)

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3 You will have learned about the function of neurotransmitters as an explanation of schizophrenia.

(a) Describe the function of neurotransmitters as an explanation of schizophrenia.

(3)

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(b) Explain **one** strength of the function of neurotransmitters as an explanation of schizophrenia.

(2)

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(Total for Question 3 = 5 marks)



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4 Evaluate how issues around genes and mental health can affect development.

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(Total for Question 4 = 8 marks)



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(Total for Question 5 = 8 marks)



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(Total for Question 6 = 20 marks)

TOTAL FOR SECTION A = 54 MARKS



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SECTION B

Answer questions from ONE option in this section.

Indicate which question you are answering by marking a cross . If you change your mind, put a line through the box and then indicate your new question with a cross .

OPTION 1: CRIMINOLOGICAL PSYCHOLOGY

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

If you answer OPTION 1, put a cross in the box .

7 In your studies of criminological psychology you will have learned about treatments for offenders.

(a) Describe **one** biological treatment for offenders.

(2)

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(b) Explain **one** strength of a biological treatment for offenders.

(2)

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(Total for Question 7 = 4 marks)

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P 7 1 9 1 9 R A 0 2 3 5 6



8 Alicia conducted an experiment to investigate perceptions of criminal behaviour. She gave participants from a local office two different scenarios about an office manager.

In the first scenario the participants had to say how likely it was that the office manager committed assault (condition A). In the second scenario the same participants had to say how likely it was that the office manager committed fraud (condition B).

The participants were asked to give a score from 1 to 10, where 1 was highly unlikely and a score of 10 was highly likely.

(a) Explain **one** weakness of Alicia collecting quantitative data for her experiment.

(2)

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(b) Alicia's results are shown in **Table 1**. Complete **Table 1** and calculate the Wilcoxon Signed Ranks test for Alicia's experiment.

(4)

Participant	Condition A: Likelihood of committing assault	Condition B: Likelihood of committing fraud	Difference	Rank	Rank if positive	Rank if negative
A	1	5				
B	3	3				
C	2	7				
D	7	8				
E	5	10				
F	4	2				
G	3	6				
Total:						

Table 1

SPACE FOR CALCULATIONS

Wilcoxon T value



(c) Explain **one** improvement Alicia could make to her experiment.

(2)

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(Total for Question 8 = 8 marks)

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(Total for Question 9 = 8 marks)



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(Total for Question 10 = 16 marks)

TOTAL FOR SECTION B OPTION 1 = 36 MARKS



OPTION 2: CHILD PSYCHOLOGY

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

If you answer OPTION 2, put a cross in the box .

11 In your studies of child psychology you will have learned about therapies for helping children with autism.

(a) Describe **one** therapy used to help children with autism.

(2)

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(b) Explain **one** strength of a therapy for helping children with autism.

(2)

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(Total for Question 11 = 4 marks)

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12 Alicia conducted an experiment to investigate perceptions about whether day care improved the cognitive development of children. She gave parents from a local nursery two different scenarios about a child.

In the first scenario the participants had to say how likely it was that the cognitive development of a child who did not attend day care would have improved (condition A). In the second scenario the same participants had to say how likely it was that the cognitive development of a child who did attend day care would have improved (condition B).

The participants were asked to give a score from 1 to 10, where 1 was highly unlikely and a score of 10 was highly likely.

(a) Explain **one** weakness of Alicia collecting quantitative data for her experiment. (2)

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(b) Alicia's results are shown in **Table 2**. Complete **Table 2** and calculate the Wilcoxon Signed Ranks test for Alicia's experiment.

(4)

Participant	Condition A: Likelihood of child who did not go to day care improving	Condition B: Likelihood of child who did go to day care improving	Difference	Rank	Rank if positive	Rank if negative
A	1	5				
B	3	3				
C	2	7				
D	7	8				
E	5	10				
F	4	2				
G	3	6				
Total:						

Table 2

SPACE FOR CALCULATIONS

Wilcoxon T value

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(c) Explain **one** improvement Alicia could make to her experiment.

(2)

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(Total for Question 12 = 8 marks)

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(Total for Question 13 = 8 marks)



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(Total for Question 14 = 16 marks)

TOTAL FOR SECTION B OPTION 2 = 36 MARKS



OPTION 3: HEALTH PSYCHOLOGY

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

If you answer OPTION 3, put a cross in the box .

15 In your studies of health psychology you will have learned about treatments for alcohol addiction.

(a) Describe **one** treatment for alcohol addiction.

(2)

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(b) Explain **one** strength of a treatment for alcohol addiction.

(2)

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(Total for Question 15 = 4 marks)

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16 Alicia conducted an experiment to investigate perceptions about whether a drug addict is more likely to commit a crime than a non-drug addict. She gave participants from a local town two different scenarios about a crime.

In the first scenario the participants had to say how likely it was that the person who was not a drug addict committed the crime (condition A). In the second scenario the same participants had to say how likely it was that the person who was a drug addict committed the crime (condition B).

The participants were asked to give a score from 1 to 10, where 1 was highly unlikely and a score of 10 was highly likely.

(a) Explain **one** weakness of Alicia collecting quantitative data.

(2)

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(b) Alicia's results are shown in **Table 3**. Complete **Table 3** and calculate the Wilcoxon Signed Ranks test for Alicia's experiment.

(4)

Participant	Condition A: Likelihood of non-addict committing the crime	Condition B: Likelihood of drug addict committing the crime	Difference	Rank	Rank if positive	Rank if negative
A	1	5				
B	3	3				
C	2	7				
D	7	8				
E	5	10				
F	4	2				
G	3	6				
Total:						

Table 3

SPACE FOR CALCULATIONS

Wilcoxon T value

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(c) Explain **one** improvement Alicia could make to her experiment.

(2)

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(Total for Question 16 = 8 marks)

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(Total for Question 17 = 8 marks)



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(Total for Question 18 = 16 marks)

TOTAL FOR SECTION B OPTION 3 = 36 MARKS
TOTAL FOR PAPER = 90 MARKS



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