

Write your name here

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Other names

**Pearson Edexcel**  
**Level 3 GCE**

Centre Number

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Candidate Number

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# Psychology

**Advanced Subsidiary**

**Paper 2: Biological Psychology and Learning Theories**

Thursday 17 May 2018 – Afternoon

**Time: 1 hour 30 minutes**

Paper Reference

**8PS0/02**

**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 70.
- The marks for **each** question are shown in brackets – *use this as a guide as to how much time to spend on each question.*
- The list of formulae and statistical tables are printed at the start of this paper.
- Candidates may use a calculator.

## Advice

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

Turn over ►

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## FORMULAE AND STATISTICAL TABLES

### Standard deviation (sample estimate)

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

### Spearman's rank correlation coefficient

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

### Critical values for Spearman's rank

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.



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### 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**

		$N_b$																		
		5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20			
$N_a$																				
<b><math>p \leq 0.05</math> (one-tailed), <math>p \leq 0.10</math> (two-tailed)</b>																				
<b>5</b>	4	5	6	8	9	11	12	13	15	16	18	19	20	22	23	25				
<b>6</b>	5	7	8	10	12	14	16	17	19	21	23	25	26	28	30	32				
<b>7</b>	6	8	11	13	15	17	19	21	24	26	28	30	33	35	37	39				
<b>8</b>	8	10	13	15	18	20	23	26	28	31	33	36	39	41	44	47				
<b>9</b>	9	12	15	18	21	24	27	30	33	36	39	42	45	48	51	54				
<b>10</b>	11	14	17	20	24	27	31	34	37	41	44	48	51	55	58	62				
<b>11</b>	12	16	19	23	27	31	34	38	42	46	50	54	57	61	65	69				
<b>12</b>	13	17	21	26	30	34	38	42	47	51	55	60	64	68	72	77				
<b>13</b>	15	19	24	28	33	37	42	47	51	56	61	65	70	75	80	84				
<b>14</b>	16	21	26	31	36	41	46	51	56	61	66	71	77	82	87	92				
<b>15</b>	18	23	28	33	39	44	50	55	61	66	72	77	83	88	94	100				
<b>16</b>	19	25	30	36	42	48	54	60	65	71	77	83	89	95	101	107				
<b>17</b>	20	26	33	39	45	51	57	64	70	77	83	89	96	102	109	115				
<b>18</b>	22	28	35	41	48	55	61	68	75	82	88	95	102	109	116	123				
<b>19</b>	23	30	37	44	51	58	65	72	80	87	94	101	109	116	123	130				
<b>20</b>	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
<b><math>p \leq 0.01</math> (one-tailed), <math>p \leq 0.02</math> (two-tailed)</b>																
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
<b><math>p \leq 0.025</math> (one-tailed), <math>p \leq 0.05</math> (two-tailed)</b>																
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
<b><math>p \leq 0.005</math> (one-tailed), <math>p \leq 0.01</math> (two-tailed)</b>																
<b>5</b>	0	1	1	2	3	4	5	6	7	7	8	9	10	11	12	13
<b>6</b>	1	2	3	4	5	6	7	9	10	11	12	13	15	16	17	18
<b>7</b>	1	3	4	6	7	9	10	12	13	15	16	18	19	21	22	24
<b>8</b>	2	4	6	7	9	11	13	15	17	18	20	22	24	26	28	30
<b>9</b>	3	5	7	9	11	13	16	18	20	22	24	27	29	31	33	36
<b>10</b>	4	6	9	11	13	16	18	21	24	26	29	31	34	37	39	42
<b>11</b>	5	7	10	13	16	18	21	24	27	30	33	36	39	42	45	48
<b>12</b>	6	9	12	15	18	21	24	27	31	34	37	41	44	47	51	54
<b>13</b>	7	10	13	17	20	24	27	31	34	38	42	45	49	53	56	60
<b>14</b>	7	11	15	18	22	26	30	34	38	42	46	50	54	58	63	67
<b>15</b>	8	12	16	20	24	29	33	37	42	46	51	55	60	64	69	73
<b>16</b>	9	13	18	22	27	31	36	41	45	50	55	60	65	70	74	79
<b>17</b>	10	15	19	24	29	34	39	44	49	54	60	65	70	75	81	86
<b>18</b>	11	16	21	26	31	37	42	47	53	58	64	70	75	81	87	92
<b>19</b>	12	17	22	28	33	39	45	51	56	63	69	74	81	87	93	99
<b>20</b>	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: BIOLOGICAL PSYCHOLOGY**

**1** You will have learned about the classic study by Raine et al. (1997).

Explain **two** strengths of Raine et al's (1997) study.

Strength 1

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Strength 2

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**(Total for Question 1 = 4 marks)**

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2 You were required to carry out a practical investigation in biological psychology.

(a) State the hypothesis for your practical investigation in biological psychology. (2)

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(b) Describe **one** ethical consideration you accounted for during your practical investigation in biological psychology. (2)

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(c) Describe the outcome of your Spearman's rho test for your practical investigation in biological psychology. (2)

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(d) Explain **two** improvements you could make to your practical investigation in biological psychology.

(4)

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**3** Belinda is an 11-month-old child whose parents were recently contacted by her nursery staff. They informed Belinda's parents that Belinda is aggressive towards other children. She has pushed other children over, taken their toys, and has shouted at the nursery staff.

(a) Describe how Freud's psychodynamic theory could explain Belinda's aggressive behaviour.

(3)

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(b) Explain **one** strength and **one** weakness of Freud's psychodynamic explanation of aggression.

(4)

Strength

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Weakness

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**(Total for Question 3 = 7 marks)**

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4 Evaluate **one** adoption study that you have learned about in biological psychology.

(8)

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(Total for Question 4 = 8 marks)

**TOTAL FOR SECTION A = 29 MARKS**



**SECTION B: LEARNING THEORIES**

**5** Malcolm carried out a non-participant observation in a local nursery to find out whether older children or younger children are more aggressive.

(a) Describe non-participant observation as a human research method.

(3)

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(b) Describe how Malcolm could use event sampling in his non-participant observation at the local nursery.

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Malcolm observed 12 children from the local nursery:

- six children aged one to two years old (Group A)
- six children aged three to four years old (Group B).

The results of Malcolm's observation are shown in **Table 1**.

<b>Group A</b>	<b>Number of aggressive acts observed for children aged one to two years old</b>	<b>Group B</b>	<b>Number of aggressive acts observed for children aged three to four years old</b>
1	11	1	22
2	14	2	15
3	15	3	18
4	7	4	17
5	7	5	24
6	6	6	24
	Mean score = 10		Mean score = 20

**Table 1**

- (c) Calculate the median number of aggressive acts observed for children aged one to two years old (Group A).

(1)

**SPACE FOR CALCULATIONS**

Median number of aggressive acts observed for children aged one to two years old (Group A) .....





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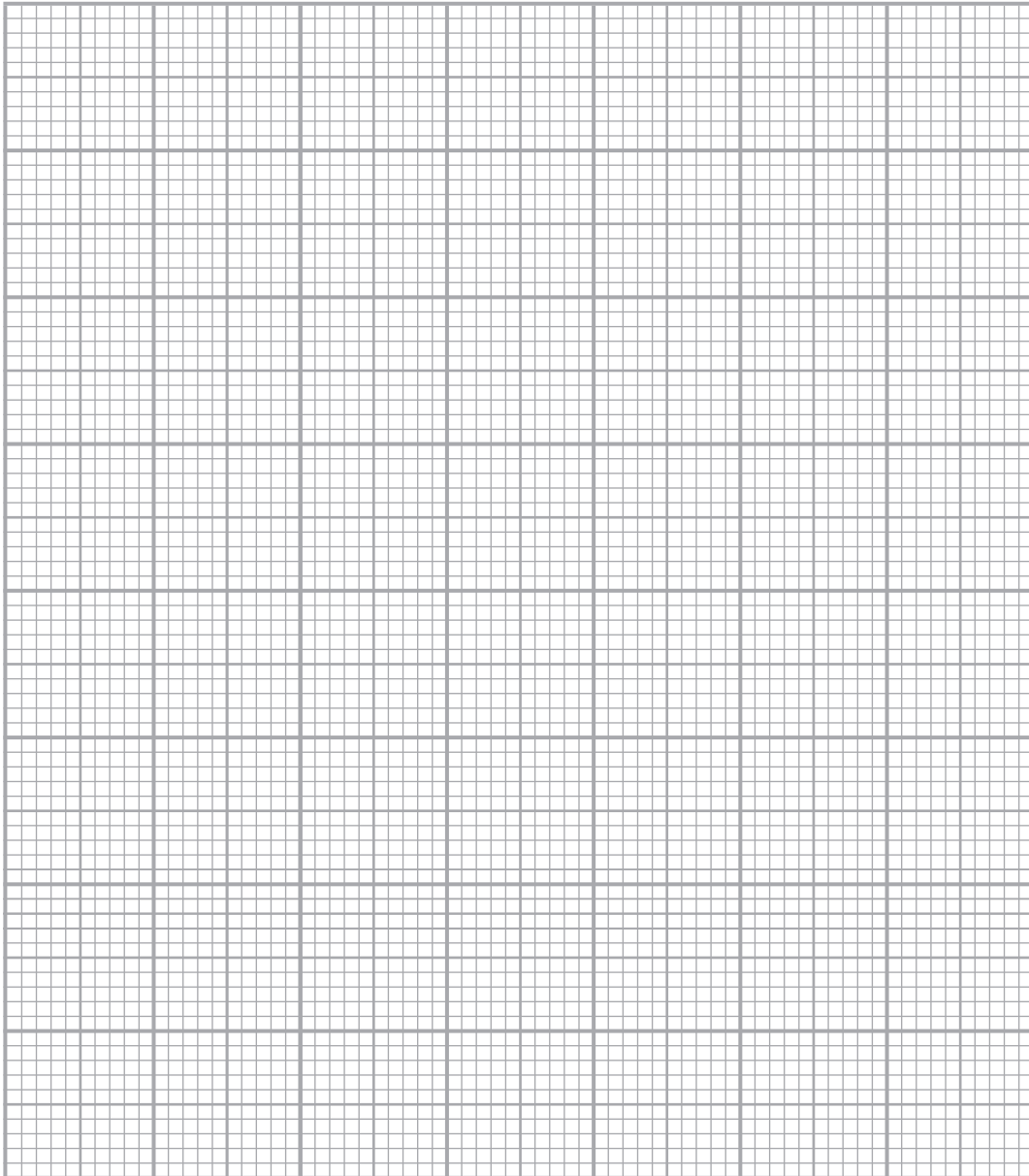
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(d) Draw a bar chart to display the mean number of aggressive acts for children aged one to two years old (Group A) and for children aged three to four years old (Group B), as shown in **Table 1**.

(3)

Title



(e) Explain **one** participant variable that Malcolm could have controlled for when planning his observation at the local nursery.

(2)

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**(Total for Question 5 = 11 marks)**

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- 6 Matilda has been diagnosed with a phobia of buttons. She has been undergoing systematic desensitisation therapy for three months, which has been unsuccessful. Her therapist has decided to try an alternative treatment for her phobia.

Describe **one** treatment, other than systematic desensitisation, that the therapist could use with Matilda.

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**(Total for Question 6 = 4 marks)**



7 (a) Describe content analysis as a research method used in psychology.

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(b) Explain **one** weakness of content analysis as a research method used in psychology.

(2)

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**(Total for Question 7 = 6 marks)**

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8 You will have learned about the classic study by Watson and Rayner (1920) Little Albert.  
Evaluate the classic study by Watson and Rayner (1920) Little Albert.

(8)

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(Total for Question 8 = 8 marks)

**TOTAL FOR SECTION B = 29 MARKS**



**SECTION C**

- 9 Harrison and two of his friends were arrested for fighting whilst watching their local football club play against a rival team. During the fight Harrison’s friends cheered him on and encouraged him to fight supporters from the opposing team. Harrison was arrested by the police and did not see the rest of the football match.

Evaluate how operant conditioning and brain functioning could explain Harrison’s aggressive behaviour. You must make reference to the context in your answer.

**(12)**

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**(Total for Question 9 = 12 marks)**

**TOTAL FOR SECTION C = 12 MARKS**  
**TOTAL FOR PAPER = 70 MARKS**



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