Please check the examination details below before entering your candidate information

Candidate surname: StemUp Model Solution | Other names:

Centre Number | Candidate Number

Pearson Edexcel International Advanced Level

Friday 19 January 2024

Morning (Time: 2 hours)

Paper reference **WPS04/01**

Psychology

International Advanced Level

UNIT 4: Clinical Psychology and 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 96.
- 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.
- Calculators may be used.

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

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

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.

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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.

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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.

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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 the following classic study in detail:

- Rosenhan (1973)

(a) State **one** aim of Rosenhan's (1973) study.

(1)

To investigate whether psychiatrists could distinguish the sane from the insane, by seeing if sane pseudo-patients admitted to psychiatric hospitals would be detected as sane by staff.

(b) Describe the qualitative data gathered by the pseudo-patients in Rosenhan's (1973) study.

(2)

Once admitted, the pseudo-patients kept detailed written notes in diaries of their experiences on the ward, such as how staff and patients treated them and what medication they were given. The notes also recorded how normal behaviour was misinterpreted by staff, eg the nursing records described one pseudo-patient's note-taking as "patient engages in writing behaviour", seen as a symptom of his illness.

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(c) Explain **two** strengths of Rosenhan's (1973) study in terms of reliability.

(4)

1 *The pseudo-patients used a standardised procedure on admission: all reported hearing voices saying words such as "empty", "hollow" and "thud", then behaved normally once on the ward. Because the same procedure was repeated in 12 different hospitals, the study is replicable and the consistent findings show it is reliable.*

2 *Quantitative data were also gathered, such as the number of tablets the pseudo-patients were given and how often staff responded to their questions or initiated contact with them. Numerical data like this is objective, needs no subjective interpretation and so reduces researcher bias, making the results more reliable.*

(Total for Question 1 = 7 marks)

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2 Ashanti is a psychiatrist who is planning to conduct a case study to research the effectiveness of family therapy.

Ashanti will first find out about the effectiveness of family therapy from secondary data. She then intends to complete her case study on Caspian, one of her own patients. Caspian attends family therapy sessions to help manage his schizophrenia.

(a) Describe how Ashanti could gather secondary data for her case study.

(2)

Ashanti could search reputable online databases, such as Google Scholar or psychology journals, for published studies, reviews and articles about family therapy for patients with schizophrenia. She would use key search terms such as "family therapy", "schizophrenia" and "effectiveness" so the secondary data she gathers is relevant to her research into whether family therapy works.

(b) Describe how Ashanti could conduct her case study research method with Caspian to investigate the effectiveness of family therapy.

(4)

First, Ashanti must gain fully informed consent from Caspian for his therapy sessions and personal information to be used in a case study, and keep his identity confidential. She could then gather qualitative data by interviewing Caspian about his thoughts and feelings on the family therapy sessions, and interview his family members about any changes they have noticed at home, such as fewer arguments or relapses.

Ashanti could use Caspian's medical case files to track the course of his schizophrenia since diagnosis, such as hospital admissions and relapses before and after therapy began, to find evidence of progress. She could also attend some family therapy sessions and make observational records of how Caspian and his family interact. Repeating these measures over several months would show whether his symptoms improve over time.

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(c) Explain **two** weaknesses of Ashanti using a case study research method to investigate the effectiveness of family therapy.

(4)

1 *Caspian is Ashanti's own patient, so she may be biased towards wanting family therapy to succeed for him, and her case study could lack objectivity. Her interpretation of his interviews and case files may be skewed by her personal beliefs, which would reduce the reliability and validity of her conclusions about effectiveness.*

2 *The case study is based only on Caspian's unique experience of family therapy, and his family dynamics and symptoms are unlikely to be representative of other patients with schizophrenia. Therefore the findings about the effectiveness of family therapy cannot be generalised to the wider population receiving this therapy.*

(Total for Question 2 = 10 marks)

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3 Andrezj has been diagnosed with a mental health disorder. Two clinicians diagnosed him separately using the DSM. Both were from a different culture to Andrezj.

When he was speaking to the clinicians about his symptoms, Andrezj had found it difficult to find the right words to express how he was feeling. He also felt that sometimes he struggled to explain his concerns and worries about the symptoms.

(a) Describe **one** way that culture may have influenced Andrezj's diagnosis.

(2)

The clinicians were from a different culture to Andrezj, so linguistic and cultural differences may have affected how he expressed his worries and concerns, as he found it hard to find the right words. The clinicians may have interpreted his descriptions through their own cultural lens rather than from a culturally relative point of view, so they may have misunderstood his symptoms and given a less accurate diagnosis.

(b) Explain **one** reason why Andrezj's diagnosis may be considered reliable.

(2)

Two clinicians diagnosed Andrezj separately using the same classification system, the DSM, so if they reached the same diagnosis this shows inter-rater reliability. This is supported by Brown et al. (2001), who found that independent interviewers using the DSM-IV for mood and anxiety disorders came to the same diagnoses, showing that the DSM is a reliable diagnostic system.

(Total for Question 3 = 4 marks)

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4 In your studies of clinical psychology, you will have learned about one of the following mental health disorders:

- Anorexia nervosa
- Unipolar depression

(a) Give **one** symptom of your chosen mental health disorder.

(1)

Chosen mental health disorder:

Unipolar depression

Decreased interest or pleasure in all, or almost all, activities for most of the day, nearly every day.

(b) Describe **one** non-biological explanation for your chosen mental health disorder.

(4)

Beck's (1967) cognitive theory suggests unipolar depression is caused by faulty, irrational patterns of thinking. People develop negative schemas, often from early experiences such as criticism or loss, which are activated by later stressful events. This leads to the negative cognitive triad: a negative view of the self ("I am worthless"), of the world ("everyone is against me") and of the future ("things will never get better"). These views are maintained by cognitive biases (errors in processing information), such as overgeneralisation from limited evidence, selective abstraction of negative details and magnification of failures. This creates a negative self-concept, so the person feels hopeless and develops the symptoms of depression.

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(c) Analyse the effectiveness of cognitive behavioural therapy (CBT) for your chosen mental health disorder.

(6)

CBT challenges the negative automatic thoughts and faulty beliefs of the cognitive triad and uses behavioural activation, so it targets the cause suggested by the cognitive explanation. It can also be combined with other treatments. Wiles et al. (2013) found that patients who received CBT alongside their antidepressant medication showed a greater reduction in depressive symptoms than those on medication alone, so CBT is effective.

However, CBT requires clients to complete homework tasks, such as thought diaries, between sessions. Clients with depression may find this difficult because it needs motivation, and diminished interest in daily life is a symptom of depression, so some clients drop out or do not engage, reducing its effectiveness.

CBT also does not account for other causes of depression, such as low serotonin, so it may be less effective when depression is not just due to cognitive processing. Cuijpers et al.'s (2013) meta-analysis found CBT was no more effective than drug treatment when used alone, but was most effective when combined with drugs, suggesting CBT works best as part of a combined treatment.

(Total for Question 4 = 11 marks)

TOTAL FOR SECTION A = 32 MARKS

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SECTION B

Clinical Psychology

Answer the question. Write your answer in the space provided.

5 Evaluate the effectiveness of drug therapy as a treatment for schizophrenia.

(16)

Drug therapy is a biological treatment for schizophrenia based on the dopamine hypothesis, which suggests symptoms are caused by excess dopamine activity in the brain. Typical antipsychotics, such as phenothiazines like chlorpromazine, block dopamine D2 receptors, reducing dopamine activity and so suppressing positive symptoms such as hallucinations and delusions. Atypical antipsychotics, such as clozapine and risperidone, block dopamine receptors but also act on serotonin. Drugs can be taken as tablets or syrup, and if patients forget to take them, long-acting injections can be given to help with compliance. They can also be used with anti-depressants.

There is strong evidence that drug therapy is effective. Patients who respond to phenothiazines show a reduction in most symptoms. Meltzer et al. (2004) found that patients taking haloperidol had reduced symptoms and improved day-to-day functioning. Emsley (2008) found that risperidone injections reduced both positive and negative symptoms, with 64% of patients having no symptoms two years later. This suggests that drugs can treat a range of symptoms, not only positive ones. Antipsychotics also reduce symptoms more rapidly than psychological therapies such as family therapy, so patient distress is reduced quickly and patients can then engage with other therapies.

However, drugs have serious side effects. Typical antipsychotics can cause tardive dyskinesia (involuntary movements), and Adityanjee and Kaizad (2005) found that in 0.05% of patients antipsychotics lead to neuroleptic malignant syndrome, causing confusion and high blood pressure, and in 10% of these cases death. Side effects also reduce compliance: Rosa et al.

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(2005) found only around 50% of patients took their antipsychotics as prescribed, so however well the drugs act on neurotransmitters, they are ineffective if they are not taken. Patients who stop often relapse, which can create a "revolving door" of hospital admissions.

Drug therapy is also reductionist, as it treats schizophrenia only as a problem of neurotransmitters. Genes may play a role, and Eaton (1980) found schizophrenia is associated with city life, suggesting social adversity and the environment are involved, which drugs cannot change. Drugs manage symptoms rather than cure the disorder, so symptoms may return once medication stops.

The evidence itself has limitations. Hartling et al. (2012) reviewed 114 studies and found it hard to reach overall conclusions about antipsychotic effectiveness because of possible bias, brief follow-up periods and selective samples, and many trials are funded by drug companies. On the other hand, Bustillo et al. (2001) found that assertive community treatment helped prevent relapse and hospitalisation, suggesting drugs are most effective when combined with other interventions.

In conclusion, drug therapy is effective in rapidly reducing symptoms for many patients, particularly positive symptoms, and the evidence for this is strong. However, its effectiveness is limited by side effects, poor compliance and its narrow focus on neurotransmitters, so it is most effective when combined with psychological and social interventions such as family therapy.

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(Total for Question 5 = 16 marks)

TOTAL FOR SECTION B = 16 MARKS

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SECTION C

Psychological Skills

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

6 Ben investigated whether television programmes portrayed gender stereotypes for females and males. He conducted a content analysis on four television programmes.

Ben tallied the number of stereotypical or non-stereotypical female and male characters in each programme.

The results are shown in **Table 1**.

Television programme	Number of stereotypical female characters	Number of non-stereotypical female characters	Number of stereotypical male characters	Number of non-stereotypical male characters
A	𝍸 /	///	𝍸 𝍸	//
B	𝍸 𝍸	𝍸	𝍸	//
C	𝍸 //	𝍸	𝍸	𝍸
D	𝍸	𝍸 ///	𝍸 /	///

Table 1

(a) Calculate the ratio of female to male stereotypical characters recorded by Ben in his content analysis.

You must give your answer in the lowest form.

(1)

Space for calculations

Each //// gate = 5 characters

Stereotypical female = 6 + 10 + 7 + 5 = 28

Stereotypical male = 10 + 5 + 5 + 6 = 26

28 : 26 ⇒ (÷ 2) ⇒ 14 : 13

Ratio 14 : 13

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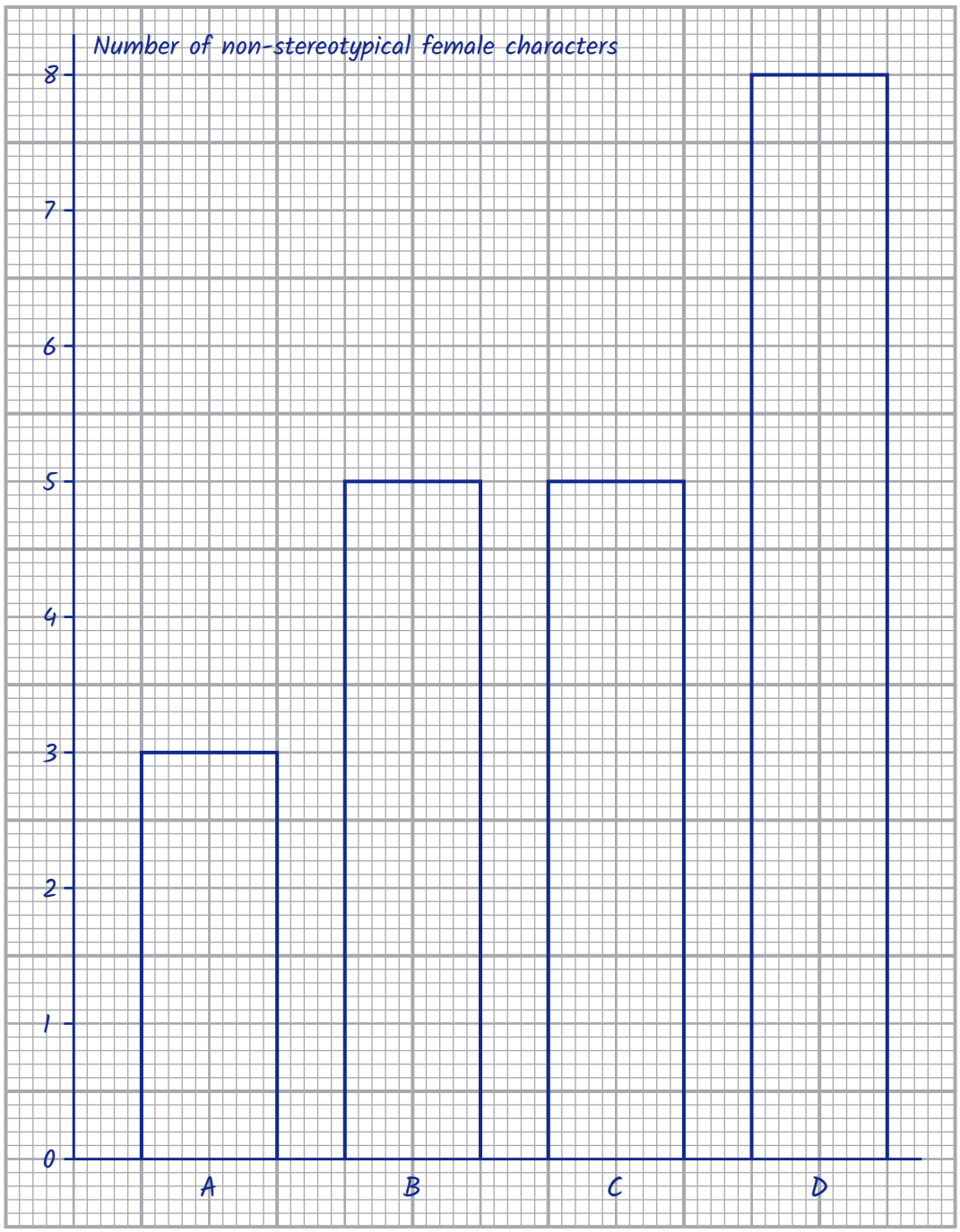
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(b) Draw a bar chart to show the data from **Table 1** for non-stereotypical female characters in each television programme.

(3)

Title:

A bar chart to show the number of non-stereotypical female characters in each of the four television programmes (A, B, C and D)



(Total for Question 6 = 4 marks)

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7 Zhi intends to use a longitudinal research method to investigate the influence of parenting styles on the educational achievement of children. She plans to gather a sample of 20 families to study over a five-year time period. Zhi has decided to sample families with children currently aged six years old.

(a) Describe how Zhi could use a volunteer sampling technique to gather the families for her investigation.

(2)

Zhi could advertise her study through posters and newsletters in local primary schools that six-year-old children attend, explaining that it investigates parenting styles and educational achievement over five years. She would include her contact details so parents of six-year-olds could volunteer, and select the first 20 families who reply.

(b) Explain **one** improvement that Zhi could make to the sample of families chosen for her investigation.

(2)

Zhi could also include families with newborn babies and children under six in her sample, rather than only six-year-olds. This would let her study the influence of parenting styles from birth onwards, so her findings about educational achievement would be more valid, as early parenting experiences would not be missed.

(Total for Question 7 = 4 marks)

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8 Rabia plans to conduct research into the effects of testosterone on aggressive behaviours in rats. Her research will involve a medical procedure on male rats to reduce their testosterone levels. Rabia will ensure that her research meets the requirements of the Animals (Scientific Procedures) Act 1986 and Home Office Regulations.

Explain **three** ethical considerations Rabia would need to consider when conducting her research with rats.

1 *Rabia should carry out the medical procedure on the smallest number of rats possible while still giving a reliable test of testosterone and aggression. This meets the requirement of reduction in the Animals (Scientific Procedures) Act 1986, that the number of animals used is the minimum needed to achieve the results sought.*

2 *The procedure to reduce testosterone should cause the least possible pain and distress, eg using anaesthetic and pain relief during the operation and monitoring the rats afterwards. This is because the Act requires procedures to be refined to minimise any suffering an animal experiences during the experiment.*

3 *The rats must be housed in suitable cages with enough space and given acceptable standards of care, such as regular food, water and cleaning, throughout the study. This meets the Home Office code of practice for good animal welfare, which requires consistent, high-quality care and accommodation for the animals.*

(Total for Question 8 = 6 marks)

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9 Troy investigated the relationship between bullying behaviour and a person's self-esteem. He collected self-report data using a questionnaire. Six respondents were asked closed-ended questions about their behaviour towards others and also closed-ended questions about self-esteem.

Troy calculated scores for behaviour towards others out of 20, with 0 being no indication of bullying behaviour and 20 being a strong indication of bullying behaviour. He scored the answers about self-esteem out of 20, with 0 being very low self-esteem and 20 being very high self-esteem.

Troy used a Spearman's rank test to find out if his results were significant. His results are shown in **Table 2**.

(a) Calculate the Spearman's rank correlation coefficient from the data shown in **Table 2**.

You must show your calculations by substituting into the formula.

You **must** give your answer to **three** decimal places.

The formulae and statistical tables can be found at the front of the paper.

(4)

Score for bullying behaviour (out of 20)	Rank 1	Score for self-esteem (out of 20)	Rank 2	d	d^2
18	5	4	1	4	16
9	2	13	4	−2	4
14	3	9	3	0	0
2	1	18	6	−5	25
19	6	17	5	1	1
17	4	8	2	2	4
				Total for d^2	50

Table 2

Space for calculations

$r_s = 1 - \frac{6\Sigma d^2}{n(n^2-1)} = 1 - \frac{6 \times 50}{6(6^2-1)} = 1 - \frac{300}{210}$

$= 1 - 1.4286 = -0.4286 = -0.429$ (3 d.p.)

Spearman's rank correlation coefficient ..... −0.429 .....

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(b) State, using the data from Table 2, whether Troy's results are significant for a two-tailed test at $P \leqslant 0.05$.

The formulae and statistical tables can be found at the front of the paper.

(1)

Not significant; for a two-tailed test at p ≤ 0.05 with N = 6, the calculated value of 0.429 (ignoring the sign) is less than the critical value of 0.886.

(c) Give **one** conclusion that Troy could make from his investigation.

(1)

There is no significant relationship between bullying behaviour and self-esteem, so a person's self-esteem does not predict whether or not they show bullying behaviour.

(Total for Question 9 = 6 marks)

TOTAL FOR SECTION C = 20 MARKS

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SECTION D

Answer the question. Write your answer in the space provided.

10 One key question for society is whether knowledge of psychology can inform interventions for internet addiction.

Internet addiction could be explained as spending many hours on non-work based multiple activities on computers, mobile devices, the internet and/or video games.

Cash et al. (2012) suggested internet addiction could include an inability to control time spent on digital technology, with a need for more time to achieve a desired mood. The user is unable to stop their internet use even when family conflict, a poor social life and negative employment or education consequences arise. They claimed there can be withdrawal symptoms when not using the internet.

Greenfield (2011) suggested that internet applications often use a variable ratio reinforcement schedule, where online activities give unpredictable and variable reward structures. The reward may be intensified when combined with mood enhancing content.

Discuss the key question of whether knowledge of psychology can inform interventions for internet addiction. You should use concepts, theories and/or research studied in your psychology course.

You must make reference to the context in your answer.

(8)

Psychology can inform interventions for internet addiction because learning theory explains how it develops. Operant conditioning suggests behaviour followed by desirable consequences is positively reinforced and repeated. Greenfield (2011) suggested internet applications use a variable ratio schedule, where rewards such as likes on an Instagram photo or points in a video game are unpredictable. Skinner showed this schedule produces behaviour that is very resistant to extinction, which explains why users cannot control their time online. Interventions could therefore use positive reinforcement of offline activities, such as rewards for time spent away from devices, that outweigh the rewards gained online.

Biological psychology also helps. Pleasurable activities activate the dopamine reward pathway and produce euphoria, and when online activity is combined with mood enhancing content the user may need more time online to get enough dopamine stimulation to reach their desired mood, as Cash et al. (2012) describe. Interventions could gradually reduce internet time rather

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than stopping it suddenly to avoid withdrawal symptoms. Drug treatments such as SSRIs, which regulate neurotransmitter functioning, could help reduce the low mood experienced during withdrawal.

Clinical therapies could also be adapted. CBT could challenge faulty beliefs, such as "I can only feel good when I am online", and family therapy could address the family conflict and poor social life Cash et al. describe, allowing family members to discuss the user's inability to control internet use and support them to cut down.

However, psychology may be limited in informing interventions. Internet addiction is not a fully recognised disorder in the DSM, so there is less research into effective treatments. Explanations based on dopamine or reinforcement alone are reductionist, as addiction may also be due to loneliness or stress. Total abstinence is unrealistic because people need the internet for work and education, and SSRIs have side effects and do not remove the reinforcement built into apps.

Overall, knowledge of psychology can inform interventions for internet addiction, especially by explaining reinforcement and withdrawal, but combining approaches such as CBT and family therapy is likely to be most effective.

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SECTION E

Answer the question. Write your answer in the space provided.

11 Assess the use of psychological knowledge in society.

(20)

Psychological knowledge from theories and research is used in many areas of society, such as education, the criminal justice system, mental health and the media. Its use can be assessed by considering how much it has benefited society and whether it has been misused or has limitations.

Milgram's (1963) research into obedience increased understanding of the situations in which blind, destructive obedience is most likely, such as the presence of a legitimate authority figure and gradual commitment. This knowledge can help society design prevention strategies, such as training soldiers to question unlawful orders, to reduce atrocities like the My Lai massacre. However, knowing the optimum conditions for obedience could also be used negatively by people seeking power and control over those in subordinate positions, so the knowledge can be misused as well as used well.

Knowledge of memory has also been applied. Baddeley and Hitch's working memory model explains processing in active short-term memory, such as the phonological loop. This has helped children with dyslexia access learning through classroom strategies and interventions such as Cogmed, which aim to improve working memory. Bartlett's (1932) theory of reconstructive memory explains why recall can differ from the real event, so courts are more cautious about relying on eyewitness testimony alone. However, Yuille and Cutshall (1986) found eyewitnesses to a real shooting were largely accurate months later, so treating all eyewitness accounts as unreliable could be harmful to achieving justice for defendants and victims.

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In the criminal justice system, knowledge of brain structures in aggression is used. Raine et al. (1997) found that murderers pleading not guilty by reason of insanity had less activity in their prefrontal cortex and corpus callosum than controls, helping courts understand that violence may not always be a rational choice. Aggression has also been linked to testosterone, which has led to chemical treatments for violent male offenders. However, this cannot explain violence in females and risks ignoring social causes, so it can only partly be used to treat offenders.

Social learning theory states behaviour is learned from role models through attention, retention, reproduction and motivation. Bandura's Bobo doll studies have been used to limit children's access to violent media through PEGI ratings on video games and age ratings on films. However, society does not always act on this knowledge: despite Becker et al. (2002) showing the negative influence of thin media role models on eating behaviour, thin role models remain widely available, suggesting knowledge is not always used effectively.

Knowledge of mental health has led to effective treatments. Classical conditioning explains phobias as learned stimulus-response associations, and this led to systematic desensitisation, which Capafons et al. (1998) showed was effective in treating a fear of flying. Knowledge of hormones such as melatonin and their interaction with external zeitgebers has led to light therapy for seasonal affective disorder and sleep disorders. However, conditioning knowledge has also been misused: aversion therapy was used to try to "cure" homosexuality, even after homosexuality was removed from the DSM in 1973, showing that therapies can be used for social control of people's lifestyles.

Similarly, Bowlby's (1944) study of 44 juvenile thieves suggested that maternal deprivation could lead to affectionless psychopathy. This has improved childcare practice, such as allowing

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parents to stay with children in hospital, but it may lead society to blame mothers, eg working mothers, for their children's antisocial behaviour.

A further issue is that much psychological knowledge comes from lab studies with narrow, often Western samples, so it may lack ecological validity and may not generalise to all cultures when applied in society. Much of the research is also socially sensitive, so its application needs careful ethical consideration.

In conclusion, psychological knowledge has been used very successfully in society, for example in treating phobias and SAD, supporting learners with dyslexia and protecting children from violent media. However, its use depends on how it is applied: it can be misused for social control or to blame groups, and is sometimes ignored, so its value to society depends on applying it ethically and alongside other explanations.

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