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I declare this is my own work.

INTERNATIONAL A-LEVEL PSYCHOLOGY

Unit 3 Advanced Topics and Research Methods 2

Wednesday 20 January 2021 07:00 GMT Time allowed: 1 hour 30 minutes

Materials

For this paper you must have:

- a calculator, which you are expected to use where appropriate.

Instructions

- Use black ink or black ball-point pen.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- You must answer the questions in the spaces provided. Do not write outside the box around each page or on blank pages.
- All working must be shown.
- If you need extra space for your answer(s), use the lined pages at the end of this book. Write the question number against your answer(s).
- Do all rough work in this book. Cross through any work you do not want to be marked.

Information

- The marks for questions are shown in brackets.
- The maximum mark for this paper is 90.

For Examiner's Use	
Section	Mark
A	
B	
C	
TOTAL	



Section A: Psychology of Sleep

Answer **all** questions in the spaces provided.

0 1

Anum is 20 years old and works as a flight attendant. She regularly works on two flights: a 12-hour international flight between France and Singapore and a one hour internal flight within the UK.

0 1 . 1

Use your knowledge of psychology to briefly explain why Anum is more likely to experience jet lag after working on the international flight rather than on the internal flight.

[2 marks]

On the international flight Anum crosses multiple time zones, whereas on the internal UK flight she crosses none. Jet lag is positively correlated with the number of time zones crossed, so only the long flight desynchronises her body clock from local zeitgebers.

0 1 . 2

Anum tends to experience worse jet lag than other flight attendants on the same international flight. Identify and briefly explain **one** possible reason for this.

[3 marks]

Age. Research (eg Sack et al., 2007) has shown that jet lag tends to decrease with age. As Anum is only 20 years old and fairly young, she may be more likely to suffer severe effects of jet lag than older members of the aircrew on the same international flight. Alternatively, other flight attendants may be more phase tolerant than Anum, so they are more resistant to the effects of jet lag.

0 1 . 3

Use your knowledge of psychology to briefly explain **one** way that Anum might be able to reduce her jet lag.

[2 marks]

Anum should adjust to local zeitgebers when she arrives, eg by staying awake in natural daylight if it is daytime in Singapore. Light resets her SCN and suppresses melatonin, so her body clock resynchronises with local time more quickly.



0 2

Briefly explain **one** limitation of restoration theory as a function of sleep.

[2 marks]

There are contradictory findings about the effects of exercise on sleep. Restoration theory predicts that greater energy expenditure should lead to longer sleep so the body can repair itself, but Horne and Minard (1985) found that vigorous exercise does not always lead to longer sleep; participants fell asleep faster but did not sleep for longer. This challenges the claim that sleep is for restoration.

0 3

Describe and evaluate research studies into the sleep/wake cycle.

[9 marks]

Siffre (1975) spent six months in an underground cave with no natural light or other zeitgebers, although he had food, drink and a radio. He found that his days became longer and his sleep/wake cycle extended to between 25 and 32 hours, showing the sleep/wake cycle is controlled by an endogenous pacemaker which free runs without light. His sleep/wake cycle also became desynchronised from his body temperature circadian rhythm.

Stephan and Zucker (1972) damaged the suprachiasmatic nucleus (SCN) in rats. The rats became more active during the dark and their sleep/wake cycle was disrupted, suggesting the SCN is the main endogenous pacemaker. Abraham, Gwinner and Van't Hof (2000) injected sparrows with melatonin, which induced sleep, showing the role of melatonin from the pineal gland in regulating the cycle.

These findings are supported by other research. Aschoff (1965) found the sleep/wake cycle of students kept in an underground bunker also extended, to between 25 and 27 hours, supporting Siffre. Zucker, Boshes and Dark (1983) found similar disruption after damaging the

Turn over ►



SCN in ground squirrels, supporting Stephan and Zucker.

However, there are methodological issues. Siffre's research is a case study of one man with little control; he was also exposed to artificial light, which may itself have acted as a zeitgeber, so the findings may lack internal validity and cannot be generalised. In Stephan and Zucker, confounding variables such as the severity of the operation may have caused the changes in behaviour, rather than the loss of the SCN, and the use of non-human animals means it is difficult to generalise the findings to the more complex human sleep/wake cycle.

There are also ethical issues. Siffre reported feelings of depression, suicidal thoughts and memory problems during the study and long-lasting psychological problems afterwards. Stephan and Zucker's research caused suffering and death to non-human animals, which must be weighed against the benefits.

On the other hand, the research is useful, as understanding the role of the SCN, melatonin and light has practical applications, such as helping to combat insomnia and jet lag.

Extra space



0 4

Describe and evaluate the role of personality factors **and** genetics in insomnia.**[12 marks]**

Insomnia is difficulty in getting to sleep and/or staying asleep.

Personality factors may make some people more vulnerable. Anxiety is associated with high levels of physiological arousal, eg activation of the sympathetic nervous system and raised heart rate, which acts against sleep. Therefore individuals with anxious personalities, who worry and ruminate, are more likely to suffer from insomnia, and worrying about not sleeping may then increase arousal further and maintain it.

Genetics may also play a role. Insomnia may reflect an inherited vulnerability in sleep mechanisms which is triggered by high arousal, eg stress, in line with a diathesis-stress approach. Mental illnesses such as schizophrenia and depression, which are both believed to have a significant genetic component, are associated with insomnia. Whether you are more alert in the morning or the evening (chronotype) is genetic and controlled by 'clock genes', such as PER genes. Chronotype is based on the biological circadian rhythm, and morning types are

Turn over ►

roughly two hours ahead of evening types; a mismatch between a person's chronotype and the demands of their life, eg an evening type who must get up early for work, may lead to insomnia.

There is supporting evidence for the role of anxiety. Vahtera et al. (2007) found that stressful life events increased sleep disturbance, particularly in people with high levels of anxiety. Gregory et al. (2006) found that childhood anxiety was associated with later sleep problems. This is also supported by the effectiveness of therapies such as CBT for insomnia, which reduce arousal and anxiety levels and are effective in helping insomnia, suggesting that anxiety is a cause.

There is also evidence for a genetic component. Twin studies have shown that monozygotic (MZ) twins are more concordant for insomnia than dizygotic (DZ) twins, eg Watson et al. (2006), and Heath et al. (1998) found that a substantial proportion of the variation in sleep problems in twins could be attributed to genetic factors. Bastian and Morin (2000) found that insomnia runs in families, and Morin et al. (1999) showed an association between insomnia and mental illness. For chronotype, Kerkhof and Van Dongen (1996) and Van Dongen et al. (2005) found differences between morning and evening types in the timing of circadian rhythms, such as body temperature, supporting the role of biological clock mechanisms.

However, these explanations are oversimplistic. MZ twins are not 100% concordant for insomnia, so genes cannot be the whole explanation, and evidence has shown that environmental factors also play a role, eg Riemann et al. (2010) emphasised hyperarousal resulting from stress, poor sleep hygiene, shift work and family environment. Twins share an environment as well as genes, so concordance may be partly



environmental. An interactionist or diathesis-stress approach, in which an inherited vulnerability combines with stressors and anxious personality, is therefore more complete.

There are also methodological issues with some research. Many studies use small samples, and much of it is correlational, so we cannot establish cause and effect: anxiety may cause insomnia, or chronic lack of sleep may cause anxiety. Data on sleep is often self-reported, which may be inaccurate, and people with insomnia often underestimate how long they sleep.

There is also a lack of understanding. Although we have identified several 'clock genes', we do not understand how these function to control chronotype and thus influence insomnia. Finally, the link with mental illness is complex, as insomnia may be a symptom of

Extra space depression or schizophrenia rather than a separate disorder with a shared genetic cause, so it is hard to separate the role of genes in insomnia itself.

Overall, there is good evidence that both anxious personality and genetic vulnerability contribute to insomnia, but neither alone is sufficient, and they are best understood as interacting with environmental stressors.



Section B: Schizophrenia

Answer **all** questions in the spaces provided.

0	5
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Explain how gender bias might reduce the reliability in the diagnosis of schizophrenia.

[3 marks]

Females tend to have better cognitive and social functioning than males, so they may be better at masking the symptoms of schizophrenia. Practitioners may therefore be less likely to diagnose females with schizophrenia, resulting in underdiagnosis of females. The diagnosis is then based on gender rather than symptoms, so it is not consistent and therefore unreliable.

0	6	.	1
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Describe the dopamine hypothesis as an explanation for schizophrenia.

[4 marks]

The original dopamine hypothesis suggested that high levels or excess activity of dopamine in the subcortex, eg the mesolimbic pathway, was associated with the development of schizophrenic symptoms, eg due to oversensitive D2 receptors. More recent theories suggest that reduced dopamine in frontal parts of the brain such as the prefrontal cortex (hypodopaminergia) might cause negative symptoms, whilst increased dopamine in other areas such as the subcortex (hyperdopaminergia) might be responsible for positive symptoms such as hallucinations.



0 6 . 2

Explain **one** strength of the dopamine hypothesis as an explanation for schizophrenia. **[3 marks]**

It has useful implications for treatment. The dopamine hypothesis has allowed further development of antipsychotic drugs, such as chlorpromazine, which reduce dopamine activity by blocking D2 receptors and help to alleviate symptoms. Also, amphetamines, which increase dopamine activity, produce schizophrenia-like symptoms (Curran et al., 2004), supporting the hypothesis.

0 7

Describe and evaluate the use of cognitive therapy as a therapy for schizophrenia. **[20 marks]**

Cognitive therapy, including cognitive behavioural therapy (CBT), is based on the idea that the symptoms of schizophrenia, such as delusions and hallucinations, are maintained by irrational and distorted thinking. It is used alongside antipsychotic drugs to help reduce the symptoms of schizophrenia and help to reduce the severity of psychotic episodes, usually over a course of about 5 to 20 sessions.

The first stage is assessment, where the therapist and patient identify delusional beliefs and the distress they cause. The therapist then helps the patient to challenge these beliefs through reality testing, eg testing whether the voices are really other people by comparing them with evidence, to reduce distress. CBT can therefore be used to help overcome delusional thinking, as the patient learns that their beliefs are not supported by evidence and considers more realistic explanations, eg that voices are their own inner speech.

Patients may be taught the use of positive self-talk to replace negative or irrational thoughts. Coping strategy enhancement uses education about schizophrenia and symptom targeting, where the patient learns

Turn over ►



strategies such as distraction or relaxation to deal with specific symptoms. Cognitive restructuring may use the ABCDE framework: identifying the activating event (A), exploring the beliefs about it (B), recognising the emotional and behavioural consequences (C), disputing the irrational beliefs (D) and forming a restructured, more rational belief (E), so the patient interprets their experiences in a less distressing way. Homework tasks are often set to practise these skills between sessions.

There is supporting evidence for its effectiveness. Morrison et al. (2014) found that cognitive therapy significantly reduced psychiatric symptoms in patients with schizophrenia who had chosen not to take antipsychotic drugs, suggesting it can be effective on its own. Drury et al. (1996) found that patients receiving cognitive therapy alongside medication showed a faster and greater reduction in positive symptoms, and a shorter recovery time, than a control group receiving medication with recreation and support. NICE recommends that CBT should be offered to all people with schizophrenia.

However, CBT requires self-awareness, insight and a willingness to engage with the process, which some people with schizophrenia lack, eg those with severe negative symptoms such as avolition or those who do not believe they are ill. It is also not suitable for everyone: not all clients are suited to vigorous confrontation of their beliefs, and challenging deeply held delusions may cause distress or damage the therapeutic relationship.

CBT is not effective in treating all schizophrenic symptoms; it is mainly effective for positive symptoms and less effective for negative symptoms, so it is not effective for all schizophrenic patients. It



requires a course of sessions, which may lead to drop out, especially at times of severe psychotic episodes, when patients are unable to take part; this is why it is usually combined with drug therapy. Drop out also means effectiveness studies may be biased towards patients who respond well.

A further criticism is that CBT may not actually treat the symptoms of schizophrenia but instead teach patients strategies for dealing with their symptoms (Trower et al., 2004). It therefore improves the patient's quality of life and reduces distress rather than curing the disorder, and it does not address underlying biological causes such as abnormal dopamine activity.

There are also ethical issues. CBT has been criticised for attempting to control patients' thoughts by deciding which beliefs are irrational, which may interfere with an individual's freedom of thought and creates a power imbalance between therapist and patient, especially if the patient is vulnerable.

Compared with other therapies, cognitive therapy has the advantage that it has no physical side effects, whereas antipsychotic drugs can cause weight gain, tardive dyskinesia and agranulocytosis. It treats the patient's thinking, giving them an active role and skills which may

Extra space reduce relapse after therapy ends, rather than simply suppressing symptoms. However, it is more time consuming and expensive than drugs, as it requires trained therapists, and it is hard to evaluate because therapist skill and the therapeutic relationship vary, so outcomes may not be due to the techniques themselves.

Overall, cognitive therapy is an effective and ethical addition to drug

Turn over ►



therapy, especially for positive symptoms, but it is not suitable for all patients and works best as part of a combined treatment approach.

30

Section C: Research Methods 2

Answer **all** questions in the spaces provided.

Only **one** answer per question is allowed.

For each question completely fill in the circle alongside the appropriate answer.

CORRECT METHOD



WRONG METHODS



If you want to change your answer you must cross out your original answer as shown.



If you wish to return to an answer previously crossed out, ring the answer you now wish to select as shown.



A researcher wanted to investigate if there was a relationship between aggression and the time spent watching television. She asked 10 participants to keep a diary for one week. At the end of each day, each participant recorded:

- the total number of hours they had spent watching television that day
- their feelings of aggression for that day on a scale of 1 to 10, where the higher the score the greater the feelings of aggression.

0 8

Write a suitable hypothesis for this study.

[3 marks]

There will be a positive correlation between the total number of hours spent watching television each day, as recorded in a diary, and the self-rated feelings of aggression for that day on a scale of 1 to 10.

Turn over for the next question

Turn over ►



0	9
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Explain why a correlation is a more appropriate method than an experiment for the researcher to use in this case.

[3 marks]

In an experiment the researcher would have to manipulate the IV, but it would be unethical to manipulate the level of aggression to investigate cause and effect, as this could lead to harm. It would also not be possible to manipulate the number of hours watching television in everyday life, as this would be very time consuming and impractical. A correlation simply measures both co-variables as they naturally occur, and if a link is found it may suggest ideas for future experimental research.



1 0The results for participant 1 are shown in **Table 1** below.**Table 1**

Aggression scores and number of hours spent watching television each day for participant 1.

Day	Aggression score (out of 10)	Number of hours spent watching television
1	6	3
2	6	3
3	4	2
4	1	1
5	3	3
6	10	9
7	2	0

1 0**1**Use the data in **Table 1** to calculate the median aggression score for participant 1. Show your workings.**[2 marks]***Aggression scores in order: 1, 2, 3, 4, 6, 6, 10**Middle (4th) value of 7 scores = 4**Median = 4***1 0****2**Use the data in **Table 1** to calculate the range of the number of hours watching television for participant 1. Show your workings.**[2 marks]***Highest number of hours = 9, lowest = 0**Range = $9 - 0 = 9$* *Range = 9 hours***Turn over for the next question****Turn over ►**

1 1

Explain **one** reason why it is more appropriate to use the range rather than the standard deviation as a measure of dispersion for the number of hours spent watching television.

[3 marks]

The number of hours spent watching television are only estimates of whole hours recorded by the participant at the end of each day, not precise values. The standard deviation uses every piece of data and requires precise (interval) values, so it would not be appropriate to use it. The range only uses the days with the highest and lowest number of hours, so it only provides an estimate of dispersion and therefore does not require precise values.

1 2

The researcher calculated the median aggression score and the median number of hours spent watching television for each participant and plotted them onto a scattergram. The scattergram suggested a positive correlation.

Explain what having a positive correlation means in relation to this study.

[2 marks]

As the median number of hours spent watching television increases, the median aggression score also increases, ie the more hours a participant spends watching television, the greater their aggression score.



1 3

The researcher then used a statistical test on the results.

Explain the purpose of statistical testing.

[3 marks]

Statistical testing allows the researcher to be confident that the result is significant, ie that the relationship or difference found is unlikely to be due to chance (eg $p \leq 0.05$), so she can decide whether to accept or reject the null hypothesis. This allows her to draw sound conclusions and infer something about what the data means, and to make generalisations about the population from which the sample was drawn.

1 4

With reference to level of measurement, explain why using Spearman's rho test would be suitable to analyse the results of this study.

[2 marks]

The aggression scores should be treated as ordinal data, because the scale of 1 to 10 is subjective and we cannot be sure the intervals between each aggression score are equal. Spearman's rho is suitable as it is used for a correlation with ordinal (or higher) data.

1 5

When reporting the study, the researcher wrote an abstract. Which **one** of the following would **not** typically be found in an abstract?

Shade **one** box only.

[1 mark]**A** Aim
☐
B Conclusions
☐
C Evaluation
☒
D Findings
☐
Turn over ►

1 6

The researcher found a well-respected questionnaire that measured aggression. She decided to give this to the participants in her original study as an additional measure of aggression.

Explain how the researcher could use a correlation with both measures of aggression to assess the concurrent validity of the aggression scores from the participant's diaries.

[4 marks]

The researcher could give each participant the well-respected aggression questionnaire and then correlate the two sets of aggression scores for each participant, ie their median diary aggression score and their questionnaire score, by calculating a correlation coefficient. This tells her the strength and direction of the relationship. Participants who score highly on the diary should also score highly on the questionnaire. If the coefficient is greater than +0.8, the diary aggression scores have high concurrent validity.

1 7

The researcher found that one participant had a very high median aggression score and a very low median number of hours spent watching television.

Explain how the researcher could use a case study to investigate this finding further.

[3 marks]

She could invite this participant to take part in a detailed study collecting large amounts of qualitative data over time, using a variety of methods. She could interview them about when they watched television and the types of programmes watched, and observe their behaviour, recording the number and types of aggressive acts, to find out what else explains their high aggression.



1	8
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Briefly explain **one** limitation of the use of case studies in psychology.

[2 marks]

Case studies cannot be replicated due to their individual nature, as they focus on one person or small group with unique characteristics and circumstances. This means the findings cannot be tested for reliability and lack scientific rigour, and they cannot be generalised to the wider population.

30

END OF QUESTIONS



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