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INTERNATIONAL A-LEVEL PSYCHOLOGY

Unit 3 Advanced Topics and Research Methods 2

Friday 7 June 2024

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	
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TOTAL	



J U N 2 4 P S 0 3 0 1

Section A: Psychology of Sleep

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

Kazem is a nurse who regularly works shifts.

When Kazem arrives home at 9 am after his night shift he often struggles to fall asleep, despite feeling tired. Last night, at 2 am during his shift, he nearly switched off an important piece of medical equipment until a colleague stopped him. Recently, Kazem has been feeling ill and his doctor has sent him for medical tests.

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Using your knowledge on the effects of shift work, explain Kazem's behaviour.

[4 marks]

Night shifts desynchronise Kazem's circadian rhythm from zeitgebers such as daylight, causing shift-work insomnia: despite feeling tired he cannot sleep at 9 am because his body clock signals it is morning. At 2 am his alertness is at its lowest, so he has concentration and decision-making problems, which is why he nearly switched off important medical equipment. Shift work also has physical effects, eg increased risk of heart disease or cancer, explaining why he feels ill and needs medical tests.

Our biological rhythms are influenced by endogenous pacemakers and exogenous zeitgebers.

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Using an example, what is meant by endogenous pacemakers?

[2 marks]

Endogenous pacemakers are internal body clocks, usually in the brain, that regulate many of our biological rhythms, eg the suprachiasmatic nucleus (SCN) in the hypothalamus, which controls the sleep-wake cycle.



0	2	2
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Using an example, what is meant by exogenous zeitgebers?

[2 marks]

Exogenous zeitgebers are external cues or factors in the environment that influence and reset the endogenous pacemakers, eg light levels, social activities or meal times.

0	3
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Describe memory consolidation as a function of sleep.

[4 marks]

We need sleep so that events from the day can become permanently stored as memories. REM sleep has a role in the development and storage of procedural memories (skills). NREM sleep, especially the deeper stages, has a role in declarative memories: during NREM they are reactivated in the hippocampus and stored as more permanent memories in the frontal cortex. Walker et al. (2002) found finger-tapping skill improved after sleep but not after the same time awake.

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0 4

Explain **one** strength and **one** limitation of evolutionary explanations of sleep.

[6 marks]

One strength is that there is supporting evidence that sleep has an adaptive function. Unilateral sleep has evolved in some marine mammals, such as dolphins (Mukhametov, 1987), and in migratory birds: one hemisphere sleeps while the other stays awake, so they can keep surfacing to breathe or watch for predators. This suggests sleep patterns evolved as a means of solving the particular evolutionary pressures faced by these animal groups. Lesku et al. (2006) also found that species at greater risk of predation slept less.

One limitation is that there is contradictory evidence. Allison and Cicchetti (1976) found that some prey species, which should sleep little to stay safe, actually sleep more than predators would predict, so evolutionary explanations cannot account for all species. The explanations

Extra space *are also oversimplistic, as they cannot explain the different functions of REM and NREM sleep, or why there is such a strong need to recover sleep after deprivation, which restoration theories can explain. Much of the research uses animals, so it may not generalise to humans, especially in the modern world.*



0 5

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

Insomnia is difficulty falling asleep or staying asleep. It may be primary insomnia, arising from an underlying factor within the person, or secondary insomnia, a consequence of some other pre-existing condition or environmental factor.

Personality has been linked to insomnia through anxiety. Anxiety is associated with high levels of physiological arousal, such as a raised heart rate and racing thoughts, which prevents a person from relaxing and sleeping normally. Neuroticism is a personality trait correlated with anxiety, so people with anxious, worrying personalities are more likely to experience insomnia. Vahtera et al. (2007) found that employees high in anxiety proneness were more likely to develop sleep disturbances after a stressful life event, such as the death or illness of a family member, than those low in anxiety proneness.

Genetics may also play a role. Some people are naturally more alert and function better at different times of the day (their chronotype, eg 'larks' and 'owls'), and chronotype has been linked to genes, including 'clock genes'. An inherited chronotype influences the circadian sleep-wake cycle, so a person whose body clock does not match their required schedule may have difficulty sleeping (primary insomnia). Kerkhof and Van Dongen (1996) found that morning types and evening types differ in the timing of their circadian rhythms, such as body temperature, and Van Dongen et al. (2005) found stable, trait-like individual differences in how people respond to sleep loss.

There is supporting research for the link between anxiety and insomnia. As well as Vahtera et al., Gregory et al. (2006) found that sleep

Turn over ►

problems and anxiety are closely associated across development, and Morin et al. (1999) found that insomnia is linked to anxiety and other mental illness. This suggests personality factors such as anxiety play a genuine role.

However, there are methodological issues. Much of this research is correlational, so we cannot conclude that anxiety causes insomnia: insomnia may cause anxiety, or a third variable such as stress may cause both. Many studies also use small samples and self-report measures of sleep, which may be inaccurate, reducing validity.

Twin studies provide evidence for a genetic component. Watson et al. (2006) and Heath et al. (1998) found higher concordance for insomnia and sleep disturbance in identical (MZ) twins than in non-identical (DZ) twins, and Bastian and Morin (2000) found insomnia often runs in families. However, concordance is never 100%, so genes cannot be the only cause. Also, although several clock genes have been identified, we do not understand how they control chronotype and influence insomnia, so the genetic explanation is incomplete.

Explanations based on personality and genetics alone are oversimplistic, as environmental factors such as noise, stress, shift work and poor sleep hygiene also play a role (Riemann et al., 2010), suggesting a diathesis-stress approach is more appropriate. Finally, therapies such as CBT that reduce arousal and anxiety are effective for insomnia, which supports the role of anxious personality, and shows that even if there is a genetic predisposition, insomnia can be treated psychologically.



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Section B: Schizophrenia

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

0 6

Using an example, explain the term dysfunctional thought processing.

[2 marks]

Dysfunctional thought processing is when a person's internal information processing (cognitive) system is not functioning normally, eg problems with perception, memory, reasoning or language.

Asha is talking to her doctor.

"Recently, I have been struggling to find the motivation to leave the house to go to work. When I do go outside, I think that people from the government are recording my behaviour. At times, I also hear voices which comment on my actions."

0 7 . 1

Outline **two** symptoms of schizophrenia shown by Asha.

[2 marks]

Avolition: Asha struggles to find the motivation to leave the house to go to work.

Delusions of persecution: Asha believes people from the government are recording her behaviour.

Asha's doctor asks her to provide some information about her family's medical history.

Asha says, "My father was diagnosed with schizophrenia 3 years ago. I also think that my grandmother, my father's biological mother, had some symptoms of schizophrenia as she used to say that she heard voices. However, my grandmother was never medically diagnosed with the condition."

0 7 . 2

Using your knowledge of genetics as an explanation for schizophrenia, briefly explain why Asha might have developed schizophrenia.

[2 marks]

Asha's grandmother probably carried gene(s) linked to schizophrenia, as she showed symptoms. Asha's father may have inherited them from his biological mother, and he has been diagnosed, so they are likely to have been passed on from him to Asha, increasing her vulnerability.



0	8
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Briefly evaluate the genetic explanation for schizophrenia.

[4 marks]

Twin studies support the explanation: Gottesman and Shields (1966) found much higher concordance rates for schizophrenia in MZ twins than DZ twins, and adoption studies (Kety et al., 1968) found higher rates in biological relatives of adoptees with schizophrenia than in adoptive relatives, showing a genetic influence. However, concordance in MZ twins is never 100%, so the cause cannot be only genetic, and twins share environments. The explanation is also reductionist, simplifying a complex disorder to gene(s).

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0 9

Discuss anti-psychotic drugs as a therapy for schizophrenia.

[20 marks]

Drug therapy is based on the principle that schizophrenia is related to a biochemical (neurotransmitter) imbalance in the brain, which anti-psychotic drugs aim to redress. They come in different forms, such as tablets, syrups or injections, including long-lasting 'depot' injections. Typical anti-psychotic drugs (first-generation), such as chlorpromazine and haloperidol, primarily treat positive symptoms such as hallucinations and delusions. They are based on the dopamine hypothesis, that schizophrenia is related to high levels of dopamine activity (hyperdopaminergia) in the mesolimbic pathway. They act as dopamine antagonists: they bind to and block dopamine (D2) receptors on the post-synaptic neuron without stimulating them, preventing dopamine from binding and so reducing dopamine transmission. Atypical anti-psychotic drugs (second-generation), such as clozapine and risperidone, treat both positive and negative symptoms. They regulate levels of both dopamine and serotonin, binding to dopamine and serotonin receptors on the post-synaptic neuron. They bind to D2 receptors only temporarily before dissociating, which allows normal dopamine transmission and is thought to reduce side effects. There is evidence for the effectiveness of anti-psychotic drugs. Davis et al. (1980) reviewed studies and found that relapse occurred in about 55% of patients whose drug was replaced by a placebo compared with about 19% of those who remained on the drug. Thornley et al. (2003) found that patients given chlorpromazine had fewer symptoms and better general functioning than those given a placebo. Meltzer (1999) found that clozapine was effective in a substantial proportion of patients



who had not responded to typical drugs. The fact that drugs which reduce dopamine activity work also supports the dopamine hypothesis. However, side effects are a major problem. Typical anti-psychotics can cause confusion, weight gain, dry mouth and involuntary movements such as tardive dyskinesia, which may be irreversible. Clozapine carries a risk of agranulocytosis, so patients need regular blood tests. These side effects lead to high attrition rates, as people stop taking their medication, which often results in relapse. This means many studies showing effectiveness may overestimate it, because patients who dropped out are not always counted.

Not all people respond well to anti-psychotic drugs: they are more effective for some people than others, and a minority show little improvement, so they would need alternative therapies. In addition, drugs only treat the symptoms and do not offer a cure. Therefore, they must be taken regularly, even when symptoms are not currently being experienced, which can create dependency and requires long-term commitment.

On the other hand, anti-psychotic drugs are easily accessible and can be given in forms that best suit the person, eg injections for those with memory problems who might forget daily tablets, or who lack insight into their illness. They work quickly and allow many people to live in the community rather than in hospital, and they can reduce symptoms enough for a person to engage with psychological therapies. Typical drugs are also relatively cheap, although some newer atypical drugs are very expensive, which limits access in some countries.

Compared with other therapies, such as cognitive behavioural therapy



Extra space (CBT) or family therapy, drugs require less effort from the patient and no therapist time. However, CBT tackles the person's irrational beliefs about their symptoms and has no physical side effects, and research suggests drugs combined with psychological therapy are more effective than drugs alone, so a combined, interactionist approach may be best.

There are also ethical issues: drugs have been criticised as a 'chemical straitjacket' used to make patients easier to manage rather than to benefit them, and some patients are medicated without full consent.

Finally, drug therapy is reductionist, as it treats schizophrenia purely as a biochemical problem and ignores psychological and social factors such as stress and family dynamics, which may explain why relapse is common. Overall, anti-psychotic drugs are an effective first-line treatment for many people, particularly for positive symptoms, but their side effects and the fact that they do not cure the disorder mean they are best used alongside other therapies.



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Section C: Research Methods 2

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

A psychologist wanted to investigate how new experiences affect a person's level of excitement. The psychologist was not aware of any previous research in this area.

The psychologist attended a major sporting event and asked people waiting inside the stadium if they would take part in a study. Each person who agreed was asked if they had attended a live sporting event before or not. They were then asked to rate their current level of excitement on a scale of 1–10, where 1 means 'not excited at all' and 10 means 'very excited'.

1	0
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State the aim of this study.

[1 mark]

To investigate whether new experiences (attending a live sporting event for the first time) affect people's excitement levels.

1	1
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Name the experimental method the psychologist is using in this study.

[1 mark]

Natural experiment.

1	2
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Identify whether the psychologist should use a directional hypothesis or a non-directional hypothesis for this study. Explain your answer.

[2 marks]

Non-directional hypothesis.

This is because the psychologist was not aware of any previous research in this area, so cannot predict the direction of the difference.



1 3

Write an appropriate hypothesis for this study.

[3 marks]

There will be a (significant) difference in the ratings of excitement levels (on a scale of 1 to 10) between people who have not attended a live sporting event before and people who have attended a live sporting event before.

The results of this study can be seen in **Table 1** below.

Table 1 Median excitement rating for those who had and had not attended a live sporting event before and the ranges for both groups

	Group 1 (had attended a live sporting event)	Group 2 (had not attended a live sporting event)
Median excitement rating	3.5	8
Range	6	2

1 4Explain what the median and range values in **Table 1** suggest about the effect of new experiences on excitement levels. Justify your answers.**[4 marks]**

Median *People are more excited before new (sporting) experiences than those who have experienced them before, as the median excitement rating was much higher (8) for those who had not attended a live sporting event before than for those who had (3.5).*

Range *Group 1's large range (6) shows more variability: some were excited, others much less (eg 2 to 8). Group 2's small range (2) shows ratings closely grouped around 8 (eg 7 to 9), so all those having a new experience were similarly excited.*

Turn over ►

1 5

Identify the experimental design used by the psychologist in this study. Explain your answer.

[2 marks]

Independent groups design.

Each participant was only in one group: either those who had attended a live sporting event before (group 1) or those who had not (group 2).

1 6

The psychologist wanted to analyse the results of the study using a statistical test. Briefly explain the purpose of statistical testing.

[3 marks]

Statistical tests provide a mathematical way of deciding whether the null hypothesis should be retained or rejected. They tell psychologists whether the difference or relationship found between variables is statistically significant or occurred by chance. If significant, the null hypothesis is rejected and the alternative accepted, allowing appropriate conclusions to be drawn.



1 7

Name an appropriate statistical test that the psychologist could use to analyse the data in this study. Explain **three** reasons for your choice in the context of this study.

[7 marks]

Mann-Whitney U test.

Firstly, the psychologist is testing for a difference, not a correlation: a difference in excitement ratings between participants who have attended a live sporting event before and those who have not.

Secondly, the psychologist is using an independent groups design, as each participant is either in the group who have attended a live sporting event before or in the group who have not, so the data are unrelated.

Thirdly, the data should be treated as ordinal, because excitement is measured on a rating scale of 1 to 10. The rating is not a direct measurement of excitement and the intervals between points are not necessarily equal, eg one person's rating of 6 may not mean the same as another's, so the data can only be ranked.

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

For each multiple-choice 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.



1 8

At the end of the study the psychologist produced a scientific report.

Identify the correct order of the sections of a scientific report.
Shade **one** box.

[1 mark]

A Abstract, discussion, introduction, results, method and referencing

☐

B Abstract, introduction, method, results, discussion and referencing

☒

C Abstract, method, introduction, results, discussion and referencing

☐

D Abstract, results, discussion, introduction, method and referencing

☐


The psychologist decided to conduct a follow-up study to investigate if there is a correlation between excitement ratings and the number of times a person has attended a live sporting event.

The psychologist attended another major sporting event and asked 10 people how many sporting events they had been to in the past 6 months.

They were then asked to rate their current excitement level on a scale of 1–10, where 1 means 'not excited at all' and 10 means 'very excited'.

1	9
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Identify the co-variables in this follow-up study.

[2 marks]

Number of sporting events attended in the past 6 months.

Excitement rating (on a scale of 1 to 10).

2	0
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Explain **one** strength and **one** limitation of correlations in psychological research.

[4 marks]

A strength is that correlations can be a useful starting point for future research: once the psychologist knows there is a relationship between the co-variables, eg events attended and excitement, it may suggest hypotheses for further experimental investigation.

A limitation is that correlations only show that a relationship exists, not why. Cause and effect cannot be established, as other extraneous ('third') variables could be influencing both co-variables.

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END OF QUESTIONS



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