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INTERNATIONAL A-LEVEL PSYCHOLOGY

Unit 3 Advanced Topics and Research Methods 2

Tuesday 7 January 2025 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	
Question	Mark
A	
B	
C	
TOTAL	



Section A: Psychology of Sleep

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

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. 

0 1

Which **one** of the following is a feature of non-REM sleep?

Shade **one** box only.

[1 mark]

- | | | |
|----------|--------------------------|----------------------------------|
| A | Dreaming occurs | ☐ |
| B | Heart rate increases | ☐ |
| C | Muscle paralysis | ☐ |
| D | Synchronised EEG pattern | ☒ |

0 2

What is meant by an infradian rhythm?

[1 mark]

A biological rhythm that occurs less than once every 24 hours, ie it lasts longer than 24 hours, eg the monthly menstrual cycle.



0 3

Evaluate research studies of circadian rhythms.

[6 marks]

Research supports the existence of an internal circadian rhythm. Siffre (1962, 1972) spent months in an underground cave without daylight or clocks, and his sleep/wake cycle free-ran at slightly longer than 24 hours. Aschoff and Wever (1976) found similar free-running rhythms in participants in a bunker.

Animal studies support the role of the SCN: Morgan (1995) transplanted SCN cells from mutant hamsters with 20-hour rhythms into normal hamsters, which then adopted 20-hour rhythms, and DeCoursey et al. (2000) found chipmunks with SCN damage were more likely to be killed by predators.

However, Siffre's study involved just one male participant in a cave, so the results cannot be generalised and may tell us little about natural

Extra space human circadian rhythms. Also, artificial light was not controlled, an extraneous variable. Animal studies raise ethical issues and may not generalise to humans.

Despite this, the research has useful applications, eg helping shift workers and people with jet lag to cope with disrupted rhythms, and timing drug doses for optimum effect.

Turn over ►



0 4

Rashid is talking to his friend and says: "Sleep is really strange. Every night I lie down in my bed in a dark room and the next thing that happens is I wake up in the morning when it is light outside."

Describe the effects of endogenous pacemakers **and** exogenous zeitgebers on the sleep/wake cycle. Use Rashid's statement to support your description.

[9 marks]

Endogenous pacemakers are internal biological clocks that control biological rhythms such as the sleep/wake cycle. The main pacemaker is the suprachiasmatic nucleus (SCN), a small cluster of cells in the hypothalamus which lies just above the optic chiasm. Left alone, it keeps a free-running rhythm of about 24 to 25 hours. The SCN sends signals to the pineal gland, which controls the release of the hormone melatonin. Melatonin induces sleep by slowing body and brain activity, so more is released at night and less during the day.

Exogenous zeitgebers are external environmental cues, such as light, social cues and mealtimes, that influence and synchronise (entrain) the endogenous pacemakers so the sleep/wake cycle stays at 24 hours. Light is the most important zeitgeber: light-sensitive cells in the retina detect light and send this information along the optic nerve to the SCN, which resets the biological clock each day.

Rashid's statement shows these processes working together. When Rashid lies down in his bed in a dark room, his eyes detect that there is no light, so the exogenous zeitgeber of light is absent. These signals travel via the optic nerve to Rashid's SCN, which signals his pineal gland to release melatonin into his bloodstream. The melatonin slows down his body and brain activity, which results in Rashid falling asleep without noticing it, which is why he says the next thing that happens is waking up.



In the morning, when it is light outside, light reaches Rashid's eyes (even through closed eyelids) and sends a signal to his SCN, which in turn signals his pineal gland to stop releasing melatonin. As his melatonin levels fall, his brain and body become more active and Rashid wakes up.

Rashid's regular routine of going to bed at night in his bedroom is also a social zeitgeber, and the daily cycle of darkness and light keeps his SCN entrained to a 24-hour sleep/wake cycle, so he falls asleep and wakes up at about the same times every day.



0 5

Briefly describe **one** evolutionary explanation for the function of sleep.**[3 marks]**

Webb's hibernation theory proposes that sleep serves a similar purpose to hibernation. When an animal is inactive during sleep it expends less energy, so sleep helps to conserve energy at times when it would be inefficient to be active, eg at night when it is dark and food is hard to find. Animals with high metabolic rates, such as small mammals, should therefore sleep more, increasing their chance of survival.

0 6

Explain **one** strength of the restoration theory of sleep.**[3 marks]**

Sleep deprivation case studies support restoration theory. Randy Gardner (1964) stayed awake for 11 days and showed mental disturbances such as hallucinations, language difficulties and paranoia, and Peter Tripp also experienced hallucinations. This suggests sleep is needed to restore the brain, and when Gardner did sleep he recovered much of his lost stage 4 and REM sleep (REM rebound), supporting its restorative role.

0 7

Briefly describe **one** explanation for narcolepsy.**[3 marks]**

Narcolepsy is thought to be caused by low levels of the neurochemical hypocretin (orexin), or its receptors, in the brain. Hypocretin plays an important role in maintaining wakefulness, so a reduction explains why people with narcolepsy fall asleep uncontrollably. This may be linked to a genetic defect (seen in dogs, Lin et al., 1999) in the gene that regulates hypocretin receptors in the brain.



0	8
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Briefly evaluate the genetic explanation for insomnia.

[4 marks]

Twin studies support a genetic component, eg Watson et al. (2006) found higher concordance for insomnia in MZ than DZ twins, and family studies show insomnia runs in families (Ohayon et al., 2001). However, MZ concordance is never 100%, which it should be if the cause were purely genetic, as MZ twins share exactly the same genes. Many people have insomnia with no family history. It is oversimplistic and reductionist, as environmental factors such as stress also play a significant role (Riemann et al., 2010).

30

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Section B: Schizophrenia

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

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Mei has recently told her friend that she has been hearing voices. The voices comment on her daily activities and criticise her, telling her that she is a horrible person. Mei also told her friend that she has lost interest in going to school and just wants to stay at home. Mei's friend has noticed that Mei now rarely talks and when she is asked a question, her answers are very brief.

Identify **two** symptoms of schizophrenia and explain how each symptom is demonstrated by Mei.

[4 marks]

Symptom 1 *Auditory hallucinations: Mei is hearing voices that comment on her daily activities and criticise her, telling her that she is a horrible person, when there is no one actually speaking.*

Symptom 2 *Avolition: Mei has lost interest and motivation in day-to-day activities such as going to school, and just wants to stay at home.*



1 0

Mei is diagnosed with schizophrenia by her doctor who refers her for cognitive therapy.

Explain how cognitive therapy might be used to treat Mei.

[4 marks]

The therapist would help Mei to identify her irrational thoughts and beliefs, eg that she is a horrible person, and then challenge them using reality testing.

Mei would be helped to understand the link between her thoughts (that she is horrible), her emotions (loss of interest, apathy) and her behaviour (not going to school). The therapist might also help Mei understand that the voices she hears are not real and are probably her own inner voice or thoughts, so they become less distressing.

1 1

Briefly explain **one** strength of cognitive therapy as a treatment for schizophrenia.

[2 marks]

There is research support: Drury et al. (1996) found that patients given cognitive therapy alongside medication showed a greater reduction in positive symptoms and a faster recovery time than a control group.

Turn over for the next question

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1 2

Discuss issues of reliability **and** validity in the diagnosis of schizophrenia.

[20 marks]

Reliability in diagnosis refers to the consistency of a diagnosis: whether different doctors would all agree that an individual has schizophrenia. It can be assessed using inter-rater reliability, where different clinicians make the same diagnosis of the same person, and test-retest reliability, where a clinician makes the same diagnosis of the same person on separate occasions from the same information. Validity refers to the accuracy of a diagnosis: whether someone actually has schizophrenia, or whether they have a different disorder. Reliability is linked to validity, because if a diagnosis of schizophrenia is not reliable then it cannot be valid.

Diagnosis is made using classification systems such as the DSM-5 and ICD-11. The diagnostic criteria change over time as these are updated, eg DSM-5 removed the subtypes of schizophrenia, which can affect both reliability and validity. The two systems also differ: the ICD requires only one month of symptoms, whereas the DSM requires at least six months of disturbance, so a person could be diagnosed under one system but not the other.

There is research support for improving reliability. As each edition of the DSM has been published, inter-rater reliability has improved: Beck et al. (1962) found only a 54% concordance rate between practitioners diagnosing the same patients, whereas Soderberg et al. (2005) found a concordance rate of 81% using the DSM. Jakobsen et al. (2005) also found high agreement when 100 patients were diagnosed using the ICD-10. This suggests that modern diagnosis of schizophrenia is fairly reliable.



However, other research contradicts this. Rosenhan (1973) sent eight healthy pseudo-patients to psychiatric hospitals claiming to hear voices saying words like 'thud'. All were admitted, seven diagnosed with schizophrenia, and the staff never detected that they were sane, even though they behaved normally once admitted. When hospitals were then told to expect pseudo-patients, they wrongly identified many genuine patients as fake. This suggests diagnosis was neither reliable nor valid, although it used an older DSM, and Rosenhan's study was criticised as unethical because it deceived hospital staff.

Symptom overlap reduces validity. Schizophrenia shares symptoms with other disorders, eg hallucinations and delusions also occur in bipolar disorder, and avolition occurs in depression. This means a person could be diagnosed with schizophrenia under one system and bipolar disorder under another. Co-morbidity, where two or more disorders occur together, such as schizophrenia with depression or substance abuse, also makes accurate diagnosis and treatment difficult. Buckley et al. (2009) found around half of patients with schizophrenia also had depression, which questions whether schizophrenia is a separate condition.

People diagnosed with schizophrenia also differ greatly in their symptoms: two people could have no symptoms in common, eg one has hallucinations and delusions, the other avolition and speech poverty. This suggests that a single label of schizophrenia is not valid and perhaps it is several different disorders, so the diagnosis of 'schizophrenia' should perhaps not be used.

Cultural bias is another issue. Hearing voices may be seen as a normal spiritual experience in some cultures, but as a hallucination in Western

Turn over ►



Extra space *cultures. Research has found that African-Caribbean people living in the UK are far more likely to be diagnosed with schizophrenia than white people, yet rates in the Caribbean are much lower. This suggests that white psychiatrists may misinterpret cultural behaviour as symptoms, reducing validity. Gender bias may also affect diagnosis: men are diagnosed more often than women, possibly because women's better social functioning masks their symptoms (Cotton et al., 2009).*

Validity can also be assessed using predictive validity: if a diagnosis is valid, it should predict the course of the disorder and the outcome of treatment. However, outcomes vary greatly, with some people recovering fully and others showing chronic symptoms, which lowers predictive validity. Some research does support validity, eg Hollis (2000) found that diagnoses of schizophrenia in adolescents remained stable over time, suggesting good diagnostic consistency, but Read et al. (2004) found low test-retest reliability and poor predictive validity for schizophrenia. Overall, the reliability of diagnosis has improved with updated, more objective classification systems, but issues such as symptom overlap, co-morbidity and cultural and gender bias still threaten its validity. This matters because a misdiagnosis can lead to inappropriate treatment, such as anti-psychotic drugs with serious side effects, as well as social stigma, so care is needed when diagnosing schizophrenia.



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Section C: Research Methods 2

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

A psychologist carried out a study of depression. 18 people who had been diagnosed with depression participated in the study. The psychologist asked the participants to keep a daily record of their main thoughts, emotions and behaviours in a diary for two weeks.

At the end of the two weeks, the psychologist collected the participants' diaries and conducted a content analysis on the information written in them.

1	3
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What is meant by content analysis?

[2 marks]

A research technique that involves coding written or qualitative information about behaviour, eg from diaries, into themes or categories so that it can be quantified and analysed.

1	4
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Use your knowledge of how to conduct a content analysis of written information to explain what the psychologist could do with the information in the participants' diaries.

[6 marks]

First, the psychologist should carefully read through all 18 diaries to gain an idea of their content.

The psychologist should then develop a coding system to analyse the diary entries, eg by deciding on categories or words to look out for, such as 'sad', 'worthless' or 'unmotivated'.

Next, the psychologist should re-read all the diaries and, each time they see something that relates to a category in the coding system, record it with a tally mark.

After reading all 18 diaries, the psychologist should count the total number of tallies in each coded category and interpret the results. They might also carry out a thematic analysis, categorising the findings into overall themes and concepts.



1 5

Explain how the psychologist could assess the reliability of the content analysis of the participants' diaries.

[4 marks]

The psychologist could recruit at least one other independent researcher, and together they would agree on the coding system to use. Both would then independently read all 18 diaries, tallying entries using the pre-agreed categories.

They would then compare their tallies and statistically analyse them using a correlation to check the level of agreement (inter-rater reliability). If a significant positive correlation is found between their tallies, the content analysis would be considered reliable.

1 6

Only 6 out of the 18 people who participated in the study were male.

Calculate what fraction of the participants was female. Show your answer in its simplest form.

[2 marks]

Number of females = $18 - 6 = 12$

Fraction female = $12/18 = 2/3$

Answer: $2/3$ of the participants were female.

1 7

The psychologist was concerned that the participants may have been affected by demand characteristics when writing their diary responses.

Explain why the psychologist might be concerned about demand characteristics.

[3 marks]

Most people know that depression is linked to thinking negatively about yourself. Because the participants knew a psychologist would read their diaries, they may have tried to help by exaggerating or inventing negative thoughts and how unhappy they felt during the two weeks, so the diaries may not be accurate, reducing validity.

Turn over ►

1 8

As part of the content analysis, the psychologist collected nominal data.

What is meant by nominal data?

[2 marks]

A basic form of measurement where frequency data is collected in categories, often by tallying. The data is discrete and cannot be placed in any meaningful order, eg the number of 'sad' entries.

1 9

Apart from nominal data, name and outline **one other** type of data that the psychologist might have collected during this study.

[3 marks]

Primary data.

The psychologist collected the data first-hand for this study by asking the 18 participants to complete a diary of their thoughts, emotions and behaviours for the two-week period, which was then analysed by the psychologist themselves, rather than using data already collected by someone else.

2 0

Explain **one** strength of conducting a content analysis.

[3 marks]

Content analysis usually has high reliability because the content, eg the participants' diaries, is a permanent record. The psychologist or other researchers can look back through the diaries to check the accuracy of their coding and tallies, or repeat the analysis to see whether the same results are found, which makes it easy to check the consistency of the findings.



2 1

The psychologist wrote a scientific report of the content analysis.
The introduction section referred to information taken from a book by Aaron Beck.

Which of the following would be the correct way of writing the reference for this book in the References section of the report?

Shade **one** box only.

[1 mark]

- A** Beck, A. (1967). *Depression: Clinical, Experimental and Theoretical Aspects*. New York: Hoeber. ☒
- B** Beck, A. *Depression: Clinical, Experimental and Theoretical Aspects*. New York: Hoeber. (1967). ☐
- C** Beck, A. (1967). New York: Hoeber. *Depression: Clinical, Experimental and Theoretical Aspects*. ☐
- D** Beck, A. New York: Hoeber. (1967). *Depression: Clinical, Experimental and Theoretical Aspects*. ☐

2 2

Meta-analysis is an additional research method that can be used in psychology.

What is meant by meta-analysis?

[2 marks]

Combining the results of several studies with a similar research hypothesis and statistically analysing them together to provide a single overall conclusion which has greater statistical power.

2 3

Briefly explain **one** limitation of meta-analysis.

[2 marks]

Publication bias: the researcher can choose which studies to include and might only select studies that support their hypothesis, or only published (significant) studies, so the overall conclusion may be biased.

30

END OF QUESTIONS



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2 4



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