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Forename(s)

Candidate signature

I declare this is my own work.

INTERNATIONAL A-LEVEL PSYCHOLOGY

Unit 3 Advanced Topics and Research Methods 2

Monday 8 January 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	
Question	Mark
A	
B	
C	
TOTAL	



Section A: Psychology of SleepAnswer **all** questions in the spaces provided.**0 1**Explain **two** differences between non-REM sleep and REM sleep.**[4 marks]**

Difference 1 *Non-REM sleep has four distinct stages (stages 1 to 4), each characterised by regular patterns of electrical activity, giving a synchronised EEG pattern, whereas REM sleep has no distinct stages and shows a desynchronised EEG pattern with no regular pattern, similar to being awake.*

Difference 2 *In REM sleep there is rapid eye movement and major muscle paralysis (atonia), whereas in non-REM sleep the eyes do not move rapidly and the muscles are not paralysed. Also, adults spend much longer in non-REM sleep (about 75%) than in REM sleep.*



Imran has been having trouble sleeping for the past 2 months. Every night he lies in bed for several hours trying to fall asleep. When he finally does fall asleep, he wakes up regularly throughout the night. Imran feels tired during the day, struggles to complete his day job and often becomes angry at his work colleagues. Imran's doctor has diagnosed him with insomnia.

0	2
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Use your knowledge of **three** symptoms of insomnia to explain Imran's behaviour.

[6 marks]

Symptom 1 *Long sleep onset latency: the time taken to fall asleep is very long, as Imran lies in bed for several hours every night trying to fall asleep, so his sleep efficiency (time in bed asleep) is likely to be less than 85%.*

Symptom 2 *Increased night-time awakenings: when Imran finally does fall asleep he wakes up regularly throughout the night. This is recurring rather than one-off, occurring three or more times a week, as he has had problems every night for the past 2 months.*

Symptom 3 *Daytime impairment: Imran's daytime activities are affected because of tiredness, as he struggles to complete his day job, and his day-to-day life is affected in other ways, as he often becomes angry at his work colleagues (irritability).*

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0 3

Describe and evaluate research into biological rhythms.

[20 marks]

Biological rhythms are cyclical changes in the body's processes. Circadian rhythms have a cycle that occurs once every 24 hours, eg the sleep/wake cycle. Infradian rhythms have a cycle length of more than 24 hours, eg the human menstrual cycle, which lasts about 28 days.

Ultradian rhythms have a cycle length of less than 24 hours, eg the stages of sleep, which repeat about every 90 minutes during the night.

Biological rhythms are controlled by endogenous pacemakers, such as the suprachiasmatic nucleus (SCN) in the hypothalamus, and are influenced by exogenous zeitgebers, such as the day/night (light/dark) cycle.

Siffre (1975) spent around six months in an underground cave with no daylight, clocks or other external cues. He woke, ate and slept when he felt like it. His sleep/wake cycle free-ran at slightly longer than 24 hours (around 25 hours), showing that the circadian rhythm is controlled by an endogenous pacemaker but that exogenous zeitgebers are needed to keep it at exactly 24 hours. Aschoff and Wever (1976) placed participants in an underground bunker without natural light and found similar free-running rhythms of between 24 and 25 hours.

Russell et al. (1980) studied the menstrual cycle. Sweat was collected from the armpits of a donor woman and rubbed on the upper lips of female participants. The participants' menstrual cycles became synchronised with the donor's, suggesting this infradian rhythm can be influenced by an exogenous factor, pheromones. Dement and Kleitman (1957) recorded the EEG activity of participants sleeping in a sleep laboratory and found that sleep follows an ultradian cycle of non-REM stages 1 to 4 and REM sleep lasting about 90 minutes, and that



participants woken during REM sleep usually reported dreaming.

A limitation of this research is its methodology. Siffre's study involved just one male participant, so the results cannot be generalised and may tell us little about natural human circadian rhythms, as there are individual differences in cycle length. He was also exposed to artificial light, which was not controlled; Czeisler et al. (1999) showed that dim artificial light can alter circadian rhythms, so this extraneous variable may have affected his rhythm, lowering internal validity.

Russell et al.'s study used a small sample and lacked control of extraneous variables, such as stress, diet and exercise, that also affect the menstrual cycle, so it is difficult to establish cause and effect.

Sleep laboratory studies such as Dement and Kleitman's are well controlled and use objective EEG recordings, which increases reliability, but sleeping wired up to machines in an unfamiliar laboratory lacks ecological validity, so participants' sleep patterns may not be natural.

Much of the research into biological rhythms does not consider individual differences and instead tries to generalise the findings to everyone.

Czeisler et al. found that people's sleep/wake cycles varied from 13 to 65 hours, and Duffy et al. (2001) found that 'morning people' and 'evening people' differ in when they prefer to sleep. This means research based on small samples may not apply to everyone.

The research also highlights that endogenous and exogenous factors need to work in synchrony rather than independently. Most studies try to isolate one factor, eg by removing light, which is unrealistic, as in everyday life the SCN is constantly reset by light. This is supported by animal research: DeCoursey et al. (2000) destroyed the SCN in

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chipmunks returned to the wild, and their sleep/wake cycles disappeared, and many were killed by predators. However, animal studies raise ethical issues and their findings may not generalise to humans.

A strength of research into biological rhythms is its practical applications. An understanding of circadian rhythms can help people working shifts to cope better with the disruption, eg by using rotating shifts that move forwards, which will improve their health. Research into the stages of sleep has improved our understanding of sleep disorders and how they could be treated. It can also lead to better drug treatments (chronotherapeutics), by timing doses for when drugs have the optimum effects on the body.

In conclusion, research consistently shows that biological rhythms are controlled by endogenous pacemakers and entrained by exogenous zeitgebers, although methodological problems such as small samples, poor control and individual differences mean the findings should be generalised with caution.

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Section B: Schizophrenia

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

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Identify **one** positive symptom and **one** negative symptom of schizophrenia.

[2 marks]

Positive symptom Hallucinations

Negative symptom Avolition

Kiera has been diagnosed with schizophrenia and suffers from both positive and negative symptoms.

Kiera's doctor suggests using anti-psychotic drugs to help her manage her symptoms. Kiera is worried as she does not know how anti-psychotic drugs work.

0	5
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Using your knowledge of anti-psychotic drugs, explain what the doctor could tell Kiera about anti-psychotic drugs as a possible therapy for her.

[4 marks]

The doctor could tell Kiera that typical anti-psychotics only reduce

positive symptoms, but because she has both positive and negative

symptoms she should be given an atypical anti-psychotic, such as

clozapine or risperidone, since these address both types of symptoms.

They block dopamine and serotonin receptors in her brain, reducing the

activity of these neurotransmitters, which should reduce the intensity of

her symptoms. The doctor should warn Kiera that she might experience

side effects, such as confusion and weight gain.



0 6

Describe the genetic explanation for schizophrenia.

[6 marks]

The genetic explanation suggests that schizophrenia is caused by one or more candidate genes that are inherited and passed on from parents to their offspring, so it runs in families. Candidate genes include the COMT gene, which is involved in the breakdown of dopamine, and the C4 gene, which is linked to the pruning of synapses during brain development.

Schizophrenia is thought to be polygenic: rather than one single gene, many genes each add a small amount of risk. Ripke et al. (2014) compared the genomes of over 37,000 people with schizophrenia with controls and suggested that it might involve up to 108 separate genetic variations that work together to cause the disorder.

The genetic explanation is often tested through family studies.

Gottesman (1991) found that the risk of developing schizophrenia

Extra space increases the more closely a person is genetically related to someone with the disorder: around 1% in the general population, about 9% for a sibling and about 48% for an MZ twin. Twin studies are also used: Gottesman and Shields (1966) found higher concordance rates for schizophrenia in MZ (identical) twins, who share 100% of their genes, than in DZ (non-identical) twins, who share about 50%.

However, as concordance in MZ twins is not 100%, the explanation suggests that a person inherits a genetic predisposition towards the disorder (diathesis), which then becomes activated by some environmental factor (stressor), such as trauma or cannabis use, which triggers the disorder.

Turn over ►

0 7

Evaluate the neural correlates explanation for schizophrenia.

[6 marks]

There is research support for the neural correlates explanation. Johnstone et al. (1976) found that people with schizophrenia had enlarged ventricles compared to controls, and Plaze et al. (2011) found reduced activity in the superior temporal gyrus in patients experiencing auditory hallucinations. This suggests there is a link between brain structure and activity and schizophrenia.

Further support comes from anti-psychotic drugs, which block dopamine receptors and help to reduce symptoms, supporting the dopamine hypothesis. However, this is an oversimplification, as many neurotransmitter systems, such as glutamate and serotonin, interact, and the mapping of these cortical pathways needs further investigation.

The findings are also unreliable. Lewis (1990) reviewed 18 studies and
Extra space *found no significant link between enlarged ventricles and the negative symptoms associated with schizophrenia. A variety of brain mechanisms seem to be implicated, but none are yet sufficiently understood to provide a causal link.*

There is also an issue of cause or consequence. The research is correlational, so we cannot tell whether changes in neural activity or structures cause schizophrenia, or whether developing schizophrenia, or taking long-term medication, results in changes to the brain.

Finally, the explanation is reductionist, as it tries to simplify the complex disorder of schizophrenia to a single biological cause, such as high levels of dopamine, ignoring psychological and environmental factors such as stress and family dysfunction. A diathesis-stress approach may therefore be better.



0 8

Discuss cognitive therapy as a treatment for schizophrenia.

[12 marks]

Cognitive therapy, including cognitive behavioural therapy (CBT), is used alongside medication to reduce the symptoms of schizophrenia and help to ease the severity of psychotic episodes. It usually involves between 5 and 20 sessions with a therapist over the course of several months. The therapist first helps the person to identify their irrational beliefs, for example a delusion that they are being followed, and to understand how these beliefs lead to their distressing emotions and behaviour.

The therapist then helps the person to challenge their irrational beliefs, using reality testing, where the evidence for and against a belief is examined, to reduce distress. Cognitive restructuring may use Ellis' ABCDE framework: identifying the activating event (A), exploring the beliefs about it (B), recognising the consequences (C), disputing the irrational beliefs (D) and forming a restructured, more rational belief (E). Clients are taught positive self-talk and complete homework 'diaries' between sessions to record their thoughts and practise these skills.

Coping strategy enhancement uses education and symptom targeting, eg teaching the person to use distraction to cope with voices.

There is supporting evidence. Drury et al. (1996) found that patients receiving cognitive therapy alongside medication showed a greater reduction in positive symptoms and a faster recovery than a control group, and Kuipers et al. (1997) found that CBT reduced symptoms and drop-out rates. Morrison et al. (2014) found that cognitive therapy reduced symptoms even in people who had chosen not to take anti-psychotic drugs.

A strength is that, compared to drug therapy, cognitive therapy has no

Turn over ►

side effects such as weight gain, so it may be more acceptable to patients. However, CBT requires self-awareness and a willingness to engage with the process, which some people with schizophrenia lack, especially those with negative symptoms such as avolition. Not all clients are suited to vigorous confrontation of their beliefs, which may be distressing.

It is not effective in treating all symptoms of schizophrenia, so it is not effective for everyone. It also requires a course of sessions, which may lead to high drop-out rates, especially at times of severe psychotic episodes. Trower et al. (2004) suggest that it may not actually treat the symptoms but instead teach clients strategies for dealing with them, so it does not address the underlying cause.

Finally, CBT has been criticised for attempting to control clients' thoughts, which raises ethical issues as it may interfere with an individual's freedom of thought. Overall, cognitive therapy is effective for many patients, especially when combined with medication, but it is best seen as a way of managing symptoms rather than a cure.



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.



Aya was referred to a psychologist. She had suffered damage to her brain following a car accident, which resulted in significant memory problems. The psychologist decided to carry out a case study to investigate the extent of Aya's memory problems.

0 9

Outline what is meant by a case study.

[2 marks]

A detailed, in-depth study of a single individual, group of people, institution or event, which is usually conducted over a period of time, using a variety of techniques or methods.

1 0

Explain how the psychologist might ensure confidentiality in this case study.

[2 marks]

The psychologist should ensure that Aya's identity is not disclosed when publishing the results of the study, by anonymising her, eg using a pseudonym (fake name) or her initials instead of her name.

Turn over ►



As part of the case study, the psychologist created a questionnaire for Aya's family to complete to investigate how her memory had been affected by the accident.

1 1

Write a suitable open question that the psychologist could include in the questionnaire.

[2 marks]

"Please describe some of the changes you have noticed with Aya's memory since her accident, and how she copes with them in her day-to-day life."

1 2

Explain how the psychologist could test the face validity of the questionnaire.

[4 marks]

The psychologist could ask another psychologist or expert (or several) in memory to read through the questions on the questionnaire that will be given to Aya's family. They would be asked to decide whether, on the face of it, the questions appear to meet the aim of the questionnaire, ie investigating how Aya's memory has been affected by the accident. If the experts believe the questionnaire looks like it measures how her memory has been affected, it would be said to have face validity.

1 3

Which **one** of the following types of data is most often produced by open questions?

Shade **one** box only.

[1 mark]

- | | |
|-----------------------|----------------------------------|
| A Interval | ☐ |
| B Nominal | ☐ |
| C Qualitative | ☒ |
| D Quantitative | ☐ |



1	4
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Briefly explain **one** strength and **one** limitation of case studies.

[4 marks]

Strength *A lot of rich, detailed qualitative and quantitative data can be obtained, giving the researcher a detailed insight into the person. It also allows the study of issues that could not be studied in any other way, eg the effects of brain damage.*

Limitation *Case studies involve individuals or very small samples, so the findings lack population validity and cannot be generalised. As cases are one-off and unique, they cannot be replicated, so reliability is difficult to assess, and the researcher may become too involved, leading to a loss of objectivity.*

Turn over for the next question

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The psychologist conducted a memory experiment with Aya.

In the experiment, Aya took part in two conditions.

Condition 1: Aya was given 1 minute to read a list of 20 words. She was then asked to immediately write down as many words as she could remember. This was a test of her short-term memory.

Condition 2: Aya was given 1 minute to read a second list of 20 different words. After a 10-minute delay, Aya was asked to write down as many words as she could remember from this second list. This was a test of her long-term memory.

The results of the psychologist's experiment can be seen in **Table 1** below.

Table 1 Number of words out of 20 recalled in the memory experiment

Condition 1: Immediate recall	Condition 2: 10-minute delay
14	1

1 5

Calculate the percentage number of words recalled in Condition 1 **and** in Condition 2.

[2 marks]

Condition 1 $14 \div 20 \times 100 = 70\%$

Condition 2 $1 \div 20 \times 100 = 5\%$



1 6

Using the data in **Table 1**, suggest what the psychologist could conclude about Aya's memory after her accident.

[2 marks]

Aya's immediate recall is good (70%), suggesting her short-term memory is not affected by the accident, but she has problems recalling information after a delay (5%), suggesting problems with her long-term memory.

1 7

Explain how the psychologist could use the test-retest method to assess the reliability of the results of this experiment.

[4 marks]

The psychologist would carry out the same memory experiment again with Aya at a later date, using the same procedure (with new lists of 20 words of equal difficulty).

The psychologist would then compare the results from both memory experiments, using a statistical test of correlation (or a scattergram) to check for similarities between the two sets of results.

If the results of both experiments are similar, giving a significant positive correlation (eg +0.8 or above), then the results are reliable.

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1 8

The psychologist has already used questionnaires and conducted an experiment as part of Aya's case study.

Identify and explain how the psychologist could use **one other** method in Aya's case study.

[4 marks]

Interviews. The psychologist could carry out an unstructured interview with Aya and her family about the accident and how it affects her life, including her memory. The psychologist would ask open questions, eg asking Aya to describe what she finds difficult to remember in her day-to-day life, and follow up on her answers with further questions. The interview could be recorded and transcribed, giving detailed qualitative data about Aya's memory problems from her own point of view, which could be compared with her family's questionnaire answers.

After carrying out research, psychologists often write a scientific report about their study.

1 9

Name **one** section included in a scientific report. Briefly explain what information would need to be included in the section you have named.

[3 marks]

Section of scientific report Results

Explanation A summary of the key findings from the study. It would include descriptive statistics, such as the mean, median and mode, and tables or graphs, and inferential statistics, including the choice of statistical test, the reasons for it and the results of the test, eg whether they were significant.

30

END OF QUESTIONS



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