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INTERNATIONAL A-LEVEL PSYCHOLOGY

Unit 3 Advanced Topics and Research Methods 2

Thursday 5 June 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	
Section	Mark
A	
B	
C	
TOTAL	



J U N 2 5 P S 0 3 0 1

Section A: Psychology of SleepAnswer **all** questions in the spaces provided.**0 1**

There are three types of biological rhythm.

- A** Circadian
- B** Infradian
- C** Ultradian

Complete the table of definitions by choosing the correct letter from the list above and writing it next to the appropriate definition.

Use **each** letter only **once**.

[3 marks]

Biological rhythm with a cycle length of 24 hours.	<i>A</i>
Biological rhythm with a cycle length of less than 24 hours.	<i>C</i>
Biological rhythm with a cycle length of more than 24 hours.	<i>B</i>

0 2Outline **one** limitation of research studies into circadian rhythms.**[2 marks]**

Studies such as Siffre's lack ecological validity: he lived in an underground cave with no daylight or clocks, which is very artificial, so findings tell us little about natural circadian rhythms. Also Siffre was the only participant (male), so the sample lacks population validity.



0 3

Omar has just started his new job as a pilot, flying around the world. He notices that when he flies in the direction of west to east, he experiences more severe jet lag than when he flies from east to west.

0 3 . 1

Using your knowledge of the effects of jet lag on the disruption of biological rhythms, explain Omar's experiences.

[4 marks]

Flying east to west, Omar's circadian rhythm runs ahead of the new time zone (phase delay). He can simply stay awake longer, lengthening his day, so his body clock quickly adjusts and jet lag is less severe.

Flying west to east, his body clock runs behind the new time zone (phase advance), so his circadian rhythm must move forward to catch up and he must sleep before his body is ready. This adjustment is much harder and takes longer, so his fatigue and sleep disruption are more severe.

0 3 . 2

Another pilot suggests to Omar that he should avoid consuming any coffee before travelling, as this might make jet lag symptoms worse.

Suggest **two other** behaviours that Omar could change to reduce the effects of jet lag when travelling from west to east.

[4 marks]

- 1 *Omar could adjust his daily schedule before flying, going to bed and eating meals earlier in the days before the flight to anticipate the new time zone, so his body clock is already partly advanced.*
- 2 *On arrival, Omar should expose himself to morning daylight as soon as possible, as light is the main zeitgeber that resets the SCN, helping his body clock advance to local time. He could also avoid alcohol.*

Turn over ►



0	4
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Name **one** type of sleep.**[1 mark]***REM (rapid eye movement) sleep.*

0	5
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Evaluate the role of personality factors as an explanation for insomnia.

[4 marks]

Vahtera et al. (2007) found people high in anxiety proneness were more likely to develop sleep disturbance after a stressful life event, supporting a role for anxious personality, and Morin et al. (1999) linked insomnia with anxiety and depression. CBT, which reduces arousal and anxiety, is effective for insomnia, further supporting the explanation. However, the research is correlational, so insomnia may cause anxiety rather than the reverse, and limited samples and uncontrolled extraneous variables, such as stress, reduce its validity.



0 6

Discuss memory consolidation as a function of sleep.

[12 marks]

Memory consolidation theory suggests that sleep is a time when memories acquired during the day are changed and established into stable, permanent long-term memories. Different stages of sleep are thought to consolidate different types of memory. REM sleep is believed to play a role in consolidating procedural memories (skills), whereas NREM sleep, particularly deep slow-wave sleep (SWS), is linked to the consolidation of declarative memories (episodic and semantic). During NREM sleep, declarative memories that were temporarily stored in the hippocampus are reactivated (replayed) and then redistributed by the hippocampus to the frontal cortex for long-term storage.

Memory consolidation is researched in sleep laboratories where participants learn a task, then their sleep is monitored with EEG and they are woken or deprived of particular stages before being re-tested. Karni et al. (1994) trained participants on a visual discrimination task. Performance improved after a normal night's sleep, and when NREM sleep was disrupted, but not when REM sleep was disrupted, suggesting REM sleep consolidates procedural memory. Walker et al. (2002) found that performance on a finger-tapping motor sequence task improved by about 20% after a night of sleep, but not after the same time spent awake, and the improvement correlated with the amount of stage 2 NREM sleep. Diekelmann and Born (2010) reviewed research and concluded that slow-wave sleep supports declarative memory consolidation through reactivation of hippocampal memories, while REM sleep helps to stabilise these memories.

A strength is that there is a wide range of research support for memory

Turn over ►

consolidation as a function of sleep, such as Karni et al. (1994) and Walker et al. (2002), using controlled laboratory methods that allow cause and effect to be inferred, since the same task is tested after sleep versus wakefulness. Advances in techniques to measure brain activity, such as EEG and brain scanning, have also helped improve our understanding by showing which sleep stages are active while memories are being consolidated.

However, methods used to measure brain activity can lack precision. EEG shows general electrical activity from the surface of the brain, so it cannot show exactly where or how memories are transferred from the hippocampus to the cortex, therefore it does not give a full and detailed understanding of this function. The function of sleep in memory consolidation is very complex and, as yet, we do not fully understand all of the processes involved, for example how REM and NREM stages work together.

There are also issues with extraneous variables. In early studies it was often difficult to separate the effect of sleep itself from simply being quiet, relaxed and undisturbed, which also reduces interference with new memories, so the improvement may not be specific to sleep. Sleep laboratories are also artificial: being wired to an EEG and woken during the night may disturb normal sleep patterns, lowering ecological validity, and samples are often small, limiting generalisation.

Finally, consolidation may not be the only function of sleep, as restoration theories suggest sleep also repairs the body and brain.

Overall, there is good evidence that sleep helps consolidate memories, with REM linked to procedural and NREM to declarative memory, but



the exact mechanisms are not yet fully understood.

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Section B: Schizophrenia

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

0 7

What is meant by positive symptoms **and** negative symptoms of schizophrenia?

[2 marks]

Positive symptoms are atypical symptoms experienced in addition to normal functioning, eg hallucinations.

Negative symptoms are atypical symptoms that represent a loss of usual or expected functioning, eg avolition.

0 8

What is meant by hallucinations?

[2 marks]

Hallucinations are false perceptions of objects or events involving the senses that are not really there, eg seeing things or hearing voices that are not real.



0 9

Evaluate the use of anti-psychotic drugs as a therapy for schizophrenia.

[6 marks]

There is evidence that anti-psychotic drugs are effective. Davis et al. (1980) found that relapse occurred in about 55% of patients whose drug was replaced with a placebo compared with only about 19% of patients who stayed on the drug. Thornley et al. (2003) also found chlorpromazine reduced symptoms and improved functioning compared with a placebo. Drugs are accessible, as they come in forms such as syrups or injections, and typical anti-psychotics are cheap. However, side effects are a serious problem. Typical anti-psychotics can cause confusion, weight gain and involuntary movements (tardive dyskinesia), so many people stop taking them, causing high attrition rates and relapse. Typical anti-psychotics also have little effect on negative symptoms, although atypical drugs such as clozapine can help with both positive and negative symptoms; however, some newer atypicals are very expensive. Not all patients respond well to anti-psychotic drugs. Furthermore, drugs only treat the symptoms and do not offer a cure, so they must be taken regularly even when symptoms are not being experienced.

Turn over for the next question

Turn over ►



1 0

Sarah and George are reading about schizophrenia in their psychology textbooks.

Sarah says, "I thought that you could only develop schizophrenia if someone in your family already had it. My friend has schizophrenia and so does her biological father."

George replies, "I thought that schizophrenia was related to something that was happening inside a person's brain."

Describe and evaluate **two** biological explanations of schizophrenia. Refer to the conversation between Sarah and George in your answer.

[20 marks]

One biological explanation is the genetic explanation, which suggests schizophrenia is hereditary. It is thought to be polygenic: several candidate genes, such as the COMT gene, have been associated with an increased risk, including genes that code for the production and function of neurotransmitters such as dopamine. Ripke et al. (2014) identified 108 separate genetic variations associated with schizophrenia. The explanation is investigated using family, twin and adoption studies, which compare concordance rates between relatives who share different amounts of genes. Gottesman and Shields (1966) found a concordance rate of about 42% for MZ (identical) twins compared with about 9% for DZ (non-identical) twins. Tienari et al. (1994) found that adopted children whose biological mothers had schizophrenia were more likely to develop it (6.7%) than adoptees without this genetic risk (2%).

Sarah is highlighting the genetic explanation. She believes schizophrenia runs in families because a gene, or multiple genes, are inherited and passed on. Her friend has schizophrenia and so does her friend's biological father, suggesting that genes for schizophrenia may have been passed down from father to daughter. However, Sarah is wrong that you can only develop schizophrenia if a family member has it, because most people with schizophrenia do not have an affected parent.

There is supporting evidence for the genetic explanation. Kety et al.



(1968) found higher rates of schizophrenia among the biological relatives of adopted people with schizophrenia than among their adoptive relatives, which separates the influence of genes from upbringing. However, there are methodological issues: twin studies often use small samples, and MZ twins are reared in a more similar environment and treated more alike than DZ twins, so nurture might partly explain the higher MZ concordance rate rather than just nature. As MZ concordance is well below 100%, genes cannot be the whole explanation. Sarah's friend and her father also share an environment, so a stressful family life could explain both cases.

The second explanation is neural correlates, which suggests schizophrenia is linked to changes in brain chemistry and structure. The dopamine hypothesis suggests that increased dopamine activity (hyperdopaminergia) in subcortical areas such as the mesolimbic pathway is responsible for positive symptoms such as hallucinations, while reduced dopamine (hypodopaminergia) in the frontal areas of the brain causes negative symptoms. The glutamate hypothesis suggests glutamate activity is reduced in people with schizophrenia, linked to NMDA receptors working less effectively; as glutamate acts to reduce dopamine, reduced glutamate increases dopamine levels. Brain structure and activity may also be correlated with symptoms: Johnstone et al. (1976) used CT scans and found enlarged ventricles in people with schizophrenia, and Juckel et al. (2006) found a negative correlation between activity in the ventral striatum and the severity of negative symptoms. Reduced activity in the superior temporal gyrus and anterior cingulate gyrus has been shown to correlate with positive symptoms.

George is suggesting the neural correlates explanation, as he believes

Turn over ►



schizophrenia is caused by something happening inside a person's brain.

He could be highlighting abnormal levels of neurotransmitters such as dopamine or glutamate, or changes in brain structure such as enlarged ventricles.

Extra space *There is support for the neural correlates explanation.*

Anti-psychotic drugs that block dopamine receptors have been shown to reduce symptoms, and Kim et al. (1980) found lower glutamate levels in the cerebrospinal fluid of people with schizophrenia. However, the dopamine hypothesis is an oversimplification because many

neurotransmitters interact, so singling out just one may be inaccurate.

Findings are also unreliable: Lewis (1990) carried out a meta-analysis of 18 studies and found no significant link between enlarged ventricles and negative symptoms. Neural correlates research is correlational, so brain changes may be an effect of the disorder, or of long-term medication, rather than a cause. A variety of brain mechanisms are likely to be involved, but none are yet understood well enough to provide a causal link, so George's view is still incomplete.

Both explanations are reductionist, as environmental risk factors such as stress, cannabis use and family dysfunction are implicated in the onset of schizophrenia. The two explanations may also be linked, as genes such as COMT affect dopamine. Therefore Sarah and George are both partly right: biological factors probably only contribute partially, creating a vulnerability that interacts with environmental triggers, which supports an interactionist (diathesis-stress) approach.



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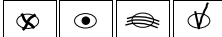
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Section C: Research Methods 2Answer **all** questions in the spaces provided.Only **one** answer per question is allowed.

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. 

A psychologist was interested in studying the social behaviours people show towards each other in public. The psychologist decided to conduct an observation.

To carry out this observation, the psychologist visited a large shopping centre and sat in a busy area. The psychologist observed and recorded some of the social behaviours that the people in the shopping centre showed towards each other.

The people in the shopping centre did not know that they were being observed as part of the study.

1 1

Which **one** of the following set of observational techniques is being used by the psychologist in this study?

Shade **one** box only.**[1 mark]**

- | | | |
|----------|--|---|
| A | Controlled, covert and non-participant observation |  |
| B | Controlled, non-participant and overt observation |  |
| C | Covert, naturalistic and non-participant observation |  |
| D | Naturalistic, non-participant and overt observation |  |



1 2

Identify the sampling technique used by the psychologist in this study.
Justify your answer.

[2 marks]

Opportunity sampling.

*The psychologist simply observed whoever happened to be in the busy
area of the shopping centre at the time of the observation.*

1 3

One of the psychologist's behavioural categories was 'holding a door open for
another person'.

Suggest **two** other behavioural categories that the psychologist might record during
the observation of social behaviours.

[2 marks]

1 *Smiling at another person.*

2 *Helping someone pick up something they have dropped.*

1 4

The psychologist believed that the observation had a high level of ecological validity.

Explain why the psychologist felt confident about the ecological validity of
the observation.

[3 marks]

*The observation took place in the real-life setting of a shopping centre,
with people doing their own day-to-day activities. As it was covert,
people did not know they were being observed, so they acted naturally.*

*The psychologist could therefore be confident the behaviours recorded
reflected natural behaviour that would have occurred even without the
observation.*

Turn over ►

During the observation, the psychologist noticed differences in the behaviours of younger people and older people. One main difference was related to helping behaviour.

The psychologist decided to conduct a field experiment to investigate the differences in helping behaviour between younger people and older people.

To conduct this field experiment, the psychologist returned to the shopping centre on a different day with an assistant.

The assistant dropped bags of shopping in front of either younger people or older people. The psychologist recorded whether the younger people or the older people helped to pick up the shopping or not.

1	5
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What is a field experiment?

[2 marks]

A field experiment is an experiment conducted in a natural, everyday setting where the researcher directly manipulates an IV and measures its effect on the DV. Participants often do not know they are taking part.



1 6

The results of the field experiment are shown in **Table 1** below.

Table 1: The helping behaviour shown by younger people and older people.

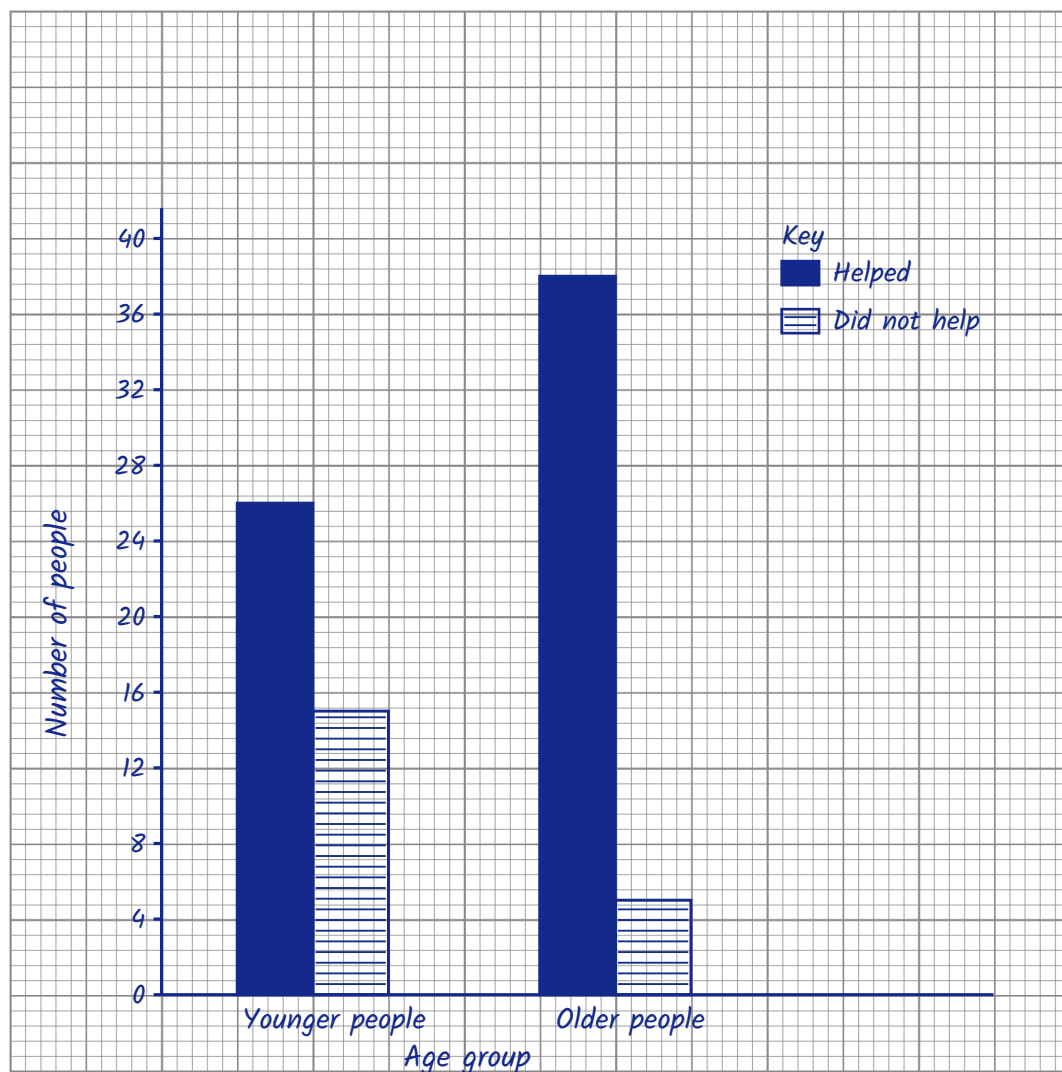
	Younger people	Older people
Helped pick up shopping	26	38
Did not help pick up shopping	15	5

Draw an appropriate graph to show the results of this field experiment.

Your graph must include a title.

[5 marks]

Title: Helping behaviour shown by younger people and older people



Turn over ►



1 7

The psychologist collected quantitative data in this field experiment.

Outline what is meant by quantitative data?

[2 marks]

Quantitative data is numerical data, such as scores from tests or tallies of yes/no answers, eg the number of people who helped or did not help.

1 8

Explain **one** benefit of collecting quantitative data in psychological research.

[2 marks]

Quantitative data is easier to analyse than qualitative data, as it can be put into graphs and statistical tests can be carried out on it, making it easier to compare groups and draw objective conclusions.

1 9

Identify a suitable statistical test that the psychologist could use to analyse the data from the field experiment. Explain **two** reasons for your choice.

[5 marks]

Statistical test *Chi-squared test*

Reason 1 *The psychologist is testing for a difference between younger people and older people in their helping behaviour (or an association between age and helping), and the design is independent groups because each participant was either a younger person or an older person.*

Reason 2 *The data are nominal: they are discrete categories, as each person was simply counted as either helping to pick up the shopping or not helping, giving frequency counts in a 2 x 2 contingency table.*



2 0Outline **two** limitations of conducting field experiments.**[4 marks]**

1 *There is less control over extraneous variables in a shopping centre, such as how busy it is or whether people were in a hurry, so it is harder to establish cause and effect.*

2 *There are ethical issues, as participants are studied without giving informed consent and are deceived (consent can only be obtained afterwards), which might upset some participants.*

2 1

After conducting psychological research, psychologists often write a scientific report about their investigation for other people to read.

Briefly outline **two** pieces of information a psychologist would include in the Introduction section of a scientific report.

[2 marks]

A review of past relevant research (literature review) giving the background and rationale for the study.

The aims and hypotheses of the current study.

30**END OF QUESTIONS**

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2 4



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