Cambridge Assessment International Education

Cambridge International AS & A Level

PSYCHOLOGY **9990/41**

Paper 4 Specialist Options: Application **October/November 2022**

1 hour 30 minutes

9503185965

You must answer on the enclosed answer booklet.

You will need: Answer booklet (enclosed)

INSTRUCTIONS

- Answer **four** questions in total:
  - Answer questions from **two** options.
    - Section A: answer **two** questions.
    - Section B: answer **one** question.
    - Section C: answer **one** question.
- Follow the instructions on the front cover of the answer booklet. If you need additional answer paper, ask the invigilator for a continuation booklet.

INFORMATION

- The total mark for this paper is 60.
- The number of marks for each question or part question is shown in brackets [ ].

This document has **8** pages. Any blank pages are indicated.

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Section A

You must answer **two** questions from this section.
Answer all the parts for the two questions you choose.

Psychology and abnormality

1 Richard has a fear of oranges and knows about the behavioural explanation of phobias. Richard wants to be treated using systematic desensitisation (Wolpe, 1958). However, his partner thinks that other treatments may be better.

(a) Explain what is meant by a 'behavioural explanation of phobias'. [2]

(b) Explain how systematic desensitisation would be used to treat Richard's fear of oranges. [4]

(c) Suggest **two** ways in which a phobia can be treated, other than systematic desensitisation. [4]

(d) Discuss the strengths and weaknesses of using systematic desensitisation to treat phobias. You should include a conclusion in your answer. [5]

Psychology and consumer behaviour

2 Newspaper Headline: Bugs Bunny goes to Disney!
Braun-LaTour et al. (2004) investigated the retroactive effect that advertising has on how consumers remember past experiences. In Experiment 1, students received course credits for participating. Data was collected and coded and an inter-rater reliability correlation of 0.9 was found between the two independent judges (coders).

(a) Explain what is meant by the term 'retroactive effect' in this study. [2]

(b) **(i)** Give **one** example of the data that was collected in Experiment 1. [2]

(ii) Explain what is meant by an 'inter-rater reliability correlation of 0.9'. [2]

(c) Explain how this study relates to the debate about individual versus situational explanations. [4]

(d) Discuss the strengths and weaknesses of giving course credits to students in studies of 'false advertising'. You should include a conclusion in your answer. [5]

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Psychology and health

3 In an attempt to understand non-adherence to medical advice, Riekert and Drotar (1999) tested adolescents aged 11–18 and their parents. The parents completed a questionnaire at the medical appointment. The adolescents and their parents completed further questionnaires at home, which were then returned by post.

(a) Outline **one** conclusion from the study by Riekert and Drotar. [2]

(b) **(i)** Suggest **two** examples of how ethical guidelines reduced the number of participants in this study. [2]

(ii) Give **two** reasons why some participants were excluded from the study by the researchers. [2]

(c) Explain **two** reasons why a patient might **not** adhere to medical advice. [4]

(d) Discuss the strengths and weaknesses of gathering data about health using questionnaires to be returned by post. You should include a conclusion in your answer. [5]

Psychology and organisations

4 Gold et al. (1992) studied the effect of shift patterns on sleep. Fig. 4.1 shows the percentage of participants in each sleep time category per 24 hours on workdays for the four types of shift.

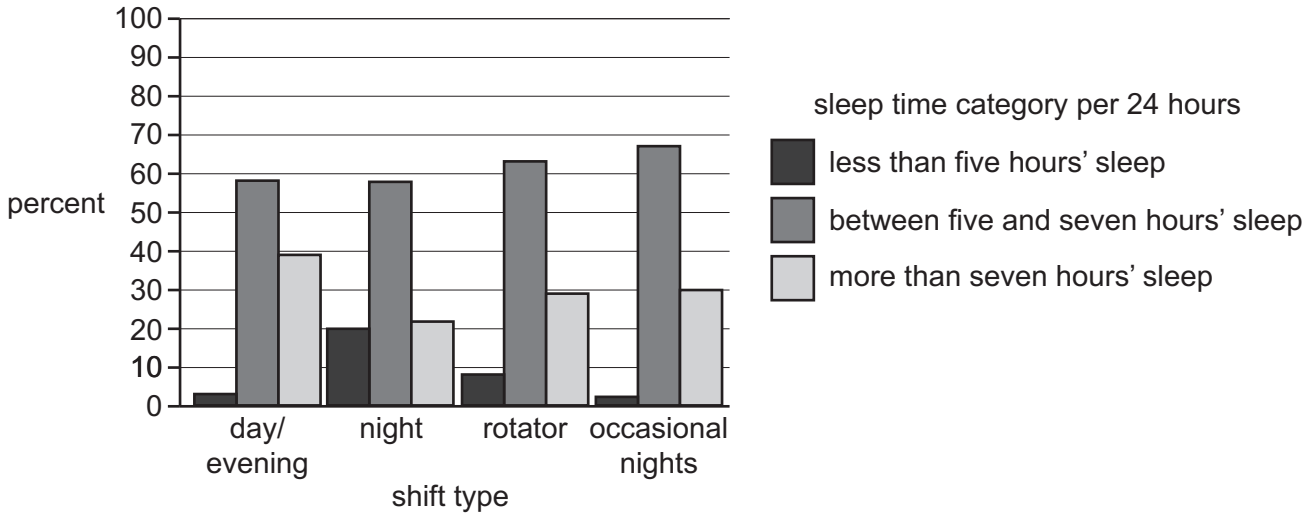


Fig. 4.1

(a) Outline what is meant by 'rotator' in this study. [2]

(b) Give **two** findings from the data shown in Fig. 4.1. [4]

(c) **(i)** Identify **two** types of error or accident that were more likely to happen to nurses on a rotator shift in this study. [2]

(ii) Other than errors or accidents, shiftwork can have direct effects on health.

Suggest **two** effects shiftwork could have on health. [2]

(d) Discuss whether the findings of the study by Gold et al. can be generalised. You should consider both sides of the argument and include a conclusion. [5]

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Section B

You must answer **one** question from this section.

Psychology and abnormality

5 **(a)** Design a longitudinal study using observation to investigate whether a token economy effectively manages schizophrenia. [10]

(b) Explain the psychological and methodological evidence on which your study is based. [8]

Psychology and consumer behaviour

6 **(a)** Design an experiment to investigate gender differences in pre-cognitive decisions when buying a product. [10]

(b) Explain the psychological and methodological evidence on which your experiment is based. [8]

Psychology and health

7 A child is in pain; the parent takes the child to the hospital so that a practitioner can assess the child's pain.

(a) Design a study to investigate whether there is a correlation between the parent's rating of the child's pain and the practitioner's rating of the child's pain. [10]

(b) Explain the psychological and methodological evidence on which your study is based. [8]

Psychology and organisations

8 A new machine has been designed, but it is dangerous to use. In order to reduce errors and accidents, the operator-machine system needs to be improved.

(a) Design an experiment to investigate **one** way that the safety of the new machine could be improved. [10]

(b) Explain the psychological and methodological evidence on which your experiment is based. [8]

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Section C

You must answer **one** question from this section.

Psychology and abnormality

9 *'In the future a genetic explanation of schizophrenia will be the only explanation needed.'*

To what extent do you agree with this statement? Use examples of research you have studied to support your answer. [12]

Psychology and consumer behaviour

10 *'Children should never be used as participants in studies of advertising.'*

To what extent do you agree with this statement? Use examples of research you have studied to support your answer. [12]

Psychology and health

11 *'Alternative techniques are more effective for managing pain, such as chronic pain, than biochemical pain techniques.'*

To what extent do you agree with this statement? Use examples of research you have studied to support your answer. [12]

Psychology and organisations

12 *'Quality of working life can only be measured effectively using five-point rating scales.'*

To what extent do you agree with this statement? Use examples of research you have studied to support your answer. [12]

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Surname	StemUp Model Solution
Answer booklet	Write the question number in the left-hand margin at the start of each answer.

Question number

Answers for paper 9990/41

Section A

Psychology and abnormality

1(a) The behavioural explanation says that all behaviour, including phobias, is learned through association (classical conditioning). A neutral stimulus is paired with something that naturally causes fear, so it becomes a conditioned stimulus that triggers a conditioned fear response. For example, Little Albert (Watson and Rayner, 1920) learned to fear a white rat after it was paired with a loud noise. Richard may have learned to fear oranges in the same way.

1(b) First, Richard is taught progressive muscle relaxation and deep breathing, so he can make himself relax on demand. This works by reciprocal inhibition: he cannot be relaxed and anxious at the same time.

Second, Richard and the therapist build an anxiety hierarchy of situations involving oranges, from least to most frightening, e.g. hearing the word 'orange', looking at a picture of an orange, seeing a real orange across the room, touching one, and finally peeling and smelling an orange.

Richard then works up the hierarchy one step at a time while using his relaxation. He only moves to the next step when he can stay relaxed at the current one. Over several sessions oranges become associated with relaxation instead of fear, so the conditioned fear response is extinguished.

Question number	
1(c)	One way is cognitive-behavioural therapy. The therapist helps the person identify and challenge irrational thoughts (e.g. 'something terrible will happen if I touch an orange') and replace them with rational ones. It can include applied relaxation, as used by Öst and Westling (1995), where the person learns to tense and relax muscles to lower heart rate and blood pressure and counteract stress hormones such as adrenaline. A second way is applied tension (Öst et al., 1989), used for blood-injury phobia. The person tenses the muscles of the arms, legs and torso to raise blood pressure, which stops the sudden drop in blood pressure that makes them faint. They practise this and then use it while being exposed to blood or needles.
1(d)	A strength is that systematic desensitisation can be generalised to many different phobias, such as spiders, heights or oranges, and to other anxiety problems, because only the hierarchy needs to change. A second strength is that it does not involve drugs, so there are no side effects or dependence, and the relaxation techniques can be used by the patient anywhere, so they stay useful after therapy ends. It has also been used effectively for over 60 years. A weakness is that it takes time and effort from the patient, who must attend many sessions and practise relaxation, unlike simply swallowing a pill, so some patients may drop out. A second weakness is that it only treats the learned behaviour. It does not deal with faulty thinking, so it may make the phobia easier to live with rather than cure it, and CBT, which also changes irrational thoughts, may be more effective. In conclusion, systematic desensitisation is a safe, effective first choice for specific phobias like Richard's, but where irrational thoughts keep the fear going it is best combined with cognitive techniques.

Question number	
	Psychology and consumer behaviour
2(a)	Retroactive interference is when new information interferes with and changes information already stored in memory. In this study the new information (an advert showing a visitor meeting Bugs Bunny at a Disney resort) changed participants' memories of their own childhood visit to Disney, so some recalled shaking hands with Bugs Bunny, which is impossible because he is a Warner Bros character.
2(b)(i)	The participants' written recall statements of their own Disney experience, which were coded for how many items that had appeared in the advert (such as meeting Bugs Bunny) they reported as part of their own memory.
2(b)(ii)	Inter-rater reliability is the extent to which two independent judges coding the same data give the same scores. A correlation of 0.9 is a strong positive correlation, close to +1, so the two coders agreed very closely and the coding of reactions and recall was consistent and reliable.
2(c)	A situational explanation is that behaviour is caused by the environment. Here the situation is the advert itself and the participants' past experience of visiting Disney: the pictures of Bugs Bunny in a Disney setting are external information that changed what people remembered. An individual explanation is that behaviour is caused by factors within the person. Here the false memory was created by each participant's own cognitive processes, as memory is reconstructive. Some participants noticed that Bugs Bunny did not belong in a Disney advert and others did not, which shows that individual differences also played a part, so the study supports an interaction of both.

Question number	
2(d)	A strength is that course credits are an incentive, so it is easier to recruit enough students, and they are more likely to stay for the whole study rather than withdraw. A second strength is that students who are rewarded are likely to take part with enthusiasm and pay attention to the adverts, and they know they are in a study so they give consent (even if not fully informed consent, as the false advert must be hidden). A weakness is that students may feel they cannot withdraw because they would lose their credits, even if they want to stop, which reduces their right to withdraw. A second weakness is that they may try to please the experimenter (demand characteristics), e.g. claiming to remember Bugs Bunny, and may only be taking part for credits rather than to further scientific knowledge, which lowers validity. In conclusion, course credits are acceptable if students are told they can withdraw without losing credit and are fully debriefed about the false advert, because otherwise the pressure to stay may bias responses.
	Psychology and health
3(a)	Families who did not return the postal questionnaires were less adherent to their diabetes treatment than the families who did return them. So research on adherence that only uses people who take part may overestimate how well patients adhere, because the least adherent are missing from the sample.
3(b)(i)	Informed consent: only 80 of the 94 families approached agreed to take part, so families who did not consent were not included. Right to withdraw: 28 families chose not to return the questionnaires they took home, so their data was lost from the study.

Question number	
3(b)(ii)	Adolescents were excluded if they had an additional chronic illness as well as diabetes. Adolescents were excluded if they showed developmental delay, e.g. Down's syndrome.
3(c)	One reason is rational non-adherence. The patient makes a reasoned decision not to follow advice, for example because the medication has unpleasant side effects, costs too much, or because they feel better and believe they no longer need it (Laba et al., 2012). A second reason comes from the health belief model. A patient may not adhere if they believe they are not susceptible to the illness or that it is not serious, or if the perceived barriers (cost, effort, side effects) outweigh the perceived benefits of the treatment, especially if there is no cue to action such as symptoms or a reminder.
3(d)	A strength is that people can complete the questionnaire at home in their own time, so they can think about their answers carefully without pressure from a doctor or researcher, which is better than an interview. A second strength is that people may prefer to write about personal health behaviour, such as missing insulin doses, rather than admit it face-to-face, so answers may be more honest. They also have time to decide whether to take part, so they can easily withdraw. A weakness is a low return rate: people may not receive the questionnaire, read it but forget, or delay. In Riekert and Drotar, 28 families did not return it, and these were the less adherent families, so the sample becomes biased. A second weakness is that the researcher is not there to explain unclear questions or check who filled it in, e.g. a parent may complete the adolescent's questionnaire, which lowers validity.

Question number	
	In conclusion, postal questionnaires are useful for collecting honest, private health data, but because non-returners differ from returners, researchers must follow up non-returners or the findings cannot be generalised.
	Psychology and organisations
4(a)	A rotator is a nurse who works a rotating (alternating) shift pattern rather than a fixed shift. In this study it was a nurse who, within a month, worked 4 or more day or evening shifts and also 4 or more night shifts.
4(b)	Night workers were the most likely to have less than five hours' sleep (about 20%), compared with only about 3% of day/evening workers. Day/evening workers were the most likely to have more than seven hours' sleep (about 39%), compared with only about 22% of night workers.
4(c)(i)	Medication errors (e.g. giving the wrong drug or dose) and driving accidents or near-accidents on the way to or from work.
4(c)(ii)	Gastrointestinal problems such as peptic ulcers, constipation and diarrhoea. Cardiovascular disease, such as increased blood pressure (Knutsson, 2003).
4(d)	The findings can be generalised because any work involving shifts, especially night or rotating shifts, disrupts the sleep-wake cycle, so other shift workers such as police or factory workers are also likely to lose sleep. Also, nurses are typical of many occupations that work shifts, and people working shifts are more likely to have accidents than people who do not, so the link between rotating shifts and errors should apply to other jobs. However, nurses may be different from other workers: their job involves saving

Question number

lives and is highly stressful, whereas many other workers do boring, repetitive tasks, so sleep and error rates may differ.

Also, the nurses all came from one hospital in Massachusetts, USA, and worked its particular shift pattern, which differs from other rotas such as the metropolitan or continental rota, so attitudes and effects may differ in other places.

In conclusion, the general finding that rotating shifts reduce sleep and increase errors can be generalised, but the specific percentages should not be applied to other jobs or countries without further research.

Section B

Psychology and abnormality

5(a) Aim: to investigate whether a token economy effectively manages the behaviour of people with schizophrenia over 18 months. Hypothesis: the frequency of appropriate behaviours will increase and inappropriate behaviours will decrease on a token economy ward compared with a standard care ward.

Sample: 40 adult in-patients diagnosed with schizophrenia (using DSM-5) on two similar long-stay wards of a psychiatric hospital, selected by opportunity sampling. One ward runs a token economy and the other gives routine hospital care.

Method: a longitudinal, naturalistic, non-participant, overt observation on the wards. Patients earn tokens for target behaviours, which they exchange for rewards such as snacks, outings or TV time.

Behavioural categories (tallied on a checklist): appropriate behaviours (making bed, washing and dressing, attending meals on time, talking to others, taking part in activities) and inappropriate behaviours (bizarre speech, aggression, social withdrawal, refusing to wash).

Procedure: a 1-month baseline is recorded before the token economy starts. Then

Question number

two trained observers use time sampling, recording each patient's behaviour every 10 minutes for one hour in the morning and one hour in the evening, on two days each week, for 18 months, with a follow-up 6 months later.

Reliability: both observers record independently and their tallies are correlated; inter-rater reliability above +0.8 is required. Observers are trained using videos before the study.

Data and analysis: quantitative frequency tallies, shown as monthly means on a line graph, plus qualitative notes. The two wards are compared using a Mann-Whitney U test, and discharge rates recorded.

Ethics: informed consent from patients who are able, or from a guardian; tokens are only for extras, never basic needs; confidentiality; right to withdraw without affecting treatment.

5(b)

Psychological evidence: a token economy is based on operant conditioning. Positive reinforcement makes a behaviour more likely to be repeated, and tokens are secondary reinforcers that gain value because they are exchanged for primary or desired reinforcers. This is why my patients earn tokens for appropriate behaviours.

Paul and Lentz (1977) used a social learning programme with a token economy for long-stay patients with schizophrenia and compared it with milieu therapy and routine hospital care. The token economy group improved most in self-care and social behaviour and more were released into the community, which is why I compare a token economy ward with a routine care ward.

Methodological evidence: a longitudinal design is used because token economies take months to change behaviour and we need to know whether changes last, as Paul and Lentz followed patients over several years. Observation is used because patients with schizophrenia may not give reliable self-reports, and behaviour can be measured directly. Behavioural categories make the data objective and quantitative, and time sampling makes it manageable. A baseline allows each

Question number

patient's change to be measured, and a control ward shows the change is due to the token economy. Two observers allow inter-rater reliability to be checked. Overt observation is needed for ethical reasons, as patients are vulnerable, and naturalistic ward observation gives high ecological validity.

Psychology and consumer behaviour

6(a) Aim: to investigate whether there are gender differences in pre-cognitive purchasing decisions. Hypothesis: there will be a difference between males and females in brain activity that predicts a decision to buy.

Method: a laboratory experiment using an fMRI scanner. The IV is gender (male or female), a natural IV, so the design is independent measures. The DVs are activity in the nucleus accumbens, insula and medial prefrontal cortex during the product and price periods, and the 'buy' or 'not buy' decision.

Sample: 40 right-handed adults aged 18 to 30 (20 male, 20 female), recruited by volunteer sampling from an advert at a university, screened for metal implants and claustrophobia.

Procedure: each participant is given £20 to spend. In the scanner they complete 40 trials of a shopping task: a product is shown for 4 seconds, then its price for 4 seconds, then they choose yes or no to buy it in the next 4 seconds by pressing a button. One trial is chosen at random and honoured.

Controls: all participants see the same 40 gender-neutral products (e.g. headphones, chocolates, books) in a random order at discounted prices, with standardised instructions and timings.

Data and analysis: quantitative brain activation and the percentage of 'buy' choices. Brain activity in the seconds before the choice is used to predict the decision, and prediction accuracy and mean activation for males and females are compared with an independent t-test.

Question number	
	Ethics: informed consent, right to withdraw (with a button to stop the scan), confidentiality of scans, and a full debrief.
6(b)	Psychological evidence: Knutson et al. (2007) created the SHOP (save holdings or purchase) task in an fMRI scanner. Participants saw a product for 4 seconds, its price for 4 seconds, then chose whether to buy in 4 seconds. Activity in the nucleus accumbens when seeing the product, and in the medial prefrontal cortex when the price was seen as good value, predicted a decision to buy, while insula activity with excessive prices predicted not buying. This means the brain 'knows' the decision before the person consciously makes it, which is a pre-cognitive decision. I copied the timings and brain areas and simply add gender as the IV, because men and women may respond differently to products and prices. Methodological evidence: a laboratory experiment gives control over extraneous variables, such as the products, prices and timings, so differences can be linked to gender. fMRI gives objective, quantitative data that cannot be faked, unlike self-report. Independent measures must be used because gender cannot be manipulated. Gender-neutral products and random order avoid bias, and standardised procedures allow replication, which increases reliability. Using real money that is actually spent increases validity because choices have real consequences. Screening protects participants from harm in the scanner.
	Psychology and health
7(a)	Aim: to investigate whether there is a correlation between a parent's rating and a practitioner's rating of a child's pain. Hypothesis: there will be a positive correlation between the two ratings.
	Sample: 100 children aged 4 to 10 brought by a parent to the emergency department of a children's hospital, with the triage nurse who assesses them,

Question number

selected by opportunity sampling over two months.

Method: a correlational study using a visual analogue scale (VAS): a 10 cm line from 'no pain' (0) to 'worst pain possible' (10). The parent and the nurse each mark the line to show how much pain they think the child is in, and the distance is measured in cm, giving a score from 0 to 10.

Procedure: in the waiting area the parent completes the VAS on their own. Within 10 minutes the nurse observes the child (facial expression, crying, posture, guarding the injury) and completes their own VAS without seeing the parent's rating. Neither discusses the pain before rating.

Controls: the same VAS and instructions are used for every pair; ratings are made within 10 minutes of each other; nurses are trained in the same way.

Reliability: for 20 children a second nurse also rates independently to check inter-rater reliability.

Data and analysis: two quantitative scores for each child are plotted on a scatter graph (parent on x, nurse on y) and a Spearman's rho correlation is calculated.

Ethics: informed consent from parents and assent from children; treatment is never delayed for the study; data is anonymous; right to withdraw.

7(b)

Psychological evidence: a visual analogue scale is a simple psychometric measure of pain intensity that is quick and needs no complex vocabulary, so a parent can complete it while worried. Measures like the McGill Pain Questionnaire are not suitable because they rely on the patient describing their own pain, which a young child cannot do. Practitioners judge children's pain mainly from behaviour, and Turk et al. (1985) identified pain behaviours such as facial or audible expressions of distress, distorted walking or posture, negative affect and avoidance of activity, which is why the nurse observes these. Behavioural scales such as the UAB pain behaviour scale show that observed pain can be rated numerically. Faces scales such as Wong-Baker could also be used, as they give a number for each face.

Question number	
	Methodological evidence: a correlational design is needed because the aim is to find a relationship between two co-variables, not cause and effect. Both measures give quantitative interval-like data that can be plotted on a scatter graph and tested with Spearman's rho. Rating independently and without seeing each other's scores prevents one rating influencing the other, increasing validity. A second nurse allows inter-rater reliability to be checked. Opportunity sampling in a real hospital gives high ecological validity and enough cases quickly. Ethics are vital because the children are in pain and are a vulnerable group.
	Psychology and organisations
8(a)	Aim: to investigate whether an auditory alarm reduces errors in operating the new machine more than a visual warning light. Hypothesis: there will be fewer errors of omission and faster reactions with the auditory alarm.
	Method: a laboratory experiment using a computer simulator of the machine. The IV is the type of warning: condition A, a flashing red warning light on the control panel; condition B, a loud auditory alarm (about 15 dB above the background noise). The design is repeated measures, counterbalanced so half do A first and half do B first.
	DVs: the number of errors of omission (failing to press the emergency stop when the warning occurs) and the reaction time in milliseconds to press the stop button.
	Sample: 30 trainee machine operators from the company, selected by volunteer sampling.
	Procedure: each participant operates the simulator for 30 minutes per condition while also doing a secondary monitoring task, as in a real factory. Ten warnings occur at random times in each session.
	Controls: the same simulator, the same recorded factory background noise, the

Question number

same number of warnings, and standardised instructions. Sessions are a day apart to reduce fatigue.

Data and analysis: quantitative error counts and reaction times; the mean for each condition is shown on a bar chart and compared using a Wilcoxon signed-ranks test.

Ethics: the simulator means no real danger; informed consent; right to withdraw; debrief.

8(b) Psychological evidence: an operator-machine system is a loop in which the machine gives information through displays, the operator processes it and makes a decision, then acts on the machine through controls. Accidents happen when this loop breaks down. Displays can be visual or auditory: a visual light only works if the operator is looking at it, whereas an alarm can be heard wherever they are looking, but it must be loud enough to be heard above background noise, so loudness in decibels matters. There are four main types of error: omission (failing to do something), commission (doing something wrong), sequence and timing errors. An error of omission, such as not stopping the machine because the warning was missed, is the most likely with a poor display, which is why it is my main DV. Poor display design has caused real accidents, for example at Three Mile Island an indicator light misled operators about a valve's position.

Methodological evidence: a laboratory experiment with a simulator allows the IV to be manipulated and other variables controlled, so cause and effect can be established, and it is ethical because no one can be hurt by a dangerous machine. Repeated measures removes participant variables such as skill, and counterbalancing controls order effects. Errors and reaction times are objective, quantitative data, and random warnings with a secondary task make the task more realistic. Using trainee operators means the results apply to the people who will use the machine.

Question number

Section C

Psychology and abnormality

9 The genetic explanation says schizophrenia is inherited. Gottesman and Shields (1972) studied twins and found a much higher concordance rate for schizophrenia in MZ twins, who share 100% of their genes, than in DZ twins, who share about 50%. This supports a genetic cause, and if specific genes are identified the explanation could apply to everyone and allow early identification of people at risk. In support of the statement, genetic explanations are reductionist and scientific, so they can be studied precisely and replicated, unlike the psychodynamic approach, which cannot be tested. Advances in molecular genetics may in future identify the genes involved, and genetics can explain why schizophrenia is found in all cultures. Biological explanations have also led to effective drug treatments.

However, the MZ concordance in Gottesman and Shields was well below 100%, so genes cannot be the whole explanation; if they were, every MZ twin of a person with schizophrenia would also develop it. The diathesis-stress model suggests a genetic vulnerability only leads to schizophrenia when combined with environmental stress. Twins also share an environment, so concordance may partly be environmental.

Other explanations are also scientific and add something genes cannot. The dopamine hypothesis explains the symptoms biochemically, and the cognitive explanation (Frith, 1992) explains symptoms such as hearing voices as a failure to recognise one's own inner speech. These lead to treatments: CBT (Sensky et al., 2000) reduced symptoms, and token economies (Paul and Lentz, 1977) improved behaviour, which a genetic explanation could never offer. Being reductionist, a genetic explanation ignores the person's thoughts, family and social situation,

Question number

whereas a holistic view is needed to treat the whole person.

In conclusion, I largely disagree. Genetics will probably explain who is vulnerable, but because MZ concordance is not 100% and treatments based on cognitive and behavioural explanations work, a genetic explanation will never be the only one needed; an interactionist explanation is best.

Psychology and consumer behaviour

10 There are strong ethical reasons to agree. Children may not understand complex instructions, may not be able to explain what they think or feel, and cannot give informed consent themselves, so parents must consent for them. They may not feel able to use their right to withdraw from an adult researcher, and may not understand a debriefing. Studies of advertising could also cause harm that is not evident for years: Fischer et al. (1991) showed children aged 3 to 6 brand logos and asked them to match them to products, and found over 90% of six-year-olds matched Old Joe the Camel to cigarettes, so the study itself exposed young children to tobacco advertising.

Similarly, Auty and Lewis (2004) showed children aged 6 to 7 and 11 to 12 a clip from Home Alone with Pepsi placed in the scene, or a control clip, and then offered a choice of Pepsi or Coca-Cola. Using children here means encouraging them to consume sugary drinks, which raises questions of harm.

However, I disagree that children should never be used. Children are consumers and are targeted by advertisers, so research on adults cannot tell us how ads affect them; children process ads differently and may not recognise persuasive intent. Fischer et al. (1991) provided evidence that very young children recognise cigarette logos, which was used to argue for restrictions on tobacco advertising, so the research protected children overall. Auty and Lewis (2004) found that children who saw the Pepsi placement were more likely to choose Pepsi, showing product

Question number

placement influences children even without conscious recall, which is important for regulating films aimed at children.

Children are also naïve, so they are more likely to behave naturally and less likely to look for demand characteristics, which can increase validity even in a laboratory.

Ethical problems can be reduced: parental consent, child assent, short and enjoyable tasks like matching logos, and the presence of a parent.

In conclusion, I disagree with the statement. Children should be used only when the research benefits children and cannot be done with adults, with strict ethical safeguards, because without such studies we could not protect children from advertising.

Psychology and health

11 Alternative techniques include acupuncture, where fine needles are inserted along meridians and left for 10 to 20 minutes, and stimulation therapy (TENS), where electrodes on the skin give mild electrical stimulation. Biochemical techniques use drugs such as opioids (e.g. morphine), which bind to opioid receptors, and non-opioid analgesics such as paracetamol and anti-inflammatories.

There is support for the statement, especially for chronic pain. Alternative techniques do not involve taking drugs, so there are no side effects such as stomach problems from anti-inflammatories, and no risk of addiction, tolerance or withdrawal symptoms, which is a major problem with long-term opioid use for chronic pain. TENS can be used at home by the patient whenever pain occurs, without a prescription or consultation, giving the patient control. Gate control theory (Melzack and Wall, 1965) explains how TENS could work: stimulation of large nerve fibres closes the 'gate' in the spinal cord so fewer pain signals reach the brain, which gives the technique a scientific basis.

However, alternative techniques may not be as effective as medical ones. Acute

Question number

and severe pain, such as after surgery or a broken bone, needs fast and strong pain relief that only drugs give. Some research suggests acupuncture works partly as a placebo, so its effect may be due to expectations rather than the needles. Acupuncture is passive and needs a trained practitioner each time. Also many people do not believe alternatives will work, and many societies are conditioned to accept only medical techniques, so belief and adherence may be lower. Measuring effectiveness is also difficult because pain is subjective and is usually measured by self-report scales such as a visual analogue scale.

In conclusion, I partly agree. For chronic pain, alternative techniques can be more effective in the long term because they avoid addiction and side effects, but for acute severe pain biochemical techniques are more effective. The best approach is often to combine them, matching the technique to the type of pain and the patient.

Psychology and organisations

12 Quality of working life (QWL) is how good a person's working life is. Walton (1974) identified eight categories, including adequate and fair pay, safe and healthy working conditions, opportunity to use and develop skills, opportunity for growth and security, social integration, constitutionalism (rights at work), work and total life space, and social relevance. QWL questionnaires based on these ask workers to rate statements on a five-point scale from 'very dissatisfied' to 'very satisfied'.

There is support for the statement. A five-point scale allows a wide range of responses, so differences between workers can be measured. It has a neutral mid-point, so a worker who genuinely feels neutral can choose it. It produces quantitative data that can be statistically analysed and compared between departments or over time, e.g. before and after a change in working hours. The

Question number

Minnesota Satisfaction Questionnaire (Weiss et al., 1967) also uses a five-point scale successfully, which shows the format works.

However, I disagree that only five-point scales are effective. The Job Descriptive Index (Smith et al., 1969) uses a simple 'yes', 'no' or '?' response to adjectives about each part of the job and is widely used and reliable. Rating scales are closed questions that may force people into answers that do not reflect their true opinion, lowering validity, and they cannot explain why a worker is dissatisfied. Interviews or open questions give qualitative data that explains the reasons. Workers may also give socially desirable answers or respond to demand characteristics, especially if they fear a manager will see their answers, and researchers must avoid leading questions. Objective measures such as absenteeism and staff turnover can also indicate QWL without relying on self-report.

In conclusion, I disagree. Five-point scales are an effective, practical way to measure QWL across many workers, but they are not the only effective method; the most valid measurement combines rating scales with qualitative interviews and objective records.

Cambridge Assessment International Education

Cambridge International AS & A Level

PSYCHOLOGY **9990/42**

Paper 4 Specialist Options: Application **October/November 2022**

1 hour 30 minutes

8565330451

You must answer on the enclosed answer booklet.

You will need: Answer booklet (enclosed)

INSTRUCTIONS

- Answer **four** questions in total:
  - Answer questions from **two** options.
    - Section A: answer **two** questions.
    - Section B: answer **one** question.
    - Section C: answer **one** question.
- Follow the instructions on the front cover of the answer booklet. If you need additional answer paper, ask the invigilator for a continuation booklet.

INFORMATION

- The total mark for this paper is 60.
- The number of marks for each question or part question is shown in brackets [ ].

This document has **8** pages. Any blank pages are indicated.

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Section A

You must answer **two** questions from this section.
Answer all the parts for the two questions you choose.

Psychology and abnormality

1 The Blood Injection Phobia Inventory (BIPI) is a questionnaire with items about phobic situations. The participants rate their cognitive, behavioural and physiological responses to these phobic situations on four-point scales. Fig. 1.1 shows one of these items.

Item 5. When I hear a conversation about blood.

Type of response	Response statement	four-point scale			
		never	sometimes	almost always	always
Cognitive	I think I'm going to faint.	0	1	2	3
Behavioural	I escape from the situation immediately.	0	1	2	3
Physiological	Response X	0	1	2	3

Fig. 1.1

(a) Suggest **one** physiological response statement that could be used for Response X in Fig. 1.1. [2]

(b) Suggest **two** strengths of using a four-point scale to measure anxiety in people with blood injection phobia. [4]

(c) **(i)** Suggest **one** way in which anxiety in people with blood injection phobia could be measured, other than using a rating scale. [2]

(ii) Suggest **one** weakness with the measure you suggested in **(c)(i)**. [2]

(d) Discuss the strengths and weaknesses of using quantitative data to assess blood injection phobia. You should include a conclusion in your answer. [5]

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Psychology and consumer behaviour

2 Results of Experiment 1 by Woods et al. on the effect of background noise on food perception are shown in Fig. 2.1:



Fig. 2.1

(a) Identify the conditions (levels) of the independent variable from the data in Fig. 2.1. [2]

(b) Give **two** findings from the data in Fig. 2.1. [4]

(c) **(i)** Explain the experimental design that was used by Woods et al. in Experiment 1. [2]

(ii) Suggest **one** problem if an alternative experimental design had been used. [2]

(d) Discuss the strengths and weaknesses of using laboratory experiments to investigate the effect of background noise on consumer behaviour. You should include a conclusion in your answer. [5]

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Psychology and health

3 Psychologists have developed their understanding of pain and how to manage it. Three different techniques to manage pain are:

- 'alternative techniques'
- 'psychological techniques'
- 'medical techniques'.

There is a debate about which technique is most effective in managing pain.

(a) Explain what is meant by the term 'pain'. [2]

(b) Outline **two** 'alternative techniques' that can be used to manage pain. [4]

(c) **(i)** Outline how **one** 'psychological technique' can be used to manage pain. [2]

(ii) Give **one** difference between 'psychological techniques' and 'alternative techniques' to manage pain. [2]

(d) Discuss the strengths and weaknesses of using 'medical techniques' to manage pain. You should include a conclusion in your answer. [5]

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Psychology and organisations

4 The success of a leader could be due to how well followers can follow them. Kelley (1988) described the different qualities and types of followers and within this description he included a diagram. Fig. 4.1 is based on this diagram.

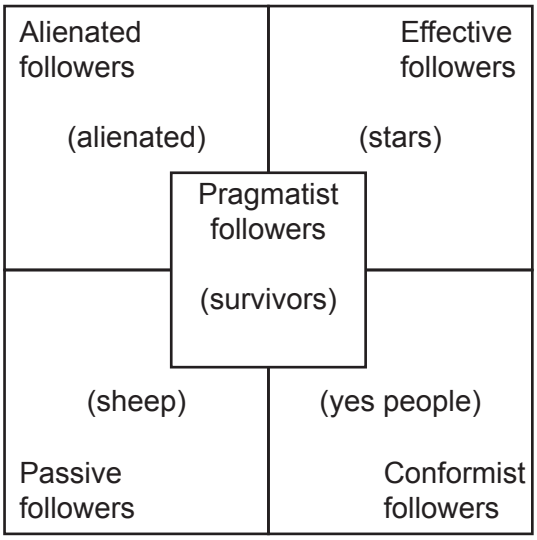


Fig. 4.1

(a) Explain what is meant by 'followership'. [2]

(b) Explain **two** qualities of effective followers from Kelley (1988). [4]

(c) Give **two** differences between alienated followers (alienated) and conformist followers (yes people). [4]

(d) Discuss whether Kelley's types of followers can be applied to all organisations. You should consider both sides of the argument and include a conclusion. [5]

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Section B

You must answer **one** question from this section.

Psychology and abnormality

5 **(a)** Design a study to investigate the effectiveness of a biomedical treatment (SSRIs) for obsessive-compulsive disorder (OCD). [10]

(b) Explain the psychological and methodological evidence on which your study is based. [8]

Psychology and consumer behaviour

6 When looking at a drinks menu in a restaurant, some people would choose the first item listed and some people would choose the last item listed.

(a) Design a study using a questionnaire to investigate whether drinks menu item choice is influenced by primacy or recency. [10]

(b) Explain the psychological and methodological evidence on which your study is based. [8]

Psychology and health

7 **(a)** Design a case study to investigate whether providing information is an effective way to promote good dental health. [10]

(b) Explain the psychological and methodological evidence on which your study is based. [8]

Psychology and organisations

8 Tuckman outlined different stages of group development.

(a) Design a study using observation to identify whether a group in an organisation is 'forming' or 'norming'. [10]

(b) Explain the psychological and methodological evidence on which your study is based. [8]

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Section C

You must answer **one** question from this section.

Psychology and abnormality

9 *'The cognitive explanation of phobias is better than all other explanations.'*

To what extent do you agree with this statement? Use examples of research you have studied to support your answer. [12]

Psychology and consumer behaviour

10 *'Shopper movement patterns are of no use to understanding shopper behaviour.'*

To what extent do you agree with this statement? Use examples of research you have studied to support your answer. [12]

Psychology and health

11 *'The strength of the Yale model of communication is its holism rather than its reductionism.'*

To what extent do you agree with this statement? Use examples of research you have studied to support your answer. [12]

Psychology and organisations

12 *'Having both LPI-Self and LPI-Observer questionnaires in the Leadership Practices Inventory (LPI) is of no practical value.'*

To what extent do you agree with this statement? Use examples of research you have studied to support your answer. [12]

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Surname	StemUp Model Solution
Answer booklet	Write the question number in the left-hand margin at the start of each answer.

Question number

Answers for paper 9990/42

Section A

Psychology and abnormality

1(a) 'My heart starts beating faster.' (a physiological response, written as a statement that can be rated from never to always).

1(b) A four-point scale allows a range of responses from 'never' to 'always', so it shows individual differences in how anxious different people with blood injection phobia feel, e.g. one person may 'sometimes' think they will faint and another 'always'. A four-point scale gives quantitative data, so it can be used over time to check improvement in a person trying to reduce their blood injection anxiety, e.g. their score on Item 5 falling from 3 to 1 after treatment such as applied tension.

1(c)(i) Observation of the person's behaviour when they are shown a blood-related situation, e.g. recording whether they look away, leave the room or go pale when shown a video of a blood test.

1(c)(ii) Cognitive responses cannot be observed, e.g. the thought 'I'm going to faint', and some physiological responses such as muscles tensing cannot be seen, so the measure is incomplete.

1(d) A strength is that a person's scores can be compared with other people's scores on

Question number	
	the same scale, e.g. to see whether their blood injection phobia is more severe than average. A second strength is that the data can be analysed statistically and compared with previous and future studies, and a number is not open to interpretation, so researcher bias does not apply. A weakness is that the person cannot give a reason or explanation, e.g. why hearing about blood makes them feel faint, so the cause of the phobia is not understood. A second weakness is that reducing a phobia to numbers is not what a patient would expect, and they may feel uninvolved if they are never asked to explain how they feel. In conclusion, quantitative data is the most useful way to measure severity and track progress in treatment, but it should be combined with a clinical interview so the therapist understands the person's experience.
	Psychology and consumer behaviour
2(a)	The quiet sound (background noise) condition and the loud sound condition. (There was also a baseline condition with no sound.)
2(b)	Sweetness was rated much lower in the loud condition than the quiet condition: about −3 compared with baseline when loud, but only about −0.1 when quiet. Food was liked more in the quiet condition (about +0.7) than in the loud condition (about −0.6).
2(c)(i)	A repeated measures design: every participant took part in all conditions (baseline, quiet and loud sound), rating the foods in each, so their own baseline could be used to calculate the differences.

Question number	
2(c)(ii)	With independent groups, individual differences between participants could confound the results, e.g. the loud group may simply include people who like salty food less, so the difference would not be due to the noise.
2(d)	A strength is that the IV, the volume of the background noise, can be set precisely using headphones and equipment, and the DV is measured on a rating scale, so cause and effect can be established. A second strength is that extraneous variables, such as the type of food, other noises and instructions, can be controlled and standardised, so the study can be replicated to test reliability. A weakness is that consumer behaviour happens in the real world, e.g. eating in a noisy restaurant or on an aeroplane with others, so wearing headphones in a laboratory lacks ecological validity. A second weakness is that participants know they are being studied and may respond to demand characteristics, e.g. guessing that loud noise should make food taste worse. Isolating one variable is also reductionist, as many other factors affect taste together. In conclusion, laboratory experiments are the best way to show that noise causes changes in taste, but the findings should be checked with field experiments in real restaurants before being applied.
	Psychology and health
3(a)	Pain is an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage, e.g. the throbbing and distress felt after cutting a finger.

Question number	
3(b)	Acupuncture: between 5 and 20 fine stainless steel needles are inserted into the skin and left in place for 10 to 20 minutes. They are placed along meridian lines through which life energy, 'qi', is said to flow, to restore its balance and reduce pain. Stimulation therapy (TENS): electrodes are placed on the skin near the painful area and pass a mild electrical current, which causes a tingling sensation that distracts from, and may block, the original worse pain.
3(c)(i)	Attention diversion: the patient focuses on a non-pain stimulus, such as counting ceiling tiles or listening to music, so attention is distracted from the pain and it is felt less.
3(c)(ii)	Psychological techniques can be done by the patients themselves at any time once learned, whereas alternative techniques such as acupuncture need to be applied by a trained practitioner on each occasion.
3(d)	A strength is that medical techniques are legitimate: drugs are tested and prescribed by a qualified medical practitioner, so patients trust them. A second strength is that they are easy to use, often just swallowing a pill, and they work biologically, e.g. opioids bind to receptors and block pain signals, giving fast, strong relief for acute pain. A weakness is that drugs such as opioid painkillers can be addictive and have side effects, and tolerance means higher doses are needed over time, which is a problem for chronic pain. A second weakness is that the patient is passive in their own treatment, and psychological or alternative techniques may be as effective without the need to take medicine. In conclusion, medical techniques are most suitable for acute, severe pain, but for

Question number	
	chronic pain they should be combined with psychological techniques to reduce reliance on drugs.
	Psychology and organisations
4(a)	Followership is the role of being a follower: the intentional practice by subordinates to enhance the interaction between leader and follower, e.g. actively supporting and helping a leader achieve organisational goals rather than just obeying.
4(b)	Self-management: effective followers think critically and work independently, in control of their own actions, so they do not need close supervision from the leader. Courage: effective followers hold to their beliefs and are loyal and honest, so they will stand up to a leader and challenge decisions they think are wrong or unethical.
4(c)	Alienated followers think independently and critically and always question the leader, whereas yes people are dependent, uncritical thinkers who accept the leader's ideas without question. Alienated followers are passive and not committed to the organisation, often becoming cynical and creating conflict, whereas yes people are active and committed, carrying out orders willingly, defending the leader and avoiding conflict.
4(d)	Kelley's types can be applied because most organisations have leaders and followers, whether a factory, a hospital or a school, so there will always be followers who differ in thinking and engagement. Also, the qualities of effective followers, such as commitment and competence, are useful in followers in any organisation, so managers anywhere can use the model to develop their staff. However, all organisations are different, so what works in one may not work in

Question number

another; e.g. in the military, followers are expected to obey, so independent critical thinking may be discouraged.

Also, leaders differ, so follower behaviour will differ, and Kelley's model may be wrong or culture-bound; it needs testing in a wide range of organisations and cultures where questioning a leader is unacceptable.

In conclusion, the two dimensions can be used to describe followers in most organisations, but the ideal type of follower depends on the organisation, so the model should be adapted, not applied to all.

Section B

Psychology and abnormality

5(a) Aim: to investigate the effectiveness of an SSRI (fluoxetine) for treating OCD.

Hypothesis: participants taking the SSRI will show a greater reduction in OCD symptoms than those taking a placebo.

Method: a double-blind, randomised, placebo-controlled field experiment over 12 weeks. The IV is the treatment: SSRI or an identical-looking placebo capsule, taken daily. Independent measures design with random allocation.

Sample: 60 adults aged 18 to 60 diagnosed with OCD (DSM-5) with a Y-BOCS score of 16 or above, recruited by volunteer sampling from adverts in outpatient clinics. Excluded: other psychiatric disorders, pregnancy, or already taking medication.

DV: OCD severity measured with the Yale-Brown Obsessive Compulsive Scale (Y-BOCS), a clinician interview scored 0 to 40, rating time spent on, interference from, distress, resistance and control of obsessions and compulsions. It is given at baseline and at weeks 4, 8 and 12. Participants also keep a daily diary of time spent on compulsions (quantitative) and describe how they feel (qualitative).

Question number	
	Controls: the clinicians rating the Y-BOCS and the participants do not know who has the SSRI; same dose and timings; no other therapy during the trial.
	Reliability: two clinicians rate a sample of interviews independently to check inter-rater reliability.
	Analysis: mean reduction in Y-BOCS score for each group shown on a line graph and compared with an independent t-test; the percentage of 'responders' (a 35% or greater reduction) is compared.
	Ethics: informed consent, right to withdraw, side effects monitored by a psychiatrist, and the placebo group offered the SSRI at the end.
5(b)	Psychological evidence: the biochemical explanation of OCD suggests low serotonin activity is involved. SSRIs block the reuptake of serotonin into the presynaptic neuron, so more remains in the synapse, which should reduce obsessions and compulsions; this is why the SSRI is the IV. My design is based on Grant et al. (2008), who tested the biochemical treatment nalmefene for pathological gambling. Participants were assessed to ensure they were suitable, then randomly allocated to nalmefene or a placebo in a double-blind trial, and gambling severity was measured with a version of the Yale-Brown scale adapted for gambling. Lower doses of nalmefene reduced gambling symptoms more than placebo. The Y-BOCS (Goodman et al., 1989) is the standard psychometric measure of OCD severity.
	Methodological evidence: a placebo group is needed because people may improve just from expecting to; this isolates the effect of the drug. The double-blind procedure prevents demand characteristics and researcher bias in rating. Random allocation spreads participant variables, such as severity, evenly. Screening and exclusions remove confounding variables and protect participants, as Grant et al. did. Repeated measurement over 12 weeks shows how quickly the drug works, as SSRIs take several weeks. The Y-BOCS gives standardised, quantitative data that can be compared statistically, while diaries add qualitative detail and validity.

Question number

Offering the drug afterwards meets the ethical duty not to withhold effective treatment.

Psychology and consumer behaviour

6(a) Aim: to investigate whether drinks menu item choice is influenced by primacy (first items) or recency (last items). Hypothesis: drinks in the first and last positions will be chosen more often than drinks in the middle.

Method: a questionnaire given to customers in a restaurant while they wait for a table. It shows a drinks menu of eight soft drinks, followed by questions.

Design: there are two versions of the menu. Version A lists the drinks in one order; Version B is a mirror image, with the order completely reversed, so each drink appears both near the top and near the bottom. Questionnaires are handed out alternately, so customers are allocated to versions evenly.

Example questions: Q1 (closed) 'Which one drink would you choose from this menu?' Q2 (rating) 'How much do you usually like each drink?' on a five-point scale from 1 'not at all' to 5 'very much', to control for preference. Q3 (open) 'Why did you choose this drink?' Q4 'How often do you eat out?'

Sample: 200 adult customers aged 18 and over at four restaurants, selected by opportunity sampling.

Controls: same drinks, same prices, same font and layout in both versions; standardised instructions.

Data and analysis: quantitative frequencies of choices in each position (1 to 8), shown on a bar chart and compared with chance (12.5% per position) using a chi-squared test; qualitative reasons are grouped into themes.

Ethics: informed consent, anonymity, right to withdraw (not completing the questionnaire), debrief.

Question number	
6(b)	Psychological evidence: primacy is the tendency to remember and choose the first items in a list, and recency the last items. Trade publications on menu design suggest people tend to remember the top two items and the bottom item, and that the items in the first and last positions of a category are chosen most often. This 'edge bias' was studied by Dayan and Bar-Hillel (2011), who manipulated the position of foods on restaurant menus, including a Baseline menu and a Mirror menu in which the order was reversed. They found that items were more popular when placed at the beginning or end of a category list than in the middle. My Version A and Version B menus copy their baseline and mirror design, using drinks instead of food. Methodological evidence: a questionnaire is used because it can be given quickly to a large sample, giving data that can be generalised. The mirror version means each drink appears in the edge and middle positions, so a drink's popularity cannot explain the effect of position. Closed questions give quantitative data for statistical testing, the preference rating controls for liking, and the open question gives qualitative reasons, increasing validity. Using real restaurants gives ecological validity. Standardised menus and instructions improve reliability, and anonymity reduces socially desirable answers.
	Psychology and health
7(a)	Aim: to investigate whether providing information is an effective way to promote good dental health in one person. Participant: one 30-year-old adult with poor dental health (gum disease and plaque), referred by a dentist, who gives informed consent. A pseudonym is used. Method: a longitudinal case study over 6 months using several methods. The person receives a 'Dental Health Manual': an information booklet and short video explaining brushing twice a day for two minutes, flossing, cutting sugary snacks

Question number

and regular check-ups, with a simple diagram of gum disease.

Data collection: (1) Objective: a dentist records a plaque score and gum bleeding at baseline and after 1, 3 and 6 months. (2) Self-report: a daily diary of brushing, flossing and sugary snacks. (3) A questionnaire testing dental knowledge before and after the manual. (4) Semi-structured interviews, e.g. 'What information was most useful?' and 'What makes it hard to floss every day?' (5) An interview with the person's partner to check the diary.

Reliability: two dentists rate the plaque independently, and data is triangulated across methods.

Data and analysis: quantitative plaque scores and diary totals shown on a line graph over time; qualitative interview data analysed into themes.

Ethics: right to withdraw, confidentiality, normal dental treatment is never withheld, debrief.

7(b) Psychological evidence: providing information is a strategy for promoting health. Lewin et al. (1992) created the Heart Manual, a self-help booklet giving information to people who had survived a heart attack so they could change to a healthier lifestyle, with relaxation and exercise. Compared with a group given standard information and advice, the manual group had better psychological adjustment, fewer GP visits and fewer readmissions to hospital in the following months. My 'Dental Health Manual' applies the same idea to teeth. Janis and Feshbach (1953) also showed that a dental hygiene message with minimal fear was more effective at changing tooth-brushing behaviour than a strong fear message, so my information is clear and positive rather than frightening.

Methodological evidence: a case study allows an in-depth, detailed understanding of how one person responds to information, including their reasons, which a large experiment could not provide. It is longitudinal because dental health changes slowly and we need to know if behaviour change lasts. Using several methods

Question number	
	allows triangulation: objective dental measures check the self-report diary, which may be affected by social desirability. Quantitative data shows change over time and qualitative interviews explain it. Two dentists improve reliability. The weakness is that one person cannot be generalised, which is accepted for an in-depth study.
	Psychology and organisations
8(a)	Aim: to identify whether a work group in an organisation is at the 'forming' or 'norming' stage. Sample: a newly created project team of 8 employees in a large company, selected by opportunity sampling because the team has just been set up. Method: a naturalistic, non-participant, overt observation of the team's weekly one-hour meetings for 10 weeks, video recorded with consent so it can be watched again. Behavioural categories: Forming: introducing themselves; polite, tentative conversation; asking about the task or roles; looking to the leader for direction; avoiding disagreement. Norming: agreeing rules or ways of working; using 'we' and 'our'; sharing ideas and giving constructive feedback; accepting others' roles; reaching agreement without the leader. Procedure: two trained observers use event sampling, tallying every instance of each behaviour on a checklist for each meeting, and also write qualitative notes on the atmosphere. Reliability: the two observers code independently and their tallies are correlated; above +0.8 is required. Categories are piloted on another team first. Data and analysis: for each meeting, the percentage of forming and norming behaviours is calculated and plotted on a line graph. If most behaviours are forming the group is classed as forming; if most are norming it is classed as norming.

Question number	
	Ethics: informed consent, confidentiality (managers do not see individual data), right to withdraw.
8(b)	Psychological evidence: Tuckman (1965) outlined stages of group development: forming, when people come together and are polite, uncertain and dependent on the leader; storming, when people present ideas and conflict occurs; norming, when members begin to agree, develop shared rules and cohesion; and performing, when the group functions as a coherent unit. Tuckman and Jensen (1977) added adjourning. Because the behaviour of people at each stage is different, it should be observable, so my behavioural categories are based on Tuckman's descriptions of forming and norming. A new team is chosen so it can be observed from the start, and observing for 10 weeks allows the change from forming to norming to be seen. Methodological evidence: observation is used because it records what group members actually do rather than what they say they do, avoiding social desirability. Naturalistic observation of real meetings gives high ecological validity. It is non-participant so the observers do not change the group, and overt for ethical reasons; video lets behaviours be checked. Clear behavioural categories make the data objective and quantitative, and event sampling captures every relevant behaviour. Two observers allow inter-rater reliability to be checked, and qualitative notes add detail to explain the numbers.
	Section C
	Psychology and abnormality
9	The cognitive explanation says phobias are caused by irrational thoughts and expectations. DiNardo et al. (1988) studied people with and without a fear of dogs. Many fearful people had had a frightening encounter with a dog, but so had

Question number

many people without a fear. The difference was that fearful people expected harm in future encounters, so it was their cognitions, not just the experience, that explained the phobia.

In support of the statement, the cognitive explanation explains why people behave as they do, which a strictly behavioural approach cannot: classical conditioning (Watson and Rayner, 1920) cannot explain why many people who have a frightening experience never develop a phobia, but DiNardo et al.'s findings can. Everyone thinks, so the explanation applies to everyone, and negative thoughts can be changed to positive ones. It has led to cognitive-behavioural therapy, which has been successful for many years. It is also more testable than the psychodynamic explanation, as Freud's (1909) analysis of Little Hans relied on interpretation of a single case and cannot be scientifically tested.

However, other explanations may be more scientific: cognitive explanations are based on thoughts, which cannot be observed and must be inferred from self-report, whereas behavioural explanations are based on observable behaviour and were demonstrated experimentally with Little Albert. Biological explanations, such as preparedness (Seligman, 1971), explain why phobias of snakes and heights are far more common than phobias of cars, which cognitive explanations do not. The cognitive explanation is also reductionist, focusing on thoughts and ignoring learning and biology, and it is an individual explanation that ignores situational factors, such as a traumatic event that started the fear. Treatment also suggests that behaviour matters: systematic desensitisation (Wolpe, 1958) works without changing thoughts directly.

In conclusion, I disagree. The cognitive explanation is strong because it explains why only some people develop phobias, but it is not better than all others; a holistic explanation combining learning, biological preparedness and faulty cognitions is best.

Question number

Psychology and consumer behaviour

10 Shopper movement patterns are the routes people take around a store. Gil et al. (2009) tracked shoppers' movements in real UK supermarkets using tags and found that shoppers followed different but predictable patterns depending on their type of shopping trip, e.g. a quick top-up shop compared with a main weekly shop.

I disagree with the statement because this research is useful. If shoppers are predictable types, store design can follow these patterns, e.g. putting essential items where quick shoppers will pass. Studies of movement show where items should be placed (such as impulse items on the main routes and at the end of aisles) and how the store layout should be organised. Because Gil et al. tracked real shoppers in real supermarkets, the findings have high ecological validity, and tracking gives objective data about what shoppers actually do rather than what they say they do in a questionnaire.

However, there are reasons why movement patterns are of limited use. Shoppers may be one type on one occasion and a different type on another, depending on why they are visiting, so it is hard to predict an individual. People also behave differently in different types of store: Gil et al. studied supermarkets, so their findings may not apply to clothes shops. Shoppers may be influenced more by other variables such as atmospherics and store layout; Vrechopoulos et al. (2004) found that the layout of a virtual store (such as a grid or freeform layout) affected how useful and easy to use shoppers found it. People also often shop on impulse, and shopper behaviour may differ in countries other than the UK.

Movement data also tells us where people go but not why, so it is reductionist without qualitative data such as interviews.

In conclusion, I disagree. Movement patterns are useful for store design because they are objective and ecologically valid, but they are not enough on their own; they should be combined with research on atmospherics, layout and shoppers'

Question number

motives to fully understand shopper behaviour.

Psychology and health

11 The Yale model of communication (Hovland, Janis and Kelley, 1953) explains how persuasive health messages work. It breaks communication into components: the source (who gives the message, e.g. their expertise and credibility), the message (e.g. fear arousal, one- or two-sided arguments), the medium, the audience (e.g. age, intelligence, self-esteem) and the situation. The audience must attend to, understand and accept the message for attitudes to change.

Its strength can be seen as reductionism. Breaking communication into separate factors allows each to be studied in detail in experiments, isolating one IV while controlling others. For example, Janis and Feshbach (1953) varied only the level of fear in a dental hygiene message and found minimal fear produced the most change in tooth-brushing, and Hovland and Weiss (1951) varied only source credibility. These factors are different from each other, so it makes sense to study them separately, and this gives clear practical advice for designing health campaigns.

However, the model can also be seen as holistic, because it considers many factors together rather than one alone, recognising that persuasion depends on who says what to whom and in which situation. This is a strength, because breaking communication down may lose sight of the overall process: the effect of fear depends on the audience, e.g. high fear may work for someone with high self-esteem but not low, and studying one factor at a time ignores how they interact. Some other models of health promotion do not break communication into individual features in this way.

In conclusion, I partly agree. The model's practical strength comes mainly from reductionism, because isolating each factor gives clear, testable findings, but its

Question number

value as a theory comes from being holistic, combining the factors into one model, so its real strength is that it does both.

Psychology and organisations

12 The Leadership Practices Inventory (Kouzes and Posner, 1987) measures five practices of exemplary leadership: model the way, inspire a shared vision, challenge the process, enable others to act and encourage the heart. It has 30 statements rated on how frequently the leader shows each behaviour. The LPI-Self is completed by the leader about themselves, and the LPI-Observer is completed by others, such as managers, colleagues and the people they lead.

I disagree that having both is of no practical value. Having two raters rather than one gives a fuller picture. An observer may reveal strengths and weaknesses the leader does not know about, e.g. a leader who thinks they encourage the heart but whose team says they rarely give praise. Self-ratings may reveal things observers cannot see, such as the leader's intentions. The two can be compared to check reliability and validity: agreement suggests an accurate measure, while gaps show where training is needed, which is of great practical value for leadership development.

However, there are arguments for the statement. The 'self' may not be honest, rating themselves too highly due to social desirability, and observers may also not be honest, e.g. rating a manager highly for fear of consequences or low because of a personal dislike. If observer ratings are bad, this can create interpersonal conflict between a leader and their team. Leaders may simply ignore ratings they do not like and carry on leading as before. Also, ratings of general practices may be irrelevant if leadership depends on the situation, as situational and adaptive leadership approaches suggest, since the same behaviour may be effective in one situation but not another.

Question number

In conclusion, I disagree. Having both questionnaires is valuable because comparing self and observer views reveals blind spots and checks reliability, but the value depends on honest, anonymous ratings and on leaders being willing to act on the feedback.

Cambridge Assessment International Education

Cambridge International AS & A Level

PSYCHOLOGY **9990/43**

Paper 4 Specialist Options: Application **October/November 2022**

1 hour 30 minutes

0948460592

You must answer on the enclosed answer booklet.

You will need: Answer booklet (enclosed)

INSTRUCTIONS

- Answer **four** questions in total:
  - Answer questions from **two** options.
    - Section A: answer **two** questions.
    - Section B: answer **one** question.
    - Section C: answer **one** question.
- Follow the instructions on the front cover of the answer booklet. If you need additional answer paper, ask the invigilator for a continuation booklet.

INFORMATION

- The total mark for this paper is 60.
- The number of marks for each question or part question is shown in brackets [ ].

This document has **8** pages. Any blank pages are indicated.

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Section A

You must answer **two** questions from this section.
Answer all the parts for the two questions you choose.

Psychology and abnormality

1 Richard has a fear of oranges and knows about the behavioural explanation of phobias. Richard wants to be treated using systematic desensitisation (Wolpe, 1958). However, his partner thinks that other treatments may be better.

(a) Explain what is meant by a 'behavioural explanation of phobias'. [2]

(b) Explain how systematic desensitisation would be used to treat Richard's fear of oranges. [4]

(c) Suggest **two** ways in which a phobia can be treated, other than systematic desensitisation. [4]

(d) Discuss the strengths and weaknesses of using systematic desensitisation to treat phobias. You should include a conclusion in your answer. [5]

Psychology and consumer behaviour

2 Newspaper Headline: Bugs Bunny goes to Disney!
Braun-LaTour et al. (2004) investigated the retroactive effect that advertising has on how consumers remember past experiences. In Experiment 1, students received course credits for participating. Data was collected and coded and an inter-rater reliability correlation of 0.9 was found between the two independent judges (coders).

(a) Explain what is meant by the term 'retroactive effect' in this study. [2]

(b) **(i)** Give **one** example of the data that was collected in Experiment 1. [2]

(ii) Explain what is meant by an 'inter-rater reliability correlation of 0.9'. [2]

(c) Explain how this study relates to the debate about individual versus situational explanations. [4]

(d) Discuss the strengths and weaknesses of giving course credits to students in studies of 'false advertising'. You should include a conclusion in your answer. [5]

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Psychology and health

3 In an attempt to understand non-adherence to medical advice, Riekert and Drotar (1999) tested adolescents aged 11–18 and their parents. The parents completed a questionnaire at the medical appointment. The adolescents and their parents completed further questionnaires at home, which were then returned by post.

(a) Outline **one** conclusion from the study by Riekert and Drotar. [2]

(b) **(i)** Suggest **two** examples of how ethical guidelines reduced the number of participants in this study. [2]

(ii) Give **two** reasons why some participants were excluded from the study by the researchers. [2]

(c) Explain **two** reasons why a patient might **not** adhere to medical advice. [4]

(d) Discuss the strengths and weaknesses of gathering data about health using questionnaires to be returned by post. You should include a conclusion in your answer. [5]

Psychology and organisations

4 Gold et al. (1992) studied the effect of shift patterns on sleep. Fig. 4.1 shows the percentage of participants in each sleep time category per 24 hours on workdays for the four types of shift.

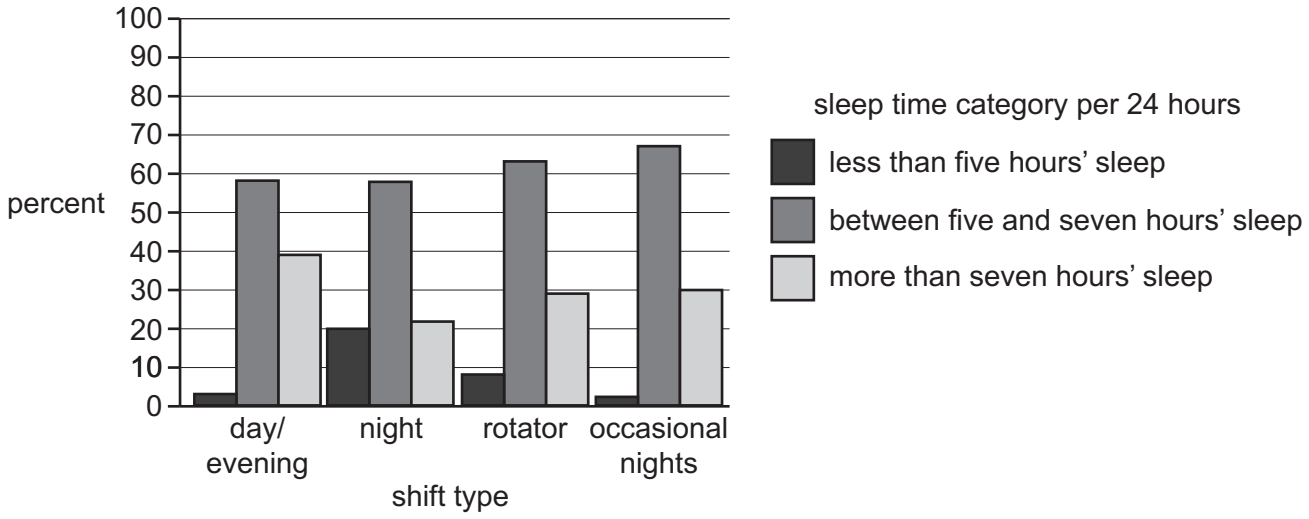


Fig. 4.1

(a) Outline what is meant by 'rotator' in this study. [2]

(b) Give **two** findings from the data shown in Fig. 4.1. [4]

(c) **(i)** Identify **two** types of error or accident that were more likely to happen to nurses on a rotator shift in this study. [2]

(ii) Other than errors or accidents, shiftwork can have direct effects on health.

Suggest **two** effects shiftwork could have on health. [2]

(d) Discuss whether the findings of the study by Gold et al. can be generalised. You should consider both sides of the argument and include a conclusion. [5]

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Section B

You must answer **one** question from this section.

Psychology and abnormality

5 **(a)** Design a longitudinal study using observation to investigate whether a token economy effectively manages schizophrenia. [10]

(b) Explain the psychological and methodological evidence on which your study is based. [8]

Psychology and consumer behaviour

6 **(a)** Design an experiment to investigate gender differences in pre-cognitive decisions when buying a product. [10]

(b) Explain the psychological and methodological evidence on which your experiment is based. [8]

Psychology and health

7 A child is in pain; the parent takes the child to the hospital so that a practitioner can assess the child's pain.

(a) Design a study to investigate whether there is a correlation between the parent's rating of the child's pain and the practitioner's rating of the child's pain. [10]

(b) Explain the psychological and methodological evidence on which your study is based. [8]

Psychology and organisations

8 A new machine has been designed, but it is dangerous to use. In order to reduce errors and accidents, the operator-machine system needs to be improved.

(a) Design an experiment to investigate **one** way that the safety of the new machine could be improved. [10]

(b) Explain the psychological and methodological evidence on which your experiment is based. [8]

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Section C

You must answer **one** question from this section.

Psychology and abnormality

9 *'In the future a genetic explanation of schizophrenia will be the only explanation needed.'*

To what extent do you agree with this statement? Use examples of research you have studied to support your answer. [12]

Psychology and consumer behaviour

10 *'Children should never be used as participants in studies of advertising.'*

To what extent do you agree with this statement? Use examples of research you have studied to support your answer. [12]

Psychology and health

11 *'Alternative techniques are more effective for managing pain, such as chronic pain, than biochemical pain techniques.'*

To what extent do you agree with this statement? Use examples of research you have studied to support your answer. [12]

Psychology and organisations

12 *'Quality of working life can only be measured effectively using five-point rating scales.'*

To what extent do you agree with this statement? Use examples of research you have studied to support your answer. [12]

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Surname	StemUp Model Solution
Answer booklet	Write the question number in the left-hand margin at the start of each answer.

Question number

Answers for paper 9990/43

Section A

Psychology and abnormality

1(a) The behavioural explanation says that all behaviour, including phobias, is learned through association (classical conditioning). A neutral stimulus is paired with something that naturally causes fear, so it becomes a conditioned stimulus that triggers a conditioned fear response. For example, Little Albert (Watson and Rayner, 1920) learned to fear a white rat after it was paired with a loud noise. Richard may have learned to fear oranges in the same way.

1(b) First, Richard is taught progressive muscle relaxation and deep breathing, so he can make himself relax on demand. This works by reciprocal inhibition: he cannot be relaxed and anxious at the same time.

Second, Richard and the therapist build an anxiety hierarchy of situations involving oranges, from least to most frightening, e.g. hearing the word 'orange', looking at a picture of an orange, seeing a real orange across the room, touching one, and finally peeling and smelling an orange.

Richard then works up the hierarchy one step at a time while using his relaxation. He only moves to the next step when he can stay relaxed at the current one. Over several sessions oranges become associated with relaxation instead of fear, so the conditioned fear response is extinguished.

Question number	
1(c)	One way is cognitive-behavioural therapy. The therapist helps the person identify and challenge irrational thoughts (e.g. 'something terrible will happen if I touch an orange') and replace them with rational ones. It can include applied relaxation, as used by Öst and Westling (1995), where the person learns to tense and relax muscles to lower heart rate and blood pressure and counteract stress hormones such as adrenaline. A second way is applied tension (Öst et al., 1989), used for blood-injury phobia. The person tenses the muscles of the arms, legs and torso to raise blood pressure, which stops the sudden drop in blood pressure that makes them faint. They practise this and then use it while being exposed to blood or needles.
1(d)	A strength is that systematic desensitisation can be generalised to many different phobias, such as spiders, heights or oranges, and to other anxiety problems, because only the hierarchy needs to change. A second strength is that it does not involve drugs, so there are no side effects or dependence, and the relaxation techniques can be used by the patient anywhere, so they stay useful after therapy ends. It has also been used effectively for over 60 years. A weakness is that it takes time and effort from the patient, who must attend many sessions and practise relaxation, unlike simply swallowing a pill, so some patients may drop out. A second weakness is that it only treats the learned behaviour. It does not deal with faulty thinking, so it may make the phobia easier to live with rather than cure it, and CBT, which also changes irrational thoughts, may be more effective. In conclusion, systematic desensitisation is a safe, effective first choice for specific phobias like Richard's, but where irrational thoughts keep the fear going it is best combined with cognitive techniques.

Question number	
	Psychology and consumer behaviour
2(a)	Retroactive interference is when new information interferes with and changes information already stored in memory. In this study the new information (an advert showing a visitor meeting Bugs Bunny at a Disney resort) changed participants' memories of their own childhood visit to Disney, so some recalled shaking hands with Bugs Bunny, which is impossible because he is a Warner Bros character.
2(b)(i)	The participants' written recall statements of their own Disney experience, which were coded for how many items that had appeared in the advert (such as meeting Bugs Bunny) they reported as part of their own memory.
2(b)(ii)	Inter-rater reliability is the extent to which two independent judges coding the same data give the same scores. A correlation of 0.9 is a strong positive correlation, close to +1, so the two coders agreed very closely and the coding of reactions and recall was consistent and reliable.
2(c)	A situational explanation is that behaviour is caused by the environment. Here the situation is the advert itself and the participants' past experience of visiting Disney: the pictures of Bugs Bunny in a Disney setting are external information that changed what people remembered. An individual explanation is that behaviour is caused by factors within the person. Here the false memory was created by each participant's own cognitive processes, as memory is reconstructive. Some participants noticed that Bugs Bunny did not belong in a Disney advert and others did not, which shows that individual differences also played a part, so the study supports an interaction of both.

Question number	
2(d)	A strength is that course credits are an incentive, so it is easier to recruit enough students, and they are more likely to stay for the whole study rather than withdraw. A second strength is that students who are rewarded are likely to take part with enthusiasm and pay attention to the adverts, and they know they are in a study so they give consent (even if not fully informed consent, as the false advert must be hidden). A weakness is that students may feel they cannot withdraw because they would lose their credits, even if they want to stop, which reduces their right to withdraw. A second weakness is that they may try to please the experimenter (demand characteristics), e.g. claiming to remember Bugs Bunny, and may only be taking part for credits rather than to further scientific knowledge, which lowers validity. In conclusion, course credits are acceptable if students are told they can withdraw without losing credit and are fully debriefed about the false advert, because otherwise the pressure to stay may bias responses.
	Psychology and health
3(a)	Families who did not return the postal questionnaires were less adherent to their diabetes treatment than the families who did return them. So research on adherence that only uses people who take part may overestimate how well patients adhere, because the least adherent are missing from the sample.
3(b)(i)	Informed consent: only 80 of the 94 families approached agreed to take part, so families who did not consent were not included. Right to withdraw: 28 families chose not to return the questionnaires they took home, so their data was lost from the study.

Question number	
3(b)(ii)	Adolescents were excluded if they had an additional chronic illness as well as diabetes. Adolescents were excluded if they showed developmental delay, e.g. Down's syndrome.
3(c)	One reason is rational non-adherence. The patient makes a reasoned decision not to follow advice, for example because the medication has unpleasant side effects, costs too much, or because they feel better and believe they no longer need it (Laba et al., 2012). A second reason comes from the health belief model. A patient may not adhere if they believe they are not susceptible to the illness or that it is not serious, or if the perceived barriers (cost, effort, side effects) outweigh the perceived benefits of the treatment, especially if there is no cue to action such as symptoms or a reminder.
3(d)	A strength is that people can complete the questionnaire at home in their own time, so they can think about their answers carefully without pressure from a doctor or researcher, which is better than an interview. A second strength is that people may prefer to write about personal health behaviour, such as missing insulin doses, rather than admit it face-to-face, so answers may be more honest. They also have time to decide whether to take part, so they can easily withdraw. A weakness is a low return rate: people may not receive the questionnaire, read it but forget, or delay. In Riekert and Drotar, 28 families did not return it, and these were the less adherent families, so the sample becomes biased. A second weakness is that the researcher is not there to explain unclear questions or check who filled it in, e.g. a parent may complete the adolescent's questionnaire, which lowers validity.

Question number	
	In conclusion, postal questionnaires are useful for collecting honest, private health data, but because non-returners differ from returners, researchers must follow up non-returners or the findings cannot be generalised.
	Psychology and organisations
4(a)	A rotator is a nurse who works a rotating (alternating) shift pattern rather than a fixed shift. In this study it was a nurse who, within a month, worked 4 or more day or evening shifts and also 4 or more night shifts.
4(b)	Night workers were the most likely to have less than five hours' sleep (about 20%), compared with only about 3% of day/evening workers. Day/evening workers were the most likely to have more than seven hours' sleep (about 39%), compared with only about 22% of night workers.
4(c)(i)	Medication errors (e.g. giving the wrong drug or dose) and driving accidents or near-accidents on the way to or from work.
4(c)(ii)	Gastrointestinal problems such as peptic ulcers, constipation and diarrhoea. Cardiovascular disease, such as increased blood pressure (Knutsson, 2003).
4(d)	The findings can be generalised because any work involving shifts, especially night or rotating shifts, disrupts the sleep-wake cycle, so other shift workers such as police or factory workers are also likely to lose sleep. Also, nurses are typical of many occupations that work shifts, and people working shifts are more likely to have accidents than people who do not, so the link between rotating shifts and errors should apply to other jobs. However, nurses may be different from other workers: their job involves saving

Question number

lives and is highly stressful, whereas many other workers do boring, repetitive tasks, so sleep and error rates may differ.

Also, the nurses all came from one hospital in Massachusetts, USA, and worked its particular shift pattern, which differs from other rotas such as the metropolitan or continental rota, so attitudes and effects may differ in other places.

In conclusion, the general finding that rotating shifts reduce sleep and increase errors can be generalised, but the specific percentages should not be applied to other jobs or countries without further research.

Section B

Psychology and abnormality

5(a) Aim: to investigate whether a token economy effectively manages the behaviour of people with schizophrenia over 18 months. Hypothesis: the frequency of appropriate behaviours will increase and inappropriate behaviours will decrease on a token economy ward compared with a standard care ward.

Sample: 40 adult in-patients diagnosed with schizophrenia (using DSM-5) on two similar long-stay wards of a psychiatric hospital, selected by opportunity sampling. One ward runs a token economy and the other gives routine hospital care.

Method: a longitudinal, naturalistic, non-participant, overt observation on the wards. Patients earn tokens for target behaviours, which they exchange for rewards such as snacks, outings or TV time.

Behavioural categories (tallied on a checklist): appropriate behaviours (making bed, washing and dressing, attending meals on time, talking to others, taking part in activities) and inappropriate behaviours (bizarre speech, aggression, social withdrawal, refusing to wash).

Procedure: a 1-month baseline is recorded before the token economy starts. Then

Question number

two trained observers use time sampling, recording each patient's behaviour every 10 minutes for one hour in the morning and one hour in the evening, on two days each week, for 18 months, with a follow-up 6 months later.

Reliability: both observers record independently and their tallies are correlated; inter-rater reliability above +0.8 is required. Observers are trained using videos before the study.

Data and analysis: quantitative frequency tallies, shown as monthly means on a line graph, plus qualitative notes. The two wards are compared using a Mann-Whitney U test, and discharge rates recorded.

Ethics: informed consent from patients who are able, or from a guardian; tokens are only for extras, never basic needs; confidentiality; right to withdraw without affecting treatment.

5(b) Psychological evidence: a token economy is based on operant conditioning. Positive reinforcement makes a behaviour more likely to be repeated, and tokens are secondary reinforcers that gain value because they are exchanged for primary or desired reinforcers. This is why my patients earn tokens for appropriate behaviours.

Paul and Lentz (1977) used a social learning programme with a token economy for long-stay patients with schizophrenia and compared it with milieu therapy and routine hospital care. The token economy group improved most in self-care and social behaviour and more were released into the community, which is why I compare a token economy ward with a routine care ward.

Methodological evidence: a longitudinal design is used because token economies take months to change behaviour and we need to know whether changes last, as Paul and Lentz followed patients over several years. Observation is used because patients with schizophrenia may not give reliable self-reports, and behaviour can be measured directly. Behavioural categories make the data objective and quantitative, and time sampling makes it manageable. A baseline allows each

Question number

patient's change to be measured, and a control ward shows the change is due to the token economy. Two observers allow inter-rater reliability to be checked. Overt observation is needed for ethical reasons, as patients are vulnerable, and naturalistic ward observation gives high ecological validity.

Psychology and consumer behaviour

6(a) Aim: to investigate whether there are gender differences in pre-cognitive purchasing decisions. Hypothesis: there will be a difference between males and females in brain activity that predicts a decision to buy.

Method: a laboratory experiment using an fMRI scanner. The IV is gender (male or female), a natural IV, so the design is independent measures. The DVs are activity in the nucleus accumbens, insula and medial prefrontal cortex during the product and price periods, and the 'buy' or 'not buy' decision.

Sample: 40 right-handed adults aged 18 to 30 (20 male, 20 female), recruited by volunteer sampling from an advert at a university, screened for metal implants and claustrophobia.

Procedure: each participant is given £20 to spend. In the scanner they complete 40 trials of a shopping task: a product is shown for 4 seconds, then its price for 4 seconds, then they choose yes or no to buy it in the next 4 seconds by pressing a button. One trial is chosen at random and honoured.

Controls: all participants see the same 40 gender-neutral products (e.g. headphones, chocolates, books) in a random order at discounted prices, with standardised instructions and timings.

Data and analysis: quantitative brain activation and the percentage of 'buy' choices. Brain activity in the seconds before the choice is used to predict the decision, and prediction accuracy and mean activation for males and females are compared with an independent t-test.

Question number	
	Ethics: informed consent, right to withdraw (with a button to stop the scan), confidentiality of scans, and a full debrief.
6(b)	Psychological evidence: Knutson et al. (2007) created the SHOP (save holdings or purchase) task in an fMRI scanner. Participants saw a product for 4 seconds, its price for 4 seconds, then chose whether to buy in 4 seconds. Activity in the nucleus accumbens when seeing the product, and in the medial prefrontal cortex when the price was seen as good value, predicted a decision to buy, while insula activity with excessive prices predicted not buying. This means the brain 'knows' the decision before the person consciously makes it, which is a pre-cognitive decision. I copied the timings and brain areas and simply add gender as the IV, because men and women may respond differently to products and prices. Methodological evidence: a laboratory experiment gives control over extraneous variables, such as the products, prices and timings, so differences can be linked to gender. fMRI gives objective, quantitative data that cannot be faked, unlike self-report. Independent measures must be used because gender cannot be manipulated. Gender-neutral products and random order avoid bias, and standardised procedures allow replication, which increases reliability. Using real money that is actually spent increases validity because choices have real consequences. Screening protects participants from harm in the scanner.
	Psychology and health
7(a)	Aim: to investigate whether there is a correlation between a parent's rating and a practitioner's rating of a child's pain. Hypothesis: there will be a positive correlation between the two ratings. Sample: 100 children aged 4 to 10 brought by a parent to the emergency department of a children's hospital, with the triage nurse who assesses them,

Question number

selected by opportunity sampling over two months.

Method: a correlational study using a visual analogue scale (VAS): a 10 cm line from 'no pain' (0) to 'worst pain possible' (10). The parent and the nurse each mark the line to show how much pain they think the child is in, and the distance is measured in cm, giving a score from 0 to 10.

Procedure: in the waiting area the parent completes the VAS on their own. Within 10 minutes the nurse observes the child (facial expression, crying, posture, guarding the injury) and completes their own VAS without seeing the parent's rating. Neither discusses the pain before rating.

Controls: the same VAS and instructions are used for every pair; ratings are made within 10 minutes of each other; nurses are trained in the same way.

Reliability: for 20 children a second nurse also rates independently to check inter-rater reliability.

Data and analysis: two quantitative scores for each child are plotted on a scatter graph (parent on x, nurse on y) and a Spearman's rho correlation is calculated.

Ethics: informed consent from parents and assent from children; treatment is never delayed for the study; data is anonymous; right to withdraw.

7(b)

Psychological evidence: a visual analogue scale is a simple psychometric measure of pain intensity that is quick and needs no complex vocabulary, so a parent can complete it while worried. Measures like the McGill Pain Questionnaire are not suitable because they rely on the patient describing their own pain, which a young child cannot do. Practitioners judge children's pain mainly from behaviour, and Turk et al. (1985) identified pain behaviours such as facial or audible expressions of distress, distorted walking or posture, negative affect and avoidance of activity, which is why the nurse observes these. Behavioural scales such as the UAB pain behaviour scale show that observed pain can be rated numerically. Faces scales such as Wong-Baker could also be used, as they give a number for each face.

Question number

Methodological evidence: a correlational design is needed because the aim is to find a relationship between two co-variables, not cause and effect. Both measures give quantitative interval-like data that can be plotted on a scatter graph and tested with Spearman's rho. Rating independently and without seeing each other's scores prevents one rating influencing the other, increasing validity. A second nurse allows inter-rater reliability to be checked. Opportunity sampling in a real hospital gives high ecological validity and enough cases quickly. Ethics are vital because the children are in pain and are a vulnerable group.

Psychology and organisations

8(a) Aim: to investigate whether an auditory alarm reduces errors in operating the new machine more than a visual warning light. Hypothesis: there will be fewer errors of omission and faster reactions with the auditory alarm.

Method: a laboratory experiment using a computer simulator of the machine. The IV is the type of warning: condition A, a flashing red warning light on the control panel; condition B, a loud auditory alarm (about 15 dB above the background noise). The design is repeated measures, counterbalanced so half do A first and half do B first.

DVs: the number of errors of omission (failing to press the emergency stop when the warning occurs) and the reaction time in milliseconds to press the stop button.

Sample: 30 trainee machine operators from the company, selected by volunteer sampling.

Procedure: each participant operates the simulator for 30 minutes per condition while also doing a secondary monitoring task, as in a real factory. Ten warnings occur at random times in each session.

Controls: the same simulator, the same recorded factory background noise, the

Question number

same number of warnings, and standardised instructions. Sessions are a day apart to reduce fatigue.

Data and analysis: quantitative error counts and reaction times; the mean for each condition is shown on a bar chart and compared using a Wilcoxon signed-ranks test.

Ethics: the simulator means no real danger; informed consent; right to withdraw; debrief.

8(b) Psychological evidence: an operator-machine system is a loop in which the machine gives information through displays, the operator processes it and makes a decision, then acts on the machine through controls. Accidents happen when this loop breaks down. Displays can be visual or auditory: a visual light only works if the operator is looking at it, whereas an alarm can be heard wherever they are looking, but it must be loud enough to be heard above background noise, so loudness in decibels matters. There are four main types of error: omission (failing to do something), commission (doing something wrong), sequence and timing errors. An error of omission, such as not stopping the machine because the warning was missed, is the most likely with a poor display, which is why it is my main DV. Poor display design has caused real accidents, for example at Three Mile Island an indicator light misled operators about a valve's position.

Methodological evidence: a laboratory experiment with a simulator allows the IV to be manipulated and other variables controlled, so cause and effect can be established, and it is ethical because no one can be hurt by a dangerous machine. Repeated measures removes participant variables such as skill, and counterbalancing controls order effects. Errors and reaction times are objective, quantitative data, and random warnings with a secondary task make the task more realistic. Using trainee operators means the results apply to the people who will use the machine.

Question number

Section C

Psychology and abnormality

9 The genetic explanation says schizophrenia is inherited. Gottesman and Shields (1972) studied twins and found a much higher concordance rate for schizophrenia in MZ twins, who share 100% of their genes, than in DZ twins, who share about 50%. This supports a genetic cause, and if specific genes are identified the explanation could apply to everyone and allow early identification of people at risk. In support of the statement, genetic explanations are reductionist and scientific, so they can be studied precisely and replicated, unlike the psychodynamic approach, which cannot be tested. Advances in molecular genetics may in future identify the genes involved, and genetics can explain why schizophrenia is found in all cultures. Biological explanations have also led to effective drug treatments.

However, the MZ concordance in Gottesman and Shields was well below 100%, so genes cannot be the whole explanation; if they were, every MZ twin of a person with schizophrenia would also develop it. The diathesis-stress model suggests a genetic vulnerability only leads to schizophrenia when combined with environmental stress. Twins also share an environment, so concordance may partly be environmental.

Other explanations are also scientific and add something genes cannot. The dopamine hypothesis explains the symptoms biochemically, and the cognitive explanation (Frith, 1992) explains symptoms such as hearing voices as a failure to recognise one's own inner speech. These lead to treatments: CBT (Sensky et al., 2000) reduced symptoms, and token economies (Paul and Lentz, 1977) improved behaviour, which a genetic explanation could never offer. Being reductionist, a genetic explanation ignores the person's thoughts, family and social situation,

Question number

whereas a holistic view is needed to treat the whole person.

In conclusion, I largely disagree. Genetics will probably explain who is vulnerable, but because MZ concordance is not 100% and treatments based on cognitive and behavioural explanations work, a genetic explanation will never be the only one needed; an interactionist explanation is best.

Psychology and consumer behaviour

10 There are strong ethical reasons to agree. Children may not understand complex instructions, may not be able to explain what they think or feel, and cannot give informed consent themselves, so parents must consent for them. They may not feel able to use their right to withdraw from an adult researcher, and may not understand a debriefing. Studies of advertising could also cause harm that is not evident for years: Fischer et al. (1991) showed children aged 3 to 6 brand logos and asked them to match them to products, and found over 90% of six-year-olds matched Old Joe the Camel to cigarettes, so the study itself exposed young children to tobacco advertising.

Similarly, Auty and Lewis (2004) showed children aged 6 to 7 and 11 to 12 a clip from Home Alone with Pepsi placed in the scene, or a control clip, and then offered a choice of Pepsi or Coca-Cola. Using children here means encouraging them to consume sugary drinks, which raises questions of harm.

However, I disagree that children should never be used. Children are consumers and are targeted by advertisers, so research on adults cannot tell us how ads affect them; children process ads differently and may not recognise persuasive intent. Fischer et al. (1991) provided evidence that very young children recognise cigarette logos, which was used to argue for restrictions on tobacco advertising, so the research protected children overall. Auty and Lewis (2004) found that children who saw the Pepsi placement were more likely to choose Pepsi, showing product

Question number

placement influences children even without conscious recall, which is important for regulating films aimed at children.

Children are also naïve, so they are more likely to behave naturally and less likely to look for demand characteristics, which can increase validity even in a laboratory.

Ethical problems can be reduced: parental consent, child assent, short and enjoyable tasks like matching logos, and the presence of a parent.

In conclusion, I disagree with the statement. Children should be used only when the research benefits children and cannot be done with adults, with strict ethical safeguards, because without such studies we could not protect children from advertising.

Psychology and health

11 Alternative techniques include acupuncture, where fine needles are inserted along meridians and left for 10 to 20 minutes, and stimulation therapy (TENS), where electrodes on the skin give mild electrical stimulation. Biochemical techniques use drugs such as opioids (e.g. morphine), which bind to opioid receptors, and non-opioid analgesics such as paracetamol and anti-inflammatories.

There is support for the statement, especially for chronic pain. Alternative techniques do not involve taking drugs, so there are no side effects such as stomach problems from anti-inflammatories, and no risk of addiction, tolerance or withdrawal symptoms, which is a major problem with long-term opioid use for chronic pain. TENS can be used at home by the patient whenever pain occurs, without a prescription or consultation, giving the patient control. Gate control theory (Melzack and Wall, 1965) explains how TENS could work: stimulation of large nerve fibres closes the 'gate' in the spinal cord so fewer pain signals reach the brain, which gives the technique a scientific basis.

However, alternative techniques may not be as effective as medical ones. Acute

Question number

and severe pain, such as after surgery or a broken bone, needs fast and strong pain relief that only drugs give. Some research suggests acupuncture works partly as a placebo, so its effect may be due to expectations rather than the needles. Acupuncture is passive and needs a trained practitioner each time. Also many people do not believe alternatives will work, and many societies are conditioned to accept only medical techniques, so belief and adherence may be lower. Measuring effectiveness is also difficult because pain is subjective and is usually measured by self-report scales such as a visual analogue scale.

In conclusion, I partly agree. For chronic pain, alternative techniques can be more effective in the long term because they avoid addiction and side effects, but for acute severe pain biochemical techniques are more effective. The best approach is often to combine them, matching the technique to the type of pain and the patient.

Psychology and organisations

12 Quality of working life (QWL) is how good a person's working life is. Walton (1974) identified eight categories, including adequate and fair pay, safe and healthy working conditions, opportunity to use and develop skills, opportunity for growth and security, social integration, constitutionalism (rights at work), work and total life space, and social relevance. QWL questionnaires based on these ask workers to rate statements on a five-point scale from 'very dissatisfied' to 'very satisfied'.

There is support for the statement. A five-point scale allows a wide range of responses, so differences between workers can be measured. It has a neutral mid-point, so a worker who genuinely feels neutral can choose it. It produces quantitative data that can be statistically analysed and compared between departments or over time, e.g. before and after a change in working hours. The

Question number

Minnesota Satisfaction Questionnaire (Weiss et al., 1967) also uses a five-point scale successfully, which shows the format works.

However, I disagree that only five-point scales are effective. The Job Descriptive Index (Smith et al., 1969) uses a simple 'yes', 'no' or '?' response to adjectives about each part of the job and is widely used and reliable. Rating scales are closed questions that may force people into answers that do not reflect their true opinion, lowering validity, and they cannot explain why a worker is dissatisfied. Interviews or open questions give qualitative data that explains the reasons. Workers may also give socially desirable answers or respond to demand characteristics, especially if they fear a manager will see their answers, and researchers must avoid leading questions. Objective measures such as absenteeism and staff turnover can also indicate QWL without relying on self-report.

In conclusion, I disagree. Five-point scales are an effective, practical way to measure QWL across many workers, but they are not the only effective method; the most valid measurement combines rating scales with qualitative interviews and objective records.