Cambridge Assessment International Education

Cambridge International AS & A Level

PSYCHOLOGY **9990/41**

Paper 4 Specialist Options: Application **May/June 2023**

1 hour 30 minutes

7201421979

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 Obsessive-compulsive disorder (OCD) can be treated with biomedical treatments and it can be managed with psychological treatments. Biomedical treatments include the use of drugs such as SSRIs. OCD can be managed psychologically using exposure and response prevention.

(a) Explain how SSRIs work when treating OCD. [2]

(b) **(i)** Explain what is meant by an obsession, using an example. [2]

(ii) Explain what is meant by a compulsion, using an example. [2]

(c) Outline **one** case study where exposure and response prevention was used to treat OCD. [4]

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

Psychology and consumer behaviour

2 Hall et al. (2010) conducted a field experiment using an opportunity sample at a supermarket to investigate choice blindness. Participants tasted jam or smelled tea. They were deceived in a number of ways during the study.

(a) Explain what is meant by the term ‘choice blindness’. [2]

(b) Suggest **two** strengths of conducting field experiments, using examples from this study. [4]

(c) Explain **two** ways in which the participants were deceived by the experimenters in this study. [4]

(d) Discuss the strengths and weaknesses of using an opportunity sample in this study. You should include a conclusion in your answer. [5]

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Psychology and health

3 The five city project (Farquhar et al., 1985) was a large experimental field study of community health education for the prevention of cardiovascular (heart) disease. Selection of the five cities was based on eight criteria (constraints). Data was collected over a six-year period using physiological measures, such as testing blood pressure and analysing urine samples, and behavioural measures.

(a) Explain what makes the main experimental design of this study independent measures. [2]

(b) Suggest why **two** of the selection criteria for the cities were important. [4]

(c) Participants in randomly selected households were used in this study.

(i) Suggest how this might have been done. [2]

(ii) Explain why this random selection was important. [2]

(d) Discuss the strengths and weaknesses of using physiological measures to assess the validity of community health promotion projects. You should include a conclusion in your answer. [5]

Psychology and organisations

4 A manager can motivate workers by giving a monetary reward for extra work or good performance. A manager can take money away for poor performance or for not meeting targets. However, giving or taking away money might not be the best motivator. Non-monetary reward systems might be more effective motivators.

(a) Explain what is meant by the term ‘non-monetary reward system’. [2]

(b) Explain how **two** types of non-monetary reward can be used to motivate workers. [4]

(c) Suggest how non-monetary rewards apply to **two** needs from Maslow’s hierarchy. [4]

(d) Discuss the strengths and weaknesses of using monetary reward systems to motivate workers. You should include a conclusion in your answer. [5]

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Section B

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

Psychology and abnormality

5 Patients with obsessive-compulsive disorder (OCD) can receive treatment with a therapist face-to-face or by telephone.

(a) Design a study using a telephone interview to investigate whether face-to-face therapy is more effective for women with OCD than for men with OCD. [10]

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

Psychology and consumer behaviour

6 Colour can be associated with specific products, but colour can also be used where products are displayed in places such as supermarkets.

(a) Design a study using an interview to investigate which colour is best for the display area for fruit and vegetables. [10]

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

Psychology and health

7 **(a)** Design a study to investigate the effectiveness of using pill counting compared to using biochemical tests to measure adherence to medical advice. [10]

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

Psychology and organisations

8 **(a)** Design a study using a questionnaire to investigate which type of cognitive limitation/error is the **most** common in a team of managers. [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 *'Biochemical techniques, such as the use of drugs, can treat all patients with schizophrenia effectively.'*

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 *'Choice heuristics, such as availability and representativeness, are irrelevant in consumer decision-making when consumers make decisions about purchasing goods.'*

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 *'Fear arousal is the best strategy for promoting health.'*

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 *'Setting goals will **not** motivate employees because need theories explain everything about motivation at work.'*

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) OCD is thought to be linked to low levels of the neurotransmitter serotonin. After serotonin carries a message across the synapse it is normally reabsorbed by the presynaptic neuron (reuptake). SSRIs block, or inhibit, this reuptake, so more serotonin stays in the synapse to pass on messages. This raises serotonin activity in the brain and reduces the anxiety and obsessive thoughts.

1(b)(i) An obsession is a recurring, persistent and intrusive thought, image or urge that the person cannot control and that causes great anxiety. For example, a constant fear of being contaminated by germs from anything unclean, such as door handles.

1(b)(ii) A compulsion is a repetitive, purposeful physical or mental action that the person feels driven to carry out, often according to strict rules, to reduce the anxiety caused by an obsession. For example, excessively washing the hands many times, or repeatedly checking that the doors are locked.

1(c) Lehmkuhl et al. (2008) used exposure and response prevention (ERP) to treat Jason, a 12-year-old boy with OCD and autism. Jason had contamination fears: he avoided "contaminated" items such as door knobs and library books, would not sit on chairs or turn pages with his hands, and would not touch papers other children had touched.

He attended ten 50-minute sessions over 16 weeks. A hierarchy of feared

Question number	
	situations was built. In exposure he repeatedly faced the items he avoided, starting with the least feared, until the fear subsided; in response prevention he was stopped from carrying out his compulsive or avoidant behaviour. Over the sessions his anxiety dropped, and three months after treatment his Y-BOCS score remained low.
1(d)	One strength is that drugs such as SSRIs are easy to take: the patient simply swallows a pill each day, which needs little time or effort compared with weekly therapy sessions. A second strength is that drugs have been shown to reduce OCD symptoms in many studies, and the patient can be passive in treatment, which suits people who are too anxious to face their fears in ERP. One weakness is that some drugs used for anxiety can lead to dependence, and SSRIs have side effects such as nausea, so they are often recommended for short-term use only. A second weakness is that drugs treat the symptoms, not the cause: they ignore cognitive and behavioural explanations of OCD, so symptoms often return when the patient stops taking them. Conclusion: drugs are useful to reduce severe symptoms quickly, but because relapse is likely when they stop, they are best combined with a psychological treatment such as ERP rather than used alone.
	Section A: Psychology and consumer behaviour
2(a)	Choice blindness is the failure to notice that the outcome we receive does not match the choice we have just made, because we cannot recall the choice immediately after making it. In Hall et al., most shoppers did not detect that the jam or tea had been switched and justified the option they had not chosen.
2(b)	First, the setting is natural, so the study has high ecological validity. It was

Question number

carried out at a tasting stall in a real supermarket, where people normally make choices between products, so the findings are more likely to apply to everyday shopping.

Second, participants behave naturally because they do not know they are in a psychology study. The researchers said they were testing the quality of the jam and tea, and tasting food in a supermarket is a normal, believable task, so demand characteristics were unlikely.

2(c) First, the participants were deceived about the aim. They were asked to take part in a "quality control" test of the jam and tea assortment, and the experimenters presented themselves as independent consultants hired to survey the quality of the products, not as psychologists studying choice blindness.

Second, they were deceived by the "magic" jars. Each jar was lidded at both ends with a divider inside, so it looked normal but held a different jam or tea at each end. On manipulated trials the jar was secretly flipped, so participants re-tasted or re-smelled the option they had rejected, believing it was their choice.

2(d) One strength is that it is quick and easy: the researchers simply used shoppers who were readily available and passing the stall, so a relatively large sample of 180 people could be obtained without needing a list of the population. A second strength is that people could be chosen who did not know they were in a study, so they behaved naturally when tasting and choosing.

One weakness is that the sample may not be representative: only people shopping in that supermarket at that time could take part, so the findings may not generalise to all consumers. A second weakness is researcher bias: the experimenters may approach people who look friendly or willing, which further narrows the sample.

Conclusion: an opportunity sample was the most practical choice for a field

Question number	
	experiment with an unaware sample, and because choice blindness is a basic cognitive process it is likely to apply widely despite the limited sample.
	Section A: Psychology and health
3(a)	It is independent measures because different communities took part in different conditions, so each person experienced only one condition. Two treatment cities received the health education campaign and were compared with three separate reference (control) cities that did not.
3(b)	One criterion was reasonable similarity of ethnic, socioeconomic and demographic characteristics. This was important because if the treatment and control cities differed in these ways, any difference in heart disease risk could be due to the populations rather than the campaign, so a fair comparison would not be possible. Another criterion was no shared newspaper or electronic media markets between treatment and control cities. This was important because if the control cities received the same TV, radio or newspaper health messages, they would also be exposed to the treatment, and the difference between conditions would be reduced.
3(c)(i)	The researchers could use a register of all households in each of the five cities, such as an electoral register, and use a computer to randomly select households, so each household is picked by chance.
3(c)(ii)	It was important because every individual in the target population had an equal chance of being chosen for the surveys and physiological tests. This removes researcher bias, such as choosing people from one area who are healthier than others, so the sample is more representative.

Question number	
3(d)	One strength is that physiological data are objective: a blood pressure reading or a urine analysis is not open to the participant's opinion or to social desirability, so it gives a valid measure of whether health has actually changed. A second strength is reliability: devices such as a sphygmomanometer measure blood pressure on a standard scale, so measurements are consistent across cities and over the six years. One weakness is that subjective data are ignored: physiological measures do not show what people know, feel or intend to do about their health, which is important for judging an education campaign. A second weakness is that physiological changes are correlational; blood pressure could fall for reasons other than the campaign, such as medication, so cause and effect cannot be assumed, and using one measure is reductionist. Conclusion: physiological measures give the strongest objective evidence that a project works, but they should be combined with behavioural and self-report measures, as Farquhar did, to judge its validity fully.
	Section A: Psychology and organisations
4(a)	A non-monetary reward system motivates workers with rewards that are not money, such as praise, recognition, respect, empowerment and a sense of belonging. These are intrinsic rewards: a worker might be named "employee of the month", which makes them feel valued.
4(b)	Praise: a manager simply saying "well done" for a completed task can be enough to make a worker feel happy and motivated to keep working hard. To be effective it must be given fairly and consistently to all workers. Empowerment: the worker is given more responsibility and trusted to make decisions, for example by completing a project without constant monitoring.

Question number	
	Achieving the task makes them stronger and more confident in what they do, so they are motivated to take on more.
4(c)	Esteem needs: the need for achievement, status and mastering skills. Recognition of high-quality work and praise for showing skill satisfy this need, so the worker is motivated to keep performing well. Social (belongingness) needs at work: the need for affiliation with colleagues. Being part of a team and gaining the respect and recognition of co-workers gives the worker a sense of belonging to the organisation, which satisfies this need.
4(d)	One strength is that many people are motivated extrinsically: pay, bonuses and performance-related pay give a clear, measurable reward for extra effort. A second strength is that many workers see work as a means to an end, with family life more important, so money is what they value most and intrinsic rewards are only a secondary bonus. One weakness is that, according to Herzberg, pay is a hygiene factor: low pay causes dissatisfaction, but more pay does not cause satisfaction; motivators such as achievement, recognition and responsibility do. A second weakness is that taking money away for missed targets can lower morale, and money ignores the importance of a sense of belonging and good relationships with workmates. Conclusion: monetary rewards work best for short-term, measurable targets, but a combination of fair pay with non-monetary rewards is likely to give the most lasting motivation.
	Section B: Psychology and abnormality
5(a)	Aim: to investigate whether face-to-face therapy for OCD is more effective for women than for men. This is a quasi-experiment: the IV is gender (women or men,

Question number

naturally occurring), and the DV is the improvement in OCD symptoms, measured in a telephone interview.

Sample: 30 women and 30 men diagnosed with OCD, recruited by volunteer sampling through posters and letters from two outpatient psychology clinics. All are aged 18 to 60 and are not taking medication, so the groups are similar except for gender.

Procedure: every participant receives the same treatment, ten weekly 50-minute sessions of face-to-face exposure and response prevention with the same therapists. Each participant is interviewed by telephone before therapy, at the end of therapy and six months later. The interview is structured, with the same questions in the same order. Closed questions are based on the Y-BOCS, e.g. "How much time do you spend on obsessive thoughts each day?" rated 0 (none) to 4 (extreme), giving a total score out of 40. Open questions give qualitative data, e.g. "How has therapy changed your daily life?"

Controls and reliability: the interviewer reads from a standard script and is trained, and a second interviewer listens to recordings to check inter-rater reliability. The interviewer does not know the hypothesis, to reduce bias.

Ethics: informed consent is obtained, participants are told they can withdraw at any time, data are kept confidential using numbers not names, and anyone whose symptoms worsen is referred for further help.

Analysis: the mean reduction in Y-BOCS score for women and for men is calculated and compared using a Mann-Whitney U test; the open answers are analysed into themes.

5(b)

Psychological evidence: my study is based on Lovell et al. (2006), who compared CBT delivered by telephone with the same therapy face to face. In a randomised controlled trial in two UK outpatient departments, 72 patients with OCD received 10 weekly sessions of exposure and response prevention. Outcomes were measured

Question number

with the Yale-Brown Obsessive Compulsive Scale, the Beck Depression Inventory and a client satisfaction questionnaire. At six months the difference in Y-BOCS scores between the two forms was very small and satisfaction was high for both, so telephone therapy was equivalent. This is why I used ten weekly ERP sessions, the Y-BOCS and a six-month follow-up. Lovell did not compare genders, so my study fills that gap.

ERP is used because exposure means facing feared stimuli until the fear subsides, and response prevention means not carrying out the compulsion, which targets the behavioural part of OCD.

Methodological evidence: a quasi-experiment is needed because gender cannot be manipulated. A telephone interview is quick and cheap, can reach patients who find travel hard, and the lack of face-to-face contact may reduce social desirability when admitting embarrassing symptoms. A structured interview means everyone is asked the same questions, so answers can be compared between women and men and the study can be replicated, increasing reliability. Rating scales give quantitative data that can be analysed statistically, while open questions add qualitative detail, increasing validity. Volunteer sampling is used because patients must agree to therapy and follow-up, which also meets the ethical need for informed consent.

Section B: Psychology and consumer behaviour

6(a) Aim: to find out which colour is best for the display area for fruit and vegetables. This is a structured interview with a repeated measures design: each participant sees the same display in four background colours, green, white, red and brown (the IV). The DV is the rating of the display.

Setting: a supermarket that allows a small display area to be set up near the entrance with identical fruit and vegetables. The colour of the shelving and

Question number

background is changed every hour, and the order of colours is counterbalanced across the day.

Sample: an opportunity sample of 80 adult shoppers is approached after looking at the display, and each interview takes about five minutes. Those willing to return later to see the other colours, or shown photos of the same display in the other colours, complete all four conditions.

Questions: the same questions are asked in the same order. Closed rating questions: "On a scale of 1 (not at all) to 7 (very), how fresh does the fruit look?", "How attractive is the display?" and "How likely are you to buy something from it?" A final question asks which of the four colours they prefer. One open question: "Why does this colour make the produce look appealing or unappealing?"

Ethics: shoppers give informed consent, are told they can withdraw at any time, and no names are recorded. Reliability: the same trained interviewer uses a script, and some participants are re-interviewed a week later (test-retest). Validity: the produce, lighting and price labels are kept the same so only colour changes.

Analysis: the mean rating for each colour is calculated and shown in a bar chart; the most often preferred colour is identified, and answers to the open question are put into themes such as "fresh" or "natural".

6(b)

Psychological evidence: my study is based on Grossman and Wisenblit (1999), who explained colour choice in marketing through associative learning. Through classical conditioning consumers learn to link colours with qualities: white goods such as washing machines are linked with cleanliness, red with danger or excitement and green with safety, and brands become linked with colours, such as red with Coca-Cola. Green is often an indicator of freshness and nature because many vegetables are green. So I predicted green might be best for fruit and vegetables, and included white (clean), red and brown (natural, like a market stall) to compare. The open question tests whether people mention these learned

Question number

associations.

Methodological evidence: an interview is used because colour preference is a subjective judgement, so we need to ask consumers directly what they think and why. A structured interview means everyone is asked the same questions in the same order, so ratings can be compared between colours, and the study can be replicated, increasing reliability. Rating scales give quantitative data so a mean can be calculated for each colour, while the open question gives qualitative data explaining the reasons, which increases validity. Repeated measures removes participant variables, such as liking a colour in general, and counterbalancing controls order effects. The supermarket setting gives ecological validity, and opportunity sampling is quick and uses real shoppers. Informed consent and anonymity follow ethical guidelines.

Section B: Psychology and health

7(a) Aim: to compare the effectiveness of pill counting with biochemical tests as measures of adherence. This is a field study with a repeated measures design: each patient's adherence is measured by both methods (the IV), and the DV is the percentage adherence each method gives.

Sample: 50 adult patients with high blood pressure who have been prescribed one tablet a day for eight weeks, recruited by volunteer sampling through their doctor's clinic.

Procedure: the tablets are given in a bottle with an electronic cap (like the TrackCap), which records the date and time each time the bottle is opened. At the end of the eight weeks the remaining tablets are also counted by a nurse. Adherence from pill counting = number of pills removed ÷ number prescribed × 100. During the eight weeks each patient gives a blood and urine sample at two unannounced clinic visits, analysed for the level of the drug. A level in the

Question number

expected range is scored as adherent, giving the biochemical percentage.

Controls: all patients take the same drug at the same dose, and the lab technician analysing samples does not know the pill count results (single blind), to avoid bias.

Ethics: informed consent is obtained, explaining that samples will be tested, although the exact aim is not revealed to avoid changing their behaviour; patients are debriefed, can withdraw at any time, and their data are confidential.

Analysis: the mean adherence for each method is calculated and the two are correlated with a Spearman's test. The method closest to the biochemical result, which shows the drug is actually in the body, is judged more effective.

7(b)

Psychological evidence: my study uses pill counting based on Chung and Naya (2000), who used a TrackCap, an electronic cap on the medication bottle that records each time it is opened. This gives an objective record of pills leaving the bottle rather than relying on the patient's word. The biochemical test is based on Roth and Caron (1978), who used blood and urine tests to measure whether patients had really taken their medication, and found that patients and doctors overestimated adherence. Biochemical tests show the drug is in the body, whereas pill counts only show that pills were removed: a patient could take pills out and throw them away. That is why the biochemical result is used as the standard to judge pill counting.

Methodological evidence: a repeated measures design is used because both measures are taken from the same patients, so participant variables such as memory or motivation are controlled. The field setting, patients taking medication at home, gives ecological validity. Using one drug and dose for everyone standardises the procedure, so it can be replicated and is reliable. Unannounced sampling and a blind technician reduce demand characteristics and researcher bias, increasing validity. Both measures give quantitative data, so a percentage

Question number

adherence can be compared and correlated. Volunteer sampling is needed because patients must agree to give samples, and informed consent, the right to withdraw and confidentiality follow ethical guidelines, since medical data are sensitive.

Section B: Psychology and organisations

8(a) Aim: to find which type of cognitive limitation or error is most common in a team of managers. The method is a self-report questionnaire.

Sample: all 40 managers in the management team of a large company (a target population small enough to ask everyone), with the company's permission. The questionnaire is completed online in work time.

Questionnaire: it has three sections, one for each type of error, with five statements each. Each statement is rated on a 5-point scale from 1 (never) to 5 (very often), thinking about team decisions in the last six months. Sins of commission, e.g. "Our team keeps to a decision even when new evidence shows it is wrong" (belief perseverance), "We continue a project because we have already spent a lot on it" (sunk cost). Sins of omission, e.g. "We ignore useful background information such as base rates", "We blame people's personality rather than the situation" (fundamental attribution error). Sins of imprecision, e.g. "We use simple rules of thumb for complex decisions". There is one open question: "Describe a recent decision your team got wrong and why."

Reliability and validity: some items are reversed to avoid response bias, and the questionnaire is repeated two weeks later to check test-retest reliability. It is anonymous to reduce social desirability.

Ethics: informed consent, right to withdraw, confidentiality, and the company is given only overall results.

Analysis: the mean score for each section is calculated; the highest mean shows the most common type. Open answers are coded into the three categories and the

Question number	
	frequency of each is counted.
8(b)	Psychological evidence: my study is based on Forsyth (2006), who explains that group decision-making puts members under heavy cognitive demands, so cognitive errors can damage group decisions. He lists three types. Sins of commission are errors in the use of information, such as belief perseverance (keeping to beliefs that have been discredited) and sunk cost bias (continuing because of what has already been invested). Sins of omission involve ignoring useful information, including base rate bias and the fundamental attribution error. Sins of imprecision involve relying on heuristics that over-simplify complex decisions. I used these three types as the sections of my questionnaire, with items describing each error, so the scores directly show which type is most common. Methodological evidence: a questionnaire is used because it can collect data from all the managers quickly and cheaply, and the same questions make answers comparable. Rating scales give quantitative data, so a mean can be calculated for each type and compared, and the open question gives qualitative data that explains real examples, increasing validity. Anonymity reduces social desirability, since managers may not want to admit errors. Reversed items reduce response bias, and test-retest checks reliability. Using the whole team avoids sampling bias. Informed consent, the right to withdraw and confidentiality follow ethical guidelines, and stop managers worrying that answers could affect their jobs.
	Section C: Psychology and abnormality
9	Biochemical techniques treat schizophrenia by changing neurotransmitter activity. Typical antipsychotics such as chlorpromazine block dopamine D2 receptors, based on the dopamine hypothesis that positive symptoms are caused by too much dopamine activity. Atypical antipsychotics such as clozapine block both dopamine

Question number

and serotonin receptors, and newer drugs such as aripiprazole have fewer side effects.

There is evidence to agree with the statement. Drugs have been shown to be effective in many studies, reducing hallucinations and delusions for many patients. They are easy to take, simply swallowing a pill, and the patient can be passive in treatment, which is useful when a patient is too disorganised or paranoid to take part in therapy. Atypicals such as clozapine can help some patients who did not respond to typical drugs, which suggests drugs can be adapted for different patients.

However, there is stronger evidence to disagree that drugs treat all patients effectively. A sizeable minority of patients do not respond to any drug. Typical drugs mainly reduce positive symptoms and do little for negative symptoms such as withdrawal and lack of motivation. Side effects such as tardive dyskinesia and weight gain mean many patients do not take the drugs as prescribed (non-adherence), so they relapse. Drugs also treat the symptoms, not the cause; they ignore alternative explanations such as Frith's cognitive explanation, so symptoms often return when the drugs are stopped.

Other treatments help patients that drugs do not. Paul and Lentz (1977) found that a token economy (social learning) programme was more effective than milieu therapy or usual hospital care: patients showed fewer symptoms and better social behaviour, and 97% were able to live outside hospital. Sensky et al. (2000) found that CBT reduced positive and negative symptoms in patients who had not responded to medication, and that the improvement continued at nine-month follow-up, unlike the befriending control.

In conclusion, I largely disagree. Drugs are an effective first-line treatment for many patients, but because some patients do not respond, side effects reduce adherence, and drugs do not change the cause, they cannot treat all patients effectively; a combination with psychological treatments such as CBT is more

Question number

effective.

Section C: Psychology and consumer behaviour

10 Choice heuristics are mental short cuts, or rules of thumb, that people use to make quick decisions. Tversky and Kahneman described the availability heuristic, judging how likely something is by how easily examples come to mind, and the representativeness heuristic, judging something by how similar it is to a typical example or stereotype.

There is strong evidence that heuristics are not irrelevant. Consumers face huge numbers of products and cannot compare them all, so they use heuristics in everyday purchases. With availability, a brand that is heavily advertised or that a friend recently mentioned comes to mind easily and is judged more popular or reliable, so it is bought. With representativeness, a supermarket own-brand in packaging that looks like a leading brand is judged to be of similar quality because it resembles the typical product. Kahneman's idea of fast and slow thinking explains why consumers often make quick heuristic purchases and later change their minds when they think more slowly. Many different heuristics have been identified, which shows how important they are in decision-making, not only in consumer behaviour.

On the other hand, there is some support for the statement. Just because heuristics exist does not mean they apply to every decision each consumer makes; for an expensive purchase such as a car, people often compare information carefully and slowly. Focusing on availability and representativeness alone is reductionist, as other factors such as anchoring on the first price seen, emotion, price and brand loyalty also affect choice. Knutson et al. (2007) used fMRI and found that activity in the nucleus accumbens when a product was shown, and in the insula when an excessive price was shown, predicted whether participants

Question number

would buy it. This suggests that the brain may make a decision before conscious reasoning, so pre-cognitive processes may be more important to study. Much heuristics research also uses artificial laboratory problems, so it may lack ecological validity for real shopping.

In conclusion, I disagree with the statement. Availability and representativeness are clearly relevant to many quick, everyday purchases, although they are not the only factors, and for important purchases careful slow thinking and emotional brain processes also play a large part.

Section C: Psychology and health

11 Fear arousal is a health promotion strategy that tries to change behaviour by making people anxious about the consequences of an unhealthy behaviour, for example showing images of disease caused by smoking.

There are arguments that it is the best strategy. Fear grabs attention and makes people think about things they would rather avoid, and if even a few people improve their health, a little fear may be worth it: the ends justify the means. People are not really harmed, as they can stop watching or reading. Cowpe (1989) evaluated a TV campaign in which a chip-pan fire was shown spreading rapidly; the number of chip-pan fires fell in the areas where the adverts were shown, so a fear element did change behaviour.

However, the evidence suggests strong fear is not the best strategy. Janis and Feshbach (1953) gave high school students a talk on dental hygiene with strong, moderate or minimal fear appeals. The minimal fear group showed the greatest improvement in dental care (about 36% compared with 8% in the strong fear group). Strong fear may make people so anxious that they avoid or deny the message. It is also ethically questionable to upset people, and some argue that if adults choose to be unhealthy, that is their choice rather than being frightened

Question number

into health.

Alternative strategies may be more effective. Providing information tells people what to do; arousing fear without showing how to avoid the danger may just cause distress. Cowpe's campaign actually combined both approaches: the adverts aroused fear but also showed exactly how to put out the fire with a damp tea towel, so it is not clear that fear alone caused the change. Fear arousal may also work for some people, such as those already worried about their health, and not others, so individual differences matter.

In conclusion, I disagree that fear arousal is the best strategy. Mild fear can help to gain attention, but strong fear can backfire; the most effective strategy is a combination of a low level of fear with clear information about what people can do.

Section C: Psychology and organisations

12 Need theories explain motivation by the needs workers try to satisfy. Maslow's hierarchy runs from physiological and safety needs up to social, esteem and self-actualisation needs; Alderfer's ERG theory groups these into existence, relatedness and growth; McClelland identified needs for achievement, power and affiliation. Goal-setting theory (Latham and Locke, 1984) instead argues that specific, difficult but attainable goals, with feedback and commitment, motivate people.

There is some support for the statement. Goal setting does not meet Maslow's physiological or Alderfer's existence needs, which are met by pay; many workers work mainly for pay and extrinsic rewards, so a goal may mean little to them. Goal setting is also unimportant to McClelland's need for power or affiliation, and it can be argued that goals help the organisation get work done rather than helping the individual.

Question number

However, there is strong evidence to disagree. Latham and Baldes (1975) found that when logging truck drivers were given a specific, difficult goal of loading their trucks to 94% of the legal weight limit, performance rose sharply from around 60% to around 90% and stayed high. This shows goals motivate even without extra pay. Goals work best when they are SMART: specific, measurable, attainable or agreed, relevant and time-bound. Goals can be tailored to each worker's job, responsibility and skill level, so each worker can succeed, and meeting targets helps both the organisation and the individual.

Need theories also do not explain everything. They are hard to test, needs differ between individuals and cultures, and Maslow's hierarchy is not always followed in order. In fact, the two approaches are linked: achieving a goal can satisfy McClelland's need for achievement and Maslow's esteem needs, so goal setting can be a way of meeting needs rather than an alternative to them.

In conclusion, I disagree with the statement. Need theories help explain why people work, but they do not explain everything; goal setting has strong research support as a motivator, and the most complete explanation combines both.

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PSYCHOLOGY **9990/42**

Paper 4 Specialist Options: Application **May/June 2023**

1 hour 30 minutes

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 Paul and Lentz (1977) conducted a study with 84 patients with schizophrenia, allocating each patient to one of three types of treatment, including token economy. After more than four years, the effectiveness of each treatment was compared. Alternatively, schizophrenia can be treated using biochemical techniques.

(a) Outline how operant conditioning explains token economy. [2]

(b) Outline the findings about the effectiveness of token economy from this study. [4]

(c) Suggest **two** reasons why an independent measures design was a better choice for this study than any other experimental design. [4]

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

Psychology and consumer behaviour

2 Gil et al. (2009) used closed-circuit television (CCTV) to record shopper movement patterns in a supermarket. Fig. 2.1 shows the movement pattern for a 'short trip' shopper. Shoppers were interviewed twice, with the second being an extensive interview when the shoppers left the supermarket.

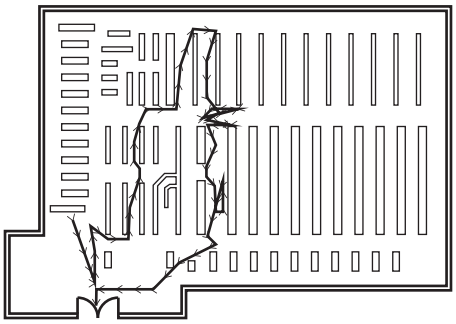


Fig. 2.1

(a) Suggest how **one** ethical guideline could have been followed in this study. [2]

(b) Explain **two** types of movement pattern identified by the CCTV recordings, other than 'short trip'. [4]

(c) **(i)** Explain **one** feature of the interviews conducted with shoppers in this study. [2]

(ii) Give **one** strength of using the feature you explained in **(c)(i)** in this study. [2]

(d) Discuss the strengths and weaknesses of using CCTV to investigate shopper behaviour. You should include a conclusion in your answer. [5]

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Psychology and health

3 Using a sample of 3000 healthy men aged 39–59, Friedman and Rosenman (1974) found that those men with a Type A personality experienced more stress-related ill-health over a period of nine years than men with a Type B personality.

(a) Explain **one** physiological effect that stress may have on health. [2]

(b) Explain **two** characteristics of a Type A personality. [4]

(c) Suggest **two** causes of stress, other than personality. [4]

(d) Discuss the strengths and weaknesses of conducting longitudinal studies to measure stress. You should include a conclusion in your answer. [5]

Psychology and organisations

4 Blau and Boal (1987) proposed a model to explain how job involvement and organisational commitment could interact to affect turnover and absenteeism in workers. Each interaction of job involvement and organisational commitment produces different worker behaviours. Each interaction is represented by a letter (W, X, Y, Z) in Fig. 4.1.

		Job involvement	
		High	**Low**
Organisational commitment	**High**	W	X
	Low	Y	Z

Fig. 4.1

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

(b) **(i)** Explain what Blau and Boal's model predicts about workers' behaviour in 'Z'. Do **not** refer to absenteeism in your answer. [2]

(ii) Explain what Blau and Boal's model predicts about workers' behaviour in 'X'. Do **not** refer to absenteeism in your answer. [2]

(c) Outline **two** of the four categories of absence identified by Blau and Boal. [4]

(d) Discuss the strengths and weaknesses of using absenteeism to measure organisational commitment. You should include a conclusion in your answer. [5]

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Section B

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

Psychology and abnormality

5 **(a)** Design a study using observation to investigate the frequency of the characteristics of schizophrenia spectrum and psychotic disorders. [10]

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

Psychology and consumer behaviour

6 Advertising can be made more effective using a slogan. Two kinds of slogans are 'jingle slogans' (slogans with music) and 'non-jingle slogans' (slogans without music).

(a) Design a study to investigate whether jingle slogans are recalled significantly more than non-jingle slogans. [10]

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

Psychology and health

7 **(a)** Design a study to investigate whether a stress-prevention technique is more effective for women than men. [10]

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

Psychology and organisations

8 **(a)** Design an experiment to investigate which is the more effective way to motivate workers in your organisation, bonuses or performance-related pay. [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 *'All impulse control disorders are caused by high levels of dopamine.'*

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 *'It is essential to collect both qualitative and quantitative data when conducting studies about the effect of brand recognition in children.'*

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 *'A repeat prescription is the only accurate way to know that a person has adhered to a request to take their medication.'*

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 *'Job satisfaction can only be assessed effectively using open-ended questions.'*

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) Operant conditioning says behaviour followed by a reward is likely to be repeated. In a token economy, patients are given tokens (secondary reinforcers) when they show desirable behaviour such as dressing themselves; this is positive reinforcement, and the tokens can be exchanged for primary reinforcers such as snacks, so the desirable behaviour is repeated.

1(b) The token economy (social learning) programme was the most effective treatment. Patients showed a reduction in positive and negative symptoms and less catatonic and withdrawn behaviour, and they interacted more with others. Over 97% were able to live independently outside hospital for 1.5 to 5 years, more than with milieu therapy or usual hospital care. However, it was less effective at reducing hallucinations and delusional thinking.

1(c) First, with repeated measures every patient would have to do all three treatments, so it would not be known which technique caused any improvement. Each treatment lasted over four years, so doing all three would also be impractical. Second, independent measures avoids carry-over (order) effects. If a patient had the token economy first, behaviours learned might continue into the next treatment and interfere with it, making it look more effective than it really was.

1(d) One strength is that drugs such as antipsychotics and atypical antipsychotics are

Question number	
	easy to take: the patient just swallows a pill, so treatment can start quickly, and the patient can be passive. A second strength is that drugs have been shown to be effective in many studies at reducing positive symptoms such as hallucinations, allowing many patients to live in the community.
	One weakness is non-adherence: side effects such as tardive dyskinesia and weight gain mean many patients do not take the drugs as prescribed, so they relapse. A second weakness is that drugs treat the symptoms, not the cause, ignoring cognitive and social explanations of schizophrenia, so symptoms often return when the drugs are stopped.
	Conclusion: biochemical techniques are a necessary first step for reducing severe symptoms, but due to side effects and relapse they work best alongside psychological treatments such as token economy or CBT.
	Section A: Psychology and consumer behaviour
2(a)	Informed consent: the shoppers were interviewed as they entered the supermarket, were told they would be tracked by the CCTV cameras, and gave their consent before being tracked, so they knew what the study involved.
2(b)	Round trip: shoppers move up and along the top corridor and aisles, visiting the vegetables, fruit and bread at the start, then return along the main corridor with various incursions into the aisles, generally exiting near the fruit and vegetables.
	Wave trip: shoppers move in a linear progression through the store along the main corridor, zigzagging in and out of the aisles, with most exiting near the far end of the store.
2(c)(i)	The interviews were structured: all shoppers were asked the same questions about the specific trip, such as the aim of the trip, use of a shopping list, satisfaction

Question number	
	and money spent, as well as general shopping habits such as how often they visit.
2(c)(ii)	Because all shoppers were asked the same questions in the same order, their answers could be compared, for example to see whether wave trip shoppers used a shopping list more than round trip shoppers.
2(d)	One strength is that CCTV observation is unobtrusive: shoppers may forget they are being filmed and so behave naturally, giving valid data on real movement patterns. A second strength is that recordings are objective and permanent, so more than one observer can code the same footage and inter-rater reliability can be checked. One weakness is that fixed cameras have a limited view, so a shopper may move out of view and behaviour may be missed, and the picture may not be clear enough to see which products are picked up. A second weakness is that CCTV records only behaviour, not what shoppers say or why they chose a route. Conclusion: CCTV is a valuable, objective way to record movement patterns, but it needs to be combined with interviews, as Gil et al. did, to explain shopper behaviour.
	Section A: Psychology and health
3(a)	Stress causes heightened physiological arousal of the sympathetic nervous system, increasing heart rate and blood pressure. If this continues for a long time it damages the blood vessels and heart, leading to coronary heart disease or a stroke caused by continued high blood pressure.
3(b)	Time urgency: Type A people are in a constant struggle against the clock. They become impatient with delays, schedule commitments too tightly and try to do

Question number

more than one thing at a time.

Competitiveness: Type A people strive hard towards goals and are very self-critical, but feel little joy in their efforts or achievements. They are also easily aroused to anger or hostility.

3(c) Life events: major changes in routine, whether positive (getting married) or negative (death of a close family member), are stressful. Holmes and Rahe (1967) gave each event a score, and higher totals were linked to more illness.

Work: some jobs are more stressful than others. Chandola et al. (2008) found work stress was associated with long hours, job insecurity, poor work relationships, and especially high job demands with low control.

3(d) One strength is that longitudinal studies show change or stability over time, so they can show whether stress leads to later illness, as in Friedman and Rosenman's nine-year study. A second strength is that the same individuals are followed, so participant variables stay constant, and measures can be repeated with the same people, giving test-retest reliability.

One weakness is attrition: over many years participants drop out or cannot be contacted, and those who leave may be the most stressed, which biases the sample. A second weakness is that once the study has started the measures cannot be changed, even if better ones appear, and unforeseen variables such as a recession may affect stress.

Conclusion: longitudinal studies are the best way to show that stress causes ill-health over time, but researchers should recruit large samples, as Friedman and Rosenman did, to allow for attrition.

Section A: Psychology and organisations

Question number	
4(a)	Job involvement is the extent to which an individual identifies psychologically with their job: how important the job is to their self-image, and how far their self-esteem is affected by how well they perform at work.
4(b)(i)	Z is low job involvement and low organisational commitment. These are apathetic employees: their work is not important to them, so they put in low effort, and they do not care about the organisation or its aims.
4(b)(ii)	X is low job involvement and high organisational commitment. These are corporate citizens: the work itself is not personally important to them, but they identify with the organisation and its goals.
4(c)	Medical absence (high job involvement, high commitment): a response to infrequent, uncontrollable events such as illness, injury, a funeral or a sick child. For the organisation this is sporadic, excused absence. Calculative absence (low job involvement, low commitment): the apathetic worker takes the maximum amount of excused and unexcused absence that the organisation permits before sanctions such as warnings or dismissal.
4(d)	One strength is that absenteeism is an objective measure: days absent are clearly and easily recorded, so it is not based on a manager's subjective opinion. A second strength is that management can keep records over time, so changes in commitment can be tracked and compared between departments. One weakness is validity: absence may be due to illness or family demands (medical absence) rather than low commitment, so high absenteeism does not always mean low organisational commitment. A second weakness is that absence is a behaviour, while commitment is an attitude, so one measure is reductionist and a range of measures such as questionnaires is needed.

Question number

Conclusion: absenteeism is a useful, objective indicator, but it should be interpreted using Blau and Boal's categories of absence and alongside attitude measures before concluding that commitment is low.

Section B: Psychology and abnormality

5(a) Aim: to investigate how frequently the different characteristics of schizophrenia spectrum and psychotic disorders occur. The method is a naturalistic, non-participant, structured observation.

Sample and setting: 20 adult in-patients diagnosed with schizophrenia in a psychiatric hospital, chosen by volunteer sampling, observed in the day room where they normally spend time.

Behaviour categories: a checklist based on DSM-5: (1) signs of hallucinations, e.g. talking to or answering someone who is not there; (2) disorganised speech, e.g. jumping between unrelated topics or made-up words; (3) grossly disorganised or catatonic behaviour, e.g. staying in a rigid posture or pacing aimlessly; (4) negative symptoms, e.g. no facial expression, not speaking or withdrawing from others; (5) behaviour linked to delusions, e.g. checking for hidden cameras.

Procedure: two trained observers sit at the side of the room and use time sampling, recording which categories occur in each 30-second interval, for two one-hour sessions a day over five days, at different times so a typical range of behaviour is seen. The observers are covert in the sense that they look like staff, but patients and staff have given consent.

Reliability: both observers record the same patients at the same time and their tallies are correlated to check inter-observer reliability; the categories are clearly defined with examples.

Ethics: informed consent is given by patients able to consent, and by a responsible clinician or relative otherwise; patients can withdraw, only numbers are used, and

Question number	
	observation stops if a patient becomes distressed. Analysis: quantitative data, the frequency of each category, are totalled and shown as a bar chart, and the most frequent characteristic is identified; brief qualitative notes describe examples.
5(b)	Psychological evidence: my categories are based on the characteristics of schizophrenia in DSM-5. To be diagnosed, a person must have two or more of: delusions, hallucinations, disorganised speech, grossly disorganised or catatonic behaviour, and negative symptoms such as a loss of speech or a lack of typical facial expressions. At least one must be delusions, hallucinations or disorganised speech, and they must be present for a significant time during one month, with signs lasting six months. Hallucinations and delusions are internal experiences, so I observed the behaviours associated with them, such as answering voices. Duration and severity are crucial, which is why I observed over five days rather than once. Methodological evidence: an observation is used because many characteristics, such as catatonia and flat affect, are behaviours that can be seen, and patients with disorganised thinking may not answer questions accurately. A naturalistic setting gives ecological validity, as patients are in their normal environment. A structured observation with defined categories and time sampling produces quantitative data, so the frequency of each characteristic can be counted and compared. Non-participant observers who look like staff reduce reactivity. Two observers allow inter-observer reliability to be checked, and clear definitions reduce subjectivity. As the patients are vulnerable, consent from a clinician or relative, confidentiality and the right to withdraw are essential ethical guidelines.
	Section B: Psychology and consumer behaviour
6(a)	Aim: to investigate whether jingle slogans are recalled significantly more than

Question number

non-jingle slogans. This is a laboratory experiment with an independent measures design. The IV is the type of slogan, jingle (sung with music) or non-jingle (spoken). The DV is the number of slogans correctly recalled.

Sample: 60 adults recruited by opportunity sampling from a college and randomly allocated to the two conditions, 30 in each.

Materials: ten short radio-style adverts for unfamiliar, made-up brands, so no one already knows them. Each advert is 30 seconds long and has the same words in both conditions; the only difference is whether the slogan is sung with a tune or spoken. All adverts are played at the same volume and length.

Procedure: participants listen to the ten adverts through headphones in a quiet room. They then do a five-minute distractor task (simple puzzles), and are then given the ten brand names and asked to write the slogan for each. One week later they are asked again (delayed recall).

Controls: standardised instructions, the same room and time of day, and the order of adverts is randomised.

Ethics: informed consent is obtained, they are told they can withdraw, results are confidential, and they are debriefed about the aim at the end.

Analysis: the slogan is scored as correct if the key words are recalled. The mean number of slogans recalled in each condition is calculated, and a Mann-Whitney U test is used to see whether jingle slogans are recalled significantly more ($p \leq 0.05$).

6(b)

Psychological evidence: my study is based on Kohli et al. (2007), who gave guidelines for effective slogans. A slogan should be clearly positioned and linked to the brand, so I gave each slogan with its brand name. It should be repeated consistently across all advertising ("please repeat that"), so I tested recall of a slogan linked to its brand. Kohli et al. suggest "jingle, jangle": jingles can be easy to remember initially, so they should be used, which is why I predicted jingle

Question number

slogans would be recalled more. They also say slogans should be used at the outset and that it is okay to be creative, so I used new brands. Because jingles may help mainly initially, I also measured delayed recall after a week.

Methodological evidence: a laboratory experiment allows the IV to be manipulated and extraneous variables to be controlled, such as the words, length and volume of the adverts, so any difference in recall can be attributed to the music, establishing cause and effect. Made-up brands control prior familiarity. Independent measures avoids order effects, as participants would remember the slogans if they heard both versions, and random allocation spreads participant variables. A distractor task prevents rehearsal. Recall scores give quantitative data that can be compared statistically. Standardised instructions make the study replicable and reliable. Informed consent, the right to withdraw and a debrief follow ethical guidelines.

Section B: Psychology and health

7(a) Aim: to investigate whether stress inoculation training is more effective for women than for men. This is a field experiment with a mixed design: gender is a quasi IV (women or men), and each participant's stress is measured before and after training (repeated measures). The DV is the reduction in stress.

Sample: 40 women and 40 men aged 20 to 50 in office jobs who report high stress at work, recruited by volunteer sampling through advertisements in local workplaces.

Procedure: all participants attend the same stress inoculation training programme in groups of ten, separate groups for women and men, with the same trainer, for one two-hour session a week for eight weeks, covering the three stages of conceptualisation, skill acquisition and application.

Measures: before training, at the end, and three months later. Self-report: a stress questionnaire with rating scales, e.g. "How often in the last month have you felt

Question number

unable to cope?" from 0 (never) to 4 (very often). Physiological: blood pressure and heart rate measured at the clinic.

Controls: the same trainer, materials and schedule for both genders; the researcher who measures blood pressure does not know the hypothesis.

Ethics: informed consent, right to withdraw, confidentiality, and anyone with very high stress is referred to a doctor or counsellor.

Analysis: the mean reduction in questionnaire score and blood pressure for women and men is calculated and compared with a Mann-Whitney U test; a bar chart shows the means.

7(b)

Psychological evidence: my study is based on Meichenbaum (1985), who developed stress inoculation training to prevent stress. It focuses on replacing maladaptive, negative self-statements with positive coping statements and relaxation, so the person responds to stress more positively. It has three stages. In conceptualisation the trainer and client talk about stress and normal ways of coping. In skill acquisition the client learns about the physiological and cognitive aspects of stress and techniques to manage it, such as relaxation and replacing negative thought patterns with positive ones. In application, the new skills are practised in a series of increasingly stressful situations. I used this programme as the technique, and the three-month follow-up tests whether it really "inoculates" against later stress.

Methodological evidence: gender cannot be manipulated, so a quasi IV is used, while measuring the same people before and after training controls participant variables in stress level. A field setting with real workers gives ecological validity. Using both a self-report questionnaire and physiological measures increases validity: the questionnaire shows how stressed people feel, while blood pressure is objective and cannot be affected by social desirability. Rating scales give quantitative data so women and men can be compared statistically. Standardising the trainer and programme makes the study reliable and replicable. Informed consent, the right to

Question number

withdraw and confidentiality follow ethical guidelines.

Section B: Psychology and organisations

8(a) Aim: to investigate which is more effective for motivating workers, bonuses or performance-related pay (PRP). This is a field experiment with an independent measures design. The IV is the reward system: a bonus or PRP. The DV is motivation, measured by productivity and a questionnaire.

Sample: 60 sales staff in my organisation who do the same job, randomly allocated to two equal groups of 30 from a list of all staff, with similar previous sales figures in each group.

Procedure: for three months, the bonus group is told that if the team reaches its sales target for the quarter, each member will receive a fixed one-off payment of £500 at the end. The PRP group receives extra pay every month in proportion to their own sales above an agreed, achievable target. The total amount available is the same for both groups.

Measures: productivity is the number of sales per worker per month, taken from company records, compared with the three months before. At the end, workers also complete a questionnaire, e.g. "How motivated do you feel to work hard?" from 1 (not at all) to 7 (extremely).

Controls: both groups have the same products, hours, manager and training, and they work in different branches so they do not compare rewards.

Ethics: informed consent, right to withdraw without affecting their job, confidentiality, and afterwards both groups are given the more effective scheme so no one loses out.

Analysis: the mean increase in sales and mean motivation rating for each group are compared with a Mann-Whitney U test.

Question number	
8(b)	Psychological evidence: my study is based on types of reward systems. A bonus is a payment, usually at the end of a period such as the year, given for achieving a target, such as a sales target; it can also be a gift or other non-monetary reward. Performance-related pay rewards each worker according to their own performance, and motivates workers to work harder to meet targets as long as the target is reasonable and achievable. This is why I set an achievable target and gave PRP monthly to individuals, while the bonus was a single payment for a team target. Other extrinsic rewards include basic pay and profit-sharing, where workers share a percentage of company profit if targets are exceeded, so I kept basic pay equal. Intrinsic rewards such as praise could also affect motivation, so the same manager treated both groups. Methodological evidence: a field experiment uses real workers doing their normal jobs, giving high ecological validity, while the IV is still manipulated so cause and effect can be inferred. Independent measures is needed because workers cannot experience both schemes without order effects, and random allocation with matched sales figures controls participant variables. Productivity from company records is objective quantitative data, and the questionnaire measures how motivated workers feel, so using both increases validity. Keeping products, hours and the reward total the same controls extraneous variables. Informed consent, the right to withdraw and offering everyone the better scheme follow ethical guidelines.
	Section C: Psychology and abnormality
9	Impulse control disorders, such as kleptomania (stealing) and pyromania (fire setting), involve a failure to resist an urge to do something harmful. The biochemical explanation is that they are linked to dopamine, the neurotransmitter of the brain's reward pathway: the behaviour causes a release of dopamine, giving a

Question number

pleasurable "high" that makes the person want to repeat it.

There is evidence to agree. Research has shown a relationship between high dopamine activity and addictive behaviours. For example, some patients with Parkinson's disease who are given drugs that increase dopamine activity develop impulse control problems such as pathological gambling or compulsive buying, which often stop when the drug is reduced. Dopamine levels can be measured physiologically, which gives objective evidence, and drugs such as naltrexone, which reduce dopamine release in the reward pathway, can reduce urges in kleptomania. This suggests dopamine may be the underlying cause of many ICDs.

However, there are strong reasons to disagree with the word "all". The link between dopamine and ICDs is correlational, so it could be that repeating the behaviour raises dopamine rather than dopamine causing the behaviour. Dopamine also cannot explain why one person develops kleptomania and another pyromania, so it is reductionist. Alternative explanations are equally valid. The behavioural explanation says the behaviour is learned through positive reinforcement: the thrill or relief after stealing rewards the act, so it is repeated. Miller's (2010) feeling-state theory says ICDs come from an intense positive feeling, such as excitement, becoming linked to a specific behaviour, so the person repeats the behaviour to re-experience that feeling. These explanations also lead to effective treatments such as CBT, which would not be expected if dopamine were the only cause.

In conclusion, I disagree with the statement. Dopamine probably plays a role in many ICDs by making the behaviour rewarding, but it cannot be the cause of all of them; an interactionist explanation combining biological, behavioural and cognitive factors is more complete.

Section C: Psychology and consumer behaviour

Question number

10

Brand recognition in children has been studied by Fischer et al. (1991), who showed children aged 3 to 6 a game board with pictures of products and asked them to match brand logos to the products. Old Joe Camel, the logo for Camel cigarettes, was matched to a cigarette by about 30% of three-year-olds and over 90% of six-year-olds, as often as the Disney Channel logo was matched to Mickey Mouse.

There are arguments that quantitative data alone is enough. Quantitative data allows numbers to be compared, such as recognition rates at each age, and is all that is needed to draw statistical conclusions about brand recognition. Fischer et al. used only quantitative matching scores, yet the study clearly showed that very young children recognise cigarette brands, which had important practical applications for advertising regulation. Qualitative data could also be a problem with young children, because they may not be able to explain their thoughts or why they recognise a logo, so their answers may be unreliable.

On the other hand, quantitative data does not explain the numbers; qualitative data does. A child matching a logo shows recognition but not whether the child likes the brand, understands what the product is, or where they learned it, for example from TV or from parents. Asking children open questions, or interviewing parents, could provide this explanation and support the numbers, increasing validity. Qualitative data gives an explanation for behaviour, which matters for deciding whether children are being influenced to want harmful products.

It could also be argued that both kinds of data might be needed from older children, who can explain their reasons, but not from very young children, while with adults self-report is easier to collect.

In conclusion, I mostly agree. Quantitative data is essential to measure how much brand recognition there is, but collecting qualitative data as well, where children are old enough, gives a fuller explanation of its effect, so both are ideal even if not always possible.

Question number

Section C: Psychology and health

11 A repeat prescription measure checks whether a patient collects new medication from the pharmacy when their previous supply should have run out. Sherman et al. (2000) used pharmacy refill records to assess adherence to asthma medication, comparing the medication collected with what had been prescribed.

There are arguments to agree. Collecting a repeat prescription suggests the person has used up the initial medicine and wants more, and that they intend to take it, as there is little reason to collect it otherwise. It is objective: the prescription is either collected or it is not, so there is no experimenter bias and no social desirability, unlike self-report, where patients may claim to have taken medicine to please the doctor. Records are kept automatically, so the measure is cheap and can be used with large numbers of patients over long periods.

However, there are strong reasons to disagree. Just because a person collects a prescription does not mean they take the medicine; they might store it or throw the old supply away. It does not show whether doses are taken at the right times. Other methods can be more accurate. Chung and Naya (2000) used a TrackCap, an electronic cap that records the date and time each time the bottle is opened, giving more detail about when pills are removed. Roth and Caron (1978) used biochemical tests of blood and urine, which show whether the drug is actually in the body; they found that both patients and doctors overestimated adherence, which shows that some measures are misleading. Subjective (qualitative) data should not be ignored either, since only the patient can explain why they did or did not take the medicine, for example because of side effects.

In conclusion, I disagree. Repeat prescriptions are an objective and practical measure, but they are not the only accurate way, and they are less direct than biochemical tests; using several measures together gives the most accurate picture

Question number

of adherence.

Section C: Psychology and organisations

12 Job satisfaction is how positive a worker feels about their job. It can be assessed with open-ended questions, which give qualitative data, or with rating scales and closed questions, which give quantitative data.

There are arguments to agree. Open questions can reveal the reasons why a worker is satisfied or dissatisfied, for example a poor relationship with a supervisor, which a rating cannot explain. Herzberg used open interviews asking workers to describe times they felt very good or very bad about their job, which led to the distinction between motivators and hygiene factors. Taking time to ask open questions also shows workers their opinion matters and that the company cares. Open questions can be added to closed questions and support the quantitative data.

However, there is strong evidence to disagree. The Job Descriptive Index (Smith et al., 1969) assesses satisfaction with five facets, the work itself, pay, promotion, supervision and co-workers, by asking workers to answer yes, no or ? to short descriptive words. The Minnesota Satisfaction Questionnaire (Weiss et al., 1967) uses rating scales from very dissatisfied to very satisfied, with a long form of 100 items and a short form of 20. Both give quantitative data, so satisfaction can be compared between workers, departments and over time, and both are widely used and standardised, so they are reliable. Collecting quantitative data is also much less time consuming than asking open-ended questions. Open answers must be interpreted, which may lead to researcher bias or misinterpretation, so inter-rater checks are needed.

In conclusion, I disagree. Job satisfaction can be assessed effectively with rating scales such as the JDI and MSQ, which are reliable and allow comparison; open-ended questions are a useful addition to explain the scores, but they are not

Question number

the only effective method.

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PSYCHOLOGY **9990/43**

Paper 4 Specialist Options: Application **May/June 2023**

1 hour 30 minutes

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 Obsessive-compulsive disorder (OCD) can be treated with biomedical treatments and it can be managed with psychological treatments. Biomedical treatments include the use of drugs such as SSRIs. OCD can be managed psychologically using exposure and response prevention.

(a) Explain how SSRIs work when treating OCD. [2]

(b) **(i)** Explain what is meant by an obsession, using an example. [2]

(ii) Explain what is meant by a compulsion, using an example. [2]

(c) Outline **one** case study where exposure and response prevention was used to treat OCD. [4]

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

Psychology and consumer behaviour

2 Hall et al. (2010) conducted a field experiment using an opportunity sample at a supermarket to investigate choice blindness. Participants tasted jam or smelled tea. They were deceived in a number of ways during the study.

(a) Explain what is meant by the term ‘choice blindness’. [2]

(b) Suggest **two** strengths of conducting field experiments, using examples from this study. [4]

(c) Explain **two** ways in which the participants were deceived by the experimenters in this study. [4]

(d) Discuss the strengths and weaknesses of using an opportunity sample in this study. You should include a conclusion in your answer. [5]

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Psychology and health

3 The five city project (Farquhar et al., 1985) was a large experimental field study of community health education for the prevention of cardiovascular (heart) disease. Selection of the five cities was based on eight criteria (constraints). Data was collected over a six-year period using physiological measures, such as testing blood pressure and analysing urine samples, and behavioural measures.

(a) Explain what makes the main experimental design of this study independent measures. [2]

(b) Suggest why **two** of the selection criteria for the cities were important. [4]

(c) Participants in randomly selected households were used in this study.

(i) Suggest how this might have been done. [2]

(ii) Explain why this random selection was important. [2]

(d) Discuss the strengths and weaknesses of using physiological measures to assess the validity of community health promotion projects. You should include a conclusion in your answer. [5]

Psychology and organisations

4 A manager can motivate workers by giving a monetary reward for extra work or good performance. A manager can take money away for poor performance or for not meeting targets. However, giving or taking away money might not be the best motivator. Non-monetary reward systems might be more effective motivators.

(a) Explain what is meant by the term ‘non-monetary reward system’. [2]

(b) Explain how **two** types of non-monetary reward can be used to motivate workers. [4]

(c) Suggest how non-monetary rewards apply to **two** needs from Maslow’s hierarchy. [4]

(d) Discuss the strengths and weaknesses of using monetary reward systems to motivate workers. You should include a conclusion in your answer. [5]

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Section B

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

Psychology and abnormality

5 Patients with obsessive-compulsive disorder (OCD) can receive treatment with a therapist face-to-face or by telephone.

(a) Design a study using a telephone interview to investigate whether face-to-face therapy is more effective for women with OCD than for men with OCD. [10]

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

Psychology and consumer behaviour

6 Colour can be associated with specific products, but colour can also be used where products are displayed in places such as supermarkets.

(a) Design a study using an interview to investigate which colour is best for the display area for fruit and vegetables. [10]

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

Psychology and health

7 **(a)** Design a study to investigate the effectiveness of using pill counting compared to using biochemical tests to measure adherence to medical advice. [10]

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

Psychology and organisations

8 **(a)** Design a study using a questionnaire to investigate which type of cognitive limitation/error is the **most** common in a team of managers. [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 *'Biochemical techniques, such as the use of drugs, can treat all patients with schizophrenia effectively.'*

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 *'Choice heuristics, such as availability and representativeness, are irrelevant in consumer decision-making when consumers make decisions about purchasing goods.'*

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 *'Fear arousal is the best strategy for promoting health.'*

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 *'Setting goals will **not** motivate employees because need theories explain everything about motivation at work.'*

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) OCD is thought to be linked to low levels of the neurotransmitter serotonin. After serotonin carries a message across the synapse it is normally reabsorbed by the presynaptic neuron (reuptake). SSRIs block, or inhibit, this reuptake, so more serotonin stays in the synapse to pass on messages. This raises serotonin activity in the brain and reduces the anxiety and obsessive thoughts.

1(b)(i) An obsession is a recurring, persistent and intrusive thought, image or urge that the person cannot control and that causes great anxiety. For example, a constant fear of being contaminated by germs from anything unclean, such as door handles.

1(b)(ii) A compulsion is a repetitive, purposeful physical or mental action that the person feels driven to carry out, often according to strict rules, to reduce the anxiety caused by an obsession. For example, excessively washing the hands many times, or repeatedly checking that the doors are locked.

1(c) Lehmkuhl et al. (2008) used exposure and response prevention (ERP) to treat Jason, a 12-year-old boy with OCD and autism. Jason had contamination fears: he avoided "contaminated" items such as door knobs and library books, would not sit on chairs or turn pages with his hands, and would not touch papers other children had touched.

He attended ten 50-minute sessions over 16 weeks. A hierarchy of feared

Question number	
	situations was built. In exposure he repeatedly faced the items he avoided, starting with the least feared, until the fear subsided; in response prevention he was stopped from carrying out his compulsive or avoidant behaviour. Over the sessions his anxiety dropped, and three months after treatment his Y-BOCS score remained low.
1(d)	One strength is that drugs such as SSRIs are easy to take: the patient simply swallows a pill each day, which needs little time or effort compared with weekly therapy sessions. A second strength is that drugs have been shown to reduce OCD symptoms in many studies, and the patient can be passive in treatment, which suits people who are too anxious to face their fears in ERP. One weakness is that some drugs used for anxiety can lead to dependence, and SSRIs have side effects such as nausea, so they are often recommended for short-term use only. A second weakness is that drugs treat the symptoms, not the cause: they ignore cognitive and behavioural explanations of OCD, so symptoms often return when the patient stops taking them. Conclusion: drugs are useful to reduce severe symptoms quickly, but because relapse is likely when they stop, they are best combined with a psychological treatment such as ERP rather than used alone.
	Section A: Psychology and consumer behaviour
2(a)	Choice blindness is the failure to notice that the outcome we receive does not match the choice we have just made, because we cannot recall the choice immediately after making it. In Hall et al., most shoppers did not detect that the jam or tea had been switched and justified the option they had not chosen.
2(b)	First, the setting is natural, so the study has high ecological validity. It was

Question number	
	carried out at a tasting stall in a real supermarket, where people normally make choices between products, so the findings are more likely to apply to everyday shopping. Second, participants behave naturally because they do not know they are in a psychology study. The researchers said they were testing the quality of the jam and tea, and tasting food in a supermarket is a normal, believable task, so demand characteristics were unlikely.
2(c)	First, the participants were deceived about the aim. They were asked to take part in a "quality control" test of the jam and tea assortment, and the experimenters presented themselves as independent consultants hired to survey the quality of the products, not as psychologists studying choice blindness. Second, they were deceived by the "magic" jars. Each jar was lidded at both ends with a divider inside, so it looked normal but held a different jam or tea at each end. On manipulated trials the jar was secretly flipped, so participants re-tasted or re-smelled the option they had rejected, believing it was their choice.
2(d)	One strength is that it is quick and easy: the researchers simply used shoppers who were readily available and passing the stall, so a relatively large sample of 180 people could be obtained without needing a list of the population. A second strength is that people could be chosen who did not know they were in a study, so they behaved naturally when tasting and choosing. One weakness is that the sample may not be representative: only people shopping in that supermarket at that time could take part, so the findings may not generalise to all consumers. A second weakness is researcher bias: the experimenters may approach people who look friendly or willing, which further narrows the sample. Conclusion: an opportunity sample was the most practical choice for a field

Question number	
	experiment with an unaware sample, and because choice blindness is a basic cognitive process it is likely to apply widely despite the limited sample.
	Section A: Psychology and health
3(a)	It is independent measures because different communities took part in different conditions, so each person experienced only one condition. Two treatment cities received the health education campaign and were compared with three separate reference (control) cities that did not.
3(b)	One criterion was reasonable similarity of ethnic, socioeconomic and demographic characteristics. This was important because if the treatment and control cities differed in these ways, any difference in heart disease risk could be due to the populations rather than the campaign, so a fair comparison would not be possible. Another criterion was no shared newspaper or electronic media markets between treatment and control cities. This was important because if the control cities received the same TV, radio or newspaper health messages, they would also be exposed to the treatment, and the difference between conditions would be reduced.
3(c)(i)	The researchers could use a register of all households in each of the five cities, such as an electoral register, and use a computer to randomly select households, so each household is picked by chance.
3(c)(ii)	It was important because every individual in the target population had an equal chance of being chosen for the surveys and physiological tests. This removes researcher bias, such as choosing people from one area who are healthier than others, so the sample is more representative.

Question number	
3(d)	One strength is that physiological data are objective: a blood pressure reading or a urine analysis is not open to the participant's opinion or to social desirability, so it gives a valid measure of whether health has actually changed. A second strength is reliability: devices such as a sphygmomanometer measure blood pressure on a standard scale, so measurements are consistent across cities and over the six years. One weakness is that subjective data are ignored: physiological measures do not show what people know, feel or intend to do about their health, which is important for judging an education campaign. A second weakness is that physiological changes are correlational; blood pressure could fall for reasons other than the campaign, such as medication, so cause and effect cannot be assumed, and using one measure is reductionist. Conclusion: physiological measures give the strongest objective evidence that a project works, but they should be combined with behavioural and self-report measures, as Farquhar did, to judge its validity fully.
	Section A: Psychology and organisations
4(a)	A non-monetary reward system motivates workers with rewards that are not money, such as praise, recognition, respect, empowerment and a sense of belonging. These are intrinsic rewards: a worker might be named "employee of the month", which makes them feel valued.
4(b)	Praise: a manager simply saying "well done" for a completed task can be enough to make a worker feel happy and motivated to keep working hard. To be effective it must be given fairly and consistently to all workers. Empowerment: the worker is given more responsibility and trusted to make decisions, for example by completing a project without constant monitoring.

Question number	
	Achieving the task makes them stronger and more confident in what they do, so they are motivated to take on more.
4(c)	Esteem needs: the need for achievement, status and mastering skills. Recognition of high-quality work and praise for showing skill satisfy this need, so the worker is motivated to keep performing well. Social (belongingness) needs at work: the need for affiliation with colleagues. Being part of a team and gaining the respect and recognition of co-workers gives the worker a sense of belonging to the organisation, which satisfies this need.
4(d)	One strength is that many people are motivated extrinsically: pay, bonuses and performance-related pay give a clear, measurable reward for extra effort. A second strength is that many workers see work as a means to an end, with family life more important, so money is what they value most and intrinsic rewards are only a secondary bonus. One weakness is that, according to Herzberg, pay is a hygiene factor: low pay causes dissatisfaction, but more pay does not cause satisfaction; motivators such as achievement, recognition and responsibility do. A second weakness is that taking money away for missed targets can lower morale, and money ignores the importance of a sense of belonging and good relationships with workmates. Conclusion: monetary rewards work best for short-term, measurable targets, but a combination of fair pay with non-monetary rewards is likely to give the most lasting motivation.
	Section B: Psychology and abnormality
5(a)	Aim: to investigate whether face-to-face therapy for OCD is more effective for women than for men. This is a quasi-experiment: the IV is gender (women or men,

Question number

naturally occurring), and the DV is the improvement in OCD symptoms, measured in a telephone interview.

Sample: 30 women and 30 men diagnosed with OCD, recruited by volunteer sampling through posters and letters from two outpatient psychology clinics. All are aged 18 to 60 and are not taking medication, so the groups are similar except for gender.

Procedure: every participant receives the same treatment, ten weekly 50-minute sessions of face-to-face exposure and response prevention with the same therapists. Each participant is interviewed by telephone before therapy, at the end of therapy and six months later. The interview is structured, with the same questions in the same order. Closed questions are based on the Y-BOCS, e.g. "How much time do you spend on obsessive thoughts each day?" rated 0 (none) to 4 (extreme), giving a total score out of 40. Open questions give qualitative data, e.g. "How has therapy changed your daily life?"

Controls and reliability: the interviewer reads from a standard script and is trained, and a second interviewer listens to recordings to check inter-rater reliability. The interviewer does not know the hypothesis, to reduce bias.

Ethics: informed consent is obtained, participants are told they can withdraw at any time, data are kept confidential using numbers not names, and anyone whose symptoms worsen is referred for further help.

Analysis: the mean reduction in Y-BOCS score for women and for men is calculated and compared using a Mann-Whitney U test; the open answers are analysed into themes.

5(b)

Psychological evidence: my study is based on Lovell et al. (2006), who compared CBT delivered by telephone with the same therapy face to face. In a randomised controlled trial in two UK outpatient departments, 72 patients with OCD received 10 weekly sessions of exposure and response prevention. Outcomes were measured

Question number

with the Yale-Brown Obsessive Compulsive Scale, the Beck Depression Inventory and a client satisfaction questionnaire. At six months the difference in Y-BOCS scores between the two forms was very small and satisfaction was high for both, so telephone therapy was equivalent. This is why I used ten weekly ERP sessions, the Y-BOCS and a six-month follow-up. Lovell did not compare genders, so my study fills that gap.

ERP is used because exposure means facing feared stimuli until the fear subsides, and response prevention means not carrying out the compulsion, which targets the behavioural part of OCD.

Methodological evidence: a quasi-experiment is needed because gender cannot be manipulated. A telephone interview is quick and cheap, can reach patients who find travel hard, and the lack of face-to-face contact may reduce social desirability when admitting embarrassing symptoms. A structured interview means everyone is asked the same questions, so answers can be compared between women and men and the study can be replicated, increasing reliability. Rating scales give quantitative data that can be analysed statistically, while open questions add qualitative detail, increasing validity. Volunteer sampling is used because patients must agree to therapy and follow-up, which also meets the ethical need for informed consent.

Section B: Psychology and consumer behaviour

6(a) Aim: to find out which colour is best for the display area for fruit and vegetables. This is a structured interview with a repeated measures design: each participant sees the same display in four background colours, green, white, red and brown (the IV). The DV is the rating of the display.

Setting: a supermarket that allows a small display area to be set up near the entrance with identical fruit and vegetables. The colour of the shelving and

Question number

background is changed every hour, and the order of colours is counterbalanced across the day.

Sample: an opportunity sample of 80 adult shoppers is approached after looking at the display, and each interview takes about five minutes. Those willing to return later to see the other colours, or shown photos of the same display in the other colours, complete all four conditions.

Questions: the same questions are asked in the same order. Closed rating questions: "On a scale of 1 (not at all) to 7 (very), how fresh does the fruit look?", "How attractive is the display?" and "How likely are you to buy something from it?" A final question asks which of the four colours they prefer. One open question: "Why does this colour make the produce look appealing or unappealing?"

Ethics: shoppers give informed consent, are told they can withdraw at any time, and no names are recorded. Reliability: the same trained interviewer uses a script, and some participants are re-interviewed a week later (test-retest). Validity: the produce, lighting and price labels are kept the same so only colour changes.

Analysis: the mean rating for each colour is calculated and shown in a bar chart; the most often preferred colour is identified, and answers to the open question are put into themes such as "fresh" or "natural".

6(b)

Psychological evidence: my study is based on Grossman and Wisenblit (1999), who explained colour choice in marketing through associative learning. Through classical conditioning consumers learn to link colours with qualities: white goods such as washing machines are linked with cleanliness, red with danger or excitement and green with safety, and brands become linked with colours, such as red with Coca-Cola. Green is often an indicator of freshness and nature because many vegetables are green. So I predicted green might be best for fruit and vegetables, and included white (clean), red and brown (natural, like a market stall) to compare. The open question tests whether people mention these learned

Question number

associations.

Methodological evidence: an interview is used because colour preference is a subjective judgement, so we need to ask consumers directly what they think and why. A structured interview means everyone is asked the same questions in the same order, so ratings can be compared between colours, and the study can be replicated, increasing reliability. Rating scales give quantitative data so a mean can be calculated for each colour, while the open question gives qualitative data explaining the reasons, which increases validity. Repeated measures removes participant variables, such as liking a colour in general, and counterbalancing controls order effects. The supermarket setting gives ecological validity, and opportunity sampling is quick and uses real shoppers. Informed consent and anonymity follow ethical guidelines.

Section B: Psychology and health

7(a) Aim: to compare the effectiveness of pill counting with biochemical tests as measures of adherence. This is a field study with a repeated measures design: each patient's adherence is measured by both methods (the IV), and the DV is the percentage adherence each method gives.

Sample: 50 adult patients with high blood pressure who have been prescribed one tablet a day for eight weeks, recruited by volunteer sampling through their doctor's clinic.

Procedure: the tablets are given in a bottle with an electronic cap (like the TrackCap), which records the date and time each time the bottle is opened. At the end of the eight weeks the remaining tablets are also counted by a nurse. Adherence from pill counting = number of pills removed ÷ number prescribed × 100. During the eight weeks each patient gives a blood and urine sample at two unannounced clinic visits, analysed for the level of the drug. A level in the

Question number

expected range is scored as adherent, giving the biochemical percentage.

Controls: all patients take the same drug at the same dose, and the lab technician analysing samples does not know the pill count results (single blind), to avoid bias.

Ethics: informed consent is obtained, explaining that samples will be tested, although the exact aim is not revealed to avoid changing their behaviour; patients are debriefed, can withdraw at any time, and their data are confidential.

Analysis: the mean adherence for each method is calculated and the two are correlated with a Spearman's test. The method closest to the biochemical result, which shows the drug is actually in the body, is judged more effective.

7(b) Psychological evidence: my study uses pill counting based on Chung and Naya (2000), who used a TrackCap, an electronic cap on the medication bottle that records each time it is opened. This gives an objective record of pills leaving the bottle rather than relying on the patient's word. The biochemical test is based on Roth and Caron (1978), who used blood and urine tests to measure whether patients had really taken their medication, and found that patients and doctors overestimated adherence. Biochemical tests show the drug is in the body, whereas pill counts only show that pills were removed: a patient could take pills out and throw them away. That is why the biochemical result is used as the standard to judge pill counting.

Methodological evidence: a repeated measures design is used because both measures are taken from the same patients, so participant variables such as memory or motivation are controlled. The field setting, patients taking medication at home, gives ecological validity. Using one drug and dose for everyone standardises the procedure, so it can be replicated and is reliable. Unannounced sampling and a blind technician reduce demand characteristics and researcher bias, increasing validity. Both measures give quantitative data, so a percentage

Question number

adherence can be compared and correlated. Volunteer sampling is needed because patients must agree to give samples, and informed consent, the right to withdraw and confidentiality follow ethical guidelines, since medical data are sensitive.

Section B: Psychology and organisations

8(a) Aim: to find which type of cognitive limitation or error is most common in a team of managers. The method is a self-report questionnaire.

Sample: all 40 managers in the management team of a large company (a target population small enough to ask everyone), with the company's permission. The questionnaire is completed online in work time.

Questionnaire: it has three sections, one for each type of error, with five statements each. Each statement is rated on a 5-point scale from 1 (never) to 5 (very often), thinking about team decisions in the last six months. Sins of commission, e.g. "Our team keeps to a decision even when new evidence shows it is wrong" (belief perseverance), "We continue a project because we have already spent a lot on it" (sunk cost). Sins of omission, e.g. "We ignore useful background information such as base rates", "We blame people's personality rather than the situation" (fundamental attribution error). Sins of imprecision, e.g. "We use simple rules of thumb for complex decisions". There is one open question: "Describe a recent decision your team got wrong and why."

Reliability and validity: some items are reversed to avoid response bias, and the questionnaire is repeated two weeks later to check test-retest reliability. It is anonymous to reduce social desirability.

Ethics: informed consent, right to withdraw, confidentiality, and the company is given only overall results.

Analysis: the mean score for each section is calculated; the highest mean shows the most common type. Open answers are coded into the three categories and the

Question number

frequency of each is counted.

8(b) Psychological evidence: my study is based on Forsyth (2006), who explains that group decision-making puts members under heavy cognitive demands, so cognitive errors can damage group decisions. He lists three types. Sins of commission are errors in the use of information, such as belief perseverance (keeping to beliefs that have been discredited) and sunk cost bias (continuing because of what has already been invested). Sins of omission involve ignoring useful information, including base rate bias and the fundamental attribution error. Sins of imprecision involve relying on heuristics that over-simplify complex decisions. I used these three types as the sections of my questionnaire, with items describing each error, so the scores directly show which type is most common.

Methodological evidence: a questionnaire is used because it can collect data from all the managers quickly and cheaply, and the same questions make answers comparable. Rating scales give quantitative data, so a mean can be calculated for each type and compared, and the open question gives qualitative data that explains real examples, increasing validity. Anonymity reduces social desirability, since managers may not want to admit errors. Reversed items reduce response bias, and test-retest checks reliability. Using the whole team avoids sampling bias. Informed consent, the right to withdraw and confidentiality follow ethical guidelines, and stop managers worrying that answers could affect their jobs.

Section C: Psychology and abnormality

9 Biochemical techniques treat schizophrenia by changing neurotransmitter activity. Typical antipsychotics such as chlorpromazine block dopamine D2 receptors, based on the dopamine hypothesis that positive symptoms are caused by too much dopamine activity. Atypical antipsychotics such as clozapine block both dopamine

Question number

and serotonin receptors, and newer drugs such as aripiprazole have fewer side effects.

There is evidence to agree with the statement. Drugs have been shown to be effective in many studies, reducing hallucinations and delusions for many patients. They are easy to take, simply swallowing a pill, and the patient can be passive in treatment, which is useful when a patient is too disorganised or paranoid to take part in therapy. Atypicals such as clozapine can help some patients who did not respond to typical drugs, which suggests drugs can be adapted for different patients.

However, there is stronger evidence to disagree that drugs treat all patients effectively. A sizeable minority of patients do not respond to any drug. Typical drugs mainly reduce positive symptoms and do little for negative symptoms such as withdrawal and lack of motivation. Side effects such as tardive dyskinesia and weight gain mean many patients do not take the drugs as prescribed (non-adherence), so they relapse. Drugs also treat the symptoms, not the cause; they ignore alternative explanations such as Frith's cognitive explanation, so symptoms often return when the drugs are stopped.

Other treatments help patients that drugs do not. Paul and Lentz (1977) found that a token economy (social learning) programme was more effective than milieu therapy or usual hospital care: patients showed fewer symptoms and better social behaviour, and 97% were able to live outside hospital. Sensky et al. (2000) found that CBT reduced positive and negative symptoms in patients who had not responded to medication, and that the improvement continued at nine-month follow-up, unlike the befriending control.

In conclusion, I largely disagree. Drugs are an effective first-line treatment for many patients, but because some patients do not respond, side effects reduce adherence, and drugs do not change the cause, they cannot treat all patients effectively; a combination with psychological treatments such as CBT is more

Question number

effective.

Section C: Psychology and consumer behaviour

10 Choice heuristics are mental short cuts, or rules of thumb, that people use to make quick decisions. Tversky and Kahneman described the availability heuristic, judging how likely something is by how easily examples come to mind, and the representativeness heuristic, judging something by how similar it is to a typical example or stereotype.

There is strong evidence that heuristics are not irrelevant. Consumers face huge numbers of products and cannot compare them all, so they use heuristics in everyday purchases. With availability, a brand that is heavily advertised or that a friend recently mentioned comes to mind easily and is judged more popular or reliable, so it is bought. With representativeness, a supermarket own-brand in packaging that looks like a leading brand is judged to be of similar quality because it resembles the typical product. Kahneman's idea of fast and slow thinking explains why consumers often make quick heuristic purchases and later change their minds when they think more slowly. Many different heuristics have been identified, which shows how important they are in decision-making, not only in consumer behaviour.

On the other hand, there is some support for the statement. Just because heuristics exist does not mean they apply to every decision each consumer makes; for an expensive purchase such as a car, people often compare information carefully and slowly. Focusing on availability and representativeness alone is reductionist, as other factors such as anchoring on the first price seen, emotion, price and brand loyalty also affect choice. Knutson et al. (2007) used fMRI and found that activity in the nucleus accumbens when a product was shown, and in the insula when an excessive price was shown, predicted whether participants

Question number

would buy it. This suggests that the brain may make a decision before conscious reasoning, so pre-cognitive processes may be more important to study. Much heuristics research also uses artificial laboratory problems, so it may lack ecological validity for real shopping.

In conclusion, I disagree with the statement. Availability and representativeness are clearly relevant to many quick, everyday purchases, although they are not the only factors, and for important purchases careful slow thinking and emotional brain processes also play a large part.

Section C: Psychology and health

11 Fear arousal is a health promotion strategy that tries to change behaviour by making people anxious about the consequences of an unhealthy behaviour, for example showing images of disease caused by smoking.

There are arguments that it is the best strategy. Fear grabs attention and makes people think about things they would rather avoid, and if even a few people improve their health, a little fear may be worth it: the ends justify the means. People are not really harmed, as they can stop watching or reading. Cowpe (1989) evaluated a TV campaign in which a chip-pan fire was shown spreading rapidly; the number of chip-pan fires fell in the areas where the adverts were shown, so a fear element did change behaviour.

However, the evidence suggests strong fear is not the best strategy. Janis and Feshbach (1953) gave high school students a talk on dental hygiene with strong, moderate or minimal fear appeals. The minimal fear group showed the greatest improvement in dental care (about 36% compared with 8% in the strong fear group). Strong fear may make people so anxious that they avoid or deny the message. It is also ethically questionable to upset people, and some argue that if adults choose to be unhealthy, that is their choice rather than being frightened

Question number

into health.

Alternative strategies may be more effective. Providing information tells people what to do; arousing fear without showing how to avoid the danger may just cause distress. Cowpe's campaign actually combined both approaches: the adverts aroused fear but also showed exactly how to put out the fire with a damp tea towel, so it is not clear that fear alone caused the change. Fear arousal may also work for some people, such as those already worried about their health, and not others, so individual differences matter.

In conclusion, I disagree that fear arousal is the best strategy. Mild fear can help to gain attention, but strong fear can backfire; the most effective strategy is a combination of a low level of fear with clear information about what people can do.

Section C: Psychology and organisations

12 Need theories explain motivation by the needs workers try to satisfy. Maslow's hierarchy runs from physiological and safety needs up to social, esteem and self-actualisation needs; Alderfer's ERG theory groups these into existence, relatedness and growth; McClelland identified needs for achievement, power and affiliation. Goal-setting theory (Latham and Locke, 1984) instead argues that specific, difficult but attainable goals, with feedback and commitment, motivate people.

There is some support for the statement. Goal setting does not meet Maslow's physiological or Alderfer's existence needs, which are met by pay; many workers work mainly for pay and extrinsic rewards, so a goal may mean little to them. Goal setting is also unimportant to McClelland's need for power or affiliation, and it can be argued that goals help the organisation get work done rather than helping the individual.

Question number

However, there is strong evidence to disagree. Latham and Baldes (1975) found that when logging truck drivers were given a specific, difficult goal of loading their trucks to 94% of the legal weight limit, performance rose sharply from around 60% to around 90% and stayed high. This shows goals motivate even without extra pay. Goals work best when they are SMART: specific, measurable, attainable or agreed, relevant and time-bound. Goals can be tailored to each worker's job, responsibility and skill level, so each worker can succeed, and meeting targets helps both the organisation and the individual.

Need theories also do not explain everything. They are hard to test, needs differ between individuals and cultures, and Maslow's hierarchy is not always followed in order. In fact, the two approaches are linked: achieving a goal can satisfy McClelland's need for achievement and Maslow's esteem needs, so goal setting can be a way of meeting needs rather than an alternative to them.

In conclusion, I disagree with the statement. Need theories help explain why people work, but they do not explain everything; goal setting has strong research support as a motivator, and the most complete explanation combines both.

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