Cambridge Assessment International Education

Cambridge International AS & A Level

CANDIDATE NAME: StemUp Model Solution

CENTRE NUMBER: | | | | | |

CANDIDATE NUMBER: | | | | |

1755408271

PSYCHOLOGY **9990/22**

Paper 2 Research Methods **February/March 2021**

1 hour 30 minutes

You must answer on the question paper.

No additional materials are needed.

INSTRUCTIONS

- Answer **all** questions.
- Use a black or dark blue pen. You may use an HB pencil for any diagrams or graphs.
- Write your name, centre number and candidate number in the boxes at the top of the page.
- Write your answer to each question in the space provided.
- Do **not** use an erasable pen or correction fluid.
- Do **not** write on any bar codes.

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 **12** pages. Any blank pages are indicated.

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Section A

Answer **all** questions in this section.

1 **(a)** Outline what is meant by a 'questionnaire'.

A self-report method using a set of written questions, which may be closed (e.g. yes/no or a rating scale) or open, that participants answer themselves on paper or online.

..... [2]

(b) Explain **one** advantage of using a questionnaire rather than an interview in research.

A questionnaire can be given to many people at once, e.g. posted or put online, so a large sample can be collected quickly and cheaply, whereas an interview needs a researcher to talk to each person. Also it is less affected by social desirability, as there is no interviewer present. [2]

2 Outline what is meant by an 'aim'. Include an example from **one** core study from the cognitive approach in your answer.

The aim is the purpose of a study; a statement of what the researcher intends to investigate. For example, Andrade aimed to investigate whether doodling while listening to a boring telephone message improves concentration and recall of its content.

..... [2]

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3 The study by Milgram (obedience) used volunteer sampling.

(a) Explain what is meant by 'volunteer sampling', using this study as an example.

A volunteer (self-selecting) sample is made up of people who choose to take part by responding to a request from the researcher. Milgram placed an advert in a local New Haven newspaper and sent direct mail, and the 40 men who replied formed his sample. [2]

(b) Suggest **two** ways that Milgram could have obtained a volunteer sample with a wider variety of participants.

1 *Milgram could place adverts in different newspapers aimed at different audiences, e.g. women's magazines and papers read by different ethnic or age groups, so more types of people would see the advert and respond.*

2 *He could advertise in a wider geographical area, e.g. outside New Haven in other cities and rural towns across the USA, so volunteers would come from different cultures and backgrounds.* [4]

4 In the study by Piliavin et al. (subway Samaritans), participant variables may have affected the results.

Explain what is meant by 'participant variables', using this study as an example.

Participant variables are differences between individuals (e.g. personality, mood) that could affect their responses and so confound the effect of the IV on the DV. For example, some passengers may have been more helpful people anyway, so they helped the victim regardless of the condition. [2]

5 Dement and Kleitman (sleep and dreams) used a sample of volunteers.

Suggest why this sample may **not** have been representative of sleep and dreams in the general population.

Only 9 adults were used, and only 5 were studied in detail, so the sample was small. As there are individual differences in dreaming, these few people's sleep and dreams may differ from others'. Also, volunteers chose to sleep in a lab, so poor sleepers would be unlikely to volunteer. [2]

6 Describe the ethical guidelines of 'numbers' and 'replacement' in relation to animals, using any examples.

Numbers: researchers should use the minimum number of animals needed to obtain valid and reliable results, because using fewer animals reduces the total harm and distress caused. The number can be kept low by good experimental design, carrying out pilot studies, using reliable measures of the DV and appropriate data analysis, so no animal is wasted. For example, Pepperberg studied only one parrot, Alex, and Yamamoto et al. used only five chimpanzees.

Replacement: where possible, animal experiments should be replaced with alternatives that do not use animals, as this avoids harm and distress to them. Alternatives include using videos or data from previous studies, or computer simulations. Technology means some studies once done on animals can now be done on humans, e.g. Canli et al. studied emotional memory in humans using non-invasive fMRI scans instead of studying animal brains.

[6]

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Section B

Answer **all** questions in this section.

7 Uma has a bird feeder in her garden. When she moved the bird feeder, some species of bird were faster to find it than others. Uma has moved the feeder a second time and is conducting an observational study to investigate which bird species are faster to learn the new location of the bird feeder.

(a) Uma is going to use a structured observation.

Suggest how she could record her data.

She would decide in advance on a limited set of behavioural categories and define them, e.g. "searching at the old location", "landing at the new feeder" and "eating at the new feeder". She would make a checklist with a column for each bird species and tally each behaviour when it occurs, and also time how long it takes each species to first reach the new feeder, using a stopwatch from when the feeder was moved.

..... [3]

(b) Uma cannot decide how many different bird species to observe.

(i) Suggest **one** reason why it would be better to record a small number of different species.

Some species, e.g. robins and magpies, are easy to recognise. With only a few distinctive species she can identify each bird correctly and quickly, so her recording would be more accurate and reliable.

..... [2]

(ii) Suggest **one** reason why it would be better to record a large number of different species.

Some species may be faster to learn than others. If she only picked fast species it would seem as if all birds learn quickly, so a large number would make her findings more representative and generalisable to bird species she did not see.

..... [2]

8 Dr Malt is testing whether a new drug to improve attention in mental health patients is better than an old drug. In her experiment, she is measuring the patients' attention to a stimulus.

(a) Explain what is meant by an 'independent variable', using Dr Malt's study as an example.

The IV is the variable that the experimenter manipulates (changes between conditions) to see whether it causes a change in the DV. In Dr Malt's study the IV is the type of drug the patients take; the new drug or the old drug. [2]

(b) **(i)** Suggest how Dr Malt could operationalise her dependent variable.

The time in milliseconds a patient takes to press a key when a target appears on a screen. [1]

(ii) Explain **one** advantage of operationalising the dependent variable in this way.

The reaction time can be measured by an electronic timer built into the computer, which is objective and precise, so the attention measure is more reliable and valid than a researcher's judgement. It also gives quantitative data so the two drug groups can be compared, e.g. mean times. [2]

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(c) Dr Malt decides she must use deception. She tells the participants in both the 'new drug group' and the 'old drug group' that they are receiving the new drug.

(i) Suggest **one** reason why it is important for Dr Malt to deceive her participants.

To reduce demand characteristics. If the old drug group knew they were not getting the new drug, they might try harder (or less hard) on the attention test, so any difference between the groups would not be caused by the drug alone.

..... [2]

(ii) Suggest **one** reason why it is an ethical problem that Dr Malt is deceiving her participants.

They cannot give fully informed consent as they do not know which drug they are taking. ..... [1]

(iii) Suggest how Dr Malt could reduce the problem you have identified in part **(c)(ii)**.

Fully debrief them afterwards, explaining why, and offer the new drug to the old drug group. ..... [1]

9 Zhu is conducting a correlational study in a factory to investigate the relationship between two variables:

- the number of hours an employee works
- how happy that employee is.

(a) Suggest **one** way that Zhu could record the number of hours an employee works.

By observation: Zhu (or a trained assistant) could stand at the factory entrance and record the exact time each employee arrives and leaves every day for a week, then add up the hours.

..... [2]

(b) Suggest **one** way that Zhu could record how happy each employee is.

Using a rating scale on a questionnaire: "How happy are you at the moment, from 1 (very unhappy) to 10 (very happy)?" Each employee gives a score, which can then be correlated with hours.

..... [2]

(c) For her sample, Zhu is looking for a factory where there is a variety of jobs for the employees.

Suggest **two** reasons why this is important.

1 *Different jobs require different hours of work, e.g. managers may work long hours and cleaners part-time. A correlation needs a wide spread of scores on each variable, so a variety of jobs gives a range of hours.*

.....

2 *Different jobs may attract different types of people and pay different salaries, which may affect happiness. Using a variety of jobs makes the sample more representative, so the findings are more generalisable.*

..... [4]

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Section C

Answer **all** questions in this section.

10 Cari thinks that adults wearing brightly coloured clothing are more helpful to children than adults wearing clothing that is not brightly coloured. She is planning a field experiment to investigate which adults are more likely to return a ball to children who have kicked it out of reach.

(a) Describe how Cari could conduct a field experiment to investigate whether adults who wear brightly coloured clothing are more helpful than those who do not.

Cari would conduct the field experiment in a public park in a city centre at lunchtime, where adults walk along a path beside a grassy area. The IV is the colour of the adult's clothing, with two levels: brightly coloured, defined as a top (shirt, jumper or coat) that is mainly red, orange, yellow, pink or lime green; and not brightly coloured, defined as a top that is mainly black, grey, brown, navy or white. As the adults choose their own clothing it uses an independent measures design. Participants are adults (estimated over 18) walking alone along the path, chosen by opportunity sampling, the first 30 adults in each condition, so 60 in total.

Procedure: two child confederates aged 10 play with a red football on the grass. When a lone adult is about 5 metres away, an observer hidden on a bench gives a signal and one child "accidentally" kicks the ball so it rolls to stop about 1 metre in front of the adult, on the path. The child then stands still and says "Please can we have our ball back?". The same children, the same ball, the same words and the same distance are used every time, as controls, and only one adult is tested at a time so there are no bystander effects. Testing takes place between 12:00 and 14:00 on dry weekdays only, so weather and time of day are kept constant. A pilot study is run first to check the ball can be kicked to the right spot each time.

DV: helpfulness is operationalised as whether the adult returns the ball (picks it up and throws or kicks it back to the children) within 10 seconds, recorded as helped / did not help. The time taken to return the ball is also recorded with a stopwatch.

Two observers on the bench independently record the colour category of each adult's top on a checklist and whether they helped, to check inter-rater reliability. Adults whose clothing they disagree about are removed.

Ethics: the children's parents give consent and are present. Adults are debriefed afterwards by the observer, told the aim and that their data is anonymous, and given the right to withdraw their data.

Analysis: the percentage of adults who helped and the median time to help are calculated for each condition and shown in a bar chart. If a higher percentage of brightly dressed adults help, this supports Cari's idea.

[10]

(b) Identify **one** practical weakness/limitation with the procedure you have described in your answer to part **(a)** and suggest how your study might be done differently to overcome the problem.

Do **not** refer to ethics or sampling in your answer.

Clothing colour is a judgement made in a few seconds, and many tops are neither clearly bright nor clearly dull (e.g. pale blue, or a dull coat over a bright shirt), so observers may categorise the same adult differently, making the IV unreliable and invalid. To overcome this, Cari could give the observers a printed colour chart showing exactly which shades count as bright and not bright, and only test adults whose top clearly matches a colour on the chart. The two observers could also photograph each adult's clothing from a distance and agree the category afterwards, checking their inter-rater reliability on a pilot study before the real study. [4]

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