Cambridge Assessment International Education

Cambridge International AS & A Level

CANDIDATE NAME: StemUp Model Solution

CENTRE NUMBER | | | | | |

CANDIDATE NUMBER | | | | |

9736943773

PSYCHOLOGY **9990/22**

Paper 2 Research Methods **February/March 2024**

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.

1 **(a)** Explain what is meant by a 'negative correlation'.

A negative correlation is a relationship between two co-variables in which, as one variable increases, the other variable decreases, e.g. the more hours students spend on social media, the lower their exam scores.

..... [2]

(b) Explain **one** ethical advantage of a correlational study compared to an experiment, using any psychological example.

In a correlational study the variables are only measured, not manipulated, so it can investigate variables that would be unsafe or distressing to change. For example, it would be unethical to deprive participants of sleep in an experiment to see the effect on their mood, as this could cause harm. In a correlation, the amount of sleep people normally get can simply be measured and correlated with their mood, so nobody is put at risk. ..... [3]

2 The memory score in the study by Andrade (doodling) was calculated using two sources of data. One source was the number of 'correct responses' of names and places given by the participants.

Describe how the total memory score was calculated.

The second source of data was the number of "false alarms", i.e. errors where the participant recalled a name or place that had not been in the recording. The number of false alarms was subtracted from the number of correct responses to give the total memory score. ..... [2]

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3 In the study by Dement and Kleitman (sleep and dreams), participants were given instructions before the study about what they should and should not do.

(a) Outline **one** of these instructions.

Participants were told not to drink alcohol or caffeine (e.g. coffee) on the day of the study. [1]

(b) Explain why the instruction you described in part **(a)** was important to the validity of the study.

Alcohol and caffeine are drugs that affect sleep and dreaming, e.g. how much REM sleep occurs. Banning them reduced participant variables, so their sleep was representative of normal sleep and differences in dream recall could be due to the IV (REM or NREM waking), not the drugs. [2]

4 The study by Perry et al. (personal space) measured preferred interpersonal distance (stop distance) in a computerised virtual room.

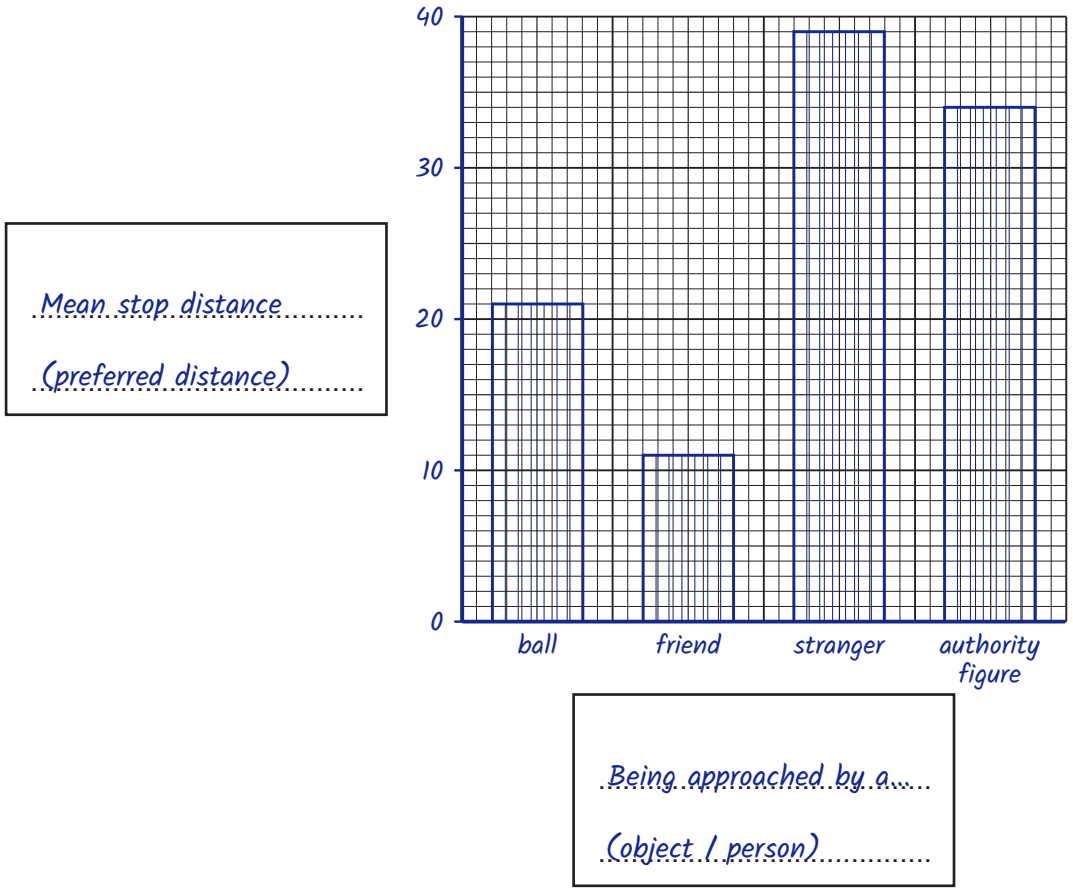
(a) Preferred interpersonal distance was measured in relation to:

- a ball
- a friend
- a stranger
- an authority figure.

Table 4.1
Preferred interpersonal distances in the control (placebo) condition for the high empathy group

	ball	friend	stranger	authority figure
Mean stop distance	21	11	39	34

(i) Draw a bar chart of the data from Table 4.1, on the axes provided. You **must** label the axes.



[4]

(ii) Explain why a bar chart is the appropriate graph to use to plot this data.

The data are in separate categories (ball, friend, stranger, authority figure), i.e. nominal/discrete data, not continuous, so the bars must be separate. [1]

(iii) State **one** conclusion from this data.

People with high empathy prefer to keep a smaller distance from a friend than from a stranger or an authority figure. [1]

(b) Suggest **one** ethical strength of using a computerised virtual room to measure preferred interpersonal distance.

There is less risk of psychological harm; being approached closely by a real stranger or authority figure could make participants uncomfortable or distressed, whereas figures in a virtual room are not real, so their personal space is not really invaded. [2]

5 (a) (i) Define the term 'population'.

The whole group of people who share a particular characteristic, from whom a sample is drawn and to whom the findings should apply. [1]

(ii) Outline **one** example of a population from a core study from the social approach.

Core study: *Milgram (obedience)*

Example: *Men in the New Haven area who read the local newspaper advertisement (or received the direct mail).* [1]

(b) (i) Define the term 'sample'.

The individuals selected from the population who actually take part in the study. [1]

(ii) Outline **one** example of a sample from a core study from the social approach.

Core study: *Milgram (obedience)*

Example: *40 men aged 20 to 50 from a range of occupations, who volunteered by replying to the advertisement.* [1]

6 Describe practice effects and fatigue effects, using any example(s).

Practice and fatigue effects are both order effects; changes in performance caused by doing a task more than once, e.g. in a repeated measures design or a longitudinal study, rather than by the IV. A practice effect is when participants improve with repetition because they have done the task before, e.g. they become more skilled at a physical task or remember answers from the first test. For example, in a memory experiment participants may recall more words in the second condition simply because they have learned a strategy in the first. A fatigue effect is when participants get worse with repetition because they become tired or bored, e.g. from answering a long series of questions. For example, if participants do a reaction time task in two conditions, they may be slower in the second condition because they are bored, not because of the IV. Both can be reduced by counterbalancing (e.g. half do AB, half do BA).

..... [6]

7 Kavi has noticed that when customers leave a takeaway restaurant, they often drop rubbish. He plans to conduct a field experiment to investigate this. Kavi will place rubbish in the street or remove any rubbish so that he can record data in two conditions:

- when the street has 10 pieces of rubbish
- when the street has no rubbish.

Kavi will observe ten customers in each condition. He will count how many customers in each condition drop rubbish.

(a) Draw a table that Kavi could use to collect his data.

Condition	Tally of customers who drop rubbish	Total number who drop rubbish (/10)
10 pieces of rubbish in the street		
No rubbish in the street		

[3]

(b) Kavi chose a narrow street rather than a wide street for his experiment.

Suggest **one** reason why this choice was important for the validity of Kavi's experiment.

In a narrow street every customer would walk close to the 10 pieces of rubbish and definitely see them, so any difference in dropping rubbish is caused by the IV. Kavi could also clearly see whether each customer drops rubbish, so his measure of the DV is valid. [2]

(c) Explain why it was necessary for all the rubbish to be removed in the second condition.

Otherwise there could be litter left by previous customers, so the "no rubbish" condition would not be a true control condition. Removing all of it makes sure the IV is manipulated properly, so only the presence of rubbish affects the DV. [2]

8 Cerys is observing a class of children who are learning to count. She is introduced to the class by the teacher, but then sits separately from the children to record her data.

(a) (i) Explain whether Cerys is conducting a participant observation or a non-participant observation.

Non-participant, because she sits separately from the children and is not involved in the counting activities. [1]

(ii) For the answer you have given in part **(a)(i)**:

Explain **one** strength of this type of observation.

There is less risk of demand characteristics or social desirability; as Cerys is not joining in, her presence has less influence on the children, so they are more likely to count as they normally would and the data are more valid. [2]

(b) Cerys uses a structured observation.

(i) Suggest **two** behavioural categories that Cerys could use to measure how well the children are learning to count.

1 *Counting aloud from 1 to 10 correctly, with no numbers missed out.*

2 *Missing out a number when counting (e.g. saying "1, 2, 4").* [2]

(ii) In relation to using **one** of the behavioural categories you have suggested in part **(b)(i)**:

Explain **one** practical problem that Cerys could have.

Behavioural category: 1 or 2 *2*

Some children may be shy or unsure and speak too quietly for Cerys to hear from where she sits, so she may record them as missing out a number when they did not, which would underestimate their counting ability. [2]

9 Nila is using a questionnaire to investigate adults' use and understanding of the internet. Four of her questions are:

A	Describe how useful the internet is to you.
B	Explain whether you would like to use the internet more than you do.
C	How confident are you that you could send an email? 1 = not confident, 5 = very confident.
D	"Using the internet can be dangerous." Do you agree? yes / no / not sure.

(a) Identify **one** closed question from A to D.

C ..... [1]

(b) Identify **one** open question from A to D.

A ..... [1]

(c) Nila wants to add this question to explore how adults use social media:

How do you use social media? Tick all that apply.
- to connect with colleagues
- to connect with family
- to discover local events.

Explain **one** strength of Nila's question about the use of social media.

It is a closed question, so it gives quantitative data: the number of adults ticking each use can be totalled and shown on a bar chart, so uses of social media can easily be compared between participants. They only have to tick, so it is quick and objective to score. ..... [2]

Section B

Answer **all** questions.

10 Henri feels relaxed when he smells flowers. He thinks that pleasant smells could influence daydreaming.

(a) Describe how Henri could conduct a laboratory experiment to investigate the effect of pleasant smells on daydreaming.

Do **not** describe sample/sampling technique or ethical issues/guidelines in your answer.

Henri would test whether a pleasant smell affects daydreaming. The IV is the type of smell in the laboratory, with two conditions: a pleasant smell (rose oil, a flower smell) or an unpleasant smell (vinegar). He would use an independent measures design: participants are randomly allocated to one condition by drawing names from a hat, so each person smells only one odour and cannot work out the aim by comparing smells.

Each participant sits alone in the same quiet, windowless laboratory. The smell is sprayed in the same amount (two sprays) 5 minutes before they enter, so the intensity is the same for everyone. To make daydreaming likely, every participant does the same boring task for 15 minutes: listening to a monotonous recording of a list of names, as in Andrade's study. All participants hear the same standardised instructions, sit in the same chair at the same temperature, and have no phone or watch.

The DV, daydreaming, is measured by self-report in two ways. Every 3 minutes a quiet tone sounds and the participant presses one of two buttons, "I was daydreaming" or "I was focused on the task", giving a daydreaming score out of 5. At the end they rate how vivid their daydreams were from 1 (not at all vivid) to 10 (extremely vivid).

Henri would compare the mean daydreaming score and the mean vividness rating in the pleasant and unpleasant smell conditions to see whether pleasant smells increase daydreaming.

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..... [10]

(b) (i) Describe **one** practical/methodological strength of the procedure you have described in your answer to part **(a)**.

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

The smell is standardised: the same amount of rose oil (two sprays) is sprayed 5 minutes before each participant enters the same quiet room, so everyone in that condition experiences the same intensity of smell.

..... [2]

(ii) Explain why the feature of the procedure you have identified in part **(b)(i)** is a strength.

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

If some participants smelled a stronger smell than others, smell strength could change how much they daydream, so differences in daydreaming scores could not be said to be caused by the type of smell. Standardising it increases validity and makes the study replicable. ..... [2]

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