Cambridge Assessment International Education

Cambridge International AS & A Level

CANDIDATE NAME: StemUp Model Solution

CENTRE NUMBER | | | | | |

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6093881896

PSYCHOLOGY **9990/22**

Paper 2 Research Methods **February/March 2023**

1 hour 30 minutes

You must answer on the question paper.

You will need: Ruler

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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[Turn over

Section A

Answer **all** questions in this section.

1 A hypothesis is 'There will be no difference between how quickly men and women blink in response to a flash of light'.

Name this type of hypothesis.

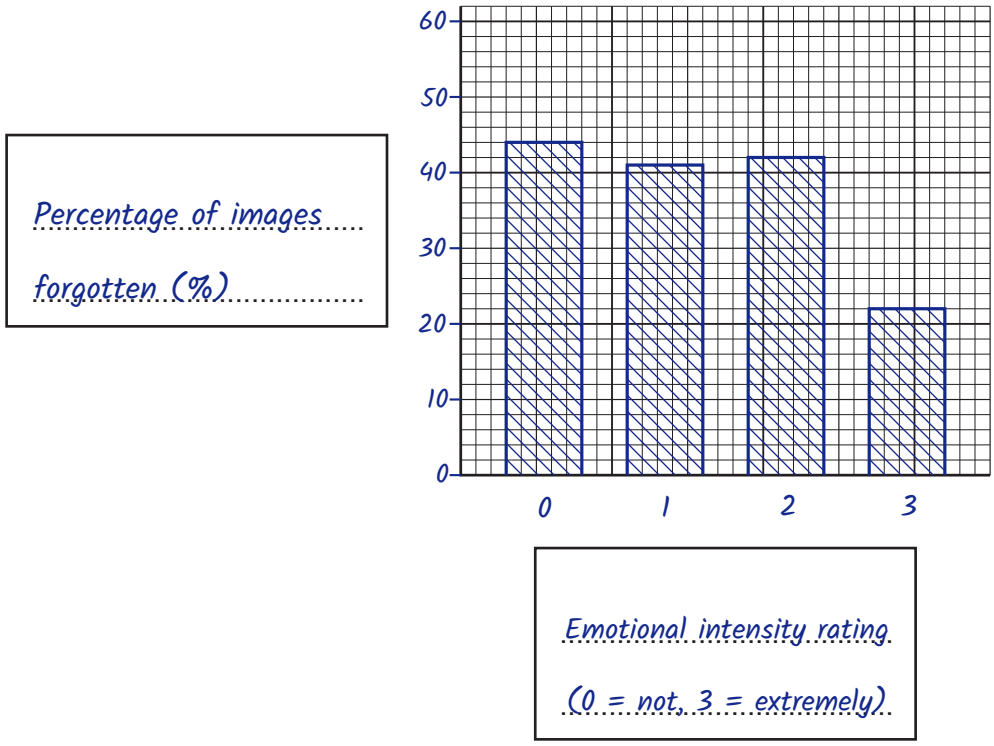
Null hypothesis. [1]

2 Table 2.1 shows some results from the experiment by Canli et al. (brain scans and emotions).

Table 2.1

	Emotional intensity rating (0 = 'not intense at all' to 3 = 'extremely intense')			
	0	**1**	**2**	**3**
Percentage of images forgotten	44	41	42	22

(a) Draw a graph of the data in Table 2.1 using the axes below. You **must** label the axes.



[4]

(b) Outline **one** finding about emotional intensity rating and level of forgetting, using the data in Table 2.1.

The most emotionally intense images (rating 3) were forgotten least, 22%, compared with 41% to 44% for ratings 0 to 2. [1]

3 Explain the importance of the ethical guideline of 'housing' in relation to animals.

Animals must be housed so that they do not suffer pain or distress. Housing must meet the essential needs of the species, age and sex, e.g. warmth, cover, nest sites, food and water, and enough space to exercise. Social animals should be kept with others so they are not distressed by isolation, but without overcrowding, which can cause aggression, while solitary animals must be able to get away from others. Cages should not be cleaned too often, as a change of smell can upset them. [3]

4 In the study by Laney et al. (false memory), questionnaires were used to collect data.

(a) Outline **one** difference between a questionnaire and an interview.

A questionnaire is written and completed by the participant alone, whereas an interview is spoken, with the interviewer present asking the questions face to face. [1]

(b) Explain **one** advantage of collecting data using questionnaires compared to interviews.

Questionnaires are quicker for collecting data from lots of people, because all of Laney's participants could fill them in at the same time, whereas interviewing each participant separately would take much more time.

[2]

(c) Explain **one** weakness of using questionnaires in this study.

Demand characteristics: participants could notice that asparagus kept appearing in the questionnaires, guess that it was the focus of the study and change their answers, e.g. rating asparagus more highly to please the researcher.

[2]

5 The research by Saavedra and Silverman (button phobia) was a case study. It used a variety of techniques including interviews and a scale (the feelings thermometer).

Suggest **one** strength of using a variety of techniques in a case study.

It allows triangulation; Saavedra and Silverman could check whether the boy's feelings thermometer ratings matched what he said in the interviews. If different sources show the same finding, the conclusions are more valid. It also gives both quantitative and qualitative data. [2]

6 Describe what is meant by the research methods of correlations and experiments, using any examples.

A correlation looks for a relationship between two measured co-variables; neither is manipulated. In a positive correlation, as one variable increases so does the other (up to +1), e.g. Dement and Kleitman found that the longer the REM period, the more words in the dream narrative. In a negative correlation, as one increases the other decreases (down to −1), e.g. Baron-Cohen et al. found that as AQ score increased, Eyes Test score decreased. Correlations cannot show cause and effect, as a third variable may affect both. In an experiment the researcher manipulates an independent variable (IV) and measures its effect on a dependent variable (DV), controlling other variables, to find cause and effect. Laboratory experiments are in an artificial setting with many controls, e.g. Andrade compared recall in doodling and non-doodling conditions. Field experiments are in the normal setting with fewer controls, e.g. Piliavin et al. manipulated the victim (cane or drunk) on the subway and measured speed of helping. [6]

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Section B

Answer **all** questions in this section.

7 Gregor is planning an experiment to compare the feelings of adults who work indoors with the feelings of adults who work outdoors. He thinks that where a person works may influence how relaxed they feel at work.

(a) Suggest a quantitative measure of 'feeling relaxed' that could be used in this study.

A rating scale: "How relaxed do you feel at work?" from 0 = not at all relaxed to 10 = completely relaxed. [1]

(b) Gregor thinks that variables other than where a person works could influence their feelings and he is therefore using a matched pairs design.

(i) Suggest **two** variables that would be relevant for matching participants in this study.

1 *Age*

2 *Pay (salary)*

[2]

(ii) Explain why **each** of the two variables that you suggested in **(b)(i)** would be relevant in this study.

1 *Older people may be more likely to work indoors, e.g. in offices, and may feel more tense because of aches or health worries. So if the indoor group were older, differences in feeling relaxed could be due to age, not where they work.*

2 *Indoor jobs such as office work may pay more than many outdoor jobs. Better-paid people may feel calmer because they have fewer money worries, not because they work indoors, so pay could confound the results.*

[4]

8 Elise is investigating whether children learn food preferences from their parents. She is conducting a self-report study to compare the food preferences of children and their parents.

(a) Elise has some ethical concerns.

(i) Some parents could feel that questions about what they eat every day are too personal.

Explain which ethical guideline Elise is concerned about here.

Privacy. Participants have a right not to reveal personal information, and parents may eat or avoid certain foods for health, dieting or religious reasons, so Elise should tell them they can refuse to answer any question.

..... [2]

(ii) When children answer questions about food they do not like, it could make them feel upset about their food preferences.

Explain which ethical guideline Elise is concerned about here.

Protection of participants from harm. Thinking about foods they dislike could make children worry that they are fussy or eat too much, which could even put them at risk of an eating problem, so their wellbeing must be protected.

..... [2]

(b) Elise has decided to use volunteer sampling.

(i) Explain how Elise could use volunteer sampling in her study.

Elise would put up an advertisement asking parents and their children to take part, explaining the study and how to reply, e.g. by email. It could be posted online on a parenting website and on notice boards at local primary schools and parent and child clubs, so it reaches families. The parent and child pairs who reply (self-selecting) would be used as her sample.

..... [3]

(ii) A friend suggests that Elise should use random sampling instead of volunteer sampling.

Suggest **one** advantage of using random sampling instead of volunteer sampling in Elise's study.

A random sample is more representative, as every family has an equal chance of being chosen. It would include families with different relationships and eating habits, e.g. children who rarely see their parents eat, not just families keen on food. ..... [2]

(c) Elise believes that learning is the only factor affecting the children's food preferences.

Suggest why Elise's belief could lower the validity of her study.

She may not be testing what she aimed to test: children's food preferences might resemble their parents' because of shared genes (biology), not learning, but she would wrongly interpret any similarity as learning.

..... [2]

9 Samir is comparing a parrot's learning of colour words and action words. His parrot is learning four colour words (red, blue, yellow, green) and must choose a box of the same colour to receive a food reward. The parrot is also learning four action words (hop, peck, jump, squawk) and must perform the correct action to receive a food reward.

(a) Outline how Samir could operationalise the action 'jump' in his study.

The parrot pushes off with both feet so that both feet leave the ground (perch) at the same time and it moves up into the air. [1]

(b) Samir's friend Daniel says the action of 'jump' is too similar to 'hop'. His advice is that Samir should use the action of 'nod' (moving the head up and down) instead of 'hop'.

Explain why the study would be better if Samir follows Daniel's advice.

Behavioural categories should be independent, so each action can only fit one category. Hop and jump are very similar; it may be hard to see whether the parrot left the ground on one leg or two, so hops could be scored as jumps, making the number of correct jumps higher than it should be. A nod is easy to tell apart from a jump, so the scoring becomes more accurate (valid) and consistent. [3]

(c) Samir decides that he needs to video the parrot's responses so that he can score each response twice.

Suggest why Samir made this decision.

To make his scoring more reliable (test-retest); he can check that his first and second scores of each response are the same, and if not, re-watch until he scores consistently, e.g. always recording a nod when the parrot nods. [2]

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Section C

Answer **all** questions in this section.

10 When a person pays more attention to their mobile phone than the person they are with, this is called 'phone snubbing'. Wyatt wants to investigate phone snubbing in men and women using an overt observation.

(a) Describe how Wyatt could conduct a study using an overt observation to investigate phone snubbing in men and women.

Wyatt would conduct an overt, non-participant, naturalistic observation in the cafe of a local university, where people normally meet. He would use a volunteer sample of 20 men and 20 women aged 18 to 25 who own a smartphone, recruited by a poster, each coming to the cafe to chat with a same-sex friend for 20 minutes. Each pair would sit at the same corner table at the same time of day (2 pm), keep their phones with them as normal and be given standardised instructions: "Just chat as you normally would."

It is overt because participants are told beforehand that they will be observed and give informed consent, and Wyatt sits openly at the next table with a clipboard. He is non-participant as he does not join the conversation.

The observation is structured, using operationalised behavioural categories of phone snubbing: (1) looking at the phone while the friend is speaking, (2) picking up the phone to text, scroll or check notifications, (3) not answering a question because of using the phone. He would use event sampling, tallying each time a category occurs, and also time with a stopwatch the total seconds the participant's eyes are on the phone. A second trained observer would record independently so their tallies can be correlated to check inter-rater reliability.

Participants would have the right to withdraw, be debriefed afterwards and their data kept confidential using numbers instead of names.

For analysis, the mean (and standard deviation) number of snubbing behaviours and mean seconds on the phone would be calculated for men and for women, and shown on a bar chart to compare the two genders. Wyatt would first run a pilot study with two pairs to check that the categories are clear and can be recorded, then compare

the results to see whether men or women phone snub more.

[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.

Problem: because the observation is overt, participants know they are being watched and may use their phones less than usual to appear polite (social desirability), so phone snubbing would be underestimated and the data would lack validity.

Solution: each pair would meet in the cafe with Wyatt present three times over a week, and only the third session would be recorded, after a first 10 minutes that is not scored. By then participants would be used to the observer (habituation) and behave more naturally, so the recorded phone use is more realistic.

[4]

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