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CANDIDATE NAME: StemUp Model Solution

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7291107198

PSYCHOLOGY **9990/21**

Paper 2 Research Methods **May/June 2023**

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.
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INFORMATION

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Section A

Answer **all** questions in this section.

1 Explain what is meant by the term 'ecological validity'. You may use an example in your answer.

Ecological validity is the extent to which the findings of a study in one situation would generalise to other situations, especially to real life outside the research setting. For example, Andrade's study was in a laboratory, so it may not represent attention in the real world, where there are many distractions. [2]

2 In the study by Laney et al. (false memory), different types of items were used in the various questionnaires. Two of the items included:

- rating items on a scale of 1–8 (from 'definitely did happen' to 'definitely did not happen')
- multiple choice items where participants circled a price they would pay for different foods, e.g. $1.90, $2.50, or 'would never buy'.

(a) Explain whether these items are both open questions, both closed questions, or one of each.

They are both closed questions, because each has fixed answer choices (a rating from 1 to 8, or one of the listed prices), so participants cannot elaborate or describe their answer in their own words.

[2]

(b) Laney et al. used a 'critical item' in the profile and in a questionnaire given to the experimental group.

Explain what is meant by a 'critical item', using the example from Laney et al.

A critical item is the item that relates directly to the IV and the aim, so it is the manipulation that allows data on the DV to be collected. In Laney et al. it was the false statement in the love group's profile that they "loved to eat cooked asparagus" the first time they tried it, which was then rated in the questionnaire. [2]

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3 In the study by Canli et al. (brain scans and emotions), a repeated measures design was used.

(a) Explain what is meant by a 'repeated measures design'. Include an example from Canli et al. in your answer.

Every participant takes part in all the levels of the IV. In Canli et al, each participant saw all of the scenes, both the emotionally negative (highly arousing) ones and the neutral ones, and rated each one for emotional arousal while being scanned.

..... [2]

(b) Explain **one** strength of using a repeated measures design.

It controls participant variables (individual differences), because each person acts as their own baseline. For example, if some participants in Canli et al. were simply more emotional than others, this would affect every condition equally, so it evens out and cannot confound the results. [2]

4 Explain **two** ways in which the procedure was standardised in the study by Yamamoto et al. (chimpanzee helping).

1 *The tools were always presented to the chimpanzee on a tray in the same way, so no tool was easier to find or reach in any trial or for any chimpanzee, so their choice of tool was not affected by where the tools happened to be.*

.....

2 *All the chimpanzees had the same familiarisation with the tools and tasks before testing, so they were equally prepared for the different tasks and differences in helping were not due to some chimpanzees knowing more about the tools.*

.....

[4]

5 Reliability refers to the consistency of tests, tasks or measures in research.

Explain why reliability is important in experiments.

If a measure is inconsistent, differences between conditions might be due to poor measurement rather than the IV, so a causal effect cannot be tested. For example, if Bandura's observers were not reliable, differences in aggression could be due to how the observers scored rather than the model condition. [2]

6 Describe the sampling techniques of 'opportunity sampling' and 'volunteer sampling', using any examples.

Opportunity sampling means using people who are available to the researcher at the time, chosen by convenience, such as passers-by or students in the researcher's own class; the researcher simply asks whoever is there. For example, Piliavin et al. used the passengers who happened to be on the New York subway trains, and Baron-Cohen et al. found some participants in an adult community education class in Exeter and a public library in Cambridge.

Volunteer (self-selecting) sampling means participants choose to take part by responding to a request to join in, such as an advert, email, post or online message. For example, Laney et al. used volunteers from a participant pool at the University of Washington, and Baron-Cohen et al. recruited adults with autism through an advert in the National Autistic Society magazine.

[6]

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Section B

Answer **all** questions in this section.

7 Steve is planning an experiment, using the technique of observation, to compare the level of frustration shown by shoppers in different types of shops. He has set up cameras to help measure the behaviour of shoppers in shops selling basic goods (things that are essential) and shops selling luxury goods (things that are not essential).

(a) Steve is concerned that situational variables could be a problem in his study.

(i) Suggest **two** situational variables that could affect Steve's study.

1 *How busy the shop is (the number of customers).*

2 *The number of staff available to serve shoppers.*

[2]

(ii) Explain how **each** of the situational variables that you suggested in **(a)(i)** could be a problem in Steve's study.

1 *Being crowded may make shoppers frustrated because of queues and waiting. So if Steve finds a difference, it could be due to how busy the shops were rather than the type of shop (basic or luxury goods).*

2 *With fewer staff, shoppers may be served more slowly and so become frustrated. Any difference in frustration could then be due to the number of staff rather than the type of shop, making it a confounding variable.*

[4]

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(b) Steve is also concerned about the ethics of his study.

(i) Suggest why the ethical guideline of right to withdraw would be difficult for Steve to follow in his study.

Right to withdraw means participants can leave a study at any time if they want to. Steve's shoppers are filmed without knowing they are in a study, so they cannot choose to leave the study (or ask for their data to be removed) because they do not know they are participants. [2]

(ii) Suggest why the ethical guideline of privacy would be difficult for Steve to follow in his study.

Privacy means people should not have their private space or behaviour intruded upon. The shoppers do not know they are being filmed, so they may be recorded doing things they would not want others to see, such as stealing, or buying expensive luxury goods they want to keep private. [2]

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8 Leila is conducting a correlational study. She predicts that there will be a correlation between:
- 'success at learning a language'
- 'enjoyment of word puzzles', e.g. crosswords.

(a) Suggest an objective measure of 'success at learning a language' that Leila could use. Justify your answer. Do **not** use a self-report rating scale.

Give each participant a vocabulary test in the new language (e.g. 50 words to translate) and score the number correct. This is objective because each word has only one correct answer, so the numerical score does not need any interpretation by Leila.

..... [2]

(b) Leila is measuring 'enjoyment of word puzzles' by asking participants to rate how much they enjoy word puzzles on a scale of 0 (not at all) to 5 (very much).

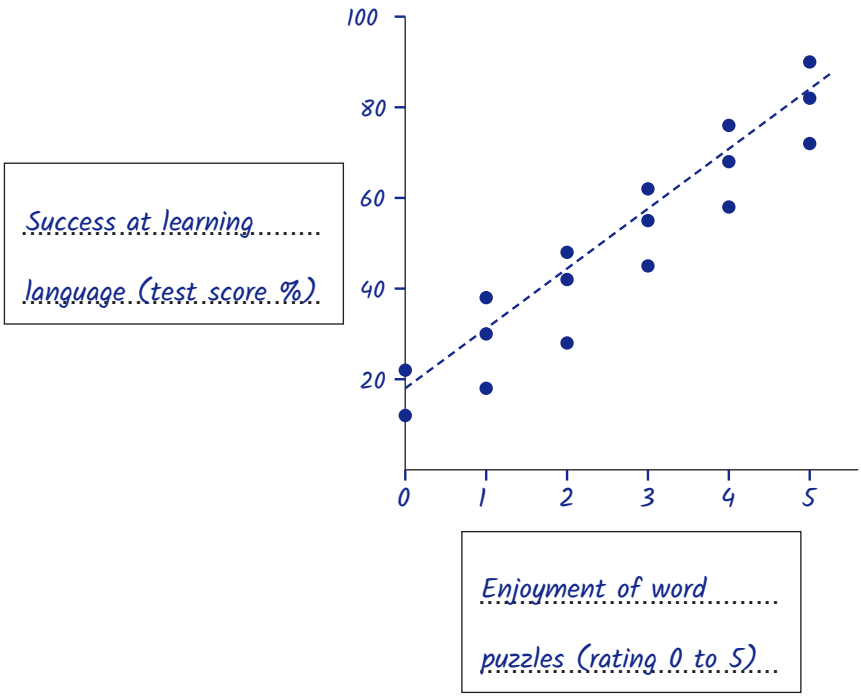
Explain how Leila would calculate the median for 'enjoyment of word puzzles'.

Put all the participants' enjoyment of word puzzles ratings (0 to 5) into numerical order and find the middle score.

..... [1]

(c) Leila conducts her study. Her results show a positive correlation.

Sketch a graph, using the axes below, to show the pattern of Leila's results.
You **must** label the axes.



[4]

9 Inma is conducting an experiment about learning. She predicts that animals will learn to find food in a maze faster in the light than in the dark. If an animal does not find the food after 10 minutes, they are given the food by the experimenter.

(a) Inma is using a directional (one-tailed) hypothesis.

Explain why Inma is using a directional hypothesis in her experiment.

Because she can predict which way the results will go (e.g. from previous research); she believes the animals will learn to find the food in the maze faster in the light than in the dark, not just that there will be some difference.

..... [2]

(b) Write a null hypothesis for Inma's experiment.

There will be no difference in how quickly animals learn to find the food in the maze in the light and in the dark; any difference will be due to chance. ..... [1]

(c) Inma will use an independent measures design for her experiment.

Explain **one** advantage of using an independent measures design compared to a repeated measures design.

Each animal only does the maze in one condition (light or dark), so there are no order effects; unlike in repeated measures, an animal cannot learn the route in one condition and then be faster in the other condition because of practice.

..... [2]

(d) Explain how Inma followed **one** ethical guideline in relation to animals.

Deprivation: the animals were not deprived of food, because if an animal did not find the food after 10 minutes it was given the food by the experimenter, so all the animals were fed whether or not they found the food.

..... [2]

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Section C

Answer **all** questions in this section.

10 Dr Clare is planning an observational study of student behaviour in a library at a university. She will be the only observer. She is interested in student behaviours such as:

- how they study
- how they find books
- what they do in the library other than studying
- how long they spend in the library.

(a) Describe how Dr Clare could conduct an observational study to investigate the behaviour of students in a library at a university.

Dr Clare would carry out a naturalistic, non-participant, covert observation in the main study area of the university library. She would sit at a desk in the upstairs gallery overlooking the ground floor, looking like an ordinary library user with books and a laptop, so the students do not know they are being observed and behave naturally. She would not interact with the students, help them find books or ask them questions, so nothing is manipulated.

Participants would be the students who enter the library during the observation periods: two hours in the morning (10:00 to 12:00) and two in the afternoon (14:00 to 16:00) every weekday for two weeks, so both busy and quiet times are included.

The observation would be structured, using a checklist of operationalised behavioural categories:

- how they study: handwriting notes, typing on a laptop, reading a book, group study (talking about work)

- how they find books: using the catalogue computer, asking a librarian, browsing the shelves

- non-study behaviour: using a phone for social media, eating or drinking, chatting socially, sleeping

- time in the library: the times each student enters and leaves, in minutes.

As she is the only observer, she would follow one target student at a time (the next student to come through the door) and use time sampling: every 2 minutes she ticks the category the student is showing, until they leave, using the library clock for

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arrival and departure times. She would also make brief notes of any behaviours not on the checklist. She would pilot the checklist first to check the categories are clear and cover what students do.

Analysis: tallies for each category would be turned into percentages and shown in a bar chart, and the mean and range of time spent in the library calculated. The library would give permission and no names or faces would be recorded.

[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.

As the only observer, Dr Clare may miss behaviours while she is ticking the checklist (e.g. a student briefly checking a phone), and there is no way to check whether her recording is consistent, so the data may be unreliable. To overcome this, she could video-record the study area (with the library's permission) and code the footage later, pausing it so nothing is missed, and code the same footage again a week later; a high correlation between her two sets of tallies would show good intra-rater reliability.

[4]

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PSYCHOLOGY **9990/22**

Paper 2 Research Methods **May/June 2023**

1 hour 30 minutes

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You will need: Ruler

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Section A

Answer **all** questions in this section.

1 From the study by Yamamoto et al. (chimpanzee helping):

Suggest why it was necessary for the chimpanzees to examine and manipulate the tools before the experiment.

So the tools were familiar to them and they knew what properties each object had. Otherwise they could not have known which tool was useful for which problem (e.g. a stick or a straw), so a failure to help would be due to not knowing the tools rather than the IV (whether they could see their partner). [2]

2 Chloë is conducting a study to investigate classical conditioning and operant conditioning. Her aim is to test which type of conditioning produces the fastest learning.

(a) Write a non-directional (two-tailed) hypothesis for Chloë's study.

You do **not** need to operationalise the variables in your hypothesis.

There will be a difference in the speed of learning between tasks learned by classical conditioning and tasks learned by operant conditioning. [1]

(b) Chloë's results in the two conditions were the same.

Explain why Chloë **must** reject her non-directional hypothesis, referring to her variables in your answer.

There was no difference in the speed of learning between classical and operant conditioning, so neither type of conditioning produced faster learning. [1]

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3 The study by Schachter and Singer investigated two factors in emotion.

(a) The participants in this study were deceived.

(i) Outline **one** way that the participants were deceived in this study.

Participants were told the injection was "Suproxin", a vitamin compound being tested for its effects on vision, but it was actually adrenaline (epinephrine) or a saline placebo.

..... [2]

(ii) Explain why the deception that you outlined in **(a)(i)** was necessary.

If participants had known they were given adrenaline and its real effects, they would all have expected the arousal. Then Schachter and Singer could not have manipulated the informed and ignorant conditions, so ignorant participants would not need the stooge for a cognitive label for their arousal. ..... [2]

(b) Schachter and Singer reported that in one condition, the observer could not hear the spoken reactions for one participant.

State **one** practical reason why this was a problem.

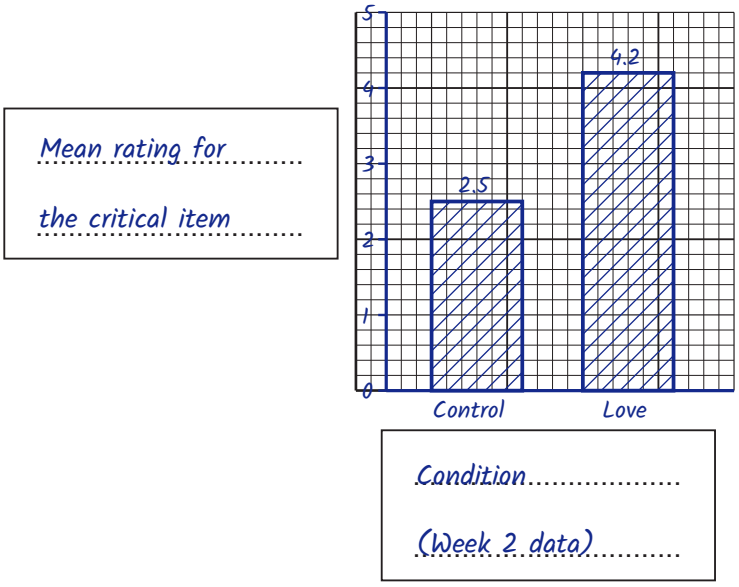
They had incomplete data in that condition, as they could not record whether the participant agreed with the stooge. ..... [1]

4 The data from Experiment 1 in the study by Laney et al. (false memory) is given in Table 4.1.

Table 4.1

Condition	Mean rating for the critical item 'loved asparagus the first time you tried it'	
	Week 1	**Week 2**
Control	1.5	2.5
Love	1.7	4.2

(a) Draw a bar chart of the 'Week 2' data only. You **must** label the axes.



[4]

(b) State **one** conclusion about this study using the data in Table 4.1.

The false suggestion increased the love group's belief that they loved asparagus; their mean rating rose to 4.2 by week 2, compared with only 2.5 for the control group. [1]

5 Explain the importance of inter-observer reliability in the study by Bandura et al. (aggression).

Inter-observer reliability is the consistency between two observers rating the same participants. In Bandura et al. the experimenter and a nursery teacher rated the same children's aggression and agreed closely, so differences in aggression were due to the model, not the observers. [2]

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6 Describe the use of controls in laboratory experiments and field experiments, using any examples.

Controls are ways of limiting the effect of variables, such as situational variables, that could affect the DV, so that each level of the IV differs only in terms of the IV, which improves validity.

In laboratory experiments controls are easier to apply, because the environment is artificial and set up by the researchers, so it can be altered and standardised. For example, Bandura et al. gave every child the same staged start, sitting at a table with potato printing, and Andrade gave both the doodling and control groups the same tape, paper and pencils.

In field experiments controls are harder to apply, because the setting already exists and cannot be altered very much. For example, Piliavin et al. could not control how many passengers were in each carriage, although they did standardise when the victim collapsed (about 70 seconds after the train left the station).

..... [6]

Section B

Answer **all** questions in this section.

7 Deryn is planning an experimental study to compare how, and how often, men and women look at themselves in a shop window. She plans to collect quantitative data using observations and will calculate a median.

(a) (i) Identify the independent variable in Deryn's study.

Gender: whether the shopper is a man or a woman.

..... [1]

(ii) Identify **one** dependent variable in Deryn's study.

How often each person looks at themselves in the shop window.

..... [1]

(iii) Identify the experimental design used in Deryn's study.

Independent measures design.

..... [1]

(b) (i) Suggest how Deryn could use a structured observation in her study.

Deryn would decide on behavioural categories before the study and record only those on a checklist. Standing near a shop window in a shopping centre, for each shopper passing she would note whether they are male or female and tally each time they look at their reflection, using categories such as "glances", "stops to look", "tidies hair", "straightens clothes" and "smiles at reflection".

..... [3]

(ii) Suggest **one** disadvantage of using a structured observation compared to an unstructured observation in Deryn's study.

Behaviours not on her checklist cannot be recorded, so data may be lost. For example, if a woman uses the window to put on lipstick and this is not a category, Deryn cannot add it, so her data on how men and women look would be incomplete. ..... [2]

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(c) A 'measure of central tendency' is a method of data analysis.

(i) Explain why the median is a measure of central tendency.

Because it finds a typical score in the data set; the middle value when the scores are placed in numerical order. [1]

(ii) Suggest **one** strength of using **one** method of data analysis, other than the median, with Deryn's results.

The mode; it shows the most common behaviour when men and women look in the window (e.g. tidying hair), which the median does not show, and it can be used with categorical (nominal) data such as the different types of looking behaviour. [2]

8 Phyllis is planning a correlational study to investigate the relationship between vocabulary size and level of education.

(a) (i) Suggest **two** ways that Phyllis could measure 'vocabulary size'.

1 *A vocabulary test: give each participant a list of 50 words of increasing difficulty to define or match to their meanings, and count how many they get right (a score out of 50).*

2 *Listen to each participant speak freely for 5 minutes (e.g. describing their day), recorded, and count the number of different words they use, giving a numerical score.*

[4]

(ii) For **one** of the ways you have suggested in **(a)(i)**:

Suggest **one** strength of measuring vocabulary size in this way.

The test is objective and standardised: everyone gets the same words and there is no doubt whether a word was known, so it is reliable. [1]

(b) Suggest **one** way that Phyllis could measure 'level of education'.

Record the number of years each participant has spent in full-time education.

[1]

(c) Phyllis expects to find a positive correlation.

(i) Outline what Phyllis would conclude if she found the results in Fig. 8.1.

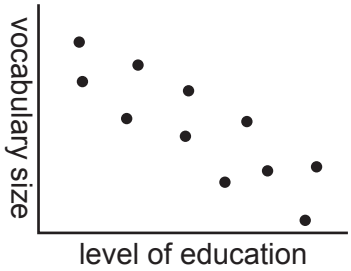


Fig. 8.1

There is a negative correlation: as level of education increases, vocabulary size decreases. [1]

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(ii) Outline what Phyllis would conclude if she found the results in Fig. 8.2.

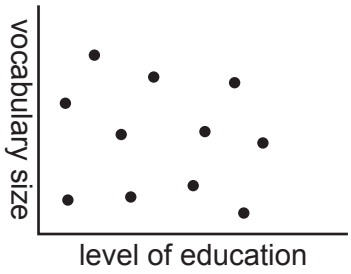


Fig. 8.2

There is no correlation: there is no relationship between vocabulary size and level of education. [1]

9 James is planning a study and has chosen to use opportunity sampling to find participants. A friend says he should use random sampling instead. Another friend says that sample size is just as important as sampling technique.

(a) Explain **one** strength of using opportunity sampling.

It is quick and easy and takes little time, because James can simply use people who are readily available nearby, such as students in his class, so he can also collect a bigger sample. [2]

(b) Explain **one** advantage of using random sampling instead of opportunity sampling.

The sample is more likely to be representative, so the findings are more generalisable, because every member of the population has an equal chance of being chosen, so it is more likely to include the range of characteristics in the population, without bias from James's choices. [2]

(c) Explain why a larger sample may be better than a smaller sample.

A larger sample includes a greater variety of people with more individual differences, so it is more representative and the findings are more generalisable. [1]

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Section C

Answer **all** questions in this section.

10 Perrin is going to interview participants about their dreams. He wants to collect information about the duration and content of dreams in children and adults.

(a) Describe how Perrin could conduct a study using an interview to investigate the duration and content of dreams in children and adults.

Perrin would use a semi-structured interview: a set of planned questions asked to every participant in the same order, plus follow-up questions based on their answers to explore the content of their dreams in more depth.

Participants would be 20 children aged 8 to 10 from a local primary school (with parental consent) and 20 adults aged 25 to 40, staff at the same school, all of whom sometimes remember their dreams. Each would be interviewed individually, face to face, in a quiet room at the school in the morning, about the dream they had the night before; a teacher would sit with each child. Interviews would be audio-recorded with consent.

Closed questions (quantitative data):

- "Did you dream last night? Yes / No / Not sure"

- "How long do you think your dream lasted? Less than 1 minute / 1 to 5 minutes / 5 to 15 minutes / more than 15 minutes"

- "How vivid was your dream, from 1 (not at all) to 5 (very vivid)?"

Open questions (qualitative data):

- "Tell me everything you can remember happening in your dream."

- "Who and what was in your dream, and how did you feel?"

Follow-up questions such as "What happened next?" would be used to gain detail, and a filler question such as "What did you eat for dinner last night?" would help hide the aim. Questions for children would use simple words.

Analysis: the median estimated duration and the mean vividness rating would be compared for children and adults and shown in bar charts. Open answers would be transcribed and analysed into themes such as "fear/monsters", "family", "school/work"

and "flying", counting how often each appears for children and adults. All participants (and parents) would give informed consent, could withdraw at any time and their data would be anonymous.

..... [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.

Participants, especially children, may not be able to remember their dream accurately or judge how long it lasted by the next morning, so the duration and content data may lack validity. To overcome this, Perrin could give each participant a dream diary to keep by the bed and ask them to write down (or for children, tell a parent who writes down) the dream and how long it seemed to last as soon as they wake. Perrin would then interview them later that morning using the diary to prompt their memory.

..... [4]

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CANDIDATE NAME: StemUp Model Solution

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PSYCHOLOGY **9990/23**

Paper 2 Research Methods **May/June 2023**

1 hour 30 minutes

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Section A

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1 **(a)** Describe what is meant by the term 'random sampling'.

Every member of the target population has an equal chance of being selected. For example, each person in the population is given a number, the numbers are put in a hat and drawn out (or chosen by a random number generator) until there are enough participants. [2]

(b) Explain **one** weakness of random sampling.

Not all the people randomly selected may be willing to take part, so the final sample may be biased and not representative. [1]

2 The study by Yamamoto et al. (chimpanzee helping) followed ethical guidelines relating to the use of animals.

Describe how **two** ethical guidelines relating to the use of animals in research were followed in this study.

1 *Housing: animals should be kept in suitable conditions. Chimpanzees are social animals, so they were housed together in a group, and they were fed properly with monkey food plus extra fruit and vegetables.*

2 *Pain and distress must be avoided; the chimpanzees only had to choose a tool such as a stick or straw and pass it through a hole to a partner, which caused no pain or distress, and the tasks led to a juice reward rather than any punishment.*

[4]

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3 In the study by Laney et al. (false memory), standard deviations were calculated.

(a) State what is meant by a 'measure of spread'.

A way of showing how much the scores in a data set vary, i.e. the dispersion of the values. [1]

(b) State **one** advantage of using the standard deviation compared to **one** other measure of spread.

Compared with the range, the standard deviation uses every score, giving the average spread of the scores around the mean rather than just the difference between the two extreme scores, so it is not distorted by one unusual score. [2]

4 In the study by Pepperberg (parrot learning), Alex the parrot was tested using the categories of:

- shape
- material
- colour.

(a) Suggest why Pepperberg chose to test the parrot using the categories of 'shape' and 'material'.

Alex could already say the labels needed for both (e.g. "square", "wood", "paper"), so his understanding could be tested validly through his speech. Both are simple visual features of objects, so a parrot could learn them; more complex concepts might have been too hard. [2]

(b) Suggest **one** other category that Pepperberg could have used to test the parrot's understanding of categories.

Sound, e.g. whether an object made a high-pitched or a low-pitched tone. [1]

5 The study by Dement and Kleitman (sleep and dreams) investigated two kinds of sleep: REM sleep and non-REM sleep.

State **three** differences between REM sleep and non-REM sleep.

1 *Dreams are recalled much more often when woken from REM sleep than from non-REM sleep.*

2 *REM sleep has rapid eye movements, but there are none in non-REM sleep.*

3 *REM sleep shows light, fast, low-voltage brain waves, but non-REM has slower waves of deeper sleep.*

[3]

6 Describe the ethical guidelines of 'informed consent' and 'protection from harm', using any examples.

Informed consent means giving participants enough information about the aim and procedure to make a choice about taking part, by briefing them, and then getting them to agree (e.g. sign a form) that they understand and want to participate; for children, parents consent. For example, in Canli et al, participants would have consented to the risks of an fMRI brain scan, whereas Milgram's participants did not give informed consent as they thought the study was about learning and punishment.

Protection from harm means ensuring participants are not harmed physically or psychologically, so they leave the study in at least as good a condition as they entered it. For example, Milgram's participants were very stressed by giving shocks, sweating and biting their lips, and one had a seizure. Harm can be reduced by debriefing; Milgram reassured them that the learner was unharmed.

[6]

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Section B

Answer **all** questions in this section.

7 Nigel has conducted a laboratory experiment to compare children's choice of sweets (candy) in different packets. The children were shown sweets in:

- brightly coloured packets with simple patterns
- black and white packets with complex patterns.

His results showed that more children chose the sweets from the 'brightly coloured packets with simple patterns' condition.

(a) (i) Suggest **one** other condition that Nigel could have included in his study.

Black and white packets with simple patterns.

..... [1]

(ii) Explain why the condition you suggested in **(a)(i)** would have been useful.

It would control for colour, as it differs from the black and white complex condition only in the pattern. So Nigel could see whether the children chose the bright packets because they like bright colours or because they dislike complex patterns.

..... [2]

(b) Nigel used a repeated measures design.

Explain what is meant by a 'repeated measures design', using an example from this study.

All participants take part in every level of the IV. In Nigel's study each child was shown sweets in both the brightly coloured simple-patterned packets and the black and white complex-patterned packets.

..... [2]

(c) Name **one** experimental design Nigel could have used, other than a repeated measures design.

Independent measures design.

..... [1]

8 Mila is planning a case study to investigate how a 21-year-old person feels about being the only young person in a community of 20 older people on a small island.

(a) Suggest **two** techniques Mila could use to collect data from her participant in this study.

Interview: Mila could ask planned questions about how the participant feels, e.g. "How do you feel about being the only young person here?", then follow-up questions based on the answers, e.g. who they talk to instead if they rarely talk to the older people.

Observation: a structured, overt observation of the participant's interactions with others over a week, tallying behavioural categories such as talking to older residents, being alone, and using the phone or internet to contact young people elsewhere.

..... [4]

(b) For **one** of the techniques you suggested in **(a)**:

(i) Explain **one** advantage of this technique.

Interview: Mila can ask for the reasons behind the participant's feelings and interactions, e.g. why they do or do not talk to the older people, and follow up answers to gain rich, detailed data about how they feel.

..... [2]

(ii) Explain **one** disadvantage of this technique.

The participant may give socially desirable answers, e.g. saying they get on well with the older people because they are embarrassed about how little they talk to them or how lonely they feel, so the data may not be valid.

.....[2]

(c) Mila wants to generalise her findings to all adults who live away from other people of their own age.

Explain why Mila should **not** make this generalisation from the findings of her case study.

She studied only one unique person of one age and gender on a small island, so the findings are not representative of other people. ..... [1]

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9 Alan and Jocelyn are writing a questionnaire to ask about the level of euphoria created by listening to music at a concert, compared with listening to music at home.

(a) (i) Suggest **one** closed question that they could use on the questionnaire to ask about euphoria.

How euphoric do you feel when listening to music at a concert? 0 (not at all euphoric) to 5 (very euphoric) [2]

(ii) Suggest **one** open question that they could use on the questionnaire to ask about euphoria.

Describe how you feel when you listen to music at a concert compared with at home. [1]

(b) For the questions you suggested in **(a)(i)** and **(a)(ii)**:

(i) Explain **one** reason why the data from the open question could be more valid than data from the closed question.

Participants can respond exactly as they want and explain their feelings, e.g. why they felt more euphoric at the concert, whereas the closed rating scale forces them to choose a number that may not reflect how they really feel. [2]

(ii) Explain **one** reason why the data from the open question could be less valid than data from the closed question.

Open answers must be interpreted, so they may be affected by researcher bias; Alan and Jocelyn might interpret the same description of euphoria differently, whereas the closed question gives an objective numerical rating that needs no interpretation. [2]

(c) Explain how Alan and Jocelyn could check their inter-rater reliability when they analyse their data.

Alan and Jocelyn should each analyse the same participants' answers to the open question independently, e.g. rating the level of euphoria described from 0 to 5. They then correlate their two sets of scores (or check if they are the same); a high positive correlation shows high inter-rater reliability. [2]

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Section C

Answer **all** questions in this section.

10 Dr Caesar is interested in animal phobias in his patients. He wants to investigate whether there is a correlation between the size of the animal causing the phobia and the severity of each patient's animal phobia.

(a) Describe how Dr Caesar could conduct a correlational study to investigate the relationship between animal size and the severity of the patients' phobias.

Dr Caesar would conduct a correlational study with two co-variables, the size of the animal causing each patient's phobia and the severity of the phobia; nothing is manipulated.

Participants would be 40 of his own patients who have an animal phobia, including phobias of animals of many sizes (e.g. spiders, mice, dogs, horses). Each patient would be tested individually in a quiet room at his clinic.

Animal size: for each patient the feared animal is identified and its size is measured as the average adult body length in centimetres, taken from a standard reference book (e.g. spider 1 cm, mouse 8 cm, dog 60 cm, horse 240 cm), giving a numerical size score.

Phobia severity: each patient completes a self-report questionnaire of 10 statements about their animal, e.g. "I avoid places where I might see this animal" and "I panic if I think about this animal", each rated from 1 (strongly disagree) to 5 (strongly agree). The ratings are added to give a severity score from 10 to 50, where higher means a more severe phobia. A few reverse-scored items (e.g. "I could touch this animal") reduce response bias.

The questionnaire would be completed during a normal appointment, taking about 10 minutes, with Dr Caesar out of the room and answers identified only by a code number, to reduce social desirability. All patients would receive the same standardised written instructions. They would give informed consent, be told they can stop at any time and be debriefed; no live animals are used, to protect them from distress.

Analysis: each patient's pair of scores (animal size, severity) would be plotted on a

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scattergram, with animal size on the x-axis and severity on the y-axis, and a correlation coefficient calculated. Dr Caesar might expect a positive correlation (bigger animals cause more severe phobias), although a negative correlation is possible, as small animals such as spiders often cause severe phobias.

[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.

Using the average body length of the species may not be valid, because patients with the same phobia may fear animals of very different sizes, e.g. one dog-phobic patient may fear small dogs and another only large dogs, so the size score may not reflect the animal they really fear. To overcome this, each patient could be shown a set of photographs of their animal at different labelled sizes (e.g. 10 cm, 30 cm, 60 cm, 90 cm) and asked to choose the size that matches the animal they fear most, and this would be used as their size score.

[4]

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