Cambridge Assessment International Education

Cambridge International AS & A Level

CANDIDATE NAME: StemUp Model Solution

CENTRE NUMBER | | | | | |

CANDIDATE NUMBER | | | | |

4386224451

PSYCHOLOGY **9990/21**

Paper 2 Research Methods **May/June 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.

© UCLES 2021

[Turn over

stemup.co.uk

Section A

Answer **all** questions in this section.

1 In the study by Pepperberg (parrot learning), several features of the procedure helped to improve reliability.

(a) State what is meant by 'reliability'.

The consistency of a measure; whether it measures the behaviour in the same way each time, giving the same results with the same participant. [1]

(b) Suggest how **one** feature of the procedure helped to make this study reliable.

The procedure was standardised; Alex was always asked the same kind of question, "What's same?" or "What's different?", so every trial was tested in the same way. Also only his first response on each trial was scored, so he could not get it right by guessing again. [2]

2 In the study by Andrade (doodling), one possible uncontrolled variable was whether the participants had friends with the same names as the people in the mock telephone call.

(a) Suggest **one** problem this uncontrolled variable might have caused.

It could lower validity; participants with friends of the same names may recall those names more easily, so Andrade could not be sure that better recall in the doodling group was caused by doodling rather than by knowing friends with those names. [2]

(b) Suggest how the problem you referred to in **(a)** could be solved.

Andrade could use very unusual or made-up names for the party guests in the mock telephone call, so that it is very unlikely any participant has friends with those names and recall is not helped by familiarity. [2]

© UCLES 2021

stemup.co.uk

3 **(a)** State what is meant by a 'case study'.

A case study is a detailed, in-depth investigation of one individual (or one small group or unit), usually using several techniques and collecting a lot of qualitative data.

[2]

(b) One type of colour blindness is when people cannot tell the difference between the colours red and green.

Describe how a case study to investigate colour blindness could be conducted.

Use volunteer sampling, advertising on colour-blindness support websites, to find one person with red-green colour blindness. They would conduct a detailed interview about the person's past, e.g. how they first found out their colour vision was different and how it affects daily life. They would then present coloured stimuli, e.g. red and green cards and Ishihara-type dot plates, ask what they see, and observe which colours they name for red and green objects around them. [3]

4 In the study by Yamamoto et al. (chimpanzee helping), quantitative data was collected.

Suggest **one** strength of collecting quantitative data in this study.

Quantitative data, such as the number of times each chimpanzee passed the requested tool, is objective and needs no interpretation, so the measure of helping is consistent (reliable) and the helping scores can easily be compared between chimpanzees and conditions. [2]

5 Explain **one** weakness of random sampling.

Random sampling is limited by access to the population: people can be selected at random but some may refuse to take part, and if those who refuse are similar (e.g. all busy workers), the final sample is biased and not representative.

[2]

6 Describe structured observations and unstructured observations, using any examples.

A structured observation records only a limited, pre-decided range of behaviours, which are listed and defined in advance as behavioural categories on a checklist. The observer tallies each category, so it collects quantitative data, can measure the DV in an experiment and is more reliable. For example, Bandura et al. recorded specific categories such as imitative physical aggression (hitting the Bobo doll with the mallet) and imitative verbal aggression, and Piliavin et al. recorded whether passengers helped or did not help the victim. An unstructured observation records all the behaviours that occur, without pre-set categories, usually as a detailed description, so it may collect qualitative as well as quantitative data. It is often used as a pilot study to identify and define the behavioural categories for a later structured observation. For example, Milgram's observers described participants' responses while giving shocks, such as sweating, trembling and nervous laughter.

..... [6]

Section B

Answer **all** questions in this section.

7 Kira is conducting a correlational study looking for a relationship between level of creativity and the amount of time spent playing sport. Kira could find a positive or a negative correlation.

(a) State whether Kira should use a directional or a non-directional hypothesis. Include a reason for your answer.

Non-directional, because she does not know whether the correlation will be positive or negative. [1]

(b) State what Kira would find if there was a negative correlation.

As level of creativity increases, the amount of time spent playing sport decreases. [1]

(c) Write a null hypothesis for Kira's study.

There will be no correlation between level of creativity and the amount of time spent playing sport. [1]

(d) Kira finds a strong correlation.

Explain whether Kira will know if one variable is causing the change in the other variable.

No, because a correlation cannot show a causal relationship. A third factor could cause both, e.g. a type of schooling could increase creativity and also leave less time for sport, or creativity could affect sport rather than sport affecting creativity. [2]

8 Ruth is planning an interview to investigate the emotional effect of being a wedding guest.

(a) Suggest **one** open question that Ruth could ask about the emotional effect of being a wedding guest.

Describe how being a guest at a wedding makes you feel.

..... [1]

(b) Suggest **one** closed question that Ruth could ask about the emotional effect of being a wedding guest.

How happy do you feel when you are a wedding guest, on a scale of 1 (not happy at all) to 10 (very happy)? ..... [1]

(c) Explain how Ruth could ensure her procedure is ethical.

Ruth should get informed consent, telling participants beforehand that they will be asked about their emotions at weddings, so that people who might be upset, e.g. recently divorced or single people, could choose not to take part. She should give them the right to withdraw, so they can refuse any question that upsets them. Finally she should debrief them, so any distress is reversed and they leave in the same state as they arrived. ..... [3]

© UCLES 2021

stemup.co.uk

9 Jabir is investigating the social lives of old people and is using a questionnaire to measure their friendships.

(a) Jabir will use volunteer sampling but also wants to make his sample representative of old people.

(i) Jabir has identified three features of old people that are relevant to his study:
- whether they live alone or not
- whether they belong to any group or club
- their exact age.

Suggest why each of these features is relevant to Jabir's study.

whether they live alone or not *people living with others (e.g. in a care home) are surrounded by people they may call friends, so they may report more friendships.*

whether they belong to any group or club *members of groups (e.g. religious or sports clubs) have more sources of friends, so they may appear to have more friends.*

their exact age *the oldest people may have fewer friends because their friends have died, or have hearing or mobility problems that make friendships harder to keep.*

[3]

(ii) Describe how Jabir could use volunteer sampling to obtain a sample.

Jabir could place adverts in old people's homes, community centres and on internet sites for older people, asking for volunteers aged over 65 to fill in a questionnaire for a study about friendships. Everyone who replies and gives consent would be in the sample. To keep it representative he could keep advertising until he has volunteers who live alone and who live with others, who are and are not in clubs, and of a range of ages. [3]

(iii) Outline **one** reason why Jabir may exclude some old people from his sample.

If they have memory problems (e.g. dementia), because they could not accurately recall their friendships. [1]

stemup.co.uk

(b) Suggest how Jabir could define the variable of 'friendship' in his study.

A friend is someone who is not a member of your family, whom you trust and would confide in, and whom you see or talk to at least once a month.

[2]

(c) Jabir intends to collect all of his data in two days.

Suggest **one** reason why this may reduce the validity of his findings.

Whether someone counts a person as a friend may depend on whether they have seen them recently, and an old person who feels lonely on the testing day may recall few friends. So the data would measure recent contact or mood on those two days, not friendship. [2]

(d) Explain **one** weakness of using a questionnaire for Jabir's study.

Respondents may give socially desirable answers. An old person who has few friends may feel embarrassed or lonely and exaggerate the number of friends they have, or how often they see them, to hide this. The questionnaire would then make it look as if old people have more friends than they really do, so Jabir's findings about their social lives would not be valid.

[3]

© UCLES 2021

stemup.co.uk

Section C

Answer **all** questions in this section.

10 Nuan wants to test the idea that the way words are presented affects recall. She predicts that people will recall more words from a list they hear than from a list they see.

(a) Describe how Nuan could conduct a laboratory experiment to test the idea that the way words are presented affects recall.

Nuan's laboratory experiment would use an independent measures design with two conditions of the IV, the way the words are presented; in the "hear" condition participants listen to a recorded list of words; in the "see" condition they read the same list on a computer screen. The sample would be 40 students aged 18 to 25 obtained by opportunity sampling, all native speakers of the language used, and random allocation (names drawn from a hat) would put 20 in each condition.

Materials: a list of 20 common, one-syllable nouns of similar frequency (e.g. cat, lamp, tree), in the same order for both conditions. In the hear condition the words are played through headphones in the same recorded voice, one word every 2 seconds. In the see condition each word appears alone in the centre of the screen in black 40-point font for 2 seconds. So both groups get the same words for the same time (40 seconds).

Procedure: each participant is tested alone in the same quiet laboratory room with no distractions, at a similar time of day, and is given standardised instructions: "You will be shown or played a list of words. Try to remember as many as you can." After the list they count backwards in threes from 100 for 30 seconds to prevent rehearsal, then have 2 minutes to write down as many words as they can, in any order.

DV: recall is operationalised as the number of words correctly recalled out of 20. Spelling mistakes are accepted if the word is recognisable; words not on the list are not counted.

Ethics: participants give informed consent, are told they can withdraw at any time, their scores are kept confidential using participant numbers, and they are debriefed about the aim at the end.

stemup.co.uk

Analysis: the mean and standard deviation of words recalled are calculated for each condition and shown in a bar chart. If the mean for the hear condition is higher, this supports Nuan's prediction that people recall more words they hear than words they see.

[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.

Because it is independent measures, participant variables such as memory ability differ between the groups: if the hear group happened to have better memories, they would recall more words for that reason, not because of how the words were presented. To overcome this, Nuan could use a repeated measures design, so each participant does both conditions, using two different word lists matched for length and word frequency. She would counterbalance the order: half hear a list first and then see a list, the other half do the reverse, so practice and fatigue effects are balanced. [4]

© UCLES 2021

stemup.co.uk

BLANK PAGE

© UCLES 2021

stemup.co.uk

BLANK PAGE

Permission to reproduce items where third-party owned material protected by copyright is included has been sought and cleared where possible. Every reasonable effort has been made by the publisher (UCLES) to trace copyright holders, but if any items requiring clearance have unwittingly been included, the publisher will be pleased to make amends at the earliest possible opportunity.

To avoid the issue of disclosure of answer-related information to candidates, all copyright acknowledgements are reproduced online in the Cambridge Assessment International Education Copyright Acknowledgements Booklet. This is produced for each series of examinations and is freely available to download at www.cambridgeinternational.org after the live examination series.

Cambridge Assessment International Education is part of the Cambridge Assessment Group. Cambridge Assessment is the brand name of the University of Cambridge Local Examinations Syndicate (UCLES), which itself is a department of the University of Cambridge.

© UCLES 2021

stemup.co.uk

Cambridge Assessment International Education

Cambridge International AS & A Level

CANDIDATE NAME: StemUp Model Solution

CENTRE NUMBER | | | | | |

CANDIDATE NUMBER | | | | |

9926412535

PSYCHOLOGY **9990/22**

Paper 2 Research Methods **May/June 2021**

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.

© UCLES 2021

[Turn over

stemup.co.uk

Section A

Answer **all** questions in this section.

1 **(a)** State what is meant by an 'open question'.

A question that lets participants answer freely in their own words, in detail, with no fixed choices, so it produces qualitative data. [1]

(b) Outline **one** open question from the study by Dement and Kleitman (sleep and dreams).

When woken, participants were asked to describe the content of their dream into a tape recorder. [1]

2 In the study by Baron-Cohen et al. (eyes test), two of the groups of participants used were:
- Group 1 – AS/HFA participants
- Group 4 – participants from the general population.

(a) State **two** similarities between the participants in Group 1 and Group 4.

1 *Both groups were all male.*

2 *Both groups were adults with similar mean IQs (116 and 115).*

[2]

(b) State **one** difference between how Group 1 and Group 4 were selected, other than being diagnosed with AS/HFA.

Group 1 were volunteers (self-selected through adverts), whereas Group 4 were randomly selected from the general population. [1]

© UCLES 2021

stemup.co.uk

3 The study by Piliavin et al. (subway Samaritans) raised ethical issues of 'right to withdraw' and 'deception'.

Explain why the study by Piliavin et al. raised these ethical issues.

right to withdraw *Participants should be able to leave a study at any time. Piliavin et al.'s passengers did not know they were in a study or that there were observers in the carriage, so they could not withdraw.*

deception *Participants should not be lied to or misled. The passengers were deceived because they believed the victim with a cane, or who smelled of alcohol, had really collapsed, when he was a stooge acting a part.*

[4]

4 In the study by Pepperberg (parrot learning) the sample was only one parrot, Alex. This parrot could have differed from other parrots of the same species.

Explain how **two** possible differences could have affected Pepperberg's study.

1 *Alex could have been more intelligent than most grey parrots, which would make grey parrots in general seem able to understand the concepts of same and different when most could not.*

2 *Alex had been trained in a laboratory for years and heard a lot of human speech, so he was more familiar with the objects and materials than wild parrots and may have performed better, so the results may not generalise.*

[4]

5 The mean and the mode are measures of central tendency.

(a) Explain why the mean could be a better measure of central tendency than the mode.

The mean uses the values of all the scores, including extreme ones, so it represents all the data, whereas the mode only shows the most frequent score and ignores the values of the others.

[2]

(b) Explain why a researcher may have to use the mode instead of the mean.

When the data are nominal (in categories, e.g. yes/no answers), so a mean cannot be calculated. [1]

6 Describe participant observation and non-participant observation, using any examples.

In a participant observation the researcher joins in with the activity being studied, so they appear to be one of the participants and have a social role in the situation. It can be overt or covert, and interacting with the group can give greater insight into the reasons for behaviour. For example, in Piliavin et al. the observers sat in the subway carriage looking like ordinary passengers while recording who helped the victim; or an observer might join in children's games to record their behaviour. In a non-participant observation the observer is not involved in the situation and watches from a distance, e.g. through a one-way mirror or using a camera. Because they are not involved in the emotions of the situation they can be more objective, and there are fewer demand characteristics. For example, Bandura et al. observed the children's aggression through a one-way mirror, and Milgram also observed participants through a one-way mirror.

[6]

© UCLES 2021

stemup.co.uk

Section B

Answer **all** questions in this section.

7 Two friends, Zvi and Bill, are conducting a natural experiment. They are collecting data by observing whether young or old people are more likely to become frustrated when trying to get on a busy train.

(a) (i) Suggest how the friends could operationalise their independent variable.

Young = aged under 20 years; old = aged over 60 years (judged from appearance). [1]

(ii) For the way you suggested in **(a)(i)**:

Explain **one** strength of operationalising the independent variable in this way.

It would be easy to tell who was young and who was old, because people under 20 and over 60 look very different, so Zvi and Bill would agree on each person's category (objective and reliable) without having to ask anyone their age. [2]

(b) Explain what is meant by a 'dependent variable', using Zvi and Bill's study as an example.

The dependent variable is the variable that is measured, which changes because of the IV. Here it is frustration, e.g. the number of times each person pushes, sighs or complains while trying to get on the train. [2]

(c) The friends agree that they should collect data over several days but have different plans for when they should do this.

(i) Zvi plans to collect data at the same time each day.

Explain **one** strength of Zvi's plan.

It improves standardisation: situational variables that could affect frustration, such as how busy the train is or how tired people are, will be similar every day, so any difference is more likely to be due to age.

..... [2]

(ii) Bill plans to collect data over a range of different times each day.

Explain **one** strength of Bill's plan.

It makes the findings more generalisable: the people travelling change over the day (e.g. commuters after work, shoppers at midday), so the sample is more varied and the results are not limited to one type of traveller or one level of crowding. [2]

stemup.co.uk

8 Jacy is conducting a laboratory experiment to investigate the effect of eating chocolate on mood. She predicts that eating chocolate will make people happier than not eating chocolate. She has 20 participants.

(a) Explain why Jacy is able to make a causal prediction.

Because it is an experiment, Jacy manipulates the IV (eating chocolate or not) and controls other variables, so any change in the DV, happiness, must be caused by eating the chocolate.

..... [2]

(b) Jacy gave each participant a number from 1 to 20. She has a hat which contains cards that are numbered from 1 to 20. She takes 10 cards from the hat and uses the 10 people with those numbers as her control group. She uses the remaining 10 participants as her experimental group.

(i) Name the process Jacy is using in this part of her study.

Random allocation (to conditions).

..... [1]

(ii) Explain **one** strength of this part of Jacy's procedure.

Random allocation means each person has an equal chance of being in the chocolate group or the control group, so individual differences are evened out. For example, people who are naturally bad-tempered or already in a happy mood should be spread evenly between the two conditions, so any difference in mood is due to eating chocolate, not participant variables, and Jacy cannot bias who goes into which group. ..... [3]

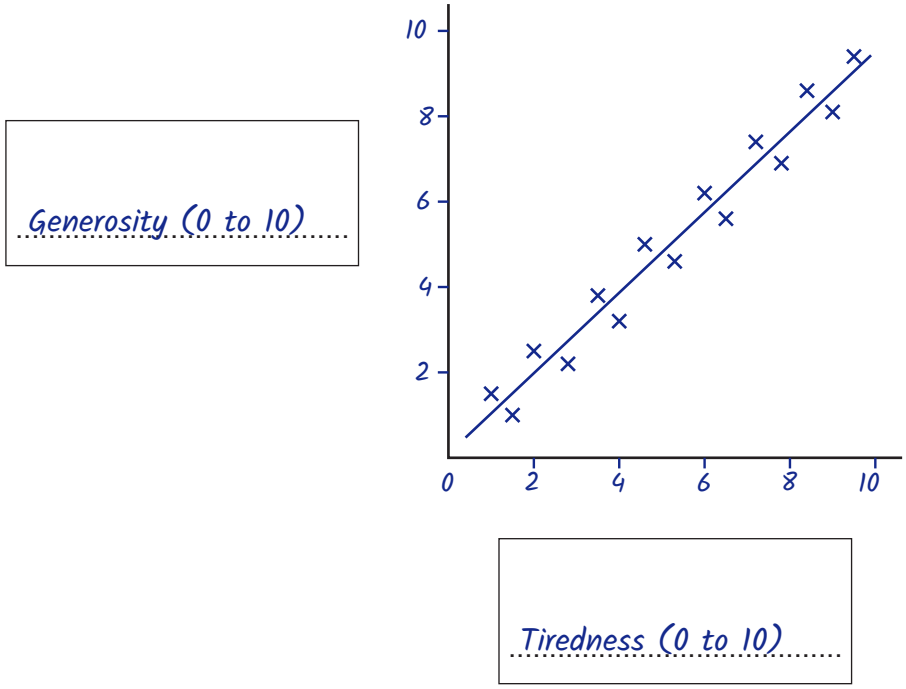
(c) Explain the experimental design that Jacy is using.

An independent measures design: different participants are in each level of the IV, so 10 participants eat chocolate (experimental group) and the other 10 do not eat chocolate (control group).

..... [2]

9 Dr Lee is measuring two variables, tiredness and generosity, on scales of 0 to 10. He finds a strong positive correlation between the two variables.

(a) Sketch a graph on the axes below using crosses to show the pattern of Dr Lee's results. You **must** label the axes. [4]



(b) Write a null hypothesis for Dr Lee's study.

There will be no correlation between tiredness and generosity.

..... [1]

(c) Suggest **one** advantage of using correlations compared to experiments.

Correlations can study variables that cannot be manipulated, e.g. because it would be unethical to deprive people of sleep to make them very tired, whereas an experiment must manipulate the IV.

..... [2]

© UCLES 2021

stemup.co.uk

Section C

Answer **all** questions in this section.

10 Seth is planning a case study to investigate the communication and emotion in a family. The family consists of a mother, father, grandmother and one son. They live in a remote house and do not interact with other people often.

(a) Describe how Seth could conduct a case study to investigate the communication and emotion in this family.

Seth would study this one family in depth in their natural setting, their remote house, visiting for a whole day once a week for 3 months. He would use several techniques so that the data can be triangulated.

1) Observation: an overt, naturalistic, non-participant observation using video cameras in the kitchen and living room (with consent), recording mealtimes and evenings. He would use event sampling with behavioural categories for communication, e.g. "asks a question", "gives an instruction", "interrupts", "ignores", and for emotion, e.g. "smiles/laughs", "shouts", "cries", "hugs/touches", noting who does it to whom (e.g. son to grandmother), so each pair can be compared.

2) Semi-structured interviews with each family member alone, e.g. "Describe how you feel when the family eats together" and "Who do you talk to when you are upset, and why?", with follow-up questions. The son's interview would use simple language.

3) A questionnaire: each person rates how close they feel to each other family member (1 = not close, 10 = very close) and how often they feel happy, angry or lonely (never / sometimes / often).

4) Each person keeps a daily diary of their main emotions and any disagreements.

Analysis: tallies from the observations give the frequency of each communication and emotion category for each pair, shown in bar charts, and the mean closeness rating of each pair is compared. The qualitative data from the interviews and diaries are analysed for themes, e.g. "grandmother as peacemaker". Seth would triangulate, checking whether what the family say matches what he observes.

Ethics: all four give informed consent (the parents also for the son), are told they

stemup.co.uk

can withdraw, pseudonyms keep data confidential, and they are debriefed at the end.

[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.

With only Seth coding the videos, his interpretation of emotions (e.g. whether a raised voice counts as "shouting") may be subjective and inconsistent, so the data may not be reliable. To overcome this, he could train a second observer using the same operational definitions (e.g. shouting = speaking loudly with an angry facial expression). Both would code the same videos independently and their tallies would be correlated to check inter-rater reliability, with any category that has low agreement discussed and redefined.

[4]

BLANK PAGE

© UCLES 2021

stemup.co.uk

BLANK PAGE

Permission to reproduce items where third-party owned material protected by copyright is included has been sought and cleared where possible. Every reasonable effort has been made by the publisher (UCLES) to trace copyright holders, but if any items requiring clearance have unwittingly been included, the publisher will be pleased to make amends at the earliest possible opportunity.

To avoid the issue of disclosure of answer-related information to candidates, all copyright acknowledgements are reproduced online in the Cambridge Assessment International Education Copyright Acknowledgements Booklet. This is produced for each series of examinations and is freely available to download at www.cambridgeinternational.org after the live examination series.

Cambridge Assessment International Education is part of the Cambridge Assessment Group. Cambridge Assessment is the brand name of the University of Cambridge Local Examinations Syndicate (UCLES), which itself is a department of the University of Cambridge.

© UCLES 2021

stemup.co.uk

Cambridge Assessment International Education

Cambridge International AS & A Level

CANDIDATE NAME: StemUp Model Solution

CENTRE NUMBER | | | | | |

CANDIDATE NUMBER | | | | |

7561043946

PSYCHOLOGY **9990/23**

Paper 2 Research Methods **May/June 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.

© UCLES 2021

[Turn over

stemup.co.uk

Section A

Answer **all** questions in this section.

1 **(a)** State what is meant by the 'aim' of a study.

The aim is the purpose of the investigation; what the study intends to find out or show. [1]

(b) Outline **one** aim of the study by Piliavin et al. (subway Samaritans).

To investigate whether the race of the victim (black or white) affects how often and how quickly passengers help. [1]

2 The study by Canli et al. (brain scans and emotions) raised ethical issues of 'right to withdraw' and 'protection from harm'.

Explain why the study by Canli et al. raised these ethical issues.

right to withdraw *Participants should be able to leave at any time if uncomfortable. In Canli et al. participants lay in an fMRI scanner with their heads held still, so it was hard to get out quickly, e.g. if they felt claustrophobic.*

protection from harm *Participants should not face more risk than in everyday life. Canli et al. deliberately showed negative, unpleasant images, which could cause distress, and fMRI is risky for anyone with metal in their body.*

[4]

© UCLES 2021

stemup.co.uk

3 In the study by Laney et al. (false memory), random allocation was used.

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

Participants are placed into the levels of the IV by chance, so each has an equal chance of being in any condition. Laney's participants were put in the "love asparagus" (false memory) group or the control group by chance.

..... [2]

(b) Explain **one** strength of using random allocation in this study.

It reduces confounding participant variables (individual differences). For example, people who already loved asparagus, or who were more easily misled into false memories, would be spread evenly between the two groups.

..... [2]

4 In the study by Bandura et al. (aggression), children were shown a room full of attractive toys to play with but were told they were for other children.

Explain **one** of the two reasons Bandura et al. gave for doing this.

To arouse mild aggression by frustrating them, so all the children were equally likely to be aggressive in the next room. Then low aggression in the non-aggressive model condition must be due to the model, not to the children not being aroused.

..... [2]

5 Two studies are using different methods to investigate the topic of dreaming in deaf people:
- Dr Kahlil is studying Joseph, who is deaf and has dreams about people using sign language.
- Dr Hart is studying six deaf people and six hearing people to compare the length of their REM periods.

(a) Explain which **one** of these investigations is a case study.

Dr Kahlil's, because he studies just one person, Joseph, in depth (his sign-language dreams in detail), whereas Dr Hart compares two groups of six people.

[2]

(b) Explain **one** strength of using a case study to investigate this topic.

Deaf people may dream differently from hearing people, so their dreams are hard to interpret. A case study can use several techniques, e.g. interviews in sign language, dream diaries and EEG, so the researcher can check their interpretation matches what was meant.

[2]

6 Describe positive correlations and negative correlations, using any examples.

A correlation looks for a relationship between two measured co-variables. In a positive correlation both variables increase together; as one increases, so does the other, and the correlation coefficient is between 0 and +1. For example, Dement and Kleitman found that the longer participants had been in REM sleep before being woken, the more words there were in their dream narratives; and Canli et al. found that the more an image activated the left amygdala, the more likely it was to be remembered. In a negative correlation the variables change in opposite directions; as one increases, the other decreases, and the coefficient is between 0 and −1. For example, Baron-Cohen et al. found that the higher a person's AQ score, the lower their Eyes Test score; and the more hours of sleep people get, the fewer errors they make on a concentration task.

[6]

stemup.co.uk

Section B

Answer **all** questions in this section.

7 Jane is planning a laboratory experiment with two groups of participants. One group speaks one language fluently and the other group speaks two or more languages fluently. Jane thinks this may affect her dependent variable of how well they learn 'nonsense' words. These are words that read like real words but have no meaning.

(a) Jane has two possible ways to measure her dependent variable:
- by timing how quickly the participant can recall 10 nonsense words correctly
- by counting the number of spelling errors made when recalling 10 nonsense words.

(i) Explain **one** strength of **one** of Jane's measures of her dependent variable.

Timing how quickly the participant recalls the 10 nonsense words is objective and quantitative, so Jane cannot be biased in her judgement and can easily compare learning speed between the one-language and two-language groups.

..... [2]

(ii) Explain **one** weakness of the measure of the dependent variable that you have referred to in **(a)(i)**.

Timing may not be valid, because people differ anyway in how quickly they learn and respond, so the times would depend on individual differences such as reaction speed rather than on the number of languages spoken.

..... [2]

(b) Suggest **one** way that Jane can operationalise 'speaking a language fluently'.

Being able to speak the language easily and without many pauses, e.g. holding a 10-minute conversation with a native speaker and coping with everyday life in it, such as buying food or understanding a film.

..... [2]

© UCLES 2021

stemup.co.uk

(c) Jane used an independent measures design in her experiment.

Explain **one** reason why it would have been better for Jane to use a matched pairs design than an independent measures design.

Matched pairs reduces participant variables; Jane could match each one-language speaker with a two-language speaker of the same age and IQ, which affect how well people learn nonsense words, so any difference is due to the number of languages spoken. [2]

8 Kofi is planning an observation of aggression in sport. He will attend a range of different sporting events to record aggressive behaviour. At first, Kofi is not certain what kinds of behaviours he will see.

(a) (i) Explain why, at first, Kofi uses an unstructured observation.

At first he does not know which aggressive behaviours he will see in different sports, so he records all behaviours. This lets him decide which aggressive behaviours to use as categories for each sport later. [2]

(ii) After watching different sports, Kofi can now use a structured observation.

Explain **one** strength of using a structured observation in Kofi's study.

He would have a specific list of aggressive behaviours (e.g. pushing, shouting at the referee) to tally, so he can concentrate on observing rather than writing, and can compare the same behaviours across different sports. [2]

© UCLES 2021

stemup.co.uk

(b) Kofi has decided to be a covert observer.

(i) Suggest **one** strength of being a covert observer in this study.

The players and spectators would not know they are being watched, so they would not hide or exaggerate their aggression. Their behaviour would be natural, so the findings are more valid.

..... [2]

(ii) Suggest **one** weakness of being a covert observer in this study.

To keep his role hidden he must sit among the spectators, so he may not be able to see all the aggression on the pitch or note it down, so some aggressive acts are missed, reducing validity.

..... [2]

9 Naia wants to interview young people about how environmental issues make them feel. She wants to collect data about emotional responses to issues such as recycling. She has decided to conduct a structured interview.

(a) Suggest **one** open question Naia could ask about emotions.

Describe how you feel when you see people not recycling their rubbish.

..... [1]

(b) Suggest **one** closed question Naia could ask about emotions.

How upset do you feel when you see litter, on a scale of 1 (not at all) to 10 (very upset)?

..... [1]

(c) Suggest **one** weakness of using a structured interview in Naia's study.

Naia cannot ask follow-up questions to explore an interesting answer, so her understanding of each young person's emotions about issues such as recycling will be incomplete and she cannot explore their individual concerns.

..... [2]

(d) One participant says that Naia's questions are too personal.

Explain **two** ethical guidelines that are important to overcome this problem.
Do **not** refer to protection from harm or right to withdraw in your answer.

1 *Informed consent: participants should understand what they will be asked before agreeing. Naia should tell them beforehand that the questions are about their own emotions, which can be personal, so they can decide whether to take part.*

2 *Privacy: participants should not feel their personal thoughts are invaded. Naia could change the questions to ask about other people, e.g. "Do you disapprove when your neighbours do not recycle their rubbish?"*

[4]

Section C

Answer **all** questions in this section.

10 Riley notices that children at his school appear to be nicer to each other at morning play time than at afternoon play time.

(a) Describe how Riley could conduct a natural experiment to investigate when the children are nicer.

Riley's natural experiment uses an IV that occurs naturally and is not manipulated: the time of play time, morning break (10:30 to 10:45) or afternoon break (14:00 to 14:15). The DV is how nice the children are to each other, measured by a structured observation in the school playground. The participants are the children aged 7 to 9 who play in the main playground; as the same children play at both times, it is a repeated measures design.

Behavioural categories operationalise "nice": helping another child (e.g. picking them up after a fall), sharing equipment or food, inviting a child to join a game, saying something kind (e.g. a compliment) and comforting a child who is upset.

Procedure: Riley and a second trained observer stand at a fixed position at the edge of the playground (by the teachers' bench) as non-participant observers, so they can see the whole area. They use event sampling, each tallying every nice behaviour they see in the 15 minutes of each break. This is done at both play times every school day for 2 weeks (10 mornings and 10 afternoons), and only on dry days, so the weather is controlled; the same number of children must be outside at both times. The observation is overt, but the children are used to staff in the playground, so they should behave normally.

Ethics: the head teacher and the parents give consent, no names are recorded and data is kept confidential.

Analysis: the total number of nice behaviours per break is calculated, and the mean for the morning play times is compared with the mean for the afternoon play times, shown in a bar chart, with the range showing variation between days. The two observers' tallies are correlated to check inter-rater reliability. If the morning mean is

stemup.co.uk

higher, this supports Riley's idea that the children are nicer to each other in the morning.

[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.

In a busy playground it is hard for the observers to see every nice behaviour, and kind words or compliments may not be heard, so some behaviours are missed and the data are not valid. To overcome this, Riley could video-record the playground from several fixed cameras with microphones and code the recordings afterwards, pausing and replaying them so that no nice behaviour is missed, using the same behavioural categories for every break.

[4]

BLANK PAGE

© UCLES 2021

stemup.co.uk

BLANK PAGE

Permission to reproduce items where third-party owned material protected by copyright is included has been sought and cleared where possible. Every reasonable effort has been made by the publisher (UCLES) to trace copyright holders, but if any items requiring clearance have unwittingly been included, the publisher will be pleased to make amends at the earliest possible opportunity.

To avoid the issue of disclosure of answer-related information to candidates, all copyright acknowledgements are reproduced online in the Cambridge Assessment International Education Copyright Acknowledgements Booklet. This is produced for each series of examinations and is freely available to download at www.cambridgeinternational.org after the live examination series.

Cambridge Assessment International Education is part of the Cambridge Assessment Group. Cambridge Assessment is the brand name of the University of Cambridge Local Examinations Syndicate (UCLES), which itself is a department of the University of Cambridge.

© UCLES 2021

stemup.co.uk