Surname	StemUp Model Solution	Centre Number	Candidate Number
First name(s)			2

GCE AS

B290U20-1

S25-B290U20-1

TUESDAY, 20 MAY 2025– AFTERNOON

PSYCHOLOGY – AS component 2
Psychology: Investigating Behaviour

1 hour 45 minutes

For Examiner's use only		
Question	**Maximum Mark**	**Mark Awarded**
1.	**8**	
2.	**2**	
3.	**6**	
4.	**6**	
5.	**8**	
6.	**10**	
7.	**22**	
8.	**18**	
Total	**80**	

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ADDITIONAL MATERIALS

In addition to this paper you may require a calculator and a ruler.

INSTRUCTIONS TO CANDIDATES

Use black ink or black ball-point pen. Do not use gel pen or correction fluid.

You may use a pencil for graphs and diagrams only.

Write your name, centre number and candidate number in the spaces at the top of this page.

Answer **all** questions.

Write your answers in the spaces provided in this booklet. If you run out of space, use the additional page(s) at the back of the booklet, taking care to number the question(s) correctly.

INFORMATION FOR CANDIDATES

The number of marks is given in brackets at the end of each question or part-question.

You are reminded of the need for good English and orderly, clear presentation in your answers.

Assessment will take into account the quality of written communication used in your answers.

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Section A

Answer **all** questions.

1. Define the following terms:

(a) 'sampling frames'. [2]

A sampling frame is a list or identifiable subgroup of the target population (e.g. all students on a school register, or people living in London) that is used to draw a sample when it is unrealistic to study the whole target population.

(b) 'independent variables'. [2]

The independent variable is the variable that the psychologist deliberately manipulates and controls (e.g. the conditions of an experiment) in order to see how it affects the dependent variable, i.e. behaviour.

(c) 'social desirability'. [2]

Social desirability is when participants give the responses they think will show them in the best possible light, rather than their true thoughts, feelings or behaviour, so the data is not a true reflection of what they really think.

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(d) 'external reliability'. [2]

External reliability is the extent to which a test or measure produces consistent results over several occasions, e.g. the same participants get similar scores when the test is repeated at a later date (test-retest).

2. Identify what the following symbols represent:

(a) < [1]

Less than (e.g. $p < 0.05$ means the probability is less than 0.05).

(b) ≥ [1]

More than or equal to (greater than or equal to).

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3. Using psychological knowledge, critically assess whether conducting research on-line is more appropriate than conducting research in a laboratory environment. [6]

Conducting research on-line can be more appropriate than a laboratory in terms of sampling. On-line, the researcher can reach a far larger and more diverse group of participants from many countries, so the sample is less culturally biased and more generalisable than a lab sample, which is often limited to local people or university students who can travel to the lab.

On-line research is also more cost effective, as it uses free or cheap software and needs no building, equipment or researcher present, whereas a laboratory study is expensive and time consuming to run, so far fewer participants can be tested in a lab.

However, a laboratory is more appropriate in terms of control and validity. In a lab the researcher is present throughout and can control extraneous variables such as noise, distractions or whether participants confer or look up answers, so internal validity is higher. On-line, the researcher cannot be sure who is actually taking part, whether they are concentrating, or whether they answer honestly, which reduces validity.

A laboratory is also more ethical. The researcher can check that valid consent is given, monitor participants for distress, and be certain that they have read and understood the debrief, whereas on-line participants may simply close the

Additional space for Question **3** only:

window and leave without being debriefed or given the right to withdraw their data.

Overall, on-line research is more appropriate when large, diverse samples are needed cheaply (e.g. surveys), but a laboratory is more appropriate when tight control, high internal validity and careful ethical protection are essential, so neither is always better.

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4. (a) Explain what is meant by a 'matched pairs' experimental design. [2]

Matched pairs is a type of independent groups design in which participants are matched on characteristics relevant to the study (e.g. age, gender, IQ). One member of each pair completes condition A and the other completes condition B.

Additional space for Question **4**(a) only:

(b) Evaluate the use of a 'matched pairs' experimental design in psychological research. [4]

A strength is that there are no order effects (such as practice or fatigue), because each participant only takes part in one condition. For the same reason there is less chance of demand characteristics, as participants are less likely to guess the aim of the study by seeing both conditions.

A further strength is that participant variables are reduced compared with an independent groups design, because the researcher has matched participants on the characteristics most relevant to the study, so differences in the DV are more likely to be due to the IV.

However, there can never be complete control of participant variables, because pairs can only be matched on some characteristics, so differences between the groups could still be due to characteristics that were not matched (e.g. motivation).

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Additional space for Question **4**(b) only:

Matched pairs is also time consuming and difficult, as the researcher must pre-test participants to match them, and more participants are needed than in a repeated measures design to get the same number of results; if one member of a pair drops out, both sets of data are lost.

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5. (a) Using examples from psychology, explain the ethical issue 'valid consent'. [4]

Valid consent means giving participants enough information about the study, in a form they can understand, so that they can make an informed choice about whether they wish to take part, and they should know they have the right to withdraw.

For example, in Milgram's (1963) study participants were deceived that the study was about memory and learning and that the shocks were real, so they could not give valid consent. With children, such as in Bandura's research, valid consent must be gained from parents or guardians as children cannot fully understand.

(b) Using examples from psychology, explain the following ethical issue 'working with animals'. [4]

Working with animals requires researchers to follow relevant legislation such as the Animals (Scientific Procedures) Act 1986 and to obtain a licence, granted after weighing up the costs to the animals against the benefits of the research.

Researchers should replace animals where possible (e.g. with computer simulations or video records), use the smallest number of animals necessary, and choose a species that is suitable for the research. For example, Harlow's research separated infant rhesus monkeys from their mothers, causing long-term distress, which would not be allowed today.

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6. Evaluate the methodology and sample used in Milgram's (1963) research '*Behavioural study of Obedience*'. [10]

Milgram's (1963) methodology was a controlled observation in a laboratory at Yale University. A strength is that several observers watched each participant through a one-way mirror, which increases the internal (inter-observer) reliability of the recording of behaviour such as sweating, trembling, stuttering and nervous laughter. However, the observers openly discussed their surprise at what they were witnessing, which may have affected how they interpreted the participants' behaviour, so observer bias may reduce validity.

Another strength is that behaviour was recorded with an objective, quantitative measure: the maximum shock level on the 30-switch generator (15 to 450 volts) that each participant was willing to give. This is easy to compare and replicate and is high in internal validity, as all 40 participants went to 300 volts and 65% (26) continued to the full 450 volts. However, this measure does not give any insight into how participants were feeling or why they obeyed, although Milgram did collect some qualitative data and interviewed participants afterwards.

The procedure was highly standardised: the same experimenter, the same confederate 'learner' (Mr Wallace), the same scripted answers and the same four verbal prods were used, which increases reliability and allowed later variations to be compared. However, the task of shocking a stranger for wrong answers on a word-pair task lacks mundane realism, so the findings may lack ecological validity; Orne and Holland argued participants may have guessed the shocks were fake, although Milgram reported that most participants believed they were real.

Turning to the sample, it was 40 men aged 20 to 50 from New Haven, recruited through a newspaper advertisement and postal requests and paid

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$4.50. A strength is that it contained a range of ages and occupations (from skilled and unskilled workers to professionals) and educational backgrounds, so it was more representative than a student sample.

However, the sample was all male, so it is prone to beta bias and the findings cannot be generalised to women, although this was accepted scientific practice

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at the time. It was also limited to one location (New Haven, USA), so it is culturally biased and cannot be generalised to other cultures; cross-cultural replications have produced mixed findings, with some finding higher and some lower obedience.

The sample was self-selecting, which may mean participants were more likely to take the research seriously and behave genuinely; however, only certain types of people volunteer, for example people who are more helpful or obedient, which reduces generalisability.

In conclusion, Milgram's methodology was reliable and objective but limited by possible observer bias and low ecological validity, while his varied but all-male, American, volunteer sample limits how far the findings can be generalised, although later replications suggest the findings are broadly valid.

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Section B

Answer **all** questions.

7. A dance teacher investigated if dancing impacted happiness. He asked 20 of his dance students (aged 16 years old) to participate. All participants were tested at the same time in their dance studio. In condition one, every participant listened to pop music for 20 minutes whilst sitting quietly. In condition two, the same participants listened to the same pop music for 20 minutes whilst copying dance moves from the dance teacher. After each condition, the participants were asked to self-report their ratings of happiness using the following scale: 0 = no happiness to 10 = highest level of happiness.

(a) State an operationalised null hypothesis for this research. [2]

There will be no significant difference in self-reported happiness ratings (0 = no happiness to 10 = highest level of happiness) between participants who listened to pop music whilst copying dance moves and participants who listened to pop music whilst sitting quietly.

(b) (i) Identify the sampling technique used to select participants in this research. [1]

Opportunity sampling.

(ii) Explain **one** strength and **one** weakness of the sampling technique used in this research. [2 + 2]

Strength: it is quick and convenient, as the dance teacher simply asked 20 of his own dance students who were readily available in his dance studio, so it cost no money and was less time consuming than other techniques such as random sampling.

Weakness: the sample is likely to be biased, as all participants were 16-year-old students from one dance studio who already like dancing, so

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they are unrepresentative and the dance teacher would struggle to generalise his results on dancing and happiness to other people.

(c) Identify and explain **one** issue that could affect the validity of this research. [3]

Order effects. The design was repeated measures and all participants did condition one (sitting quietly) first and condition two (dancing) second, with the same pop music, and no counterbalancing.

So the difference in happiness ratings may not be due to dancing: participants may have become bored of hearing the same music again in condition two, lowering happiness, or more relaxed and familiar with the studio, raising it.

This means the dance teacher cannot be sure the IV caused any change in happiness, so internal validity is reduced.

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(d) Identify and fully justify which inferential statistical test would be the most appropriate to analyse the data in this research. [4]

The Wilcoxon (matched pairs signed ranks) test would be most appropriate.

Test of difference: the dance teacher is looking for a difference in happiness ratings between dancing and sitting quietly.

Related data: the same 20 dance students took part in both the sitting and dancing conditions, so it is a repeated measures design.

Level of measurement: the self-reported happiness ratings on the 0 to 10 scale are ordinal level data, as the intervals between points are subjective and not equal.

Following the initial research, the dance teacher decided to collect some qualitative data on the happiness of participants after they danced. He decided to use a structured interview.

(e) (i) Suggest **one** question that could be used in this structured interview that would produce qualitative data. [2]

"Please explain, in your own words, why you felt happier or less happy when you were dancing to the pop music compared to sitting quietly."

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(ii) Explain why the question you suggested in (e)(i) would produce qualitative data. [2]

It is an open question, so the dance students must answer in their own words, producing descriptive data (words) about how dancing made them feel happy, rather than numerical scores like the 0 to 10 rating.

(f) Explain **one** strength and **one** weakness of using a structured interview in this research. [2 + 2]

Strength: structured interviews use the same standardised, pre-set questions in the same order for every dance student, so the interview on how dancing affects happiness can easily be repeated by other researchers to check reliability, and answers can be compared between students.

Weakness: the dance teacher cannot ask follow-up questions he had not thought of. So if a student gives an interesting answer, e.g. that dancing made them feel happier because they were with friends, he cannot probe further, so less detailed and less valid data on happiness is collected.

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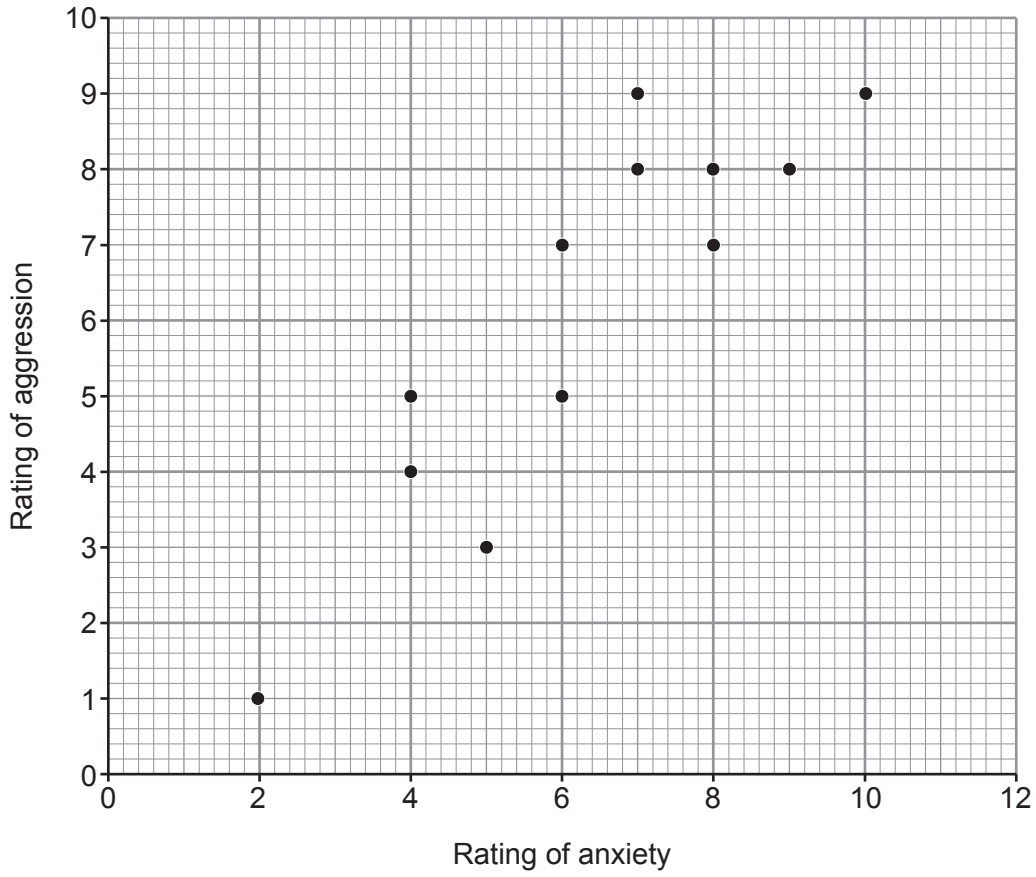
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8. A criminal psychologist hypothesised that criminals who are more aggressive will also be more anxious. She visited a prison and gave inmates a questionnaire to complete that contained the following two questions:

> How anxious are you on a scale of 0–10? (0 = not anxious at all, 10 = very anxious)
> How aggressive are you on a scale of 0–10? (0 = not aggressive at all, 10 = very aggressive)

These were her results:

Figure 1: Graphical representation displaying the aggression and anxiety ratings



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(a) (i) Identify the type of graphical representation used in **Figure 1** to display the data in this research. [1]

Scattergram (scatter diagram).

(ii) Explain why the graphical representation you identified in (a)(i) was appropriate for this research. [2]

A scattergram shows the relationship between two co-variables, here the rating of anxiety and the rating of aggression of each inmate, which are both measured at ordinal level, so each inmate is plotted as one point.

(iii) Explain why the pattern in the graphical representation (**Figure 1**) is positive. [2]

The points go from bottom left to top right: as the inmates' ratings of anxiety increase, their ratings of aggression also increase, e.g. an anxiety of 2 has an aggression of 1, while 10 has 9.

(b) Identify the level of measurement of the anxiety rating in this research. [1]

Ordinal.

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(c) Explain **one** strength and **one** weakness of using a correlational study in this research. [2 + 2]

Strength: correlations show the direction and strength of a relationship, so the criminal psychologist can see if the inmates' anxiety ratings and aggression ratings are related, and how strongly, which can be used as a basis for further research on anxiety and aggression.

Weakness: correlations do not show cause and effect, so she cannot conclude that high anxiety causes inmates to be more aggressive (or vice versa); a third variable, such as the stress of prison life, may cause both high anxiety and high aggression ratings.

(d) The observed (calculated) value was 0.85. The critical value at 0.05 was 0.503. Explain why the criminal psychologist should accept or reject the null hypothesis in this research. [2]

She should reject the null hypothesis, because the observed value of 0.85 is higher than the critical value of 0.503 at $p \leq 0.05$, so the positive correlation between inmates' anxiety and aggression ratings is significant and unlikely to be due to chance.

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(e) (i) Describe **one** ethical issue that may arise when conducting this research. [2]

Confidentiality: the inmates' anxiety and aggression ratings are very personal and could be used against them (e.g. by prison staff or at parole), so third parties should not be able to trace the ratings back to individual inmates.

(ii) Explain how the risk posed by the ethical issue in (e)(i) will be managed in this research. [2]

The criminal psychologist should not record the inmates' names on the questionnaire; instead each inmate is given a participant number, data is stored securely, and only anonymous group results are published.

(f) The psychologist sends her research to a psychology journal and the editor tells her the research will have to undergo peer review. A sport psychologist was asked to conduct the peer review. Explain **one** reason why the sport psychologist may not be appropriate to conduct the peer review for this research. [2]

Peer review should be done by an expert in the same field. This research is on criminals' aggression and anxiety, so a sport psychologist, who specialises in a different field, may lack the expertise to judge its validity.

END OF PAPER

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