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

GCE A LEVEL

A290U20-1

Z22-A290U20-1

WEDNESDAY, 8 JUNE 2022 – MORNING

PSYCHOLOGY – A level component 2
Psychology: Investigating Behaviour

2 hours 15 minutes

For Examiner's use only		
Question	**Maximum Mark**	**Mark Awarded**
1.	**10**	
2.	**6**	
3.	**4**	
4.	**2**	
5.	**6**	
6.	**14**	
7.	**22**	
8.	**8**	
9.	**9**	
10.	**19**	
Total	**100**	

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01

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.

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 necessity for good English and orderly presentation in your answers.

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

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SECTION A – Principles of Research

Answer **all** questions.

1. (a) Explain what is meant by 'primary sources' in psychology. [2]

Primary sources are data collected first-hand by the researcher themselves, specifically for their own investigation, e.g. through an experiment, questionnaire, interview or observation they have designed.

(b) Explain what is meant by 'secondary sources' in psychology. [2]

Secondary sources are data that already exist and were not collected by the researcher for this study, e.g. existing statistics, previous studies used in a meta-analysis or literature review, or a content analysis of media.

(c) Using examples from psychology, discuss why primary sources may be better than secondary sources. [6]

Primary sources may be more valid because the researcher designs the method to test their hypothesis and controls extraneous variables. For example, Milgram designed a standardised laboratory procedure (same prods, same confederate) so the orders could be shown to cause the shocks. Secondary data was collected by others for a different aim, so it may not measure exactly what is needed.

Primary research may also be more ethical, as the researcher controls how participants are treated and follows BPS guidelines, e.g. adjusting an interview on a sensitive topic if a participant becomes upset.

However, primary data is more time consuming to collect, whereas secondary data, e.g. medical records of drug therapy, already exists, and can show trends over time, e.g. obedience in different decades. So primary sources are more valid but less practical.

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2. (a) Explain the difference between quantitative and qualitative data. [2]

Quantitative data is numerical, measured as numbers or scores (e.g. a memory test score) so it can be statistically analysed, whereas qualitative data is descriptive, usually in words (e.g. interview transcripts), and is not measured numerically.

(b) Evaluate the use of qualitative data in psychological research. [4]

A strength of qualitative data is higher validity: participants can express their views in their own words in rich detail, so it gives insight into why people behave as they do rather than only what they do. It can also be more ethical, as participants are not forced into fixed choices and can explain sensitive experiences fully.

However, it has lower reliability, because the analysis (e.g. thematic analysis) relies on the researcher's subjective interpretation, which is open to bias and hard to replicate. It is also more time consuming to analyse.

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3. Describe the following ways of assessing validity in psychological research:

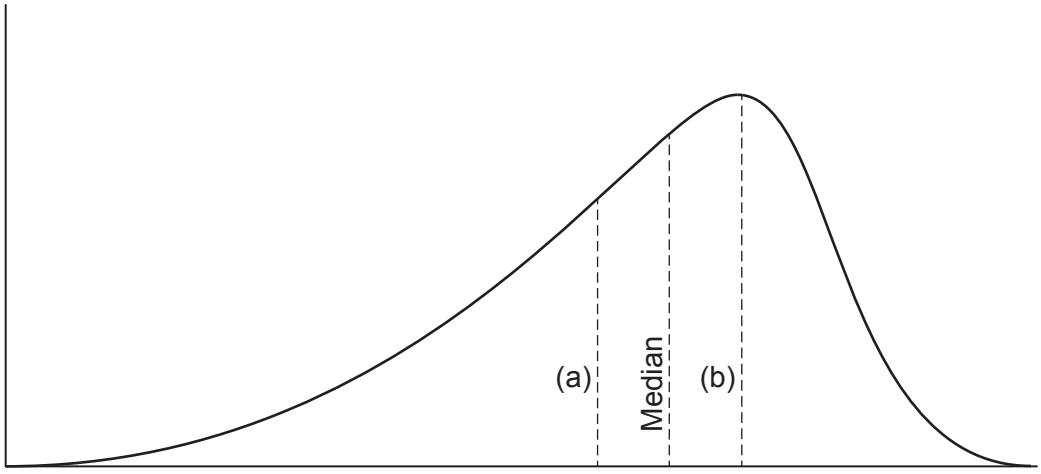
(a) concurrent validity. [2]

A new test is validated by comparing its results with an established test of the same thing that is already known to be valid. If participants score similarly on both, the new test is valid; if not, it must be redesigned.

(b) construct validity. [2]

Checking that a test really measures the theoretical construct it claims to (e.g. intelligence or anxiety) by comparing it with existing definitions of that construct, and redesigning it if it measures something different.

4. Identify which measures of central tendency are represented by (a) and (b) on this diagram:



(a) *Mean* [1]

(b) *Mode* [1]

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5. (a) Define the term 'case studies'. [2]

An in-depth, detailed investigation of one individual, group or event, using several methods (e.g. interviews, observation, tests), usually carried out over a long period (longitudinal), giving a holistic description.

(b) Explain **one** strength and **one** weakness of using case studies in psychological research. [2 + 2]

Strength: case studies produce rich, in-depth data from several methods, so they have high validity and can study rare cases that could not be created ethically in an experiment, e.g. the case of HM gave detailed insight into memory after brain surgery.

Weakness: they focus on one unique person or small group, so findings are hard to replicate and cannot easily be generalised; they also depend on the researcher's interpretation, lowering reliability, and there is a risk to the confidentiality of a well-known individual.

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6. (a) Briefly describe the results found by Milgram in his (1963) research *'Behavioural Study of Obedience'*. [2]

65% of participants (26 of the 40 men) obeyed and gave the maximum 450-volt shock, and all went to at least 300 volts. Many showed extreme tension, e.g. sweating, trembling, digging their nails into their flesh and nervous laughter.

(b) Milgram conducted an observation of obedience using a volunteer (self-selected) sample in a laboratory environment. Evaluate the methodology, sample and location of research used by Milgram in his (1963) research *'Behavioural Study of Obedience'*. [12]

Sample: Milgram used 40 men aged 20 to 50 from New Haven, USA. A strength is that they came from a range of occupations (unskilled, white collar and professional) and ages, so the sample was varied within that population. However, it was all male, so the study is prone to beta bias: the findings cannot be generalised to women, although an all-male sample was accepted scientific practice at the time. It was also limited to one American town, so findings may not generalise to other cultures; cross-cultural replications have given mixed results, e.g. higher obedience in Germany (Mantell) but much lower obedience in Australia, especially among women (Kilham and Mann).

The sample was self-selected through a newspaper advert and mailing, and participants were paid $4.50. Volunteers may take the study seriously and be motivated, but volunteer bias means only certain types of people, perhaps more cooperative or curious, take part, so the sample may be unrepresentative and more obedient than the general population.

Observation: participants were observed through a one-way mirror and filmed. The main measure, the maximum voltage given, was objective and quantitative, increasing validity and reliability. Several observers watched, which increases inter-observer reliability; however, the observers discussed their surprise at what they saw, which may have biased their interpretation of the qualitative behaviour

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(e.g. 14 men showing nervous laughter). Also, observing behaviour does not tell us what participants were thinking or feeling, although Milgram did interview them afterwards.

Location: the laboratory at Yale University allowed strict control of extraneous variables through standardised procedures: the same confederate (Mr Wallace), taped responses and four standard prods. This makes the study replicable, e.g. Burger (2009) found similar obedience rates. However, Perry's analysis of the archives claims the prods were not used consistently after the first trials, reducing reliability. The lab also lacks ecological validity, as giving electric shocks on command is not an everyday task, and the prestige of Yale may have increased obedience: in Milgram's variation in a run-down office in Bridgeport, obedience fell to 47.5%. Orne and Holland also argued participants may have guessed the shocks were fake (demand characteristics). Milgram replied that events such as the Holocaust were not everyday situations either.

In conclusion, Milgram's controlled lab observation gave reliable, objective evidence of high obedience, but the volunteer, all-male American sample and artificial setting mean the 65% figure must be generalised with caution.

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SECTION B – Personal Investigations

You should answer **all** the questions in this section with reference to the investigations carried out in your study of psychology.

INVESTIGATION ONE: An experiment on helping behaviour

7. (a) (i) State the operationalised experimental hypothesis used in your investigation. [2]

Female sixth-form students will pick up more of the 10 books dropped by a confederate in the school corridor within 30 seconds than male sixth-form students will.

(ii) Identify whether the hypothesis in (a)(i) is directional or non-directional and explain why you chose this for your experiment. [1 + 2]

Directional (one-tailed): it predicts that females will help more.

I chose a directional hypothesis because previous research suggested a gender difference in this type of helping: Eagly and Crowley found that women tend to help more in caring, low-risk everyday situations, while men help more in heroic or dangerous ones. Picking up dropped books is a safe, everyday act of kindness, so I predicted that the girls in my sixth form would help more than the boys.

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(b) (i) Identify and explain **one** extraneous variable you considered in your experiment. [1+2]

One extraneous variable was the number of other students in the corridor at the time.

Because of diffusion of responsibility (the bystander effect, Latané and Darley), a student walking past with friends or other people around may assume someone else will help, so they pick up fewer books. This would affect the DV regardless of gender, lowering the validity of my findings.

(ii) Explain how you dealt with the extraneous variable identified in (b)(i). [2]

I only dropped the books when one student was walking alone along the corridor with nobody else in sight, during lesson changeover at the same times each day, so every participant was in the same situation.

(c) Identify the experimental design and explain why it was appropriate in your experiment. [1 + 3]

Independent groups design.

It was appropriate because my IV was gender, a naturally occurring variable, so each participant could only be in one condition: a male student could not also be tested as a female, so repeated measures was impossible. Also, each student only saw the books dropped once, so they could not guess the aim, which would have happened if they had been tested twice, reducing demand characteristics.

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(d) Identify and fully justify the choice of inferential statistical test that you used to analyse the data in your experiment. [4]

I used a Mann-Whitney U test.

It is a test of difference: I was looking for a difference in helping between males and females, not a correlation.

Independent data: different students were in the male and female conditions (independent groups).

Level of measurement: the number of books picked up (0 to 10) is at least ordinal data, so a non-parametric test was suitable.

(e) Explain **two** improvements you could make to your experiment. [4]

1. I could improve reliability by standardising the confederate's behaviour more. In my experiment different friends acted as the confederate and some looked more upset than others when they dropped the books. Using the same confederate, with the same clothes, the same script ('Oh no!') and the same way of dropping the 10 books every time, would mean any difference in helping was due to gender and not the confederate, and the study could be replicated.

2. I could improve validity by using a more representative sample. I only tested 20 students from my own sixth form, who may have recognised me or the confederate and helped because they knew us. Testing students of the same age at several different colleges, where they did not know the confederate, would remove this extraneous variable and allow the findings to be generalised more confidently to 16 to 18 year olds.

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INVESTIGATION TWO: An interview on the use of social media

8. (a) Explain **one** strength and **one** weakness of using an interview in your investigation. [2 + 2]

Strength: my semi-structured interview allowed me to ask follow-up questions, e.g. when a student said Instagram made them feel 'worse', I could ask why, so I gathered detailed, in-depth answers about how social media affected them, giving the data high validity.

Weakness: students may have given socially desirable answers face to face with me, a classmate, e.g. playing down how many hours a day they spent on TikTok, and my analysis of their answers could be biased, which reduces validity and reliability.

(b) Explain **one** ethical issue that you considered in your interview and explain how you dealt with this ethical issue. [2 + 2]

Ethical issue: risk of stress or embarrassment. Some of my questions asked how social media affected students' self-esteem and whether they had experienced negative comments online, which could bring back upsetting memories, e.g. of cyberbullying, causing distress.

To deal with this, I told participants what topics would be covered before they consented, reminded them they could skip any question or withdraw at any time, and did not probe if anyone seemed uncomfortable. At the end I debriefed them and gave them details of the school counsellor.

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SECTION C – Application of research methods to a novel scenario

Answer **all** questions.

9. A primary school headteacher received complaints from a few parents that a teacher was discriminating against the boys in her class. The parents complained the teacher was giving the boys more negative attention and less positive attention than the girls. The headteacher asked an educational psychologist to carry out a participant observation. Using event sampling, she recorded how many times the teacher paid attention to the pupils in the class, noting the gender of the pupil and whether the attention was negative or positive. The educational psychologist's findings are shown in the table below:

Fig.1 – A table to show the number and gender of the pupils receiving positive attention and negative attention.

	Male pupil	**Female pupil**
Number of times pupils receive positive attention	6	18
Number of times pupils receive negative attention	12	4

(a) Describe what is meant by the term 'participant observation'. [2]

A type of observation where the researcher joins the group being studied and takes part in its activities, observing the behaviour of the others from within the group, e.g. as a classroom assistant.

(b) Describe what is meant by the term 'event sampling'. [2]

A method of recording behaviour in an observation where the researcher records every time a specific, predefined event or behaviour occurs (e.g. each time the teacher gives attention), producing a tally.

(c) Identify the level of measurement of the data collected by the researcher in this research. [1]

Ratio data (frequency counts of attention, with a true zero).

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(d) The educational psychologist decided to write up a report about the observation for the headteacher. In the report she decided to convert the data in Fig.1 into percentages.

Fig. 2 – A table to show the percentage and gender of the pupils receiving positive attention and negative attention.

	Male pupil	**Female pupil**
Number of times pupils receive positive attention	15%	(ii)
Number of times pupils receive negative attention	(i)	10%

(i) Showing your workings, calculate the percentage for the number of times negative attention was received by a male pupil. [2]

Total number of times attention was given = 6 + 18 + 12 + 4 = 40

12 ÷ 40 × 100

= 30%

(ii) Showing your workings, calculate the percentage for the number of times positive attention was received by a female pupil. [2]

Total = 40

18 ÷ 40 × 100

= 45%

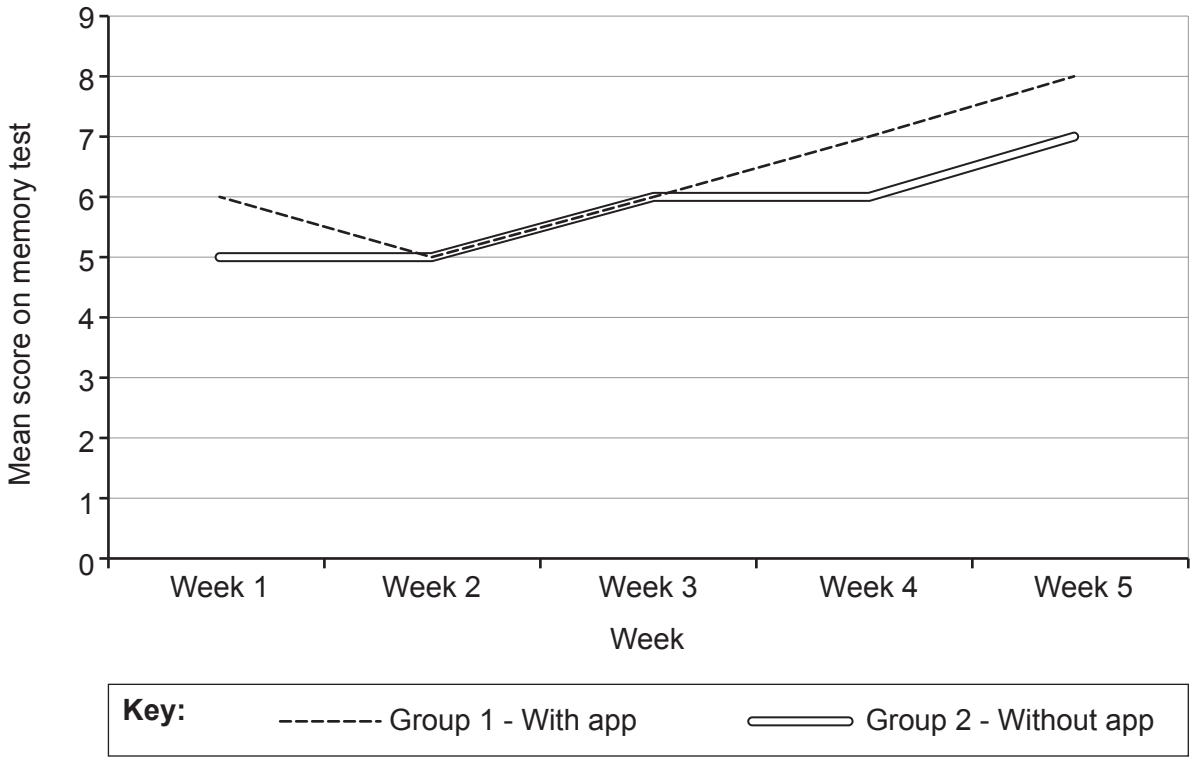
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10. A psychologist investigated the claim a company had made about its brain training app. The company claimed that using the app every day could improve memory. He decided to conduct a matched pairs experimental design, using 20 pairs. Group One used the brain training app for 15 minutes every day, Group Two did not use the app at all. Each of the groups was given a memory test (on a scale of 0-10) once a week for five weeks. The memory test was administered in a laboratory. The psychologist calculated the mean score of each group for each of the weekly tests and the results are shown on the graph below.

Fig.3 – Mean scores on memory test with or without brain training app over five weeks.



(a) (i) Identify the graphical representation used by the psychologist in Fig.3. [1]

A line graph.

(ii) Explain why the graphical representation used by the psychologist in Fig.3 is appropriate in this research. [2]

Because the data are quantitative mean scores on the memory test (0 to 10) measured at regular time intervals, once a week for five weeks, so a line graph clearly shows how each group's memory changed over time and lets the two groups be compared.

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(iii) What conclusion can be drawn from the information in Fig.3? [2]

Both groups improved by the same amount over the five weeks: the mean score for Group 1 (with app) rose from 6 to 8 and for Group 2 (without app) from 5 to 7, an increase of 2 points for each.

(b) Fully explain how the psychologist could have applied the matched pairs experimental design in this research. [3]

He could give all 40 participants a baseline memory test before the study and also record their age, as both may affect memory. He would then pair each participant with the person with the most similar baseline score and age, making 20 pairs, and randomly allocate one member of each pair (e.g. by tossing a coin) to Group 1 (use the app) and the other to Group 2 (no app).

In the final week the psychologist compared the memory scores of the 20 pairs; in 18 of the pairs the participants had different memory scores. The psychologist used a Wilcoxon matched pairs signed ranks test.

(c) Apart from using a matched pairs experimental design, explain **two** reasons why a Wilcoxon matched pairs signed ranks test is appropriate to analyse the data in this research. [2 + 2]

1. It is a test of difference: the psychologist is looking for a difference in the final week's memory test scores between the group who used the brain training app and the group who did not, not a correlation between them.

2. The memory test scores (0 to 10) are at least ordinal data, so a non-parametric test such as the Wilcoxon is suitable; it also suits a small sample (20 pairs) whose scores may not be normally distributed.

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(d) The psychologist used a directional hypothesis and found that the observed (calculated) value was 53.

(i) Using the critical values table, identify which critical value is appropriate in this research. [1]

40 ($n = 18$, $p \leq 0.05$).

n	0.01	0.05
18	27	40
19	32	46
20	37	52
21	42	58
22	48	65

(ii) Explain why the psychologist should accept or reject the null hypothesis in this research. [2]

He should accept the null hypothesis. For a Wilcoxon test the observed value must be equal to or less than the critical value to be significant; the observed value of 53 is greater than the critical value of 40 for $n = 18$ (two tied pairs excluded), so the difference is not significant.

(e) Using your knowledge of psychology, briefly discuss why conducting research in a laboratory may be better than conducting research online. [4]

A laboratory gives a higher level of control, so the impact of extraneous variables is reduced. When the memory test is done in a lab, every participant takes it in the same quiet room, with the same instructions and time limit, whereas online they could be distracted or use notes. Standardised procedures in the lab also make the findings more reliable and replicable.

Online, anyone can take part, so the researcher cannot check the participant's identity or age, which risks a lack of valid consent from vulnerable people such as children, and they cannot debrief or protect participants from distress at the time.

END OF PAPER

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