Write your name here

Surname
StemUp Model Solution

Other names

Pearson Edexcel
International Advanced Level

Centre Number

Candidate Number

Psychology

International Advanced Subsidiary
Paper 1: Social and Cognitive Psychology

Monday 14 May 2018 – Afternoon
Time: 1 hour 30 minutes

Paper Reference
WPS01/01

You do not need any other materials.

Total Marks

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided – *there may be more space than you need.*

Information

- The total mark for this paper is 64.
- The marks for **each** question are shown in brackets – *use this as a guide as to how much time to spend on each question.*
- The list of formulae and statistical tables are printed at the start of this paper.
- Candidates may use a calculator.

Advice

- Read each question carefully before you start to answer it.
- Check your answers if you have time at the end.

Turn over ▶

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FORMULAE AND STATISTICAL TABLES

Standard deviation (sample estimate)

$$\sqrt{\left(\frac{\sum(x-\bar{x})^2}{n-1}\right)}$$

Spearman's rank correlation coefficient

$$1-\frac{6\sum d^2}{n(n^2-1)}$$

Critical values for Spearman's rank

	Level of significance for a one-tailed test				
	0.05	**0.025**	**0.01**	**0.005**	**0.0025**
	Level of significance for a two-tailed test				
N	**0.10**	**0.05**	**0.025**	**0.01**	**0.005**
5	0.900	1.000	1.000	1.000	1.000
6	0.829	0.886	0.943	1.000	1.000
7	0.714	0.786	0.893	0.929	0.964
8	0.643	0.738	0.833	0.881	0.905
9	0.600	0.700	0.783	0.833	0.867
10	0.564	0.648	0.745	0.794	0.830
11	0.536	0.618	0.709	0.755	0.800
12	0.503	0.587	0.678	0.727	0.769
13	0.484	0.560	0.648	0.703	0.747
14	0.464	0.538	0.626	0.679	0.723
15	0.446	0.521	0.604	0.654	0.700
16	0.429	0.503	0.582	0.635	0.679
17	0.414	0.485	0.566	0.615	0.662
18	0.401	0.472	0.550	0.600	0.643
19	0.391	0.460	0.535	0.584	0.628
20	0.380	0.447	0.520	0.570	0.612
21	0.370	0.435	0.508	0.556	0.599
22	0.361	0.425	0.496	0.544	0.586
23	0.353	0.415	0.486	0.532	0.573
24	0.344	0.406	0.476	0.521	0.562
25	0.337	0.398	0.466	0.511	0.551
26	0.331	0.390	0.457	0.501	0.541
27	0.324	0.382	0.448	0.491	0.531
28	0.317	0.375	0.440	0.483	0.522
29	0.312	0.368	0.433	0.475	0.513
30	0.306	0.362	0.425	0.467	0.504

The calculated value must be equal to or exceed the critical value in this table for significance to be shown.

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Chi-squared distribution formula

$$X^2 = \sum \frac{(O-E)^2}{E} \qquad df = (r-1)(c-1)$$

Critical values for chi-squared distribution

	Level of significance for a one-tailed test					
	0.10	**0.05**	**0.025**	**0.01**	**0.005**	**0.0005**
	Level of significance for a two-tailed test					
df	**0.20**	**0.10**	**0.05**	**0.025**	**0.01**	**0.001**
1	1.64	2.71	3.84	5.02	6.64	10.83
2	3.22	4.61	5.99	7.38	9.21	13.82
3	4.64	6.25	7.82	9.35	11.35	16.27
4	5.99	7.78	9.49	11.14	13.28	18.47
5	7.29	9.24	11.07	12.83	15.09	20.52
6	8.56	10.65	12.59	14.45	16.81	22.46
7	9.80	12.02	14.07	16.01	18.48	24.32
8	11.03	13.36	15.51	17.54	20.09	26.12
9	12.24	14.68	16.92	19.02	21.67	27.88
10	13.44	15.99	18.31	20.48	23.21	29.59
11	14.63	17.28	19.68	21.92	24.73	31.26
12	15.81	18.55	21.03	23.34	26.22	32.91
13	16.99	19.81	22.36	24.74	27.69	34.53
14	18.15	21.06	23.69	26.12	29.14	36.12
15	19.31	22.31	25.00	27.49	30.58	37.70
16	20.47	23.54	26.30	28.85	32.00	39.25
17	21.62	24.77	27.59	30.19	33.41	40.79
18	22.76	25.99	28.87	31.53	34.81	42.31
19	23.90	27.20	30.14	32.85	36.19	43.82
20	25.04	28.41	31.41	34.17	37.57	45.32
21	26.17	29.62	32.67	35.48	38.93	46.80
22	27.30	30.81	33.92	36.78	40.29	48.27
23	28.43	32.01	35.17	38.08	41.64	49.73
24	29.55	33.20	36.42	39.36	42.98	51.18
25	30.68	34.38	37.65	40.65	44.31	52.62
26	31.80	35.56	38.89	41.92	45.64	54.05
27	32.91	36.74	40.11	43.20	46.96	55.48
28	34.03	37.92	41.34	44.46	48.28	56.89
29	35.14	39.09	42.56	45.72	49.59	58.30
30	36.25	40.26	43.77	46.98	50.89	59.70
40	47.27	51.81	55.76	59.34	63.69	73.40
50	58.16	63.17	67.51	71.42	76.15	86.66
60	68.97	74.40	79.08	83.30	88.38	99.61
70	79.72	85.53	90.53	95.02	100.43	112.32

The calculated value must be equal to or exceed the critical value in this table for significance to be shown.

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Wilcoxon Signed Ranks test process

- Calculate the difference between two scores by taking one from the other
- Rank the differences giving the smallest difference Rank 1

  Note: do not rank any differences of 0 and when adding the number of scores, do not count those with a difference of 0, and ignore the signs when calculating the difference
- Add up the ranks for positive differences
- Add up the ranks for negative differences
- T is the figure that is the smallest when the ranks are totalled (may be positive or negative)
- N is the number of scores left, ignore those with 0 difference

Critical values for the Wilcoxon Signed Ranks test

	Level of significance for a one-tailed test		
	0.05	0.025	0.01
	Level of significance for a two-tailed test		
n	0.1	0.05	0.02
N=5	0	-	-
6	2	0	-
7	3	2	0
8	5	3	1
9	8	5	3
10	11	8	5
11	13	10	7
12	17	13	9

The calculated value must be equal to or less than the critical value in this table for significance to be shown.

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SECTION A BEGINS ON THE NEXT PAGE.

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SECTION A

SOCIAL PSYCHOLOGY

Answer ALL questions in this section. Write your answers in the spaces provided.

1 In social psychology you will have learned about one classic study in detail.

(a) Describe the procedure used in Moscovici et al.'s (1969) study.

(4)

Moscovici et al. used 172 female participants who were first given a colour vision test to check they were not colour blind. They were put in groups of six: four naive participants and two confederates. Each group was shown 36 slides that were all blue but varied in brightness (intensity), and everyone had to say aloud what colour each slide was. In the consistent condition the two confederates answered "green" on all 36 slides. In the inconsistent condition the confederates answered "green" 24 times and "blue" 12 times. A control group of six naive participants with no confederates simply judged the colours, so the number of "green" answers could be compared across conditions.

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(b) Explain **one** strength and **one** weakness of Moscovici et al.'s (1969) study.

(4)

Strength

It was a controlled laboratory study: all participants were screened for colour blindness and saw the same 36 slides under the same lighting. This means extraneous variables affecting colour judgement were controlled, so the "green" answers can more reliably be put down to the minority influence of the confederates.

Weakness

The sample was only female students, so it is unrepresentative. Males may respond differently to a minority, so the findings lack generalisability to how a minority influences male decision making. The slide task was also artificial, which lowers ecological validity.

(Total for Question 1 = 8 marks)

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2 Michelle carried out a questionnaire to find out what factors people thought affected obedience. She conducted a thematic analysis on the qualitative data from her questionnaire and found the two most common themes were:

- presence of an authority figure
- proximity of an authority figure.

The median score for the two themes is shown in **Table 1**.

	Presence of an authority figure	**Proximity of an authority figure**
Median	15	10

Table 1

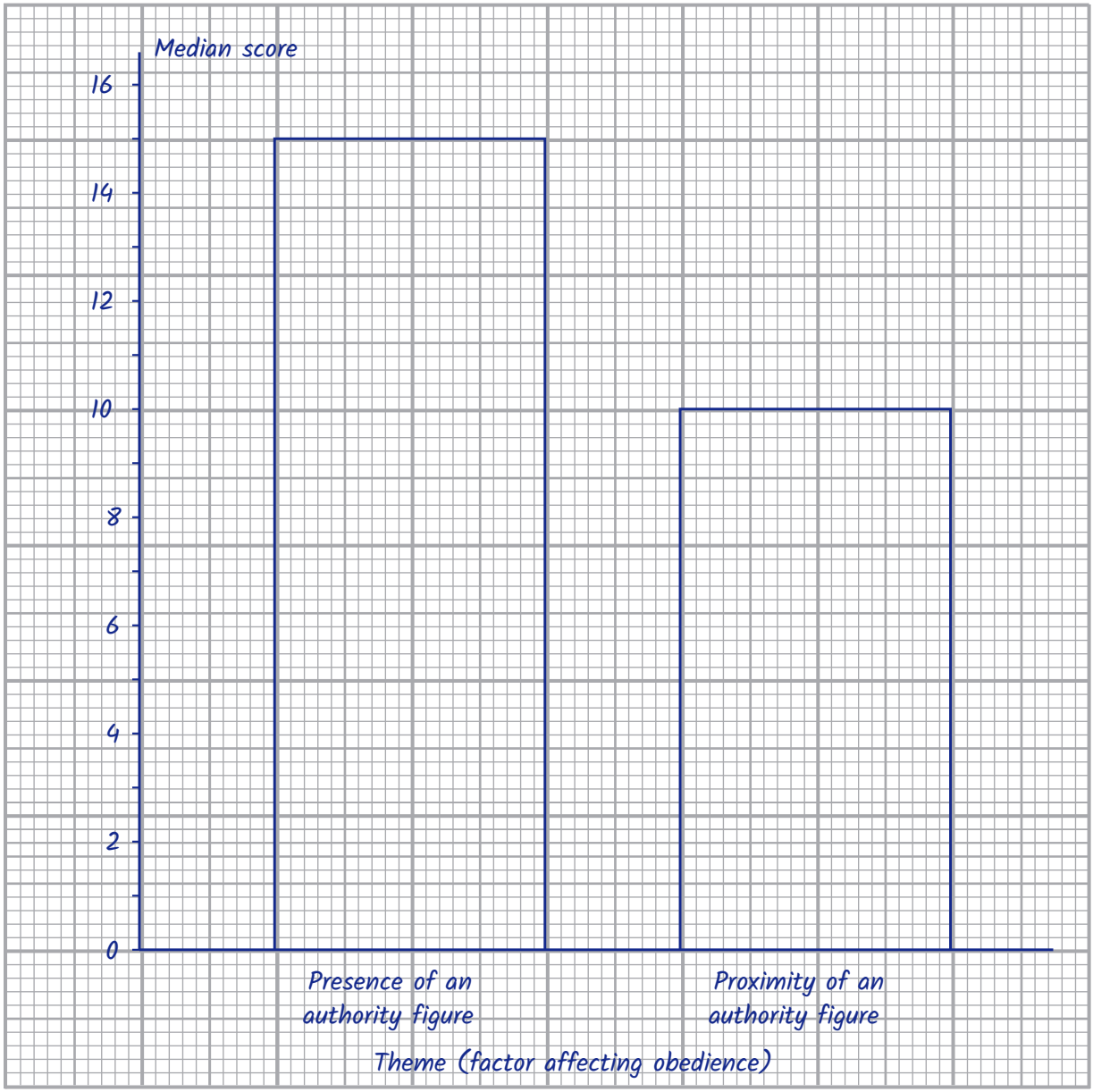
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(a) Draw an appropriate graph to show the median scores for the data shown in **Table 1**.

(3)

Title *A bar chart to show the median scores for the two most common themes: presence of an authority figure and proximity of an authority figure*



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(b) Explain **one** strength of the median as a measure of central tendency.

(2)

The median is the middle score when the data are put in rank order, so it is not affected by extreme scores. This means it is not distorted by outliers and gives a more representative average of the majority of scores than the mean would.

(c) Explain **one** strength and **one** weakness of gathering qualitative data in Michelle's research.

(4)

Strength

Michelle's qualitative data are high in validity, because people could explain in their own words, in rich detail, why factors such as the presence of an authority figure make them obey, so she gets realistic and detailed reasons rather than a forced choice.

Weakness

Michelle's thematic analysis of the answers relies on her own interpretation to decide which comments fit which theme, so it may be subjective. This could lead to a biased analysis of which factors (e.g. proximity of an authority figure) people think affect obedience.

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Michelle also gathered quantitative data from her questionnaire.

(d) Define what is meant by 'quantitative data'.

(1)

Quantitative data is numerical data, such as scores or totals, that can be analysed statistically.

(Total for Question 2 = 10 marks)

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3 Evaluate agency theory as an explanation of obedience.

(8)

Milgram's agency theory states that people obey because they move from an autonomous state, where they act on their own free will and feel responsible for their actions, into an agentic state, where they see themselves as an agent carrying out the wishes of an authority figure. This switch is called the agentic shift. It happens when the authority figure is seen as legitimate, for example because of a uniform or setting, and when the authority figure takes responsibility for the outcome, so the person no longer feels to blame. In the agentic state people obey without questioning orders, even when they experience moral strain.

A strength is the supporting evidence from Milgram's (1963) study, where 65% of participants went on to give the maximum 450 volts to the learner. Many showed signs of moral strain yet continued when the experimenter said he was responsible, which suggests they had entered the agentic state. The theory can also be applied to real-world events such as the Holocaust, where soldiers claimed they were only following orders and so carried out the murder of millions of Jews, which shows it has explanatory value beyond the laboratory.

However, agency theory does not consider individual differences. In Milgram's study 35% of participants refused to continue, so not everyone shifts into the agentic state, and personality factors such as the authoritarian personality may explain why some people obey more than others. Therefore agency theory is an incomplete explanation. Charismatic leadership (House, 1976) also suggests that the traits of the leader, not just the presence of a legitimate authority figure, are important in gaining obedience. Agency theory is also difficult to test, because the agentic state cannot be directly observed and is inferred from the obedience it is meant to explain, so the argument risks being circular.

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In conclusion, agency theory is well supported by Milgram's research and explains why ordinary people obey destructive orders, but because it ignores personality and leader characteristics it is best seen as one part of the explanation of obedience rather than a complete account.

(Total for Question 3 = 8 marks)

TOTAL FOR SECTION A = 26 MARKS

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SECTION B

COGNITIVE PSYCHOLOGY

Answer ALL questions in this section. Write your answers in the spaces provided.

4 As part of your studies in cognitive psychology, you will have conducted a practical investigation.

(a) State the dependent variable from your cognitive practical investigation.

(1)

The number of words recalled in the correct order from a list of 10 words.

(b) Describe the results from your cognitive practical investigation.

(3)

Our practical tested whether acoustic similarity affects recall in short-term memory. The mean number of words recalled from the acoustically similar list (e.g. cat, mat, hat) was 4.6 out of 10, compared to 7.3 out of 10 from the acoustically dissimilar list, so recall was 2.7 words lower for similar sounding words. The acoustically similar list had a range of 4 and the dissimilar list a range of 5, so scores were spread in a similar way. This supports the idea that STM encodes acoustically.

(c) Describe **one** control you implemented to make your procedure reliable.

(2)

We made sure the two word lists were matched: both lists had the same number of words (10), and all words were one syllable and common everyday words. Each word was also shown for the same time (2 seconds), so the procedure was the same for every participant and could be repeated.

(Total for Question 4 = 6 marks)

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5 In cognitive psychology, you will have learned about the following contemporary study in detail:

- Schmolck et al. (2002) Semantic knowledge in patient HM and other patients with bilateral medial and lateral temporal lobe lesions.

(a) State **one** result of Schmolck et al.'s (2002) study.

(1)

Patients with damage limited to the medial temporal lobe (MTL), such as HM, scored 78.1% on the pointing/naming of pictures task.

(b) Explain **one** strength and **one** weakness of Schmolck et al.'s (2002) study.

(4)

Strength

Schmolck et al. used inter-rater reliability, with several independent raters scoring the definitions that patients gave on the definitions test. This reduces bias and subjectivity in interpreting the answers, so the conclusions about semantic knowledge are more reliable.

Weakness

The tasks were artificial, e.g. naming 48 items shown as line drawings in a laboratory. This lacks ecological validity because it does not represent how people recognise and use semantic knowledge of objects in real-world situations.

(Total for Question 5 = 5 marks)

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6 Horatio investigated the influence of age on memory recall. Participants were grouped by age and asked to read a poem three times and then write it down. The poem consisted of 30 words.

Horatio scored the accuracy of recall of the poem out of 30, with 30 representing all words recalled accurately and 0 representing no words recalled accurately.

- Condition A participants were aged 20 to 25 years
- Condition B participants were aged 60 to 65 years.

(a) State a non-directional (two-tailed) null hypothesis for this investigation.

(2)

There will be no significant difference in the accuracy of recall score (out of 30) of a 30-word poem between participants aged 20 to 25 years and participants aged 60 to 65 years. Any difference will be due to chance.

Horatio's participants had volunteered for his investigation by responding to an advertisement.

(b) Explain **one** weakness of the sampling technique Horatio used in his investigation.

(2)

Advertising for volunteers in a memory study may mean that only people who think they have a good memory agree to take part. This gives an unrepresentative sample with particular memory skills, which could skew the recall scores and reduce generalisability to people of these ages.

Horatio collected nominal data.

(c) Define what is meant by the term 'nominal data.'

(1)

Nominal data is discrete data in the form of categories, e.g. counts of how many participants fall into each named group.

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The scores for accuracy of recall out of 30 in both conditions are recorded in **Table 2**.

Condition A Participants aged 20 to 25 years	**Condition B** Participants aged 60 to 65 years
23	19
21	23
26	26
25	24
23	27
20	22
22	24
Mean score: 22.86	Mean score: 23.57

Table 2

(d) Calculate the mode score for **Condition B** using the data in **Table 2**.

(1)

Space for calculations

Condition B in order: 19, 22, 23, 24, 24, 26, 27

24 occurs twice, every other score once

so the mode = 24

Mode score for Condition B 24

(e) State **one** conclusion that Horatio could make from the results in **Table 2**.

(1)

Older participants (60 to 65 years) had marginally better recall than younger participants (mean 23.57 compared to 22.86), so age did not reduce memory recall of the poem.

(Total for Question 6 = 7 marks)

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7 Evaluate Bartlett's (1932) theory of reconstructive memory, including schema theory.

(8)

Bartlett (1932) argued that memory is reconstructive rather than reproductive: we do not store an exact copy of an event, only fragments or traces of it, and when we recall it we rebuild the memory, filling in the gaps. To fill these gaps we use schemas, which are units of knowledge about the world built up from past experience and culture. A memory is therefore partly the traces encoded at the time and partly our schemas. Bartlett called this "effort after meaning", and said recall is changed through omission of details that do not fit, rationalisation to make the material make sense, and transformation into more familiar forms.

Bartlett's War of the Ghosts study (1932) supports the theory. British participants recalled an unfamiliar Native American folk story using serial and repeated reproduction. Over time the story became shorter and more conventional, for example "canoes" were recalled as "boats", showing that participants filled the gaps with their own cultural schemas. Bransford and Johnson (1972) also support schema theory: participants who were given a title before hearing an ambiguous passage about washing clothes understood and recalled much more of it, which shows schemas help us encode and store difficult or ambiguous information. The theory also has practical value, as it helps explain why eyewitness testimony can be unreliable.

However, Bartlett's research had few standardised controls. Participants were not given standard instructions and the time between readings and recall varied, so the evidence underpinning the theory lacks scientific rigour, and some changes may have been deliberate guessing rather than true memory distortion. Schemas are also hard to test because they cannot be directly observed or measured. Furthermore, the theory mainly describes that memory is reconstructed rather than explaining how the process works, and it cannot easily explain why we sometimes remember unusual events very accurately.

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In conclusion, there is good evidence that schemas shape what we recall, so reconstructive memory is a useful theory, but because the original research lacked control and the theory is more descriptive than explanatory, it is not a complete account of how memory works.

(Total for Question 7 = 8 marks)

TOTAL FOR SECTION B = 26 MARKS

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SECTION C

Answer the question in this section. Write your answer in the space provided.

8 Damon and Elisa's psychology lecturer is teaching his class about the importance of good research design when planning an investigation. He suggests that in their planning they need to consider field experiments and laboratory experiments. The lecturer gives them a scenario from which they need to plan an investigation.

Scenario

Design and carry out an investigation to measure the short-term memory capacity of local 12-year old children.

The children will need to learn five number lists. The first list contains six digits and each following list increases by two digits, up to the final list of 14 digits. The children will be asked to recall the numbers from each list in the correct order.

Damon decides to carry out a field experiment with children from a local school. Elisa decides to carry out a laboratory experiment, bringing children to one of the research rooms at the university.

Evaluate whether Damon's choice of a field experiment was a more appropriate method than Elisa's choice of a laboratory experiment for this research scenario.

You must make reference to the context in your answer.

(12)

In both laboratory and field experiments the researcher manipulates the independent variable and measures the effect on the dependent variable, so both can establish a cause and effect relationship. A laboratory experiment takes place in an artificial, controlled setting, while a field experiment takes place in the participants' natural environment. In this scenario the IV for both Damon and Elisa is the number of digits in each list (6, 8, 10, 12 and 14), and the DV is how many digits the children recall in the correct order, which shows their short-term memory capacity.

Damon's field experiment has the strength of higher ecological validity. The 12-year-old children are tested in their own school, a familiar environment where they normally learn, so they are likely to behave more naturally and their recall should be closer to how their memory works in everyday learning. A familiar school setting is also more appropriate for children, because they

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are less likely to feel anxious. By contrast, Elisa's children are brought to a university research room they are not used to, which may be distressing and uncomfortable for 12-year-olds. Anxiety could lower their recall of the longer lists, so her results may underestimate their real STM capacity, and there are greater ethical concerns about bringing young children to an unfamiliar place.

However, Elisa's laboratory experiment allows much tighter control of extraneous variables. In a school, Damon cannot easily control noise from other classes, interruptions or children overhearing the lists before their turn, all of which could affect how many digits are recalled. In Elisa's quiet research room she can present every list at the same speed, with standardised instructions and no distractions, so she can be more confident that changes in recall are caused by the number of digits. Her procedure would also be easier to replicate, so her results are likely to be more reliable than Damon's.

It could also be argued that the advantage of Damon's setting is limited, because the task itself is the same in both experiments. Learning and recalling lists of 6 to 14 digits is an artificial task wherever it is done, so even Damon's field experiment may not fully reflect how children use memory in real life, which reduces the gain in validity from testing in a school.

In conclusion, Damon's field experiment is more appropriate in terms of the children's comfort, ethics and ecological validity, but Elisa's laboratory experiment is more appropriate for accurately measuring STM capacity, because the aim is to measure a precise capacity and this needs strict controls. On balance, Elisa's laboratory experiment is the more appropriate method, provided she takes steps such as allowing the children a parent or teacher with them and time to settle in, to reduce the distress of the unfamiliar setting.

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(Total for Question 8 = 12 marks)

TOTAL FOR SECTION C = 12 MARKS
TOTAL FOR PAPER = 64 MARKS

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