



A-Level Psychology Research Methods Exam with A-Grade Answers

By [PsychLogic](#), published Sept 30, 2019

1. What is meant by:
 - (a) A laboratory experiment?
 - (b) A field experiment?
 - (c) A natural experiment?

(Total 6 marks)

1. A study conducted under artificial, controlled conditions where we aim to assess whether there is a significant difference in how 2 conditions of an independent variable (IV) affect a dependent variable (DV). Participants know they are being observed.
2. A study conducted in a natural environment where naïve participants are exposed to a 'set-up' social situation and their behaviour recorded. As with lab experiments, we aim to assess the effect of an IV on a DV.
3. A naturally occurring change in an IV is identified and observers assess whether this has an effect on a DV. Participants do not know they are being observed.

2. Students often claim that listening to music helps them to concentrate. A psychologist was not aware of any previous research in this area. She decided to investigate this claim. Forty students from a nearby sixth form centre volunteered to take part in her study. They each answered the following question: ‘Do you think that you concentrate on your work ‘better’ or ‘worse’ or ‘the same’ if you listen to music whilst working?’ She obtained the results in Table 1.

Table 1. Response to questions – ‘Do you think that you concentrate on your work ‘better’ or ‘worse’ or ‘the same’ if you listen to music whilst working?’

Better	Worse	The same
22	8	10

- (a) Should the hypothesis for this study be directional? Explain your answer.

(2 marks)

As the “psychologist was not aware of any previous research in this area” it should be non-directional as they have no reason to believe that concentration will be better or worse when listening to music.

- (b) What percentage of the students reported that they would be able to concentrate ‘better’ if they listened to music while they worked? Show your working.

(2 marks)

Out of 40 students, 22 said they could work better. $22/40 \times 100 = 55\%$

(c) Explain why using stratified sampling might improve this study.

(2 marks)

Stratified sampling includes representative numbers of individuals from a population, therefore population validity will be high and we are more likely to be able to generalise findings.

(d) The data collected in this study is primary data. Explain what is meant by primary data.

(2 marks)

Results collected from a study/sample first-hand by the psychologist themselves.

3. In a follow-up study, the psychologist obtained a volunteer sample of 10 students aged 17 years from a different sixth form centre. Using a repeated measures design, participants were asked to complete two puzzle tasks as quickly as possible.

- **Task A** was to find 10 differences in a 'spot the difference' puzzle whilst working in silence.
- **Task B** was to find 10 differences in another 'spot the difference' puzzle while listening to music through headphones.

The tasks were counterbalanced and the time taken to complete each task was recorded for each student.

Table 2: Times taken (in seconds) to complete Task A (silence) and Task B (music)

Participant	Task A (silence)	Task B (music)
1	67	82
2	45	70
3	58	60
4	43	59
5	72	77
6	90	105
7	101	90
8	37	59
9	54	83
10	63	89

- a) Explain one reason why the mean would be the most appropriate measure of central tendency to summarise the data in Table 2.

(2 marks)

As there are no extreme outlying scores for either group which might artificially inflate/deflate a mean average, the mean is the most appropriate measure of central tendency to use.

- b) Calculate the mean values for both Task A and Task B. Show your workings.

(4 marks)

Task A: $67 + 45 + 58, \text{ etc.} = 660. 660/10 = \text{mean of } 66$

Task B: $82 + 70 + 60, \text{ etc.} = 774. 774/10 = \text{mean of } 77.4$

- c) The psychologist used counterbalancing in the follow-up study. Discuss the purpose of counterbalancing.

(3 marks)

In a repeated measures design, participants may show order effects. This is when performance in the 2nd condition is affected by performance in the 1st condition.

For example, participants' performance may improve due to practice or get worse due to boredom or tiredness.

Counterbalancing involves participants being split into 2 groups A and B. Group A will perform in condition 1 first, then condition 2. Group B will perform in condition 2 first, then condition 1. This is thought to balance out the problem of order effects in a repeated measures design.

- d) Identify one possible extraneous variable that the psychologist should have controlled in the follow-up study. Explain how this variable might have affected the results of the study if it was not controlled.

(3 marks)

Use your imagination – any variable which could be affecting the DV (time taken to complete the task) apart from the IV without the researchers being aware of this.

Type of music played and participants' personal music preference could have acted as an extraneous variable. If this variable was not controlled it may be that certain participants would have a strong dislike of the music being played and this dislike could be a factor affecting time taken to complete the task.

e) Explain how the follow-up study could be said to be an improvement on the original study.

(4 marks)

This question really relates to 'Major Features of the Scientific Method'

The original study has a problem with subjectivity as students are simply asked to report on their own perception of how music affects their ability to concentrate thus they are making a personal interpretation of their perception of how it affected them. This may act as a source of bias.

By conducting an experiment we can gain empirical data in a controlled environment where a specific hypothesis can be tested and we can check findings for replicability/reliability by repeated the study precisely to see if results remain the same/similar. There is also a more representative sample in the 2nd study thus we're more able to generalise to the population as a whole

(Total 22 marks)

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