

Research methods and statistics revision questions

Question 1

Participants were shown a short video clip in which a man ran up to a woman who was getting out of her car and snatched her handbag before running off. The participants were asked a series of questions about the event. One of the questions was a 'critical' question. Half of the participants were asked, 'what colour trainers was the man wearing?'; the other half were asked 'what colour footwear was the man wearing?' The man in the video was not wearing trainers.

The following day, all the participants were invited back to the laboratory to give a description of the man in the video. They were asked to supply as much detail as they could under a number of different headings including 'facial features', 'clothing' and 'footwear'.

The researchers coded each participant's response to the 'footwear' section by categorising each answer as 'trainers' or 'other'.

1. Identify the IV and DV in this study.
2. Justify the choice of experimental design/participant design.
3. State a suitable null hypothesis for this study.
4. Explain why researcher bias could be a problem in this study. Describe a suitable way of controlling it.

Question 2

The researchers choose to use a repeated measures design. Participants were shown the same video as in experiment 1. They were then given two structured interviews in which they were asked neutral questions about the events in the video and the appearance of the people depicted. In each interview the same standardised set of questions was used. The participants' responses were coded to give an 'accuracy score' which indicated how much accurate detail each participant had been able to supply. Before one of the interviews, the participants were hypnotised. The other interview took place with no hypnosis.

5. Identify the IV and DV in this study.
6. State a non-directional experimental hypothesis for this study.
7. Describe how the researchers could deal with a confounding variable in this study.
8. Explain why the researchers used a 'standardised set' of questions in the interview.

Question 3

Researchers investigated the self-reference effect in memory. Participants were shown a series of 15 adjectives on a screen. Each was visible for 1 second. Immediately prior to seeing each word, the participants were asked a question and had to answer in relation to the word presented immediately after. Half of the participants were asked questions about the meaning of the word e.g. 'does it mean the same as...?' The other half were asked whether or not the word was true of them e.g. 'would you agree that ... is an accurate description of you?' Participants were then given an unexpected recognition test in which they were given a list of words including the original stimulus words and a number of other adjectives that were not originally shown. Participants were asked to circle the words that had been presented before. The researchers thought that self-referential processing would lead to higher recognition.

Table 1 - recognition scores for semantic and self-referential questions.

Semantic processing	Self-referential processing
8	9
4	12
6	11
7	8
4	13
Mean recognition score: 5.8	Mean recognition score: 10.6

1. Calculate the standard deviation for the 'self-referential processing' condition. (3 marks)
2. Explain how the data should be analysed. (4 marks)
3. The calculated/observed test statistic was 0.5. Explain whether the researchers should accept or reject their null hypothesis. (3 marks)

Research methods revision questions (Sample Responses)

Question 1

Participants were shown a short video clip in which a man ran up to a woman who was getting out of her car and snatched her handbag before running off. The participants were asked a series of questions about the event. One of the questions was a 'critical' question. Half of the participants were asked, 'what colour trainers was the man wearing?'; the other half were asked 'what colour footwear was the man wearing?' The man in the video was not wearing trainers.

The following day, all the participants were invited back to the laboratory to give a description of the man in the video. They were asked to supply as much detail as they could under a number of different headings including 'facial features', 'clothing' and 'footwear'.

The researchers coded each participant's response to the 'footwear' section by categorising each answer as 'trainers' or 'other'.

1. Identify the IV and DV in this study.

IV - the critical question; 'trainers' or 'footwear'.

DV - coded answer to the 'footwear' question.

2. Justify the choice of experimental design/participant design.

The researchers use independent measures because with repeated the PPs would have been asked who different questions about the footwear. Because they were exposed to both conditions they might work out the aim and change their behaviour accordingly.

3. State a suitable null hypothesis for this study.

There will be no difference in the number of PPs reporting 'trainers' between those asked the 'trainers' question and those asked the 'footwear' question.

4. Explain why researcher bias could be a problem in this study. Describe a suitable way of controlling it.

The responses were coded by researchers who were aware that the form of the question might influence the answers. Because they had to judge whether the PPs' fitted into the category 'trainers' or 'other' they might have been biased in their codings. This could be controlled by using coders who were blind to the aim of the research, so their expectation could not affect their codings.

Question 2

The researchers choose to use a repeated measures design. Participants were shown the same video as in experiment 1. They were then given two structured interviews in which they were asked neutral questions about the events in the video and the appearance of the people depicted. In each interview the same standardised set of questions was used. The participants' responses were coded to give an 'accuracy score' which indicated how much accurate detail each participant had been able to supply. Before one of the interviews, the participants were hypnotised. The other interview took place with no hypnosis.

5. Identify the IV and DV in this study.

IV - whether the PPs were hypnotised or not.

DV - accuracy scores from the structured interview.

6. State a non-directional experimental hypothesis for this study.

There will be a difference in accuracy scores between when PPs are hypnotised and when they are not.

7. Describe how the researchers could deal with a confounding variable in this study.

The study could be confounded by order effects, because the PPs will be interviewed twice and the first interview might affect performance on the second. To control this, the researchers should counterbalance the design by giving half the PPs the hypnotic interview followed by the control, and half the control followed by the hypnotic interview.

8. Explain why the researchers used a 'standardised set' of questions in the interview.

The use of standardised questions ensures that every interview is conducted the same way. This controls some interviewer variables and makes it easier to replicate the study, allowing reliability checks to be made.

Question 3

1. Calculate the standard deviation for the 'self-referential processing' condition. (3 marks)

2.07 (working must be shown)

2. Explain how the data should be analysed. (4 marks)

A Mann-Whitney U test should be used because:

*(1) the researchers are looking for a difference between self- and non-self-referential processing;
(2) independent groups design was used as different PPs did the self- and non-self-referential processing;
(3) the data were at least ordinal level because each PP had their own score and these could be ranked in order.*

3. The calculated/observed test statistic was 0.5. Explain whether the researchers should accept or reject their null hypothesis. (3 marks)

Critical value of U with $N_1 = 5$ and $N_2 = 5$, 1 tailed $p < 0.05$ is 4. Because the observed value of U is smaller than the critical value, the difference is significant. The researchers should therefore reject their null hypothesis.