7.6 How to Write a Hypothesis: 30-minute Pack

AQA 7182 · Calculator allowed · about 30 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer every question in the spaces provided. Write in full sentences where a question asks you to explain, justify or discuss. Where a question asks you to write a hypothesis, write a single complete sentence. The marks available are shown in brackets after each question. This is a full question bank rather than a single sitting: work through it in sections, or use one of the timed cuts.

1 A psychologist is investigating whether the time of day affects reaction time. Previous studies on this question have produced conflicting findings. Which one of the following is a NON-DIRECTIONAL hypothesis? Write the correct letter in your answer.

A Participants tested at 9am will have a faster mean reaction time in milliseconds than participants tested at 4pm.

B To investigate whether the time of day at which a person is tested affects their reaction time.

C Participants tested at 4pm will have a faster mean reaction time in milliseconds than participants tested at 9am.

D There will be a difference in mean reaction time in milliseconds between participants tested at 9am and participants tested at 4pm.

(Total for Question 1 is 1 mark)

---

2 In a research methods lesson, a teacher writes two statements on the board about an investigation into helping behaviour on public transport. Explain the difference between the aim of an investigation and its hypothesis.

(Total for Question 2 is 2 marks)

© Revision Library | revisionlibrary.co.uk

3 A psychologist studying obedience writes the following statement before collecting any data: 'To find out whether the uniform worn by a person giving an instruction affects whether members of the public obey that instruction.' State whether this statement is an aim or a hypothesis, and justify your answer.

(Total for Question 3 is 2 marks)

4 A psychologist plans to investigate whether stress affects immune function in undergraduate students. Her first draft of the independent variable reads simply 'stress'. Explain what is meant by operationalisation, and suggest how the independent variable 'stress' could be operationalised in this study.

(Total for Question 4 is 3 marks)

5 A psychologist plans to investigate whether taking handwritten notes rather than typed notes affects how well students learn from a lecture. Her first draft of the dependent variable reads simply 'how well students learn'. Suggest how this dependent variable could be operationalised, and explain why the version in her first draft could not be used.

(Total for Question 5 is 3 marks)

© Revision Library | revisionlibrary.co.uk

6 A psychologist is preparing to investigate whether taking part in a six-week mindfulness course affects the number of hours of sleep adults report each night.

(a) Write a suitable aim for this investigation. **(2)**

(b) Explain why a researcher needs a hypothesis as well as an aim before beginning this investigation. **(2)**

(Total for Question 6 is 4 marks)

---

7 A psychologist plans an experiment to test whether the number of bystanders present affects whether a person offers help. She intends to stage a situation in a shopping centre in which an actor drops a folder of papers, and to vary how many other shoppers are standing nearby.

(a) Suggest how the independent variable in this study could be operationalised. **(2)**

(b) Suggest how the dependent variable in this study could be operationalised. **(2)**

(c) State one reason why both variables must be operationalised before the study begins. **(1)**

(Total for Question 7 is 5 marks)

© Revision Library | revisionlibrary.co.uk

8 A psychologist investigates the working memory model using a dual task procedure. Forty-eight participants each complete two conditions in a counterbalanced order. In the single task condition they track a moving dot on a screen for two minutes. In the dual task condition they track the same moving dot while simultaneously repeating the word 'Monday' aloud once per second. The psychologist records the number of seconds out of 120 for which the participant keeps the cursor on the dot. Previous dual task studies consistently find that adding a second task that uses a different slave system still reduces tracking accuracy slightly.

Write a directional hypothesis for this study.

(Total for Question 8 is 3 marks)

---

9 A psychologist investigates interference in long-term memory. Sixty adults learn a list of twenty pairs of unrelated words. Half then learn a second list of twenty word pairs in which the first word of each pair is the same but the second word is different; the other half spend the same ten minutes completing a crossword. All participants are then shown the first word of each original pair and asked to write the word it was paired with. The psychologist records the number of pairs recalled correctly out of twenty. Previous studies of retroactive interference consistently find that learning a similar second list reduces recall of the first.

(a) Write a directional hypothesis for this study. **(3)**

(b) Explain why a directional hypothesis rather than a non-directional hypothesis is appropriate for this study. **(2)**

(Total for Question 9 is 5 marks)

© Revision Library | revisionlibrary.co.uk

Mark scheme · 7.6 How to Write a Hypothesis: 30-minute Pack

Question 1

D. It predicts that a difference will occur but does not say which group will be faster **B1**

Answer: D

Question 2

an aim is a general statement of what the researcher intends to investigate, the purpose of the study oe **B1**

a hypothesis is a precise, testable statement predicting the relationship between the operationalised variables oe **B1**

Answer: An aim states the general purpose of the study, for example to investigate whether the number of other passengers present affects helping behaviour. A hypothesis is a precise, testable prediction about the operationalised variables, for example that fewer passengers will offer help when six other passengers are present than when one other passenger is present.

Question 3

it is an aim **B1**

justification: it states the purpose of the study and makes no prediction about what will be found, and the variables are not operationalised oe **B1**

Answer: It is an aim, because it states what the psychologist intends to investigate rather than predicting an outcome, and neither variable is stated in a measurable form.

Question 4

operationalisation means defining a variable in terms of how it will be manipulated or measured in the study oe **B1**

a workable operationalisation of the IV, for example testing students during the week of their final examinations compared with a week in the middle of the teaching term oe **B1**

the operationalisation gives two clearly distinguishable conditions that another researcher could reproduce oe **B1**

Answer: Operationalisation means stating a variable in terms of how it will be manipulated or measured. Stress could be operationalised as whether students are tested during the week of their final examinations or during a week in the middle of the teaching term, which gives two conditions another researcher could set up in exactly the same way.

Question 5

a measurable operationalisation, for example the score out of 20 on a multiple choice test taken one week after the lecture oe **B1**

the operationalisation states both what is measured and the scale or units it is measured on oe **B1**

'how well students learn' cannot be used because it gives no measurement procedure, so different researchers would measure different things and the study could not be replicated oe **B1**

Answer: The dependent variable could be operationalised as the score out of 20 on a multiple choice test on the lecture content taken one week later. 'How well students learn' gives no procedure or units, so two researchers could measure it in entirely different ways and the study could not be replicated.

Question 6

(a) a statement of purpose beginning 'to investigate' or equivalent, rather than a prediction oe **B1**

(a) the aim names both the mindfulness course and reported sleep, for example to investigate whether completing a six-week mindfulness course affects the number of hours of sleep adults report each night oe **B1**

(a) Answer: To investigate whether completing a six-week mindfulness course affects the number of hours of sleep adults report each night.

(b) an aim is too general to test, as it does not state what result would count as support oe **B1**

(b) the hypothesis makes a precise prediction with operationalised variables, which is what the statistical test is carried out on oe **B1**

(b) Answer: The aim only states the purpose of the study, so nothing about it can be accepted or rejected by the data. The hypothesis turns the aim into a precise prediction about operationalised variables, and it is that prediction the statistical test evaluates.

Question 7

(a) two concrete conditions are named, for example one other shopper standing nearby compared with six other shoppers standing nearby oe **B1**

(a) the conditions are stated in countable terms that could be set up identically on each trial oe **B1**

(a) Answer: The number of other shoppers standing within two metres of the actor, set at either one shopper or six shoppers.

(b) a measurable outcome is named, for example whether a passer-by offers help within thirty seconds, or the number of seconds before the first offer of help oe **B1**

(b) the measure states the observation window or the units, so every trial is scored the same way oe **B1**

(b) Answer: The number of seconds between the folder being dropped and the first passer-by offering help, recorded up to a maximum of sixty seconds.

(c) any one of: so the study can be replicated; so the hypothesis is testable; so every trial is measured in the same way; so the data can be analysed statistically oe **B1**

(c) Answer: So that the study can be replicated by another researcher in exactly the same way.

© Revision Library | revisionlibrary.co.uk

Question 8

a statement, not an aim or a question, making a directional prediction, stated clearly enough to be understood on a single reading oe **B1**

both conditions of the independent variable are named in operationalised form: whether the participant tracks the dot alone or tracks the dot while repeating a word aloud oe **B1**

the dependent variable is stated in operationalised form: the number of seconds out of 120 for which the cursor is kept on the dot oe **B1**

Answer: Participants will keep the cursor on the moving dot for fewer seconds out of 120 in the dual task condition, when they track the dot while repeating a word aloud, than in the single task condition, when they track the dot alone.

Question 9

(a) a statement, not an aim or a question, making a directional prediction, stated clearly enough to be understood on a single reading oe **B1**

(a) both conditions of the independent variable are named in operationalised form: learning a second, similar list of word pairs compared with completing a crossword for ten minutes oe **B1**

(a) the dependent variable is stated in operationalised form: the number of word pairs recalled correctly out of twenty oe **B1**

(a) Answer: Participants who learn a second, similar list of word pairs will recall fewer of the original twenty word pairs correctly than participants who spend ten minutes completing a crossword.

(b) previous studies of retroactive interference consistently find that a similar second list reduces recall of the first oe **B1**

(b) a consistent body of prior findings gives a justified basis for predicting which condition will recall fewer pairs, so the more precise directional form is warranted oe **B1**

(b) Answer: Previous research on retroactive interference consistently reports that learning a similar second list lowers recall of the first, so there is a justified basis for predicting the direction. That allows the more precise directional prediction that the second-list group will recall fewer pairs.

© Revision Library | revisionlibrary.co.uk