



GCSE to A-level progression: Summer work

Scientific skills student booklet

Aims of this transition guide

- To provide an introduction to psychology as a science.
- To support your transition from GCSE to A-level Psychology by outlining and explaining the role played by science and research skills in the study of Psychology.
- To help you practise applying your research methods knowledge and skills to a psychological context.
- To help build your confidence and readiness to study A-Level Psychology.

Psychology is a science

The British Psychological Society (BPS) defines Psychology as ‘the science of mind and behaviour.’ As a science, Psychology requires research to test hypotheses, so that researchers come to conclusions which are based on evidence. This is the why research methods play such an important role in your studies of A-level Psychology.

You will also see the importance of science when you consider the aims of the A-level Psychology specification:

- to develop and demonstrate a deep appreciation of the skills, knowledge and understanding of scientific methods
- to develop competence and confidence in a variety of practical, mathematical and problem-solving skills.
- to understand how society makes decisions about scientific issues and how the sciences contribute to the success of the economy and society.

In addition, the Assessment Objectives for A-level Psychology reflect how important science is when studying Psychology.

Assessment Objectives (AOs) are set by Ofqual and are the same across all AS and A-level Psychology specifications and all exam boards.

A01	A02	A03
AO1: Demonstrate knowledge and understanding of scientific ideas, processes, techniques and procedures	AO2: Apply knowledge and understanding of scientific ideas, processes, techniques and procedures: <ul style="list-style-type: none"> • in a theoretical context • in a practical context • when handling qualitative data • when handling quantitative data. 	AO3: Analyse, interpret and evaluate scientific information, ideas and evidence, including in relation to issues, to: <ul style="list-style-type: none"> • make judgements and reach conclusions • develop and refine practical design and procedures

Question 1: Variables and hypotheses

We will focus on the following aspects of Working Scientifically/Research methods:

- hypothesis
- independent and dependent variables
- correlational research
- undertaking a practical investigation.

What do you need to know?

A-level Psychology specification

- Hypotheses: directional and non-directional
- Variables: manipulation and control of variables, including independent, dependent.

Add a clear definition to each of the terms in the table below. These links may help:

[Independent and dependent variables \(tutor2U\)](https://www.tutor2u.net/psychology/reference/revision-note-independent-and-dependent-variables)

<https://www.tutor2u.net/psychology/reference/revision-note-independent-and-dependent-variables>



[What is a hypothesis? \(Simply Psychology\)](https://www.simplypsychology.org/what-is-a-hypotheses.html)

<https://www.simplypsychology.org/what-is-a-hypotheses.html>



Term	Definition
Hypothesis	
Independent variable	
Dependent variable	

Before completing the Psychology questions, it is useful to consider how to write an effective hypothesis in Psychology.

- It should be a clear, testable statement (do **not** present in the form of a question).
- Both conditions of the independent variable are stated within the hypothesis.
- The dependent variable is operationalised (ie it is clear how it was measured).

Consider this example:

‘Students who have not eaten breakfast will answer fewer questions correctly than students who have eaten breakfast.’

Hypothesis	Yes or no
Is it a testable statement?	Yes.
Are both conditions of the IV stated?	Yes – both conditions stated (eaten breakfast/not eaten breakfast).
Is it clear how the DV was measured?	Yes – measured by the number of questions answered correctly.

Question 2

Read the item and then answer the questions that follow.

A psychologist conducted a memory experiment, showing people sets of numbers and then taking the numbers away and asking them to write down what they had seen.

- In Condition A, participants saw nine numbers written in groups of three for 10 seconds, for example, 746 826 392. They were then given 10 seconds to write down the numbers they had seen. This was repeated 10 times with different sets of numbers.
- In Condition B, the same participants saw nine numbers written in one group of nine for 10 seconds; for example, 746826392. The participants were given ten seconds to write down the numbers they had seen. This was repeated 10 times with different sets of numbers.

The psychologist recorded the total number of recall errors made by each participant.

(a) What is an independent variable?

[1 mark]

(b) What is a dependent variable?

[1 mark]

(c) Write a suitable hypothesis for this experiment.

[2 marks]

Question 3

A psychology teacher had an idea that students who study drama are more extravert than students who do not study drama. She wanted to find out whether or not this is true and decided to conduct an experiment. This is what she did.

- She asked all 30 members of her Year 11 psychology class whether or not they studied drama. She discovered that half of her class did study drama.
- After obtaining their consent to take part in the experiment, she asked every member of her class to complete the EPI (a personality test). The test measures extroversion. The higher the score, the more extroverted a person is.
- She calculated the mean extroversion score for the students who studied drama and the mean extroversion score for the students who did not study drama.

(a) (i) Identify the independent variable in this investigation.

Tick the correct box.

The EPI (a personality test)

The extroversion score for each student

Whether or not the students studied drama

[1 mark]

(ii) Identify the dependent variable in this investigation.

Tick the correct box.

The EPI (a personality test)

The extroversion score for each student

Whether or not the students studied drama

[1 mark]

(b) Write a suitable hypothesis for this study.

[2 marks]

Correlational research

What do you need to know?

A-level Psychology specification

Correlations

- Analysis of the relationship between co-variables.
- The difference between correlations and experiments.

Correlational study (tutor2U)

<https://www.tutor2u.net/psychology/topics/correlational-study>



- Used to establish the relationship between two variables (known as co-variables).
- The data for correlation is gathered through methods such as surveys (questionnaires and interviews), and naturalistic observation (observation of naturally occurring behaviour).
- The data collected is statistically analysed to measure the relationship between the two co-variables.
- Correlations are plotted on a type of graph called a scattergram.
- There are different types of correlational relationships, for example positive correlations and negative correlations.
- There are different strengths of correlational relationships, for example: no correlation, weak correlation, moderate correlation, strong correlation.
- Correlation is an important technique when it would not be ethical to carry out an experiment in psychology.
- A limitation of correlational research is that the researcher **cannot** conclude a cause and effect relationship from correlational research as there may be another variable that has not been controlled.

Question 4

Read the following statement and decide whether it is **TRUE** or **FALSE**. Write either **TRUE** or **FALSE** on the line below the statement.

The findings from correlations can show that a change in one variable has caused a change in the other variable.

[1 mark]

Question 5

The following statements are advantages and limitations of different research methods. Only **two** of them are about correlations. Which **two** are they?

Tick **two** boxes only.

This method provides detailed information about individuals.	<input type="checkbox"/>
This method cannot establish cause and effect.	<input type="checkbox"/>
This method allows a researcher to see if there is a relationship between two variables.	<input type="checkbox"/>
This method allows the researcher to control all variables.	<input type="checkbox"/>

[2 marks]

Question 6

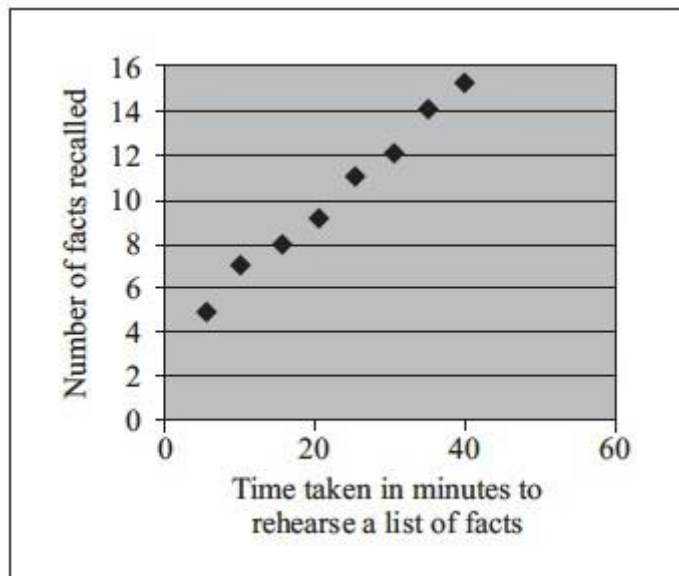
Which of the following statements is **TRUE**?
Tick the correct box.

Correlations can show the strength of a relationship between two variables.	<input type="checkbox"/>
Correlations show the causes of behaviour.	<input type="checkbox"/>

[1 mark]

Question 7

A teacher wanted to find out whether there was a relationship between the amount of time her students spent rehearsing a list of facts and the number of facts they could remember. She plotted her findings in a scatter graph.



Identify the type of relationship shown in the scatter graph.

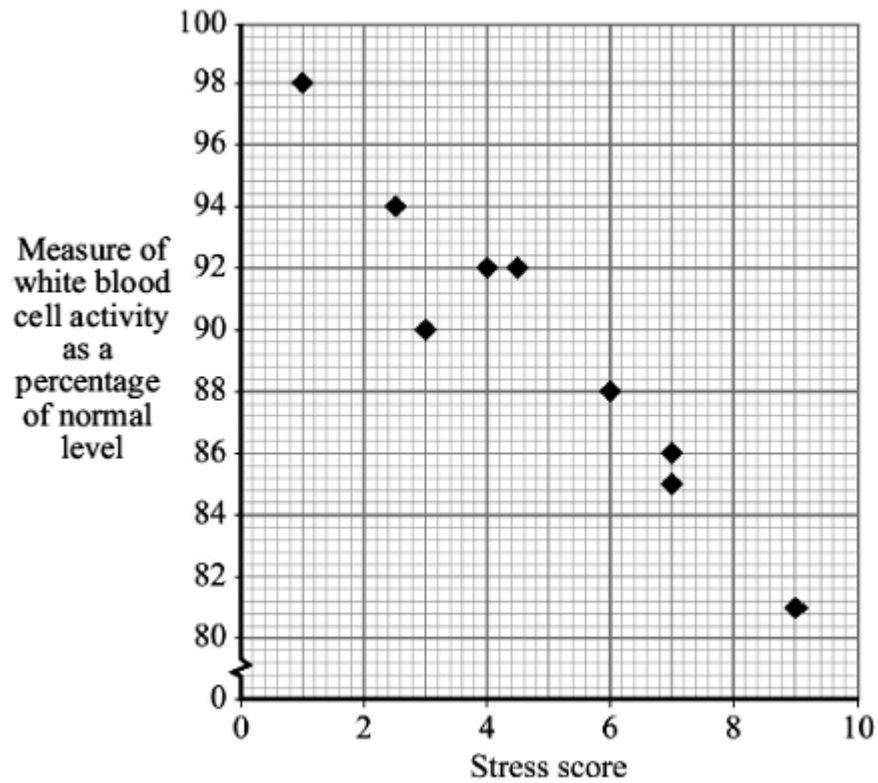
[1 mark]

Question 8

One measure of the functioning of the immune system is the level of activity of white blood cells.

What does the graph below tell you about the relationship between stress and the level of activity of white blood cells?

Relationship between stress and the level of activity of white blood cells



[2 marks]

Practical: The Stroop Effect

The BPS (British Psychological Society) have a useful resource on the Stroop Effect.

<https://cms.bps.org.uk/sites/default/files/2022-09/6%20Stroop%20Effect.pdf>



In this activity, you will undertake a mini practical. You will be investigating the Stroop Effect Using Simply Psychology's information on the Stroop Effect, answer the question below.

<https://www.simplypsychology.org/stroop-effect.html>



Don't copy and paste, you need to show your understanding by answering this in your own words

What is the Stroop Effect?

The Stroop task requires participants to look at colour words, such as 'blue', 'red', or 'green' and name the colour. However, the task involves naming the colour of the ink that the words are printed in, while ignoring the actual word meaning.

Participants generally find it easy to name the colour of a word eg 'black' when it is printed in black but this can be challenging when the word and the ink colour are different. The extent to which this interferes with the speed of naming the colour of the ink of this is known as the Stroop Effect.

Instruction – participants are asked to name the colour of ink the word is printed in.

Congruent Condition	Incongruent Condition
'Congruent' means that the word and the colour of ink match.	'Incongruent' means that the word and the ink colour do not match
Red	Red
Yellow	Yellow
Green	Green
Blue	Blue
Black	Black

Try your own Stroop test

Complete the online Stroop test and answer the questions below.

https://www.psytoolkit.org/lessons/experiment_stroop.html

Make a note of what was measured when you receive your results.

In this research, identify the independent and dependent variable.



Independent variable	
Dependent variable	

What is the hypothesis for this research?

Using the [online test](#), ask 10 people you know to complete the Stroop test and record their results.

Participant's speed in correct trials (milliseconds) during Stroop test for congruent (word and ink colour match) and incongruent conditions.

Participant	Congruent condition	Incongruent condition
Participant 1		
Participant 2		
Participant 3		
Participant 4		
Participant 5		
Participant 6		
Participant 7		
Participant 8		
Participant 9		
Participant 10		

Now calculate the mean and median for your results.

	Congruent condition	Incongruent condition
Mean		
Median		

Comment on your results in relation to your hypothesis