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# **A LEVEL**

Examiners' report

# **PSYCHOLOGY**

**H567**For first teaching in 2015

# **H567/01 Summer 2019 series**

Version 1

# Contents

Introduction	4
Paper 1 series overview	5
Section A overview	6
Question 1	6
Question 2	6
Question 3	7
Question 4	7
Question 5	7
Question 6	8
Question 7	8
Question 8	8
Question 9	9
Question 10	9
Question 11	9
Question 12	10
Question 13	10
Question 14	11
Question 15	11
Question 16	11
Question 17	12
Question 18	12
Question 19	12
Question 20	13
Section B overview	14
Question 21	14
Question 22	15
Question 23 (a)	17
Question 23 (b)	17
Question 24	18
Question 25 (a)	18
Question 25 (b)	19
Question 26	20
Section C overview	21
Question 27	22
Question 28	23

Question 29	23
Question 30 (a)	24
Question 30 (b)	24
Question 30 (c)	24
Question 30 (d)	25
Question 30 (e)	25
Question 31 (a)	26
Question 31 (b)	27
Question 32	27
Question 33	28



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# Introduction

Our examiners' reports are produced to offer constructive feedback on candidates' performance in the examinations. They provide useful guidance for future candidates. The reports will include a general commentary on candidates' performance, identify technical aspects examined in the questions and highlight good performance and where performance could be improved. The reports will also explain aspects which caused difficulty and why the difficulties arose, whether through a lack of knowledge, poor examination technique, or any other identifiable and explainable reason.

Where overall performance on a question/question part was considered good, with no particular areas to highlight, these questions have not been included in the report. A full copy of the question paper can be downloaded from OCR.

# Paper 1 series overview

Overall, this year, the standard of responses was good. There was a wide range of responses, suggesting the paper differentiated appropriately. Higher achieving candidates wrote more extended and detailed responses that were clearly focused on the question. Most candidates did contextualise their responses to the research proposal outlined in Sections B and C. Some candidates found it difficult to use terminology appropriately and some were unable to give definitions of terminology from the specification. In order to be fully prepared for this examination it is important that all aspects of the specification are covered. In addition, candidates should have practice in the design and implementation of their own practical activities (including an analysis of the data collected and the conclusions reached from this). This should hopefully reinforce their knowledge and understanding of research methods in general, as well as some of the specific terms and concepts they could be assessed on and help them to comment on how conducting their own research has helped in the planning of novel research presented in this examination. In addition, research methods can be reinforced through the core studies so that the candidates are prepared for identifying the research methods used in the core studies that they have learnt. It would also be a good idea to produce a glossary, commencing early in the course to facilitate understanding of the many terms and concepts (many of which candidates will not have encountered before studying Psychology). In general, the use of examples to illustrate points, convey understanding better and help elaboration should be encouraged. Finally, it is important to realise that a comprehensive understanding of inferential statistics and how they are interpreted is required and a realisation that there may be the need to perform some calculations in response to some questions.

#### Key point call out

In order to be fully prepared it is important that all aspects of the specification are covered – focusing particularly on page 5 to page 10 in the specification and page 29 to page 31 (for the mathematical skills)



AfL

Centres should encourage candidates to create a glossary of key research method terms and concepts, and should promote using these terms in their responses.

# Section A overview

There was good knowledge and understanding shown of the core studies, data recording, analysis and presentation and the methods used by psychologists. In this section, candidates should cover the whole of the syllabus for research methods as there were some gaps in knowledge that were evident on specific multiple choice questions outlined below.

$\sim$		- 4
()	uestion	-1

1	What type of distribution refers to a situation in which the majority of participants score highly on the measure on which they are assessed?				
	Α	bimodal			
	В	negatively skewed			
	С	normal			
	D	positively skewed			
	You	ur answer [	1]		
		er of candidates were unable to give a correct response to this question. Many candid incorrectly.	lates chose		
Que	esti	on 2			
2	Wh	ich of these best describes what a 'Type 2' error refers to?			
	Α	incorrectly accepting the null hypothesis			
	В	incorrectly rejecting the null hypothesis			
	С	use of the incorrect inferential statistical test			
	D	use of the incorrect tables of critical values			
	You	ur answer	[1]		
Ansv	vere	ed correctly by most candidates. Some candidates chose option B incorrectly.			

A when there are a few scores much lower than the rest  B when there are a few scores very similar to each other  C when there is a large number of scores overall  D when there is a small number of scores overall  Your answer [1]  A significant number of candidates were unable to give correct response to this question. Incorrect choices by candidates were varied. This would indicate that candidates need to be fully prepared to challenge their understanding of mean, median and mode.  Question 4  4 Which of these inferential statistical tests is the only one that does not involve ranking of the data at some stage?  A Chi-square  B Mann Whitney U test  C Spearman's Rho  D Wilcoxon Signed Ranks test Your answer [1]  Wost candidates answered this question correctly.  Question 5  A study investigating the difference in aggression between boys and girls recorded the number of times a child shouted at someone during playtime. Which of the following would be the appropriate inferential test to use to analyse the data from this study?  A Binomial sign test  B Chi-square  C Mann Whitney U test  D Wilcoxon Signed Ranks test Your answer [1]	A when there are a few scores much lower than the rest  B when there are a few scores very similar to each other  C when there is a large number of scores overall  D when there is a small number of scores overall  Your answer				
B when there are a few scores very similar to each other C when there is a large number of scores overall D when there is a small number of scores overall Your answer  [1] A significant number of candidates were unable to give correct response to this question. Incorrect choices by candidates were varied. This would indicate that candidates need to be fully prepared to challenge their understanding of mean, median and mode.  Question 4  4 Which of these inferential statistical tests is the only one that does not involve ranking of the data at some stage?  A Chi-square B Mann Whitney U test C Spearman's Rho D Wilcoxon Signed Ranks test Your answer  [1]  Wost candidates answered this question correctly.  Question 5  5 A study investigating the difference in aggression between boys and girls recorded the number of times a child shouted at someone during playtime. Which of the following would be the appropriate inferential test to use to analyse the data from this study?  A Binomial sign test B Chi-square C Mann Whitney U test D Wilcoxon Signed Ranks test Your answer  [1]	B when there are a few scores very similar to each other C when there is a large number of scores overall D when there is a small number of scores overall Your answer	3	Whe	en would it be best to use the median rather than the mean?	
C when there is a large number of scores overall  D when there is a small number of scores overall  Your answer	C when there is a large number of scores overall D when there is a small number of scores overall Your answer		Α	when there are a few scores much lower than the rest	
D when there is a small number of scores overall Your answer	D when there is a small number of scores overall Your answer		В	when there are a few scores very similar to each other	
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4 Which of these inferential statistical tests is the only one that does not involve ranking of the data at some stage?  A Chi-square  B Mann Whitney U test  C Spearman's Rho  D Wilcoxon Signed Ranks test Your answer [1]  Wost candidates answered this question correctly.  Question 5  5 A study investigating the difference in aggression between boys and girls recorded the number of times a child shouted at someone during playtime. Which of the following would be the appropriate inferential test to use to analyse the data from this study?  A Binomial sign test  B Chi-square  C Mann Whitney U test  D Wilcoxon Signed Ranks test Your answer [1]	at some stage?  A Chi-square  B Mann Whitney U test  C Spearman's Rho  D Wilcoxon Signed Ranks test Your answer [1]  Most candidates answered this question correctly.  Question 5  5 A study investigating the difference in aggression between boys and girls recorded the number of times a child shouted at someone during playtime. Which of the following would be the appropriate inferential test to use to analyse the data from this study?  A Binomial sign test  B Chi-square  C Mann Whitney U test  D Wilcoxon Signed Ranks test	cho	ces	by candidates were varied. This would indicate that candidates need to be fully p	
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B Mann Whitney U test C Spearman's Rho D Wilcoxon Signed Ranks test Your answer	B Mann Whitney U test C Spearman's Rho D Wilcoxon Signed Ranks test Your answer [1]  Most candidates answered this question correctly.  Question 5 5 A study investigating the difference in aggression between boys and girls recorded the number of times a child shouted at someone during playtime. Which of the following would be the appropriate inferential test to use to analyse the data from this study?  A Binomial sign test B Chi-square C Mann Whitney U test D Wilcoxon Signed Ranks test Your answer [1]	4		·	ne data
C Spearman's Rho D Wilcoxon Signed Ranks test Your answer	C Spearman's Rho D Wilcoxon Signed Ranks test Your answer		Α	Chi-square	
D Wilcoxon Signed Ranks test Your answer	D Wilcoxon Signed Ranks test Your answer		В	Mann Whitney U test	
Your answer  Most candidates answered this question correctly.  Question 5  A study investigating the difference in aggression between boys and girls recorded the number of times a child shouted at someone during playtime. Which of the following would be the appropriate inferential test to use to analyse the data from this study?  A Binomial sign test  B Chi-square  C Mann Whitney U test  D Wilcoxon Signed Ranks test  Your answer  [1]	Your answer [1]  Most candidates answered this question correctly.  Question 5  5 A study investigating the difference in aggression between boys and girls recorded the number of times a child shouted at someone during playtime. Which of the following would be the appropriate inferential test to use to analyse the data from this study?  A Binomial sign test  B Chi-square  C Mann Whitney U test  D Wilcoxon Signed Ranks test  Your answer [1]		С	Spearman's Rho	
Most candidates answered this question correctly.  Question 5  A study investigating the difference in aggression between boys and girls recorded the number of times a child shouted at someone during playtime. Which of the following would be the appropriate inferential test to use to analyse the data from this study?  A Binomial sign test  B Chi-square  C Mann Whitney U test  D Wilcoxon Signed Ranks test  Your answer  [1]	Most candidates answered this question correctly.  Question 5  A study investigating the difference in aggression between boys and girls recorded the number of times a child shouted at someone during playtime. Which of the following would be the appropriate inferential test to use to analyse the data from this study?  A Binomial sign test  B Chi-square  C Mann Whitney U test  D Wilcoxon Signed Ranks test  Your answer  [1]		D	Wilcoxon Signed Ranks test	
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A study investigating the difference in aggression between boys and girls recorded the number of times a child shouted at someone during playtime. Which of the following would be the appropriate inferential test to use to analyse the data from this study?  A Binomial sign test  B Chi-square  C Mann Whitney U test  D Wilcoxon Signed Ranks test  Your answer  [1]	A study investigating the difference in aggression between boys and girls recorded the number of times a child shouted at someone during playtime. Which of the following would be the appropriate inferential test to use to analyse the data from this study?  A Binomial sign test  B Chi-square  C Mann Whitney U test  D Wilcoxon Signed Ranks test  Your answer  [1]	Mos	t car	ndidates answered this question correctly.	
times a child shouted at someone during playtime. Which of the following would be the appropriate inferential test to use to analyse the data from this study?  A Binomial sign test  B Chi-square  C Mann Whitney U test  D Wilcoxon Signed Ranks test  Your answer  [1]	times a child shouted at someone during playtime. Which of the following would be the appropriate inferential test to use to analyse the data from this study?  A Binomial sign test  B Chi-square  C Mann Whitney U test  D Wilcoxon Signed Ranks test  Your answer  [1]	Qu	esti	on 5	
B Chi-square C Mann Whitney U test D Wilcoxon Signed Ranks test Your answer [1]	B Chi-square C Mann Whitney U test D Wilcoxon Signed Ranks test Your answer [1]	5	time	es a child shouted at someone during playtime. Which of the following would be the appr	
C Mann Whitney U test  D Wilcoxon Signed Ranks test  Your answer [1]	C Mann Whitney U test  D Wilcoxon Signed Ranks test  Your answer [1]		Α	Binomial sign test	
D Wilcoxon Signed Ranks test  Your answer [1]	D Wilcoxon Signed Ranks test  Your answer [1]		В	Chi-square	
Your answer [1]	Your answer [1]		С	Mann Whitney U test	
			D	Wilcoxon Signed Ranks test	
Most candidates were able to answer this question correctly.	Most candidates were able to answer this question correctly.		You	ır answer	[1]
		Mos	t car	ndidates were able to answer this question correctly.	

Question 6
------------

6	Wh	ich symbol in statistics means 'approximately'?	
	Α	α	
	В	<	
	С	~	
	D	Σ	
	You	ur answer [1]	
Man	у са	indidates answered this question correctly. Some candidates chose option A incorrectly.	
Que	esti	on 7	
7		at type of validity refers to the extent to which the scores on one measure are able to predict outcome on another related measure?	
	Α	criterion	
	В	ecological	
	С	face	
	D	population	
	You	ur answer [1]	
Mos	t car	ndidates answered this question correctly.	
Que	esti	on 8	
8		ch of these is the name of an interviewing technique where the researcher has no pre-planned stions?	
	Α	free form	
	В	open	
	С	unplanned	
	D	unstructured	
	You	r answer [1]	
Nea	rly a	Il candidates answered this question correctly.	

9	For which of the following would it be appropriate to use a line graph to display the data?	
	A differences in the ability of males and females to identify six emotions displayed on the	e face
	B number of acts of aggression displayed by boys and girls	
	C preference for four different learning styles displayed as percentages	
	D self-ratings of aggression (1 to 10) at different times of day (10am to 10pm)	
	Your answer	[1]
Man	y candidates answered this question correctly.	
Que	estion 10	
10	In the study by Simons and Chabris investigating inattentional blindness, how was the deperturbable operationalised?	ndent
	A detection of 'gorilla'	
	B duration of video clip played	
	C estimation of number of players present	
	D number of passes of basketball counted	
	Your answer	[1]
oper	mber of candidates were unable to give correct response to this knowledge based que ationalising a dependent c=variable in the core study. D was given wrongly as a respo	
Que	estion 11	
11	In the study by Baron-Cohen et al., what sampling technique was used to obtain the functioning adults with autism (HFA)?	high
	A opportunity	
	B self-selected	
	C snowball	
	D random	
	Your answer	[1]
cano	vered correctly by 67% of candidates. Incorrect choices by candidates were varied. A lidates were unable to give correct response to this question, potentially due to confusivledge of different sampling techniques.	

- 12 What fraction is represented by the decimal 0.05?
  - A  $\frac{1}{2}$
  - **B**  $\frac{1}{5}$
  - c  $\frac{1}{20}$
  - **D**  $\frac{1}{50}$

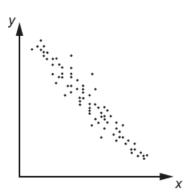
Your answer

[1]

Most candidates answered this correctly

# Question 13

13 Which of the calculated values from a Spearman's Rho test best reflect the correlation displayed in the scatter diagram below?



- **A**  $r_s = +0.2$
- B  $r_s = +0.8$
- $r_s = -0.2$
- **D**  $r_s = -0.8$

Your answer

[1]

Many answered this correctly.

	Which of these is the name of a section of the write-up of a practical report that provides a summary of the research conducted?					
A	<b>A</b> abject					
E	<b>B</b> ablate					
C	C absinth					
	D abstract					
Υ	Your answer	[1]				
Answ	vered correctly by 98% of candidates. Nearly all candidates answ	vered this correctly.				
Que	estion 15					
15 V	What name is given to the type of data collected directly by the resea	irchers?				
A	A preliminary					
E	B precursor					
C	C principal					
	<b>D</b> primary					
Υ	Your answer	[1]				
Nearly	y all candidates answered this correctly. (99%)					
Que	estion 16					
16 V	What type of data is displayed in a histogram?					
A	A anomalous					
E	B continuous					
c	C nominal					
	<b>D</b> ranked					
١	Your answer	[1]				
	mber of candidates were unable to give a correct response to the ponse by quite a number of candidates.	s question. C was wrongly given as				

							- 4	
$\mathbf{O}$	ш		ct	11/		n	1	_
U	, U	<b>.</b>	<b>5</b> 1	ш	v			_ /

17	Which is true of a field experiment?					
	Α	A has an independent variable				
	В	has an independent variable that cannot be manipulated				
	С	has an independent variable that is always naturally occurring				
	D	has no independent variable				
	You	ir answer	[1]			
Ans	vere	ed correctly by many candidates. Some candidates chose option C incorrectly.				
Que	esti	on 18				
18	Wh	ich is true of a naturalistic observation?				
	Α	always conducted in an outdoor location				
	В	conducted in a place where the behaviour studied usually occurs				
	С	has a naturally occurring independent variable				
	D	has data collected by someone who is part of the research team				
	You	ir answer	[1]			
Ans	were	ed correctly by most candidates. Incorrect choices by candidates were varied.				
Que	esti	on 19				
19	Wh	at is a coding frame?				
	Α	a technique that enables qualitative data to be recorded as quantitative				
	В	a technique that enables quantitative data to be recorded as qualitative				
	С	a technique that enables ordinal data to be recorded as nominal				
	D	a technique that enables interval data to be recorded as nominal				
	Υοι	ur answer	[1]			
		ty of candidates were not clear on what a coding frame is. This could be avoided by ey terms and concept glossary lists.	promoting			

20	What does the term 'representativeness' refer to?				
	Α	the extent to which the findings can be applied to everyday life			
	В	the extent to which the findings can be applied to other related research			
	С	the extent to which the findings can be applied to the population			
	D	the extent to which the findings can be applied to the sample			
	You	r answer	[1]		
Ans	vere	d correctly by most candidates. Some candidates chose option A incorrectly.			

## Section B overview

Section B: Areas, perspectives and debates. Questions in this section focus on areas, perspectives and debates in Psychology. Questions range in size and mark allocation

There was good understanding shown of the correlation research methods as well as secondary data and quantitative and qualitative data shown by many candidates. To improve, candidates should learn all of the terminology in the specification so that they can address all questions. They should also learn appropriate strengths and weaknesses of the different types of data collected by psychologists. Many of the responses were appropriately contextualised but not in all cases.

#### Question 21

#### Weigh more outgoing?

Some research suggests that personality is linked to a person's body type (their structure and weight), with larger people having a more extrovert (lively and outgoing) personality than those who are smaller. To investigate this further, a psychologist wants to use the correlation technique to examine the relationship between weight and extroversion.

21	Write an alternative one-tailed hypothesis for this study.
	[3]

Many candidates did write an appropriate alternative one-tailed hypothesis where both variables were operationalised. Most candidates operationalised body type by measuring the weight of the participants. Many candidates operationalised extroversion by measuring it in either a personality test or using a 1-10 rating scale. Common errors included writing an experimental hypothesis where smaller and larger people were compared or not operationalising the variables fully. A smaller number of candidates wrote a two-tailed hypothesis which was not creditworthy.

#### Exemplar 1

21

Write an alternative one-tailed hypothesis for this study.
Intuis investigation into now
ones body type (Their smoture and
weight) will have an effect on their
penenality. This meaning larger people
will be incre extraverted, where as
smaller people will be more introverted [3]

Exemplar 1 is an example of a common error where the candidate has written an experimental hypothesis rather than a correlational hypothesis.

#### Question 22

- 22\* Explain how you would conduct a study using the correlation technique to investigate if there is a relationship between a person's weight and their level of extroversion. Justify your decisions as part of your explanation. You must refer to:
  - the sampling technique to obtain participants for the study
  - how you would operationalise the variable 'extroversion'
  - · details of how one ethical consideration would be addressed
  - · the control of one extraneous variable.

You should use your own experience of practical activities to inform your response.	[15]

Responses varied a lot to this extended (yet predictable in its format) question, with many candidates finding it difficult to achieve the higher band marks. The best responses were characterised by taking each of the four required features in turn, writing a separate paragraph relating to each one. Firstly, demonstrating understanding of what was involved and how to address it for the research presented. Next by justifying the decisions made regarding how to address it. Finally, drawing on the candidates own experiences of conducting research themselves and how they learnt from this how to conduct the research presented. All of this needed to be discussed in context to obtain marks in the highest band. It should also be noted that the candidates own experiences of conducting practical activities (especially the one using the same research method, which here was correlation) should be evident in their response to each required feature in terms of how this has helped inform their decision making for the planning of the current proposed research.

There was also much variation in how candidates demonstrated knowledge and understanding of each of the individual required features (RFs). The best responses were characterised by first defining what the RF was / referred to (e.g. for RF1, defining the sampling method) before going on to describe exactly how the RF would be addressed in the proposed research. Often candidates did not provide enough

detail. For example, in relation to RF1 just identifying the method without clearly describing how they would implement this sampling method in this research did not gain the full credit. Most candidates were able to identify and describe appropriate way to operationalise the variable 'extraversion' for RF2. Many did clearly explain how this would be done with the most popular choice being a 1-10 scale. A significant number of candidates clearly labelled the rating scale they had given. Some candidates identified that they would collect nominal data which is not appropriate for a correlation and was not creditworthy for RF2.

RF3 was well explained by many candidates with some identifying 'respect' as the core principle, although many did not put this into the context of extraversion or body type. Some made good reference to upholding the status of Psychology by adhering to the ethical guidelines, which in turn, reflects positively on Psychology's standing in the wider community. However, many of the candidates did write brief responses that identified the ethical guideline and wrote very brief justifications, such as stating that it would make the study more ethical with no explanation given as to why this would be the case.

RF4 was often well explained and sometimes contextualised by the candidates. Popular controls included gender, age, mental health and the environment that the study took place in. Some of these responses were very well explained and justified. However, many responses lacked context or were very brief and just identified a variable to control rather than explaining how it would be controlled in this research.

Most candidates did make explicit reference to their own practical projects throughout their response. Many did get confused however between the correlation and experimental method and sometimes provided justifications that related to comparing conditions which was not creditworthy.

#### Exemplar 2

For this study, I would operationalise the variable of "extroversion". By I would use a self report the questionnairs to measure levels of extroversion on a likent scale of 1-5, 5 being very highly extroverted.

I would use a likent scale as it gains more detailed, specific quantitative data than a closed question would.

For my own study on steep and level of concentration, I operationalised the variable of "concentration" by asking & participants to fit out a self report questionnaire as asking than the nate their level of concentration and in class for that day on a scale of 1-10, 10 being highest concentration. Operationalising this of variable made to easy to produce a one tailed, directional hypothesis for the study.

Exemplar 2 is an example paragraph from a candidate who has addressed RF2 clearly and provided some reasonable justification but not in context and makes explicit reference to their practical work. This candidate achieved a mark in the reasonable band overall as the justification for each RF throughout their response was reasonable and sometimes not in context.

Question	23	(2)
Question	20	a

23	(a)	Outline how you could obtain secondary data to use as the measurement of the variable 'weight'.
		[3]

Most candidates did well on this question, clearly outlining how secondary data could be collected. Many candidates referred to accessing GP or hospital records for the participants. Common errors were where a sizeable minority of candidates referred to primary data, e.g. asking participants to weigh themselves and then give these to these to the researcher. In addition, some candidates suggested that the researcher could access previous research. These candidates were not aware that secondary data must be collected for the participants in the current study and not, different participants from previous research.

# Question 23 (b)

(b)	Outline one strength of the use of secondary data in this study.
	[3]

Many candidates gave well explained responses that were put into the context of the research outlined at the beginning of Section B. Popular responses included saving time, saving embarrassment of being weighed or being more valid as recorded by a professional. If the candidate provided a correct response to 23(a), they were likely to achieve marks for this question as well. However, for those who outlined primary data in 23(a), these candidates often did not achieve marks for 23(b) as the strength they gave was for primary, rather than secondary data. Some of the responses were not contextualised or were very brief. For example, some candidates would state that the data was more valid with a very brief explanation as to why.

24	Outline <b>one</b> weakness of having quantitative data in this study.
	[31

The question was usually answered well by candidates. Many responses outlined weaknesses about not being able to express why someone was extrovert or why they were overweight. Many candidates were able to support their responses with good, contextual examples. A few candidates did not put their responses into the context of the research outlined at the start of Section B or gave very brief responses such as stating that quantitative data is not in depth. A common incorrect response was where the candidate evaluated the use of a correlation rather than quantitative data.



#### AfL

Centres should be encouraged to guide students to look at the marks available for each question. In this instance, for 3 marks merely stating that "quantitative data is not in depth" is not enough detail to gain all the marks available. Candidates should make sure they answer in context when a question includes "in this study".

# Question 25 (a)

25	(a)	Suggest <b>one</b> open question that could provide additional information in the form of qualitative data for use in this study.
		[2]

Most candidates wrote an open question that was appropriately contextualised for this study. For example, many candidates asked about why they thought they were an extrovert or why they believed that there is a relationship between extraversion and body type. Some candidates did ask a general question and these received 1 mark as they were not necessarily appropriate for this study in terms of understanding the relationship between extraversion and body type through an open question. A very small minority of candidates wrote a closed question with response categories and these were not creditworthy.

# Question 25 (b)

(b)	Outline <b>one</b> strength of having some qualitative data in this study.
	[3]

Candidates performed well on this question. Some of the better responses provided a clear reason as to how having some qualitative data in this study could increase the validity and/or usefulness of the results. Most candidates did achieve some marks on this question. Common reasons for not achieving full marks were that the candidate wrote a very brief response and/or did not contextualised their response in terms of the research study outlined at the beginning of Section B.

#### Exemplar 3

It allows Ps to freely express their thoughts and feelings about their exproverion and in doings o provides rich debailed cognitive Insights unich may help the researche to explain why weight may effect extroverisps why weight may effect extroverisps

Exemplar 3 highlights a good, contextualised outline of a strength that was given full marks. This response also highlights a response that is appropriate for a 3-mark question.

6	from this study.

There were some good responses to this question, with most candidates referring to improvements to the sample and how this would help to increase the generalisability of the findings. The vast majority of the responses were contextualised in terms of extraversion and/or body type. Those who did not achieve full marks often did not explain why increasing the sample size would make the study more generalisable. Common errors usually included reference to experimental designs such as independent measures and matched pairs which were not creditworthy.

# Section C overview

A good understanding was shown by many candidates of types of data, use of inferential statistics, bar charts and conclusions that can be drawn from data as well as from statistical analysis. Many of the responses were in context of the study on bin use. Weaker responses tended to be brief. This section of the examination had the most questions that were not attempted by candidates.



#### **AfL**

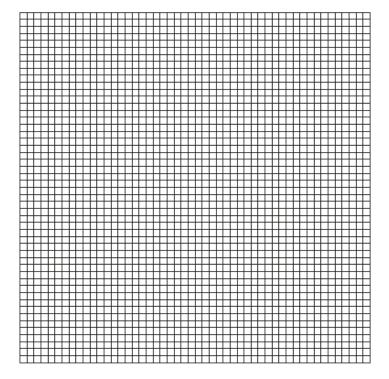
Candidates should practice under timed conditions as much as possible to get used to writing under pressure. By doing this students can get a greater sense of how to manage their time effectively so they can respond to all the relevant questions asked

#### Steps to increase bin use

Research suggests that, when trying to encourage people to change their behaviour in some way, 'telling people what to do' is not always effective and a more subtle approach may be better ('nudge theory'). To investigate this, a psychologist conducted an observation study monitoring people's use of two different types of litter bin situated close to each other in the pedestrian area of one large town centre – one that had steps printed on the pavement leading up to it and another without the steps. Recordings were made each time any item was deposited in the bin throughout a continuous period from 10am to 2pm. The data on how many people used the bins is presented in the table below.

	Table showing the number of times each bin was used by males and females	
	Males	Females
Bin with steps	9	14
Bin without steps	5	12

27 Draw a fully labelled bar chart showing the overall use of the two different types of bin.



[4]

Most candidates achieved either 3 or 4 marks for this question. They were able to draw an appropriate bar chart using the data in the table. The axes were usually labelled correctly. The most common error was drawing four bars in the table which showed the results for males and females using the bin with steps and the bin without steps. These types of responses were given 3 out of 4 marks available. The question asked for the overall use of the two different types of bins. Therefore, candidates needed to calculate the overall use for the bins with steps (for both males and females) and the bin without steps (for both males and females) and present these as two bars in their bar chart.

28	Calculate the percentage of people who used the bin with steps leading up to it. Show your workings and present your finding to <b>two</b> significant figures.
	[3]

This question was well answered by the majority of candidates and most showed their workings and correctly presented the finding to two significant figures. The most common error was to present the findings to three significant figures (57.5%) or to not show their full workings. A small minority of candidates gave the incorrect workings and incorrect percentage and therefore achieved no marks.

#### Question 29

29	Outline two conclusions that can be obtained from the data collected in this study.
	[6]

There were some good, full mark responses to this question where the candidate gave two conclusions that could be obtained from the data collected in this study. Those who gave good responses focused on females using the bins more than males and gave an explanation for why this might be true. This included conclusions such as women being tidier than males or caring about the environment more. Many then gave a conclusion about the bins with steps being used more often than the bin without steps. Some candidates referred to 'nudge theory' and how this was effective in encouraging people to throw their rubbish in the bin. One common error was stating that the 'nudge' of the steps was more effective with females than males. The males showed the greatest increase in bin use when they were in the bin with steps condition compared to the bin without steps condition. A very common response was to present the findings of the study without making any conclusions from this data. These responses achieved poorly on this question.

## Question 30 (a)

30	(a)	The psychologist used the Chi-square test to analyse the data from this study. Give <b>one</b> reason why this would be the appropriate non-parametric inferential test to use.
		[2]

This was very well answered by candidates and often the response was in context of this study. The most common response was to identify that the data was nominal with some candidates identifying that the study used an independent measures design. A significant number of candidates did not put their response in context and could, therefore, only achieve 1 mark for their response. A few candidates left this question blank.

# Question 30 (b)

(b)	Calculate the workings.	degrees	of freedom	for use w	ith the	Chi-square	test in this	study.	Show your
									[2]

Many candidates were able to calculate the degrees of freedom, and gave workings. Some candidates were successful in achieving 1, but not through the correct workings. Other candidates showed some understanding of the formula by using (r-1) and (c-1) but added these instead of multiplied.

# Question 30 (c)

(c) Using the extract from the table of critical values presented below, what is the critical value for use with the Chi-square test in this study at the 5% level of probability?

			Probability level					
1	0.001	0.01	0.02	0.05	0.10	0.5	df	
7	10.827	6.635	5.412	3.841	2.706	0.455	1	
5	13.815	9.210	7.824	5.991	4.605	1.386	2	
8	16.268	11.345	9.837	7.815	6.251	2.366	3	
5	18.465	13.277	11.668	9.488	7.779	3.357	4	
7	20.517	15.086	13.388	11.070	9.236	4.351	5	

Many candidates gave the correct response to this question (3.841). There was a follow-on error from 30(b). Those who gave an incorrect response tended to choose either 5.991 or 7.815.

## Question 30 (d)

a)	Chi-square test. Write a significance statement presenting this finding showing if the results are significant at the 5% level of probability or not.
	[3]
	[3]

Many of the candidates wrote out the significance statement in full. They were able to identify that the calculated value was less than the critical value and this, therefore, meant the results were not significant. Some gave the incorrect calculated value that they had incorrectly selected in 30(b) which lead to achieving fewer marks. A small number of candidates believed that the calculated value of 0.4058 was greater than the critical value of 3.841.

## Question 30 (e)

(e)	What does the analysis from the Chi-square test inform us regarding the use of the two different types of bin from this study?
	[3]

Some candidates did achieve very well for this question and were able to clearly explain what the analysis from the Chi-Square test informed us regarding the use of the two different types of bins in this study. However, many did not achieve full marks due to a lack of clarity. There were several candidates who gave the correct response 30(d) but then responded to this question by saying there was a significant difference in the use of the bins. These types of responses were not creditworthy.

Question 31	(a)
Question on	(u)

31 (a)	Outline one strength of the use of the nominal data collected in this study.
	[3]

Many candidates achieved 2 marks by outlining strengths of quantitative data, rather than engaging with a specific feature of nominal data. As such, relatively few achieved full marks. Most of the responses were contextualised in terms of bin with/without steps.

## Exemplar 4

31 <sup>.</sup>	(a)	Outline one strength of the use of the nominal data collected in this study.
		one strength of nominal data is that it imminusions premised
		can be put into a bor there to see the difference
		between the eath bin usuge from men and women which
		is easier to down and virtually easer to read.
		[3]

Exemplar 4 highlights a common response for this question which achieved 2 marks out of a possible 3 marks available. This candidate has correctly identified a strength of nominal data and their response is in context. However, the candidate has not identified a strength that is specific to nominal data as ordinal and interval data could also be put into a bar chart.

# Question 31 (b)

(b)	Outline <b>one</b> weakness of the use of the nominal data collected in this study.
	[3]

Like 31(a) many of the candidates did achieve 2 marks by outlining a weakness of quantitative data. Most found it difficult to explain this weakness being due to a feature of nominal data. Stronger responses made a clear contrast with the sophistication that ordinal or interval level data could provide in contrast to nominal level. Most responses were in context.

#### Question 32

32	Explain what it would mean if there was a 'Type 1 error' in this study.
	rei
	[2]

Most candidates did correctly identify a Type 1 error. Common responses included 'false positive', 'falsely rejecting null hypothesis' and 'falsely accepting alternate hypothesis'. Some of the responses were contextualised in terms of the hypothesis for the bin with steps study, but not all.

33	Outline <b>one</b> weakness of the use of event sampling to record the data in this study.
	[3]

This question generated a variety of responses. Strong responses focused on features of event sampling in this study specifically, for example referring to the fatigue involved in observing bins for 4 hours. A number of good responses commented on how time sampling would have provided more detail in this study, for example, use of time sampling could indicate if there were a large number of people attempting to use the bins simultaneously and this would suggest that sometimes people used a bin, not because of the steps, but because that was the one available for use at that time. Common errors included giving weaknesses of carrying out an observation or a weakness of an overt observation, which were not creditworthy. Most of the responses were in context.

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