GCE

Psychology

Advanced GCE **G541**

Psychological Investigations

Mark Scheme for June 2010

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Mark schemes should be read in conjunction with the published question papers and the Report on the Examination.

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Section A

Researchers conducted a study investigating the correlation between amount of sleep and concentration. First, participants were asked how long they had slept the previous night in hours and minutes. This was then recorded as 'total minutes slept'. Concentration was then assessed using a letter cancellation task in which subjects had two minutes to read an extract from a book, counting the number of times that the letter 'f' appeared. The data is presented in the table below.

Participant (initials)	Total minutes slept the night before	Number of times the letter 'f' was identified
MM	480	14
MJ	270	12
JW	420	24
CC	390	20
EP	450	25
HA	180	8
MH	300	16
JD	360	18

Question	Answer	Marks	Additional guidance
1	**Identify <u>one</u> strength and <u>one</u> weakness of the correlational method. [4]** 2 marks for strength, 2 marks for weakness **Strengths** could include: provides information about patterns/trends that can then be investigated more experimentally if desired; can be plotted visually in a scattergraph to see relationship clearly; enables us to make predictions based on the relationship between variables; when unethical or impractical to carry out an experiment; starting point for further research; etc. **Weaknesses** could include: does not inform us about cause-and-effect; the relationship revealed can be misleading; some variables can not be correlated (only variables generating continuous data can be correlated) **0 marks** The candidate has not provided any creditworthy information **1 mark** Attempt to identify strength/weakness, but lacks some clarity **2 marks** Strength/weakness clearly outlined	[4]	For full marks the strength and weakness cited must be specific to the correlational method, and not generic. For example, *a weakness is that just because we might find a positive correlation between the variables it does not show cause and effect.* Citing quantitative data on its own is not sufficient to credit, but elaborating on it is creditworthy. A weak elaboration would gain one mark.

Question	Answer	Marks	Additional guidance
2	**Suggest an appropriate alternate hypothesis for this study.** There will be/is a correlation between the amount of sleep an individual has had the previous night and the number of letter 'Fs' detected in a passage (two-tailed). It is also acceptable to cite an appropriate one-tailed alternate hypothesis. There will be/is a *positive* correlation between the amount of sleep an individual has had the previous night and the number of letter 'Fs' detected in a passage (one-tailed). * Candidates who state an experimental alternate hypothesis (*there will be a difference …),* or phrase their answer as a research question, or state a null hypothesis should be awarded zero. **0 marks** The candidate has not provided any creditworthy information **1 mark** The candidate has written an appropriate alternate hypothesis but has simply stated 'there will be/is a correlation'. There is no indication of either variable **2 marks** The candidate has written an appropriate alternate hypothesis but has only referred to one variable (eg 'there will be/is a correlation with amount of sleep' or 'there will be/is a correlation with performance in a concentration task') **3 marks** The candidate has written an appropriate alternate hypothesis referring to both variables, but there is a lack of clarity for either one or both variables (e.g. there will be/is a correlation between sleep and concentration) **4 marks** The candidate has written a clearly stated appropriate alternate hypothesis referring to both variables	**[4]**	Candidates do not have to commence with *There will be …* , or use the word 'significant'. Either a one- or two-tailed hypothesis is acceptable.

Question	Answer	Marks	Additional guidance
3	**Identify <u>two</u> findings from the data in this study.** Findings could include: in general the longer slept the more letter 'Fs' found; time slept varied from 180 to 480 minutes; the highest number of 'Fs' detected was 25, the lowest was 8; MM slept the longest but did not detect the most letter 'Fs'. MM is the only anomaly (having slept for 480 mins and only detecting 14 Fs). Accept reference to positive correlation. Also credit responses quoting descriptive statistics correctly ('Fs' Mean = 17.13; median = 17 (or 'between 16 and 18), range = 17 (or 8 to 25). Mins slept – mean = 356.25, median = 375 (or between 360 and 390), range = 300 (or 180 to 480) Do not accept rewording of same statement twice (e.g. positive correlation between mins slept and Fs / as number of mins slept increases so does number of Fs) 2 marks for each finding **0 marks** The candidate has not provided any creditworthy information **1 mark** Finding identified, but could be clearer **2 marks** Finding clearly identified in context	**[4]**	Candidates often 'blend' findings and conclusions. Here it is acceptable to cite a finding embedded into a conclusion. For example, *getting a lot of sleep seems to help you concentrate more and spot more letter 'Fs'.* Award one mark for unclear findings stated e.g. *MJ =12* Findings referring to single participants is acceptable

Question	Answer	Marks	Additional guidance
4	**Outline <u>one</u> strength and <u>one</u> weakness with the way that concentration was measured in this study.** **Strengths** could include: provides a quantifiable measure; can compare easily across participants; validity in general could be said to be high because the task demands effort to do well (e.g. may easily misplace where you have read up to if not concentrating hard); it was a practical way of assessing concentration; it was a standardised way to assess concentration. **Weaknesses** could include: could be said to lack some ecological validity (not a usual task); participants with eyesight problems may be unfairly disadvantaged; no meaning/purpose behind the task (no consequence if don't do well); 3 marks for strength, 3 marks for weakness **0 marks** The candidate has not provided any creditworthy information **1 mark** Brief, unclear and general outline of the strength/weakness **2 marks** Clear outline of the strength/weakness but not in context of investigation **OR** unclear, but in context **3 marks** Clear outline of the strength/weakness in context of investigation (must make some reference to the letter cancellation task/detection of letter 'Fs' for full marks)	[6]	For both the strength and the weaknesses the answer must be in context of the theme of the study for full marks. For example, *counting the number of letter 'Fs' is a good way to measure concentration because it would be easy to confuse an F with an E if you were not concentrating hard, so therefore it is a valid way of measuring concentration.* Participant variables are acceptable, but only those directly related to the task (e.g. dyslexia, reading speed etc is acceptable, whereas caffeine consumption is not) Reference to the use of self report as the measure of concentration is creditworthy.

Question	Answer	Marks	Additional guidance
5	**Explain what is meant by a positive correlation. [2]** A positive correlation is where as the values of one variable increase, related values of the second variable also tend to increase (although not necessarily at the same rate) **0 marks** The candidate has not provided any creditworthy information **1 mark** Attempt to explain what a positive correlation is, but could be clearer **2 marks** Clear explanation of a positive correlation	**[2]**	The candidate's response here does not have to be contextualised to the theme of the investigation (sleep and concentration), but they can do so if they like. Reference to causation (e.g. claiming affect/effect of one variable on another) should be awarded zero. Appropriate visual displays (sketches) are acceptable for one mark only (if no explanation is provided) Reference to DV should be awarded zero. E.g. As the IV increases the DV increases. However, if this is followed by a correct answer award 1 mark maximum.

Section B

Researchers conducted an *independent measures design* experiment in a local coffee bar investigating whether receiving physical contact from someone increases their rating of friendliness.
The experiment took place between 11am and 2pm on a Wednesday. As members of the public left the coffee bar after paying, some were touched lightly on the upper arm by the cashier, whereas others were not. Outside the coffee bar members of the public were asked how friendly they thought the staff were on a scale of 1 ('not very friendly') to 10 ('extremely friendly').

Question	Answer	Marks	Additional guidance
6	**Identify the sampling technique used to obtain participants for this study and suggest <u>one</u> weakness with it.** The sampling method used is opportunity sampling (also accept 'convenience', 'accidental' or 'cluster sampling'). Weaknesses could include: no (direct) control over what type of people participate; may not be representative of the wider target population; coffee bar goers in general may be atypical of other people to whom the research is intended to be aimed at; Only a 3 hour period was sampled across the mid-day (people may have reacted differently at different times of the day) etc **0 marks** The candidate has not provided any creditworthy information **1 mark** Sampling method identified **OR** sampling method not identified **OR** incorrectly identified, but attempt to suggest weakness of it, but lacks clarity **2 marks** Sampling method identified and an attempt to suggest weakness of sampling method but in general and lacks clarity **OR** sampling technique not identified, or incorrect, but weakness clearly suggested in the context of the information provided in the source material **3 marks** Sampling method identified and weakness clearly suggested but in general terms **OR** sampling method identified and attempt to suggest weakness in context **4 marks** Sampling method identified and weakness clearly suggested in the context of the information provided in the source material.	[4]	For full marks the candidate must discuss the weakness of opportunity sampling in context. For example, *a weakness is that you are restricted by who happens to be using the coffee bar at the time of the study, which on a Wednesday between 11-2pm may not be representative of how other people may react if touched on the arm by the cashier when paying or not.* Ethical issues (e.g. lack of consent) are acceptable If sampling technique is not cited, or cited incorrectly = max 2 marks

Question	Answer	Marks	Additional guidance
			*Reference to location – coffee bar, is not sufficient for full marks, but qualifies as 'an attempt' at context (max 3 marks)
			Reference to friendliness (implicit or explicit) is necessary to be awarded full marks. If the weakness is an attempt but mentions friendliness it will be credited 3.
			Context can be in either the description of the sampling technique **OR** the weakness **OR** both.
			Demand characteristics are not creditworthy as a weakness.

Question	Answer	Marks	Additional guidance
7	**What is an '*independent measures design*'?** An independent measures design is where participants only take place in one condition of the experiment (where each condition of the independent variable is experienced by one group of participants) **0 marks** The candidate has not provided any creditworthy information **1 mark** Attempt to explain what an independent measures design is, but lacks clarity **2 marks** Clear explanation of what an independent measures design is	**[2]**	1 mark can be given if the candidate says the participant only does one experiment.

Question	Answer	Marks	Additional guidance
8	**Identify <u>two</u> controls that could have been used in this study and explain why they would have been needed.** 3 marks for each control feature Control features could include: using the same cashier for all participants; ensuring customers were touched on the same place on the arm in the same way on each occasion; verbal communication from the cashier to the customer should be standardised; how long customers stayed in the coffee bar; what customers ordered; contact with other staff; how busy coffee bar is; cashier/participant sex/age/ethnicity; gender bias, etc. **0 marks** The candidate has not provided any creditworthy information **1 mark** Appropriate control feature identified (whether in context or not), but no explanation of why it would have been needed **OR** an inappropriate explanation is given. **2 marks** Appropriate control feature identified with an appropriate attempt to explain why it would have been needed, but in general, **OR** not clearly expressed in context **3 marks** Appropriate control feature identified and a clear explanation of why it would have been needed in context	[6]	Controls must be cited in context. For example, *standardise how each person was treated* (this is <u>not</u> in context). *Ensuring each customer was touched on the arm in the same way in the same place* (this <u>is</u> in context) Context can include café, staff, customers, rating of friendliness, touching Controls implied as having been used already (e.g. time of day, standardised rating scale) are acceptable Reference to equal number of participants in each condition is only acceptable for full marks if clearly explained e.g simply stating having equal numbers of each condition is not sufficient. Describing new conditions for the study should be awarded zero marks.

Question	Answer	Marks	Additional guidance
9 a	**Identify the dependent variable (DV) in this study.** The dependent variable (DV) is how friendly customers leaving the coffee bar thought the staff were according to whether they had been touched or not. **0 marks** The candidate has not provided any creditworthy information **1 mark** Attempt to identify the dependent variable, but lacks clarity **2 marks** Dependent variable clearly identified	[2]	Reference to the use of the 1-10 scale is operational detail and not essential for full marks. Reference to friendliness of staff necessary for full marks (1 mark for friendliness on its own). Reference to rating scale on its own without mentioning friendliness/staff should be awarded zero.
9 b	**Outline <u>one</u> strength and <u>one</u> weakness of the way that the dependent variable (DV) has been measured in this study.** 3 marks for strength, 3 marks for weakness **Strengths** include: quantifiable data enabling easy comparisons across individuals; easy to present findings; questioned immediately upon leaving the coffee bar; etc **Weaknesses** include: lack of qualitative information (reasons for thinking staff were friendly/unfriendly etc); differences in the way the 1-10 scale may be interpreted by different participants; phrased as a leading question (may bias participants response); may induce socially desirable responses etc **0 marks** The candidate has not provided any creditworthy information **1 mark** Attempt to outline strength/weakness, but lacks clarity, or is very brief (e.g. just saying *it is quick and easy*) and not in the context of the research outlined in the source material **2 marks** Clear and detailed outline of strength/weakness, but in general - not in the context of the research outlined in the source material **OR** Attempt to outline strength/weakness, but lacks clarity and in the context of the research outlined in the source material **3 marks** Clear and detailed outline of strength/weakness in the context of the material presented in the source material	[6]	Each strength and weakness must be cited in context for full marks. For example, *a strength is that you can quantify how friendly or not customers thought the staff were after being touched on the arm or not and work out averages of perceived friendliness for each group* Reference to aspects of methodology not related to the DV (e.g. sample/sampling) is not acceptable Context refers to 'friendliness', 'customers' or 'staff'.

Section C

A researcher has become interested in studying stress associated with driving and wishes to conduct an investigation to assess stress levels of motorists in England using the self-report method.

Question	Answer	Marks	Additional guidance
10	**Identify <u>one</u> strength and <u>one</u> weakness of using the self-report method in this study.** 2 marks for strength, 2 marks for weakness **Strengths include:** can gain insight into how stress affects motorists; can be quick, simple and cheap to conduct; enables access to lots of different motorists views about stress; enables rich detailed qualitative information to be recorded etc **Weaknesses include:** validity issues (participants may not respond in a completely honest/genuine way all the time); some responses may be difficult to interpret/analyse/classify etc **0 marks** The candidate has not provided any creditworthy information **1 mark** Attempt to identify strength/weakness in context of the information provided in the source material **OR** strength/weakness, clearly identified but not in context of the information provided in the source material **2 marks** Strength/weakness clearly identified and in context of the information provided in the source material	**[4]**	Each strength and weakness must be cited in context for full marks. For example, *a weakness may be that some motorists may give a very lengthy account of how they are affected by stress when driving which may be difficult to interpret, summarise and compare with the experiences of other motorists*

Question	Answer	Marks	Additional guidance
11	**Describe and evaluate an appropriate sampling technique for this study.**	**[10]**	For full marks the sampling method described must be able to be replicated and the evaluation issues cited must be in context.

0 marks	The candidate has not provided any creditworthy information
1-2 marks	Minimal information – attempt to describe sampling technique only – replication not possible	**OR** attempt to evaluate a sampling technique that has not been described (i.e. attempted evaluation only)
3-4 marks	Detailed description of sampling technique that would allow full replication, but no evaluation (if lacks clarity/detail = 3 marks max)	**OR** attempt to both describe sampling technique AND general attempt to evaluate it (but both lack detail/clarity)
5-6 marks	Replicable sampling technique but not clearly expressed, but general evaluation of it	
7-8 marks	Detailed description of sampling technique that would allow full replication with detailed, but general evaluation (8 marks one evaluation issue in context)	**OR** Replicable sampling technique but not clearly expressed with detailed evaluation with reference to two or more evaluation issues in context. One issue in context is awarded 7 and two or more issues in context is awarded 8.
9-10 marks	Detailed description of sampling technique that would allow full replication with clear, detailed evaluation with reference to two or more evaluation issues. Answer is in context of the material outlined in the source material.	

Additional guidance (continued):

Replicable descriptions include **how** the sampling method was employed and **who** was sampled.

Please note that it is possible that some of the characteristics of the sampling technique could be indicated in the evaluation points.

10 marks: At least **one** of the evaluation points must be in the context of **stress**.

Question	Answer	Marks	Additional guidance
12 a	**Suggest an appropriate question using a rating scale, which could be used in this study.** An appropriate question could be: *indicate on a scale of 1-10 (where 1= 'not at all' and 10 = a lot) how stressed you feel when in a traffic jam* etc **0 marks** The candidate has not provided any creditworthy information **1 mark** Attempt to suggest an appropriate question in context **OR** a clear question but not in the context of the information outlined in the source material **2 marks** Appropriate question clearly outlined in the context of the information outlined in the source material	[2]	Scale needs to be appropriately labelled for full marks Reference to anger is acceptable Questions without scales (numerical or descriptive) are not acceptable
12 b	**Evaluate the validity of using this question in this study.** The evaluation must be in the context of the information outlined in the source material for full marks. Examples of evaluation issues could include: selecting middle values and demand characteristics etc **0 marks** The candidate has not provided any creditworthy information **1 mark** Attempt to evaluate the question but **in general** (not linked to validity) whether in context or not **2 marks** Attempt to evaluate the **validity** of the question suggested, but brief, lacks clarity and not in context **3 marks** Clear evaluation of the validity of the use of the suggested question but in general, and not in context **OR** attempt to evaluate the validity of the question in context but unclear **4 marks** Clear and detailed evaluation of the validity of the question that is in context and includes reference to the use of a rating scale	[4]	For full marks the discussion about validity must be in context. For example, *asking motorists to rate how stressed they feel in a traffic jam is valid because people often get stuck in heavy traffic on our roads and it is a time when many may become stressed, but it would not allow them to express fully what they mean.* Some reference to the concept of validity (actual word not necessary) needs to be mentioned for the candidate to get 2 or more marks.

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