CAMBRIDGE
International Education

Cambridge International AS & A Level

PSYCHOLOGY **9990/21**

Paper 2 Research Methods **October/November 2024**

MARK SCHEME

Maximum Mark: 60

Published

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

Cambridge International will not enter into discussions about these mark schemes.

Cambridge International is publishing the mark schemes for the October/November 2024 series for most Cambridge IGCSE, Cambridge International A and AS Level components, and some Cambridge O Level components.

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Generic Marking Principles

These general marking principles must be applied by all examiners when marking candidate answers. They should be applied alongside the specific content of the mark scheme or generic level descriptions for a question. Each question paper and mark scheme will also comply with these marking principles.

GENERIC MARKING PRINCIPLE 1:

Marks must be awarded in line with:

- the specific content of the mark scheme or the generic level descriptors for the question
- the specific skills defined in the mark scheme or in the generic level descriptors for the question
- the standard of response required by a candidate as exemplified by the standardisation scripts.

GENERIC MARKING PRINCIPLE 2:

Marks awarded are always **whole marks** (not half marks, or other fractions).

GENERIC MARKING PRINCIPLE 3:

Marks must be awarded **positively**:

- marks are awarded for correct/valid answers, as defined in the mark scheme. However, credit is given for valid answers which go beyond the scope of the syllabus and mark scheme, referring to your Team Leader as appropriate
- marks are awarded when candidates clearly demonstrate what they know and can do
- marks are not deducted for errors
- marks are not deducted for omissions
- answers should only be judged on the quality of spelling, punctuation and grammar when these features are specifically assessed by the question as indicated by the mark scheme. The meaning, however, should be unambiguous.

GENERIC MARKING PRINCIPLE 4:

Rules must be applied consistently, e.g. in situations where candidates have not followed instructions or in the application of generic level descriptors.

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GENERIC MARKING PRINCIPLE 5: Marks should be awarded using the full range of marks defined in the mark scheme for the question (however; the use of the full mark range may be limited according to the quality of the candidate responses seen).
GENERIC MARKING PRINCIPLE 6: Marks awarded are based solely on the requirements as defined in the mark scheme. Marks should not be awarded with grade thresholds or grade descriptors in mind.

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Social Science-Specific Marking Principles
(for point-based marking)

1 Components using point-based marking:

- Point marking is often used to reward knowledge, understanding and application of skills. We give credit where the candidate's answer shows relevant knowledge, understanding and application of skills in answering the question. We do not give credit where the answer shows confusion.

From this it follows that we:

a DO credit answers which are worded differently from the mark scheme if they clearly convey the same meaning (unless the mark scheme requires a specific term)
b DO credit alternative answers/examples which are not written in the mark scheme if they are correct
c DO credit answers where candidates give more than one correct answer in one prompt/numbered/scaffolded space where extended writing is required rather than list-type answers. For example, questions that require *n* reasons (e.g. State two reasons …).
d DO NOT credit answers simply for using a 'key term' unless that is all that is required. (Check for evidence it is understood and not used wrongly.)
e DO NOT credit answers which are obviously self-contradicting or trying to cover all possibilities
f DO NOT give further credit for what is effectively repetition of a correct point already credited unless the language itself is being tested. This applies equally to 'mirror statements' (i.e. polluted/not polluted).
g DO NOT require spellings to be correct, unless this is part of the test. However spellings of syllabus terms must allow for clear and unambiguous separation from other syllabus terms with which they may be confused (e.g. Corrasion/Corrosion)

2 Presentation of mark scheme:

- Slashes (/) or the word 'or' separate alternative ways of making the same point.
- Semi colons (;) bullet points (•) or figures in brackets (1) separate different points.
- Content in the answer column in brackets is for examiner information/context to clarify the marking but is not required to earn the mark (except Accounting syllabuses where they indicate negative numbers).

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3 Calculation questions:

- The mark scheme will show the steps in the most likely correct method(s), the mark for each step, the correct answer(s) and the mark for each answer
- If working/explanation is considered essential for full credit, this will be indicated in the question paper and in the mark scheme. In all other instances, the correct answer to a calculation should be given full credit, even if no supporting working is shown.
- Where the candidate uses a valid method which is not covered by the mark scheme, award equivalent marks for reaching equivalent stages.
- Where an answer makes use of a candidate's own incorrect figure from previous working, the 'own figure rule' applies: full marks will be given if a correct and complete method is used. Further guidance will be included in the mark scheme where necessary and any exceptions to this general principle will be noted.

4 Annotation:

- For point marking, ticks can be used to indicate correct answers and crosses can be used to indicate wrong answers. There is no direct relationship between ticks and marks. Ticks have no defined meaning for levels of response marking.
- For levels of response marking, the level awarded should be annotated on the script.
- Other annotations will be used by examiners as agreed during standardisation, and the meaning will be understood by all examiners who marked that paper.

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Guide to marking annotations

BOD	benefit of doubt	✓	correct point [use **one tick per mark** except in last question part (a)]	✗	incorrect point	$\checkmark_a$ $\checkmark_b$ $\checkmark_c$ $\checkmark_d$	use for each point of description of a **required feature** in part (a) of last Q
NBOD	no benefit of doubt	GM	indicates a point is a Generic Mark	CONT	continued (use 'link' icon)		
^	'something is missing'	?	unclear point	NAQ	not answering question		
REP	repetition (of stem/ within response)		use wiggly underline/ highlighter to bring attention to a key part	$\checkmark_a$	underline letter-tick when required feature is in enough ***detail***	L1 L2 L3 L4 L5	use to show Level 1, 2, 3, 4 or 5 in part (a) of last Q
SEEN	acknowledge blank pages						

Important marking guidelines for reference

NR or zero	**Award No Response (NR):** • if there is nothing written at all in the answer space • if there is any comment un elated to the question being asked (e.g. 'can't do', 'don't know') • if there is any sort of mark which isn't an attempt at the question (e.g. a dash, a question mark). **Award Zero (0):** • if there is any attempt that earns no credit, eg the candidate copying all or some of the question, or any working that does not earn any marks, whether crossed out or not.
Crossed out work	Please note that if a candidate crosses out a question and does not re-attempt the same question, you must attempt to mark the crossed out work.
Annotate every question	Please place a marking icon on **every question** and to indicate each mark awarded (**number of ticks = number of marks** on all questions except part (a) of the last question). However, you do **not** need to put 'seen' on NR spaces.

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Question	Answer	Marks
1	**Explain what is meant by a 'matched pairs design', including any example.** Explanation = 1 Example (to illustrate not explain) = 1 Participants are matched/paired on key variables/characteristics with one placed in **experimental and control conditions;** (explanation) Allocating (pairs of) individuals who are **similar characteristic** (in important ways for a (named) **study / levels of IV** (in a made-up situation); (example) e.g. same **aggression level** children allocated to different **model conditions** in an aggression study; (example). e.g. if twins with a boy and a girl were divided into separate groups to test **gender differences** in **attention;** (example). e.g. in Baron-Cohen they were matched on age/IQ (in the autism and no autism conditions);	**2**

Question	Answer	Marks
2	**A longitudinal experiment is testing the hypothesis 'Elephants will learn better as they grow older'.** **Identify the type of hypothesis in this experiment. Justify your answer.** Type of hypothesis = 1 Justification = 1 Alternative hypothesis; (type) As it says there will be a **difference** (over time / with age); (justification) As it says it **will change** (rather than being due to **chance / no change**); (generic justification) Directional /one-tailed hypothesis; (type) As it says the elephants' learning will **get better not worse** / rather than just changing; (justification) **Note: Stating what it is not = 0** marks for 'because if it was non-directional it would just say there was a difference between the levels of the IV'. Note: anything **correlational = 0**.	**2**

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Question	Answer	Marks
3	**For the study by Baron-Cohen et al., a revised version of the 'eyes test' was developed. However, some problems with ecological validity remained.**	
3(a)	**Define what is meant by the term 'ecological validity'.** Whether results from one situation/study generalise to another situation = 1; ACCEPT: Whether a study represents the real world; Measure of everyday life of the study; Whether the **situation** is natural (to the participants / for the activity) = 0 'The realism of the study' = 0 [**NBOD**]	**1**
3(b)(i)	**Outline one problem with the ecological validity of the revised eyes test.** Outline = 1 Eyes are not stationary (in everyday life); We can look at eyes for as long as we need to; Only shows the eyes; We can normally see a whole face/body; We can use body language not just their eyes; Generic e.g. 'not natural' = 0 Sampling = 0 Environment (lab) = 0 [NAQ]	**1**
3(b)(ii)	**Explain one way in which the problem you identified in part (b)(i) could be solved.** Way to solve problem linked to bi = 1 Use a video of moving eyes; Allow unrestricted viewing time; Use photos of whole face/body;	**1**

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Question	Answer	Marks
4	**The study by Hassett et al. (monkey toy preferences) was an experiment.**	
4(a)	**Describe what is meant by an 'experiment'.** Any **two** of three **definitive** points: (Manipulated) IV and (measured) DV = 1 (need both IV and DV for the mark). Control of variables = 1. To investigate causal effects = 1. Formulation of Hypotheses or examples. = 0	**2**
4(b)	**State one independent variable from this study.** Any IV = 1 Sex (gender); Males and females; Type of toy; Plush and wheeled toys;	**1**

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Question	Answer	Marks
4(c)	**Describe <u>two</u> strengths of experiments as a research method.** Strength = 1 [×2] Detail = 1 [×2] In a two-mark answer one mark **<u>can be</u>** for a term but cannot award for a term alone (so just saying 'its reliable' on its own is not enough for a mark) Because the IV is **<u>manipulated</u>** it must be causing changes in the DV; (strength) So differences/changes must be **<u>causal</u>**; (detail) Because there are good controls **<u>only</u>** the IV can affect the DV; (strength) This increases the **<u>validity of the results;</u>** (detail) Also accept increases reliability Participants' experiences are standardised; (strength) So good **<u>reliability</u>** / easy to **<u>replicate;</u>** (detail) Measurement of the DV is **standardised** / **operationalised**; (strength) So good **<u>reliability</u>** / reduces need for **<u>interpretation</u>** / easy to **<u>replicate;</u>** (detail) Can lead to quantitative data/ scientific measurement which is objective; (strength) So comparisons between conditions is possible; (detail) Use of counterbalancing (as a type of control / across conditions / ABBA); (strength) to reduce order effects; (detail) Note: 'controlled' is a description, so 0 [NAQ]	**4**

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Question	Answer	Marks
5	**Describe inter-rater reliability and inter-observer reliability, using any example(s).** 1 mark for each definition/point of detail, up to a maximum of 2 for each term/concept. 1 mark for each example, max 2 for each term/concept. Examples can include examples from any studies (core studies, other studies, candidate's own studies). Max 4 if no examples or if only about one term/concept. Only 1 example needed to access 6 Examples can include ones from studies using such measures of reliability, ***Inter-rater reliability:*** • is a measure of whether different researchers are **scoring** consistently; (definition) • e.g. test/questionnaire/interview responses; • if data from an interview was interpreted in the same way; (example) ***Inter-observer reliability:*** • is a measure of whether different researchers are producing the same records when they **see** the same behaviours; (definition) • e.g. of (behavioural) categories / in a structured observation; (detail) ***For Either (credited only once) No mark for generic definition*** • indicates whether two researchers are rating responses in the same way: (detail – ONLY ONCE) • if they are (reliable), ratings for the same data by two (different) researchers should (positively) correlate; (detail – ONLY ONCE) e.g., if the elephants in Fagan et al. performed the same behaviours, two observers should produce identical records: (example) e.g., Bandura et al. checked that the scoring of aggressive ratings was similar when done by different researchers; (example) e.g., Hassett et al. ensured that all observers used the same (operational) definitions of the play behaviours; (example) e.g. Piliavin et al. both observers recorded the comments so could check they has recorded the same thins; (example)	**6**

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Question	Answer	Marks
6	**Dr Eynon is a university lecturer studying personality. She tested the personality of some of her students and divided them into two groups, personality 'R' and personality 'S'. Dr Eynon then showed them photographs of pleasant scenes, such as a beach. Half of the scenes contained people and half did not contain people. They scored each photograph to show how much they liked it.**	
6(a)(i)	**Suggest <u>one</u> pleasant scene that Dr Eynon could use for one of her photographs, other than a beach.** Pleasant **scene** named or described = 1 river / forest / sea/ park; people resting / sleeping; The Arctic; animals playing / swimming;	**1**
6(a)(ii)	**Dr Eynon needs to control many features about the scenes to ensure that they are similar, in addition to manipulating whether they contain people or not.** **Suggest <u>two</u> features that Dr Eynon should control about the scenes.** Feature to control = 1 [×2] Number of other features in scene; How colourful it is; The weather in the scene; Time of day; The mood of the people in the pictures; <u>Note: Number of people alone = 0</u>	**2**

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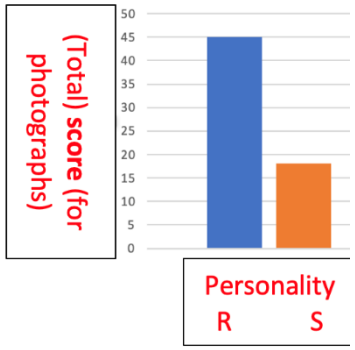
Question	Answer	Marks
6(a)(iii)	**Explain why <u>one</u> of the features you have suggested in part <u>(a)(ii)</u> would be important in Dr Eynon's study.** **Feature: 1 or 2 …..** explanation for importance (can be generic) = 1 detail = 1 Ps may prefer more features/colours; (explanation) E.g. if they are more interesting; (detail) Individual differences in weather preferences affect choices; (explanation) E.g. dislike of rain might obscure personality effects; (detail)	**2**
6(b)	**Participants were shown the photographs a random order. Dr Eynon calculated a total liking score for each of the two types of scene.**	

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Question	Answer	Marks
6(b)(i)	**Table 6.1 shows the total scores for the two types of scene, for each group of participants.** **Draw a graph showing <u>only</u> the results for 'photographs with people' from Table 6.1. You <u>must</u> label the axes.**	**3**

	Total score for photographs:	
	with people	**with no people**
Personality R	**45**	**15**
Personality S	**18**	**25**

Table 6.1



For full marks **must** have **separate** bars

***x*-axis label**: '*Personality (type)*';
x-axis units: R / S;
***y*-axis label**: *Total score of (pleasant) scenes with people;*
y-axis units: numbers up to 45;
bar heights correct; (accept 43–47; 16–20)

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Question	Answer	Marks
6(b)(ii)	**Describe the conclusion that can be made from the data in Table 6.1.** Any conclusion = 1 Complete conclusion = 2 Type R personalities like peaceful scenes with people in more than ones without people whereas Type S personalities like scenes without people more than those with; = 2 Type R personalities prefer (peaceful) photographs/scenes with more people in whilst Type P personalities prefer (peaceful) photographs/scenes without people in them; = 2 Type S personalities are more variable in terms of their scene preferences than type R personalities who mostly prefer scenes without any people in; = 2 Personality affects the type of scene people like; = 1 Note: just restating results = 0 [NAQ]	**2**

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Question	Answer	Marks
7	**Mr Grainger trains each of his farm animals to enter a stable. He lets the animal approach the stable, then rewards it with food. Each time the animal gets closer to the stable than before, he rewards it with food. When the animal enters the stable, he rewards it again. He repeats this each day until the animal enters the stable without rewards.**	
7(a)(i)	**Suggest <u>one</u> way that Mr Grainger can measure the success of this training.** Way = 1 Detail = 1 Time **how long** the animal takes to train; (suggestion) From start to end of each session (adding all sessions together); (detail) Counting **number of rewards** used; (suggestion) The number of food items (and number of times released back with other animals); (detail) **Number** of days; (suggestion) To enter without rewards; (detail) Note: Must *measure* success of training, so score 0 if qualitative.	**2**
7(a)(ii)	**For the measure of success you suggested in part <u>(a)(i)</u>:** **Identify the type of data produced by the measure of success. Justify your answer.** <u>Identification of type of data = 1</u> <u>Justification = 1</u> Quantitative; (type) Because each score is numerical; (justify) **<u>Note: If qualitative given in 7(a)(i), max 1</u>** [i.e. TE if 7ai is incorrect, but just for first mark]	<u>2</u>

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Question	Answer	Marks
7(a)(iii)	**For the measure of success you suggested in part <u>(a)(i)</u>:** **Explain <u>one</u> weakness of the type of data produced by this measure of success.** Weakness = 1 Detail = 1 (generic or linked) Numbers don't give in depth information; (weakness) So [from the time] he wouldn't know the number of reinforcements given; (linked detail) So [from the number of rewards] he wouldn't know how long it took to learn; (linked detail) e.g. details about why; (generic detail) **<u>Note: If qualitative, max 1</u>** [i.e. TE as above]	**2**
7(b)	**On some days the training sessions are more successful than on other days. This difference may be caused by situational variables.**	
7(b)(i)	**Suggest <u>two</u> situational variables that could have affected the success of training.** **1. ……..** **2. ……..** Situational variable = 1 [×2] There was a distraction (noise/too many people); it was raining when one of the animals was being trained; It was colder on one day; Mr Grainger's mood;	**2**

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Question	Answer	Marks
7(b)(ii)	**For <u>one</u> of the situational variables you suggested in part <u>(b)(i)</u>:** **Explain why this situational variable may have caused differences in the success of training of the animals.** **Situational variable: 1 or 2 …..** Explanation = 1 detail = 1 *distraction*: the animals would have been less likely to eat (because they were distracted); (explanation) so would have been rewarded less; (detail) *weather;* If it was colder/raining, then the animals would want to go inside; (explanation) so would need less rewards/take shorter amount of time; (detail)	**2**

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Question	Answer	Marks
8	**Chen is conducting a study that is similar to the study by Piliavin et al. (subway Samaritans). She has asked a young person and an old person to act as 'victims'. Each victim will appear to have difficulty climbing the step on to a bus. Chen will count how many old passengers and how many young passengers help each victim to climb the step.**	
8(a)	**Suggest <u>two</u> ways in which Chen's study is similar to the study by Piliavin et al.** Similarity = 1 [×2] About helping; Use of stooges to deceive (young/old, drunk/ill); (Two types of) victims; Participants are passengers; Both public transport systems (mass transit); Participants do not know they are in a study / cannot consent / cannot withdraw; Note: purely generic responses that can apply to any study = 0 i.e. both field experiments/observation.	**2**
8(b)	**Suggest <u>two</u> ways in which Chen's study is different from the study by Piliavin et al.** <u>Explicit</u> difference = 1 [×2] (**must** include comparison) Bus **not** subway; Age is being compared **rather than** race/gender/drunk or ill; Victim struggles to get on bus **instead of** falling / 'help' defined as helping up **instead of** aiding on floor; Piliavin et al. used a model **whereas** Chen did not; Piliavin et al. used two observers **Chen** only herself; Piliavin et al. collected comments/qualitative data **but** Chen counted/had quantitative; Piliavin old study, Chen now. Two IVs in Piliavin, only 1 in Chen's study	**2**

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Question	Answer	Marks
8(c)	**Explain the sampling technique Chen is using.** Sampling technique identified = 1 [opportunity] Link = 1 [Do **not** give in isolation] Opportunity sampling; (identification) Because they will be on the bus anyway; (link)	**2**

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Question	Answer	Marks
9	**Tanya is investigating prosocial behaviour (this is positive, friendly behaviour between individuals). She is studying prosocial behaviours in children at her local school and will give a questionnaire to every teacher in the school.**	
9(a)	**Describe how Tanya could conduct a study using a questionnaire for teachers to investigate a variety of prosocial behaviours in children.** **Do not describe sample/sampling technique or ethical issues/guidelines in your answer.** Use the table below to mark candidate responses to this question. The four required features for this questionnaire are: **(a) question format** (**open** / **closed** questions/explicit and correct examples, fillers) **(b) examples** of questions (at least **two different prosocial** not in Q, e.g. sharing, playing games together) **(c)** question **scoring / interpretation** (e.g. use of numerical scoring / measures of central tendency / analysis e.g. Measures of Central Tendency, MoS / interpretation of qualitative data) **(d) technique** (**paper & pencil** / **online**)	**10**

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<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th></tr>
<tr><td>9(a)</td><td>Other appropriate responses should also be credited.
<table>
<tr><th>Level</th><th>The response:</th></tr>
<tr><td>Level 5
9–10 marks</td><td>• has all the required features, all with <u>detail</u>, with mostly appropriate terminology.
AND
• clearly applies knowledge of methodology involved in planning an investigation.</td></tr>
<tr><td>Level 4
7–8 marks</td><td>• has all the required features, but only some of these with <u>detail</u>, with some appropriate terminology.
AND
• applies knowledge of methodology involved in planning an investigation.</td></tr>
<tr><td>Level 3
5–6 marks</td><td>• has some of the required features with <u>detail</u> / all of the required features with <u>no</u> <u>detail</u>, and some appropriate terminology.
AND
• applies a basic knowledge of methodology involved in planning an investigation.</td></tr>
<tr><td>Level 2
3–4 marks</td><td>• has at least two of the required features, with little appropriate terminology.
AND
• attempts to use knowledge of methodology involved in planning an investigation.</td></tr>
<tr><td>Level 1
1–2 marks</td><td>• has one of the required features and uses little appropriate terminology.
AND
• makes a limited attempt to use knowledge of methodology involved in planning an investigation, e.g. may not use the method required by the question.</td></tr>
<tr><td>0 marks</td><td>No creditable response.</td></tr>
</table></td><td></td></tr>
</table>

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Question	Answer	Marks
9(b)(i)	**Describe <u>one</u> practical/methodological strength of the procedure you have described in your answer to part <u>(a)</u>.** **Do <u>not</u> refer to sampling or ethics in your answer.** identification of generic strength = 1 detail = 1 (generic or linked). [term alone does not get credit, but can be 'detail'] Strengths may relate to: Validity • operationalisation • situational / participant variables factors • controls / standardisation • design / counterbalancing. Reliability • type of question/data. • inter-rater consistency • intra-rater consistency. Accept other practical/methodological strengths.	**2**

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Question	Answer	Marks
9(b)(ii)	**Describe <u>one</u> practical/methodological weakness of the procedure you have described in your answer to part <u>(a)</u>.** **Do <u>not</u> refer to sampling or ethics in your answer.** identification of generic weakness = 1 detail = 1 (generic or linked). [term alone does not get credit, but can be 'detail'] Weaknesses may relate to: Validity • operationalisation • situational / participant variables factors • controls / standardisation • design / counterbalancing. • Lack of depth Reliability • inter-rater consistency • intra-rater consistency. Accept other practical/methodological weaknesses.	**2**

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