Diploma Programme
Programme du diplôme
Programa del Diploma

Markscheme

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Psychology

Higher level

Paper 3

7 pages

Paper 3 markbands

Marks	Level descriptor
0	The answer does not reach a standard described by the descriptors below.
1–3	• The question is misunderstood, and the central issue is not identified correctly, resulting in a mostly irrelevant argument. • The response contains mostly inaccurate references to the approaches to research or these are irrelevant to the question. • The reference to the stimulus material relies heavily on direct quotations from the text.
4–6	• The question is understood, but only partially answered resulting in an argument of limited scope. • The response contains mostly accurate references to approaches to research which are linked explicitly to the question. • The response makes appropriate but limited use of the stimulus material.
7–9	• The question is understood and answered in a focused and effective manner with an accurate argument that addresses the requirements of the question. • The response contains accurate references to approaches to research with regard to the question, describing their strengths and limitations. • The response makes effective use of the stimulus material.

1. (a) Identify the research method used and outline **two** characteristics of the method. **[3]**

Award **[1]** for stating lab experiment (or true experiment). Stating 'experiment' without specification is acceptable.

Answers related to characteristics of the method may include two of the following characteristics: **[1]** per relevant point. Maximum of **[2]**.

Answers that outline characteristics such as controls, cause effect relationship, IV and DV may be awarded marks for this even if they have not identified the research method as a lab experiment

- A lab experiment involves random allocation of participants to the experimental groups (alternative: to the exposure of the independent variable).
- An experiment involves at least two conditions. In this study condition 1 was the "math-test" condition alone, and condition 2 was the "math-test and teaching intervention".
- The IV was whether participants were exposed to the teaching intervention or not, and the DV was the score on the math test.
- An experiment has a hypothesis: the hypothesis was that female participants in condition 2 (with the teaching intervention) would score higher on the math test than female participants in condition 1 (without the teaching intervention).
- A lab experiment is characterized by rigorous control to avoid confounding variables, for example, participant variables. The participants were randomly allocated into the two groups.
- The lab experiment can establish a cause-effect relationship between manipulation of the IV and its effect on the DV. In this study there was a causal relationship between the IV (learning about stereotype threat) and the DV (scores on the math test).

(b) Describe the sampling method used in the study. **[3]**

Award **[1]** for stating convenience (or opportunity) sampling.

Description of the sampling method may include two of the following characteristics: **[1]** per relevant point. Maximum of **[2]**.

- A convenience/opportunity sample consists of participants representing the population of interest. In the case of the study in the stimulus material, the population is female university students and the topic is of general interest (stereotype threat related to math performance).
- A convenience/opportunity sample consists of participants based on availability and willingness to participate. It is an easy and quick way to get a sample and often used in research at universities as in this study.
- Convenience (or opportunity) sampling is a non-probability sampling method, which means that participants are not chosen randomly.
- A convenience/opportunity sample suffers from selection bias and is therefore not necessarily representative of the population being studied (may lack population validity)
- Any other relevant point(s).

(c) Suggest an alternative or additional research method giving **one** reason for your choice. **[3]**

Award **[1]** for naming an alternative or additional research method and **[2]** for rationale.

Alternative or additional research methods include, but are not limited to:

Focus group interviews

Rationales for using focus group interviews could include, but are not limited to:

- The female students' own perception of stereotype threat in relation to math and test anxiety could be explored. The facilitator would encourage the participants to share their views and experiences of anxiety and lack of confidence in math.
- This qualitative approach would give a subjective view on each participant's experiences with stereotypes, and how this might have affected their performance.
- The qualitative data could supplement the experimental data and give the researchers insight into aspects of the stereotype threat that they had not thought of themselves or, initiate further experimental research based on the findings of the focus group interviews.

Semi-structured interviews

Rationales for using semi-structured interviews could include, but are not limited to:

- Semi-structured interviews could make a valuable contribution to an overall understanding of issues involved in gender stereotypes and math. The use of semi-structured interviews gives the participants the possibility to provide in-depth answers and to elaborate on specific points.
- The inductive content analysis of the semi-structured interview may reveal themes related to everyday stereotyping or negative expectations in relation to women and math that could contribute to a deeper understanding of the problem than that found in an experiment.

2. Describe the ethical considerations that were applied in the study and explain if further ethical considerations could be applied. **[6]**

For describing the ethical considerations that were applied in the study: **[1]** per relevant point made, up to a maximum of **[3]**.

- The participants signed a consent form before the start of the study and agreed to participate. They were only informed that the study was about math and gender so there was slight deception involved.
- They were guaranteed the right to withdraw from the study at any time and/or withdraw their data at any time as part of consent.
- They were guaranteed confidentiality and anonymity as part of consent.
- The participants were debriefed after they had completed the study. This is to ensure that the participants leave the study with a full understanding of it and in the same condition as they entered it.

For explaining further ethical considerations that could be applied: **[1]** per relevant point made, up to a maximum of **[3]**.

- In principle, participants should be fully informed about the aim and procedures of the study, but this was not done here because this would make it impossible to conduct this particular study. For example, participants were not told the purpose of writing their gender on the paper. This would serve as a primer and is known to create anxiety in females before a math test because of the stereotype threat.
- In a study like this one, on quite a sensitive issue that could potentially stress the female participants, they should have been told that they could contact the researchers if they had any questions about the study. The researchers should make sure that the female participants did not suffer any psychological harm.
- Deception is used in the study. It must be clearly justified in a research ethics application form why (minor) deception is necessary in this particular study.
- The researcher could inform participants during debriefing that they could still withdraw their data. Participants may not feel they can leave the study because they have given consent.
- Students may feel coerced to participate when they receive extra credit. Students who do not wish to participate in this research should not be disadvantaged in any way and they should be offered a comparable alternative task to receive the same credits.
- Any other relevant point(s).

3. Discuss how the researcher in the study could avoid bias. **[9]**

Refer to the paper 3 markbands when awarding marks.

The command term “discuss” requires candidates to offer a considered and balanced review of how a researcher could avoid bias.

Biases in research may originate from design of the experiment, the researchers, as well as the participants.

Possible ways for the researcher to avoid bias in this study could include but are not limited to:

- Researchers could reduce bias by having a well-designed research protocol that explicitly outlines how data is collected and analysed in this experiment.
- The researcher could conduct a pilot study in order to test the suitability of the overall design, procedures and measures used in the experiment (for example, with regard to operationalization of variables) to see if a cause–effect relationship can be established between the IV and the DV (internal validity) .This would also help to see if all possible confounding variables have been taken into account. However, a pilot study may not be possible due to time restraints or lack of resources.
- A pilot study is an important step in ensuring construct validity, that is, making sure that the study in question actually is measuring ‘stereotype threat’ in relation to math so that the results can be generalized and used for prediction.
- Sampling bias (selection bias) is a danger in the case of a non-probability sample, as in this study. Although sampling bias may occur when participants in a sample are not selected randomly, but participants can then be randomly allocated to the experimental conditions in order to control for participant bias. This was also done in this study. Random allocation may increase the possibility of generalization. Another way to avoid sampling bias is to have a random sample but this is often not done in research like this one with a student sample.
- To prevent experimenter bias (researcher bias, the Rosenthal effect), the researcher could ensure that the experimenter is blind to the hypothesis of the study. This would help prevent threats to external validity. The researcher should also be aware of personal biases when formulating a research question and analysing data,
- The researcher can control for demand characteristics (*i.e.* participants respond to cues in the experiment, which somehow tell them what is expected of them) or the Hawthorne effect (*i.e.* the mere fact of being in a study makes participants perform better). This could affect their behaviour in this experiment and thus affect internal validity of the study. A possible way to control for this is using some degree of deception, which was also the case in this experiment.
- The researcher could control for bias related to having a male experimenter in a study with only female participants by having a female experimenter conduct the experiment. This was also the case in this study.
- The researcher could try to avoid confirmation bias and gender bias during analysis of data by having other researchers participate in the collection, analysis, and interpretation of data (researcher triangulation). This is important with regard to generalization of results, especially in a study with a single sex sample and a sensitive topic related to stereotyping.

Arguments based on a conceptual framework related to qualitative research, for example, personal reflexivity should not be credited.

Marks should be awarded according to the descriptors in the markbands. Each level of the markband corresponds to a range of marks to differentiate candidates' performance. A best-fit approach is used to ascertain which particular mark to use from the possible range for each level descriptor.