PSYCHOLOGY TZ1

(IBNA / IBLA)

Overall grade boundaries

Higher level

Grade:	1	2	3	4	5	6	7
Mark range:	0 - 9	10 - 20	21 - 30	31 - 42	43 - 54	55 - 66	67 - 100

Standard level

Grade:	1	2	3	4	5	6	7
Mark range:	0 - 11	12 - 25	26 - 34	35 - 46	47 - 58	59 - 69	70 - 100

Time zone variants of examination papers

To protect the integrity of the examinations, increasing use is being made of time zone variants of examination papers. By using variants of the same examination paper candidates in one part of the world will not always be taking the same examination paper as candidates in other parts of the world. A rigorous process is applied to ensure that the papers are comparable in terms of difficulty and syllabus coverage, and measures are taken to guarantee that the same grading standards are applied to candidates' scripts for the different versions of the examination papers. For the May 2012 examination session the IB has produced time zone variants of psychology paper one. Grade boundaries for the different time zoned papers are set separately, and careful judgments are made that are based on criteria for performance level, to account for differences in the papers.

Higher level internal assessment

Component grade boundaries

Higher level

Grade:	1	2	3	4	5	6	7
Mark range:	0 - 2	3 - 5	6 - 9	10 - 13	14 - 17	18 - 21	22 - 28

The range and suitability of the work submitted

Overall the range and suitability of the work submitted was of a good standard and but non-experimental studies were also submitted this year. Unethical work was also seen, e.g. replication of Asch or other conformity studies. It is clearly stated in the psychology guide that such experiments are ethically unacceptable. The majority of candidates were aware of ethical issues and most included a copy of informed consent in the appendices but a few candidates did not obtain parental consent for participants under 16 years.

Most reports were based on cognitive psychology and this seems to provide good results at this level of education. Favourite experiments were, as usual, levels of processing, the serial position curve, Stroop, Loftus and Palmer (1974) and experiments related to schema theory. There were also a number of experiments based on the Mozart effect. As usual, they were not well done, and this is probably because the theoretical and empirical background for the Mozart effect is weak and the original findings have never been replicated. Many candidates performed experiments with several conditions and even up to five conditions. This does not constitute a simple experiment as prescribed in the guide. There is no reason to have more than two conditions and more conditions do not necessarily increase the quality of the work. In fact, calculations of statistics often went wrong in work with many conditions and the presentation of results was less clear.

In general, the weaker reports shared the following characteristics:

- There was weak and imprecise explanation of background research in the introduction. The hypotheses were not clearly justified and operationalized.
- Results were not always clearly related to the aim of the study and inferential tests were not justified or even absent. In descriptive statistics, the graph showed both the standard deviation and the mean side by side.
- Discussions were superficial, did not discuss own results in the light of the background research, and/or there was no reference to statistics. Identification of limitations of own procedure was not linked to suggestions for modification.
- Referencing was poor.

Candidate performance against each criterion

Most candidates seemed familiar with the requirements of each assessment criterion although there were differences in achievement levels. The introduction sections were in some cases very well written with a clear focus but it seemed that it was difficult for some candidates to have an exclusive focus on the relationship between a particular research study and the candidate's own research hypothesis. The introduction is important in that it presents the rationale for the candidate's own experiment and uses the background research to justify the candidate's own research hypotheses. Therefore the background research should be explained and analysed in sufficient depth (for example, aim, procedure, findings) to allow for formulation of a clear research hypothesis in the introduction and to stimulate discussion of own results in the light of the background research in the discussion section. The experiment

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should be simple and therefore it is fine to make a partial replication of a research study, for example, by reducing the number of variables. The introduction and the discussion sections are often the most difficult to write as they require a good understanding of how research studies are linked to formulation of new hypotheses. The level of depth of the analysis of the background research was at times shallow. This influenced the discussion where comparisons of the candidate's own results and those of the background studies could not be done in sufficient depth. Referencing was not always of a standard format and there are still problems with resources found on the internet.

Criterion A

Generally, the background research needs more attention in the reports. Theories and studies were often not explained in sufficient detail to justify the hypotheses. The aim of the study was not clearly formulated in all papers. Quite a few introductions included redundant explanations of research that was not particularly relevant to the candidate's own study. The analysis of background research was in some cases very well done but at times superficial, for example based on a summary of a study found on a website or in a study guide. This gave some problems in terms of justifying and formulating clearly operationalized hypotheses. It seemed that some candidates found it difficult to state a clear and justified experimental hypothesis.

It is important that the introduction is clear and focused on relevant background research so that it logically leads towards the candidate's own research hypotheses and that the background research is explained and analysed in sufficient depth (for example, aim, procedure, findings) to allow for formulation of a clear research hypothesis in the introduction and to stimulate discussion of own results in the light of the background research in the discussion section. It should be noted that it is not required to make an exact replication of an experiment. A partial replication will do but the candidate's experiment should be closely linked to an actual experiment and not simply inspired by some kind of research. It was obvious that some candidates had chosen this approach and therefore wrote very weak introductions.

Criterion B

Most candidates seemed aware of what is meant by an experimental design but choice of design was not always properly justified, for example, by reference to strengths and limitations of respective designs (repeated measures and independent designs). Some candidates had problems with operationalization of the IV and the DV. The ethical guidelines were mostly addressed in the design section but sometimes in procedures instead, which is fine. What is essential is that ethical procedures are addressed appropriately somewhere in the report. Most candidates included an informed consent from participants. A number of schools had allowed participants under the age of 16 to participate without parental consent and this is violating the ethical guidelines for internal assessment. There were only a few cases where the informed consent was not included at all and this was always in weak reports where other things were missing as well.

Criterion C

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There were often problems in identifying relevant characteristics of the participants. It may be difficult to define relevant characteristics in relation to a specific study but candidates could focus on characteristics such as age, sex, number of participants and nationality. The target population was not always identified. All samples were based on a student population in the candidate's own school. Sampling technique was mostly clearly identified as opportunity sample or self-selected sample and it was often explained or justified. Both approaches are fine. Some candidates claimed to have used a random sample, which it was clearly not. There seems to be confusion about the meaning of the word "random". Some candidates did not specify how they allocated participants to the experimental conditions but they cannot be penalized for this since it is not mentioned in the assessment criteria.

Criterion D

There were quite often problems with the description of the procedure in sufficient detail, which makes a procedure difficult to replicate. There was not always reference to the material in the appendices (either in procedure or in materials) and in these cases replication is simply not possible. It is recommended to include all materials and give details on how the materials were used in procedure.

Criterion E

Most candidates described the results in a narrative form in the results section. Not all included standard deviation as descriptive statistics even if their data allowed it. Some used the range but did not explain use of it. There is a tendency to include a whole range of measures of central tendency in the result section but this is redundant. It does not affect the marks but it is a clear indication that candidates have not considered which measure would be most appropriate for their data.

In some reports there was no graph but only a table of results. Graphs were often poorly labelled. Not all reports included tables. A few candidates had individual scores in the results section but most candidates had correctly placed the raw data in the appendices. Quite a few candidates graphed their standard deviation side by side with the mean; this does not really make sense and should be avoided.

Criterion F

Most candidates chose and justified the inferential statistical test correctly but a few did not. Most candidates used the non-parametric tests but an increasing number of candidates used the t-test, which is also appropriate since these tests are quite robust. Not all candidates could justify their choice of statistical test and a number of candidates did not make a statement of statistical significance.

Criterion G

A number of high-scoring candidates demonstrated competence in discussing own results in the light of the background research and these candidates identified relevant methodological limitations and suggested relevant modifications. However,

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many were not able to integrate the background research from the introduction properly in the discussion of own results. Many reports had a very short and superficial discussion of own results in the light of previous research but a long description of limitations of own design, which were not always relevant in terms of their own study but rather a more general list. Some candidates included strengths of own design although this is no longer necessary. The suggestions for modifications were often related to general factors rather than the candidate's own study. For example, there were a lot of candidates who mentioned the opportunity sample as a problem and suggested a random sample and more participants in future research.

Criterion H

The most common problem concerned referencing. Candidates often did not include all the references they mentioned in the introduction. There are still problems with references from the internet where candidates tend to think that the URL is enough and sometimes the background study could not be found in the reference section. Referencing did not often follow a standard way of referencing such as APA or it was not complete. Secondary referencing was generally poor.

Criterion I

Some candidates lost marks here because they were missing part of the abstract or missing parts of the appendices.

Recommendations for the teaching of future candidates

- Most important is to help candidates find appropriate background research and theoretical framework because such resources will enable them to analyse the background research in some depth. It is recommended to find relatively simple experiments to replicate. This would help candidates to make relatively simple experiments themselves based on real scientific experiments. It is much easier for candidates to replicate an experiment if they have access to readings about experiments or summaries of them so that they can read about hypotheses and other important details.

- There should be more focus on the relationship between the aim of the candidate's study and the background research so that these can be integrated in the introduction and the discussion of the results. The background research should be analysed in sufficient depth in the introduction so that the aim of the candidate's own research is clearly justified, and the experimental hypothesis should be clearly linked to background research.

- The design section should include a clear description of the experimental conditions and teachers should try to limit experimental conditions to two only (either two treatment conditions or one treatment condition and one control). This will make it easier to compare the outcome of the manipulation of the IV on the DV in the two

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conditions. This is also in line with the IB recommendations of making simple experimental studies with psychology candidates.

- Sampling should be done according to IB rules, i.e. identification of target population including relevant characteristics and description of sampling method as well as explanation (or justification) of the use of the chosen method. Most candidates use a convenience sample but they should still explain the sampling method or justify its use. The number of participants in the experiment does not need to exceed 20 (independent design) or 10 (repeated measures design).

- In the descriptive statistics section, the graphs and tables should have a proper title. It should be emphasized that graphing the results is mandatory and that a table must be included. This section includes *summarized* data not raw data or individual scores. It is recommended that candidates don't include several measures of central tendency but only the one which is specifically relevant for their data. Likewise, an appropriate measure of dispersion should be calculated and the results included in this section.

- In the inferential statistics section, candidates should be careful in choosing an appropriate statistical test and justify why this test was chosen. This could relate this to the level of measurement of the data and the experimental design.

- The explanation of the empirical studies and theoretical framework from the introduction must be referred to in the discussion section. New studies or theories should not be introduced here. Candidates should be trained in making a discussion section (perhaps by reading a couple of research articles to become familiar with the idea and style) and they should consult the checklist to be sure that all the IB requirements are met. Understanding of limitations of own procedure and suggestions for modification should be tied together. It is not enough to say that a particular study should use random sampling and more participants to be better. The limitations should be explicitly relevant to the candidate's own experiment

- It is generally recommended that candidates are familiar with scientific standards, which include references to previous studies and integration of these in their own research. Likewise, the use of proper background readings must be encouraged. It is recommended that candidates be trained in critical use of internet resources. Many candidates *only* used internet sources of a non-specialist nature as background literature. Furthermore, the candidates could gain more marks in criterion H if they learned to use a standard way of referencing.

Standard level internal assessment

Component grade boundaries

Standard level

Grade:	1	2	3	4	5	6	7

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Mark range:	0 - 2	3 - 5	6 - 8	9 - 10	11 - 12	13 - 14	15 - 20

The range and suitability of the work submitted

Overall the range and suitability of the work submitted was of satisfactory standard and fewer non-experimental studies were submitted this year. The most popular research topics were from cognitive psychology and these choices are usually suitable and manageable for candidates at this level of education. The Stroop effect and Loftus and Palmer experiments tended to be replicated the most. Some candidates chose to look at the primacy/recency effect and had difficulty explaining their results effectively. Moderators were pleased to note that most candidates at standard level were now conducting experiments that are simple enough to achieve the goals of the internal assessment and stay within the word count. However there were examples when candidates were comparing three or more variables when they only need two. This often occurred when candidates replicated the Loftus and Palmer experiment on leading questions.

Moderators reported that the majority of candidates were aware of basic ethical considerations. There was appropriate evidence in the majority of the reports indicating that candidates were aware and followed ethical principles while planning, conducting research and reporting their findings. However, some candidates still failed to obtain parental consent for participants under 16 years of age.

In general moderators reported there was an increase in the overall standard of the reports. Generally the introduction was done quite well. It seems that more candidates are receiving full marks for this criterion. Also, procedural aspects of the study were generally well done and reported; however, criterion B asking for choice, justification and explanation of design and criterion E asking for data analysis remained weak. Typically, the discussion of the results in light of the original study was very superficial.

In general, the weaker reports shared the following characteristics:

- An inappropriate topic was chosen (for example, aims referring to gender differences or aims designed solely by the candidate with no original study provided).
- Research design and sampling method were identified but not justified.
- Appropriate or relevant justification for descriptive statistics was not provided.
- Discussions lacked relevant information and were presented in a superficial manner.
- The word count was not stated, and the prescribed word limit was not adhered to.
- A reference page was not provided, or references were presented with insufficient information.

The following specific problems were noticed in some popular choices of studies:

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- When replicating Loftus & Palmer's (1974) study on reconstructive memory, candidates often compared three or more variables when they only needed two. Candidates should be advised to use two conditions for example, "smashed" and "contacted". Also, candidates who replicated Loftus's "car crash" study still neglected to put reference to the "video of car crashes" in the consent from or brief, and need to be advised to do so by teachers, rather than providing a whole class with a generic consent form. The purpose of consent forms is to inform about the study to allow withdrawal.

- When replicating the Stroop effect, a significant number did not explain the IV of congruent and non-congruent colour words well; often candidates used a variety of terms/explanations within one report. Many centres sent photocopies of reports instead of originals, which tended to be a problem for the clarity of materials provided in the appendices.

- Bartlett's "War of the Ghosts" study was often replicated although there is no clear manipulation of the independent variable.

- Some candidates conducted a replication of Asch's conformity experiment although this study has serious ethical considerations.

Candidate performance against each criterion

Mostly, there was a good range of discrimination between candidates on each criterion.

Criterion A

Generally the introduction was done quite well. Many candidates provided clear introductions and it was not difficult for them to achieve full marks. However, many candidates still tended to include information that was not required within the introduction – extra theories and studies and a null and research hypothesis that were not necessary and took up valuable words. Additional problems identified by moderators were that the aim was not always clearly stated or did not match the description of the original study. In some cases the formulation of the aim was vague and only tangentially related to the study being replicated with minimal explanations about the modifications implemented.

Criterion B

The design section seemed to be a weak point of many reports. In addition to this, some elements required within this criterion are related to other sections of the report and criteria (criterion E and criterion F) and if they are not successfully understood this has deeper consequences when evaluating the quality of the report. Many moderators reported that candidates often left out half of the requirements or didn't understand how to explain them. In many cases although the research design was identified, its use was not justified. In a few cases the explanation of repeated measures/independent samples seemed to indicate that, although candidates were using the appropriate terminology, they did not understand the concepts. However,

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candidates did seem to be able to consistently identify the independent and dependent variables much better than in previous years. At times, although variables were identified their value was not expressed precisely (for example, how the variable was measured: seconds, minutes or hours (for time); kilometres or miles (for speed)).

Ethical guidelines were usually clearly followed and evidence of this was provided within the report. The majority of candidates attached a blank copy of the consent form and debriefing letter in the appendices. Some candidates forgot to state ethical considerations within this section. However, if they referred to ethical considerations in the participants section or in the procedure section moderators were clearly instructed that the marks should be awarded for this criterion.

Criterion C

Many candidates chose students from their classes or school as participants. This choice is appropriate and completely suitable for their studies. Some candidates obtained very large samples in their study; it is recommended that 15 – 20 participants is an adequate size and there is no need for larger groups of participants.

Many moderators reported that only few relevant characteristics of the participants were provided. Also, although a selection method was typically provided, it was not fully explained. Another problem reported by many moderators was that candidates continue to struggle with understanding the difference between concepts of "random selection" and "random allocation." The term “random” is still not appropriately used by many candidates, leading to confusing accounts of participant selection used in their studies – some candidates tended to frequently describe opportunity or convenience sampling as a random sample or use random sampling as an equivalent to “anybody available".

Criterion D

The majority of candidates gave clear and relevant information in the procedure section. However, standardized instructions were not always clear or they were not included in the appendices.

Many candidates still write very brief and generic procedures that could relate to a number of experiments (such as, give out consent forms, follow standardized instructions, collate results, and so on) and then rely on detailed standardized instructions in the appendices. More specific information needs to be provided within the procedure section to indicate the main features of the procedure of the study.

Criterion E

This part of the report was often poorly written and there seems to be a lot of confusion about what is necessary. In the table one measure of dispersion and one measure of central tendency needs to be provided for the experimental and control condition. These measures should be appropriate for the level of measurement and for the obtained distribution of data. Unfortunately, many candidates did not pair

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these measures appropriately: for instance, candidates used the mean, but then used the range as the measure of dispersion instead of the standard deviation; or they used the median and then stated the standard deviation instead of the interquartile range. In addition, many candidates still included all three measures of central tendency without any explanation. In general, justification for using particular descriptive statistics continues to be difficult for candidates. Many candidates presented their data without any verbal text and often including raw data in the section.

Graphs should also present two measures of central tendency (one for the experimental group and one for the control group) and clear labels and a title should be provided. Unfortunately graphs and tables often compare unusual choices of data that are not related to the conditions of the IV and the aim.

Criterion F

Discussion sections remained the weakest, and very few top marks were awarded. Typically, discussions of the results in light of the original study were very superficial. Candidates were not comparing the differences in the calculations and there was limited discussion as to why the findings of the replicated study were similar or different to the original study. More evaluation of the limitations of the research design and procedure would yield higher marks in this area. Unfortunately, some candidates did not identify modifications or provide a conclusion to their discussion section and thus earned only minimal marks.

A number of candidates still reported general and superficial limitations such as sample size and noisy classes. At the same time they seemed not to be aware of serious confounding variables that occurred. Another common problem was that although some relevant information was provided in the discussion section, it wasn't fully developed by providing a clear link between the methodology used in the study and the results obtained. Often the conclusion was implied or inappropriate.

Criterion G

The three biggest limitations related to criterion G were that candidates were not staying within the word count, were not providing the statistical calculations in the appendices, or they failed to include a reference page.

A number of samples were clearly over the word limit and some even stated this on the cover – yet the teacher still awarded full marks.

Appendices were appropriately labelled (in the majority of cases) and were referenced in the report. Many candidates experienced problems with referencing which was often not well-executed or done in a consistent way. In particular, internet sources were not clearly referenced. Some candidates experienced problems with writing clear and concise abstracts. Some moderators reported problems with the presentation of the report – spelling and errors in simple grammar or poor quality of printing and layout were reported in these cases. Candidates should be advised to

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submit original reports (not black and white copies) in cases where they have coloured graphs in the results section.

Recommendations for the teaching of future candidates

- Guidance is needed when selecting appropriate topics and research to replicate.
- In many centres there is still a need for teachers to more clearly outline the expectations of what should be provided in the internal assessment to candidates. Teachers need to review the marking criteria with candidates to ensure they are aware of the expectations. There are noticeable differences between those samples from centres where teachers clearly take the time to go through the internal assessment criteria and those that are less detailed in their discussion of what is expected.
- When teaching future candidates, it is recommended that teachers give candidates a chance to mark a sample paper. Group discussions could also enhance candidates' understanding of which elements must be included in each section and the best way to go about writing the report.
- Creating short and simple activities that encourage candidates to look at the strengths and limitations of different designs and sampling techniques can aid in their understanding of why a particular design is used and why they may use an opportunity sample within a school setting. Understanding these concepts will allow candidates to better justify their choice of a research design and fully explain how they went about choosing a sample from the available population of students.
- A thorough presentation and discussion of the types of data (nominal, ordinal, interval and ratio) would be helpful for teaching candidates about when it is appropriate to use the mode, median, or mean. In addition, creating frequency histograms with raw data will allow candidates to see whether or not the data is skewed or reflects a normal distribution. This type of activity can help candidates to understand how they should justify their use of a particular measure of central tendency. In addition, teaching what measure of dispersion best matches up with a measure of central tendency would be beneficial. More discussion and activities using fictitious data could help candidates grasp an understanding for the different types of data and how to choose appropriate descriptive statistics when stating their results.
- In particular, the expectations for the discussion section need to be more clearly explained to candidates: far too many candidates fail to address the most basic elements (summarizing their findings; contrasting with previous study; reviewing methodology – design choice and other options). Too many of the discussion comments are superficial.
- Teachers may find it useful to create exercises that will help candidates evaluate data from the original study and data from the candidate's replicated study, then brainstorm ideas as to why the data was similar or different. By identifying the strengths and limitations of the candidate's experimental design and procedure, candidates will develop ways of enhancing their own discussion. In addition, it is

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imperative for candidates to suggest modifications for areas that were problematic within their experiment and provide a basic conclusion of their experimental findings.

- Referencing needs to be taught explicitly – and should be fairly consistent within a school.
- Candidates should be encouraged to use spell and grammar check before submission of their final work.
- Word counts must be adhered to and should be checked by the teacher.
- Teachers should encourage broader reading habits. Better projects were those in which candidates had obviously read beyond the one study they were attempting to replicate.
- Candidates should be advised to make sure that the study they are conducting and reporting is experimental – that is, it has clear manipulation of the independent variable. A questionnaire may be part of the study if it is used to measure the dependent variable but careful consideration has to be given to make sure that the independent variable is clearly manipulated by the candidate. In reports where questionnaires are used as a measure of the dependent variable teachers should encourage candidates to consider what is the most appropriate phrasing of questions in the questionnaires.
- Candidates should be advised not to choose children below the age of 16 as participants for their study.

Higher and standard level paper one

Component grade boundaries

Higher level

Grade:	1	2	3	4	5	6	7
Mark range:	0 - 6	7 - 12	13 - 15	16 - 20	21 - 26	27 - 31	32 - 46

Standard level

Grade:	1	2	3	4	5	6	7
Mark range:	0 - 6	7 - 12	13 - 15	16 - 20	21 - 26	27 - 31	32 - 46

General comments

Candidates found it more difficult to deal with the questions relating to the general framework (principles, methods and ethics) than those of specific content. Moreover, there was too much

description of studies (for all questions) and not enough focus on the command term for section A, and for section B the description of the studies took priority over displaying higher level thinking. Too often, the critical thinking elements in the extended responses were limited or not linked to the requirements of the questions.

In addition, some candidates gave very long answers for Section A questions leaving less time to adequately answer Section B question that should be more developed.

The areas of the programme and examination which appeared difficult for the candidates

Understanding the demands of the question continues to be an issue with many candidates: they do not answer the questions in a focused manner and provide marginally relevant information. Moreover, the skill to structure and develop a clear and coherent argument is a weakness of many candidates, especially in section B.

The majority of candidates were able to provide descriptive responses but few were able to offer a relevant critical analysis. Candidates seem to be over-prepared in giving formulaic evaluations and criticisms of studies. Evaluation was rarely well-integrated throughout the essay and often was just added as an afterthought.

For many candidates knowledge and understanding of research methods was lacking. A good many were unable to correctly identify research methods.

The areas of the programme and examination in which the candidates appeared well prepared

Overall knowledge of the three levels of analysis was satisfactory with the majority of candidates able to identify appropriate concepts and theoretical explanations and provide relevant research studies.

Many candidates were also capable of successfully transferring their knowledge from the options to answer paper one questions. For example, a twin study relating to a disorder could be used as an example for supporting the principle of genetic inheritance in question one. This shows teachers manage to provide integrated knowledge to the candidates.

The strengths and weaknesses of the candidates in the treatment of individual questions

Section A

Biological level of analysis

> While most candidates could successfully identify a principle and provide a study to illustrate it, it was often hard for them to link back to the principle explicitly. Too often, the focus was on the description of the study and the link to the principle was weak or missing. Some candidates were unable to clearly or correctly identify a principle but were able to present examples of studies describing it. Very often, concepts such as

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localization of function were quoted as principles, showing that the distinction between principle and concept was not always clear.

Cognitive level of analysis

Many candidates could provide an example of an appropriate study and could identify a relevant ethical consideration related to that study. Some candidates used relevant studies such as Speisman et al.'s study, Newcomer's study on cortex and memory, Loftus's lost in a shopping mall study or weapon study in an effective and focused manner. However, many candidates discussed ethical issues related to Milgram's or Zimbardo's studies. Unfortunately, these research studies, although good examples of studies presenting ethical issues, were not linked to the cognitive level of analysis and a maximum of three marks could be awarded. Some candidates tried to use operant or classical conditioning for this question, such as Little Albert study and Pavlov's study, despite them having no relevance. Too often, the focus of the answer was on the description of the study leaving less importance to the ethical issue related to that study.

Sociocultural level of analysis

Many candidates demonstrated very limited understanding of research methods. Many failed to correctly identify a valid research method, often reporting sampling techniques or "non-methods" such as the cross-cultural method, emic/etic method, single-blind method, longitudinal method. Where an appropriate research method was identified, candidates struggled to justify the actual use of the method at the sociocultural level of analysis: many responses simply outlined the features of the method and then explained a study without a clear link between the two. Moreover, many candidates used an inappropriate study to illustrate the method chosen. Here again, the focus of the answer was often on the description of a study rather than the explanation of one research method.

Section B

Biological level of analysis

Responses to this question were either excellent or very weak. Some candidates discussed in an effective and focused manner the evolutionary explanation of disgust, homosexuality or mate selection and presented appropriate studies in support of their answer. However, many candidates referred to biological explanations rather than evolutionary explanations and did not link the behaviour being described to evolution. Too often, the question was addressed in a vague and general manner offering limited psychological knowledge. In addition, discussion was generally limited and only focused on methodological issues of the studies used in support of the answer rather than dealing with issues raised by an evolutionary perspective.

Cognitive level of analysis

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Most candidates focused on memory as the cognitive process and were able to explain two relevant models such as the multi-store model and the working memory model or two theories such as schema theory and flashbulb memory. Several candidates supported their answer with relevant studies. For the most part, however, these essays were good in terms of knowledge but mediocre in terms of analysing strengths and limitations of the models or theories. Some candidates failed to identify a specific cognitive process, writing on any two theories even those not related to the cognitive level of analysis.

Sociocultural level of analysis

Many candidates wrote a well developed discussion of two appropriate techniques including factors that influence compliance, efficacy of the techniques and empirical evidence. However, there were some candidates who simply described two relevant techniques (mainly foot in the door, low balling and door in the face), with one piece of research in support of each technique or without any studies in support of their answer. Some candidates did not understand the difference between techniques to bring compliance about and factors that explain why it occurs, for example because of the principle of reciprocity.

Weaker candidates discussed obedience and/or conformity rather than compliance techniques. Milgram was frequently cited as an example of foot in the door and if candidates explained that the slow steady incremental rise in voltage was an example of foot in the door, credit could be given.

Recommendations and guidance for the teaching of future candidates

- Emphasis should be given to helping candidates understand the main aspects of psychology (principles, methodology and ethics) which are necessary for good quality answers across all parts of the syllabus.

- Candidates should practise time management more often. Many candidates write far too much for the first question in section A, which limits their time for section B.

- Teachers need to focus on developing essay writing skills. Teachers should help candidates to write clear introductions where the main concepts are clarified and write a definitive conclusion where the reader can see that the essay is referring back to the command term and the requirements of the question. Candidates should also be aware that planning the argument in advance will help them remain more specifically focused on the question as set.

- Evaluation is also an area where candidates need to be supported by teachers as it was rarely well-integrated throughout the essay. Evaluation of studies alone is not enough for the highest marks in criterion B. Candidates should be advised that critical analysis and evaluation has to be related to the requirements of the question. Candidates need to go beyond description and evaluation of studies and focus more

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on how they answer a question through the analysis, application and evaluation of the findings from them.

- Clarity of expression is another issue that teachers should advise candidates on. Candidates should define terms and be sure that theories and studies are clearly explained, not assuming too much knowledge on the behalf of the reader.

- Candidates should also be aware that more is not necessarily better and avoid writing long general introductions, detailed description of research, or evaluation when it is not required.

- Candidates should also be advised to read the questions carefully and give answers on the question asked. When it says “one” it is not to their advantage to write several examples. Indeed, the examiner will give credit only to the first example.

Higher and standard level paper two

Component grade boundaries

Higher level

Grade:	1	2	3	4	5	6	7
Mark range:	0 - 5	6 - 10	11 - 13	14 - 19	20 - 24	25 - 30	31 - 44

Standard level

Grade:	1	2	3	4	5	6	7
Mark range:	0 - 2	3 - 5	6 - 7	8 - 10	11 - 13	14 - 16	17 - 22

The areas of the programme and examination which appeared difficult for the candidates

As in previous examinations, there was a wide range in performance among schools. Candidates from some schools were very well prepared to take this exam while candidates from other schools were unprepared.

In general, the majority of responses showed some knowledge of the major ideas in the options, some knowledge of appropriate research, but limited use of critical thinking. While many candidates were able to provide routine evaluation of studies, for example, lack of ecological validity, small sample size, problems in generalizability, and so on, there was a paucity of critical analysis of the main issue of the questions. The command term “discuss” produced a number of poorly organized answers in which candidates wrote everything they know about a topic, but much of the answer was either tangential to the main topic or simply irrelevant. Candidates had particular difficulty with the command term “contrast” in this examination.

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Most teachers indicated that they believed that the examination was fair and of a similar standard to last year's examination.

The areas of the programme and examination in which candidates appeared well prepared

For the most part, candidates were able to demonstrate basic knowledge of the content of the options and of appropriate research. The two most popular options were abnormal psychology and psychology of human relationships. Candidates from some schools were very well prepared to answer questions from these options. In strong answers, and even in a fair number of middling responses, knowledge of the levels of analysis approach was in evidence. The new programme is having success in conveying the foundational theme that understanding human psychology requires the examination of biological, cognitive, and sociocultural factors.

In addition to effective teaching of the content of the options, it is also clear that instruction in how to write a response to the type of questions used on paper two yields a big return in the quality of essays written by candidates. Well prepared candidates often began their responses by defining key terms, for example, "validity", or "reliability", then directly addressed the core of the question. Knowledge of the specific demands of the command terms enables candidates to write well organized responses.

The strengths and weaknesses of candidates in the treatment of individual questions

Abnormal psychology

Question 1

This question was the most popular one on this examination. Responses showed the full range of quality from excellent to extremely poor. Strong responses started with clear definitions of both terms. Accurate use of Rosenhan's pseudo-patients study to discuss validity was almost always part of strong responses. Candidates had more knowledge of research on reliability than they had of research on validity. Good responses often included accurate discussion of Nicholls's research at Great Ormond Street Children's Hospital, Beck et al.'s and Cooper et al.'s studies of inter-rater reliability, and Seeman's study on test-retest reliability of diagnosis of schizophrenia in women. Cultural and ethical evaluation also tended to be well integrated in better responses. Best responses discussed the ways in which validity and reliability are inter-related.

Weak responses contained vague or inaccurate definitions of validity and reliability, or simply "lumped together" the two concepts and made no distinction between them. Rosenhan's research was misunderstood by many candidates. Many candidates simply discussed concepts of normality and abnormality or described classification systems in detail with little or no reference to issues of validity and reliability, an approach that produced very weak responses.

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Question 2

As compared to question one, very few candidates chose to respond to this question. Candidates who did answer this question tended to focus on anorexia, bulimia, or phobia. By and large, responses to this question tended to be mediocre or poor. Strong answers, of which there were few, evaluated the group approach as it is specifically applied in the treatment of the particular disorder identified. Much more typical were answers that discussed the features of group therapy in a general way, noting advantages such as receiving support from others and keeping costs down, and disadvantages such as lack of individual attention and lack of confidentiality. Cognitive behavioural therapy was often discussed, but candidates did not differentiate its use in individual therapy from its use in a group. There was very little use of research in the great majority of answers. Weak answers also substituted a discussion of the symptoms of the chosen disorder for a discussion focusing on group treatment of the disorder.

A few candidates did not clearly identify any specific disorder and a few candidates inappropriately chose schizophrenia as the disorder to be discussed in relation to group treatment.

Question 3

As compared to question one, very few candidates chose to respond to this question, but there were more responses to this question than to question two.

Well prepared candidates were able to provide excellent responses to this question. Multiple biological factors were discussed in the strongest responses. Candidates examined factors such as hormones, neurotransmitters, brain structures, and genetics in regard to anxiety and eating disorders. Strong answers on phobia also included a discussion of how evolution may prepare humans to fear certain insects, animals and situations. By and large, candidates were able to use at least some research in their answers.

Some candidates discussed depression, identifying it as an anxiety disorder, and a few candidates discussed schizophrenia. These responses did not earn any marks.

Developmental psychology

Question 4

By and large, this question was not answered very well. Some candidates did a reasonable job of describing Erikson's stage of identity versus role confusion, but had little to say on a second example of research. The few better responses contrasted Erikson with Rutter's Isle of Wight study.

Very often this question was answered in a broad and general manner by providing a few theories and/or studies related to adolescence and providing some evaluation of these theories. The command term "contrast" was often ignored. Although two

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theories/studies were required, sometimes only one was described and the other just identified which obviously led to weak responses.

Some candidates misinterpreted the question. The question was understood as requiring two theories/studies "leading up to adolescence" rather than "into adolescence". Some candidates described the stages of development prior to adolescence (gave an overview of Piaget's, Vygotsky's or Freud's theories), albeit with a great degree of accuracy, but it was largely irrelevant to the question that was asked.

Responses in Spanish were poor. Responses were mostly descriptive accounts of theories with minimal attention to adolescence.

Question 5

Few candidates responded to this question. For those who did, most responses focused on definitions and discussions of resilience with little focus on the strategies to build it. There was better understanding of risk factors for poor outcomes in life than of strategies to build resilience. Candidates' knowledge and understanding was clearly limited, and strategies were superficially explained without reference to any empirical studies.

A substantial number of responses gave anecdotal and vague answers in which home visiting programmes and after-school programmes were outlined without any use of studies for evaluation.

Question 6

This was a very popular question in this option. Overall, candidates showed very good understanding in their responses and provided good evidence of critical thinking related to theories or studies related to the potential effects of deprivation or trauma in childhood on later development. Responses reflected a number of different ways in which candidates approached the question – deprivation and trauma were interpreted in a variety of ways. The case study of Genie was brought up along with descriptions of "wild" children but quite often economic deprivation was also included. Many candidates also discussed the longitudinal study of Czech twin boys by Koluchova. Some candidates used Harlow's research on deprivation in rhesus monkeys to very good effect. Some strong answers also discussed Hazen and Shaver's research on childhood attachment and its effect on adult romantic relationships. Bowlby's concept of an "internal working model" and Rutter's research on adopted Romanian children were also presented, along with often well-informed discussions of resilience.

Many weaker responses identified and discussed psychological research related to deprivation or trauma, but this material was not made relevant to later development and/or candidates discussed the effects of deprivation or trauma but provided insufficient research to support discussion.

Health psychology

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Question 7

This question was the most popular one in this option. Most candidates were able to outline two stressors. Many candidates took the approach of identifying two types of stressors – acute and chronic – then sometimes provided examples of each type. Many candidates also provided details on these stressors, or went into a full discussion of Selye's GAS model, which was not required by the question.

By and large, good descriptive knowledge of coping strategies was present, but there was limited evidence of critical thinking.

A few candidates could not correctly identify a strategy to cope with stress. However, the biggest problem in answering this question was that some candidates spent too much time and effort in answering the first part of the question, which resulted in too short evaluations of a strategy for coping with stress.

Question 8

The majority of responses to this question were weak. Most responses provided superficial knowledge and understanding and did not accurately identify and discuss a prevention strategy. A lot of common sense responses to this question were provided. Many answers addressed ways to reduce obesity rather than how to prevent it.

Question 9

Most candidates focused on treatments for addictive behaviours, most frequently addiction to alcohol or tobacco. Answers tended to be descriptive and general. Candidates often provided a review of medical treatment or CBT. Usually more detailed knowledge and a thorough discussion was present for medical treatment while knowledge of CBT tended to be less detailed and superficial. Responses tended to be especially superficial when candidates chose social support groups or family therapy as the treatment mode.

Additional note: Some examiners stated that a glaring weakness occurred in the addressing of questions in the health psychology option. This weakness primarily showed itself in a lack of research-based knowledge, coupled with an inability to consistently and effectively answer the demands of the command terms at the higher level of critical thinking (for example, evaluation was not completed in a consistent way).

Psychology of human relationships

Question 10

This question was popular within the option. Most candidates were able to provide an accurate and full discussion, forming a connection between biological factors and their effect on human relationships.

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A number of different biological factors were addressed: neurotransmitters, hormones, “pleasure centres” in the brain, and centres of “aggression” in the brain, evolutionary theory applied to the natural selection of survival traits, and sexual selection applied to mate selection. The best responses directly addressed the command term “to what extent” by noting the limitations and even reductionism in just focusing on biological factors and included some discussion of the role of cognitive and sociocultural influences on human relationships.

Some candidates interpreted the phrase “human relationships” as “interpersonal relationships” and therefore focused only on attraction and mate selection, but still managed to produce good responses. Other candidates focused on all three parts of the option: social responsibility, interpersonal relationships and violence. This approach also produced some very good responses. Usually the empirical evidence given was sufficient to answer the question well.

A few responses showed limited knowledge of the connection between biological factors and human relationships. Instead of focusing on human relationships, these responses provided a brief explanation of biological factors affecting human behaviour in general.

Question 11

There was a mixed set of responses to this question, including some excellent responses and some merely common sense responses. Descriptive knowledge of research was much better than the ability to apply critical evaluation and analysis to research on this question. Many candidates resorted to noting that the topic of why relationships may change or end was very complicated, and that statement substituted for any deeper analysis. Strong responses tended to discuss social exchange theory, equity theory, and attribution theory. Some of the best responses integrated biological factors into the discussion.

This question, as well as question 14 in sport psychology, seemed to be “default” questions on this examination. If a candidate lacked the knowledge to answer a second question, this question seemed to offer a reasonable chance of earning some marks for some candidates. Candidates using this strategy for selecting a question to answer produced very poor answers based on unsubstantiated folk knowledge with no evidence from psychological research.

Question 12

This question was a very popular choice in this option. In many cases examiners reported that responses to this question received marks in the highest band. Many candidates wrote very well-developed and well-organized responses, supported by appropriate theories, studies, and evaluation of the research used. Some of the best responses pointed out the much higher rate of bystanderism in Latané and Darley's lab experiments than in Piliavin et al.'s New York subway field experiment. Responses in the mid-range were limited in evaluation. For example, Latané and Darley’s research looking at the role of the number of people available to help

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(diffusion of responsibility) as well as the informational social influence (pluralistic ignorance) was often described but not clearly evaluated. Cultural factors were introduced in the form of evaluative comments. In general, responses that discussed a relatively smaller number of theories/studies on factors influencing bystanderism in greater depth tended to gain more marks, but some very strong answers showed a good breadth of knowledge by describing and evaluating research by Piliavin, and Bateson and Darley, in addition to the most frequently used research by Latané and Darley.

Some candidates used theories on altruism to good effect but others used these theories without linking them to bystanderism. Some candidates spent too much time describing the Kitty Genovese case in great (and sometimes inaccurate) detail.

Sport psychology

Question 13

There were many responses to this question. Many candidates were able to report on research relevant to goal-setting but evaluation of the research was very limited. A common response simply discussed goal-setting in relation to performance. Another common problem reported by examiners was that candidates provided descriptive answers that talked about intrinsic and extrinsic motivation and little else.

Question 14

Candidates provided a range of different responses to this question. In some cases this question generated relevant and focused responses. However, the majority of responses listed reasons for using drugs in sport but did not support their knowledge with empirical evidence. Similarly to question 11 in the psychology of human relationships option, some candidates seemed to choose this question when they lacked knowledge to answer a second question. A number of responses contained nothing more than general knowledge, for example, athletes use steroids to increase power.

Question 15

There were very few responses to this question. Candidates who did respond to this question provided weak answers with little or no use of research. The demands of the command term “to what extent” were very poorly handled.

Recommendations for the teaching of future candidates

- It seems that the main problem for candidates is an inability to properly interpret the command terms. Therefore, from the very beginning of the course, candidates should be familiarized with the command terms and explicitly taught the different demands they place on the respondent. Candidates should be exposed to similar kinds of questions as those given in the IB examination papers, so that they are well prepared for the final IB examinations.

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- Candidates should also be given past paper questions to do and once they are done, the teacher should explain the criteria and markscheme to the candidates. After this review has occurred, candidates should be asked to assess their own work. In this way, candidates can take responsibility for their learning.

- Most importantly, teachers should ensure that the candidates form a connection between the theory/concept/term and empirical studies and in doing so ensure that they are evaluating the concept, not just the empirical studies, according to the requirements of the question.

- Candidates should be reminded that when one study is requested, adding several studies lowers the quality of the response since only the first one will be considered. If a question asks for a discussion or evaluation of one study or theory, additional studies or theories may be brought in as part of the discussion and earn marks only if this research is clearly and explicitly used to evaluate the first research discussed.

- Teachers should not encourage candidates to provide huge numbers of studies since they are often misremembered, and not made relevant to the question. Instead, focus should be made on one classic study and one or two updated examples, and then on applying this research to answering the question effectively.

- In schools that are new to the IB Diploma Programme it is imperative that teachers are aware of the demands of the psychology programme. Generalized, anecdotal discussions are not acceptable responses to examination questions. Specific psychological terminology and concepts must be taught. In addition, candidates must be instructed how to break down the demands of a question and how to effectively structure and support a response.

Higher level paper three

Component grade boundaries

Grade:	1	2	3	4	5	6	7
Mark range:	0 - 1	2 - 3	4 - 7	8 - 10	11 - 13	14 - 16	17 -30

General comment

Candidates overall seemed to have a good understanding of the stimulus material this year but some candidates had problems integrating the stimulus material with knowledge and understanding of qualitative research methodology.

The purpose of paper three is to demonstrate knowledge of qualitative research methods as outlined in the guide. Quite a few candidates appeared unprepared for paper three and showed no or limited knowledge and understanding of qualitative research methods. It was often seen that reasoning was based on knowledge from quantitative research and in

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particular, experimental research. As in previous years, most candidates used the term "experiment" interchangeably with "research study", which is not recommended.

Some candidates had problems using the information in the stimulus material properly. For example, instead of using the case study with five participants in the stimulus material as the starting point for explanation and discussion, candidates suggested various sampling methods including random sampling that could increase number of participants or they suggested changing the study to something else.

Another problem noticed this year was the tendency to focus too much on disaster and stress and less on the case study and qualitative research methodology. For example, candidates were suggesting ways to deal with the relief work instead of focusing on what the researchers were studying in this case study. Also some candidates focused too much on stress and how the two psychologists could help the relief workers instead of answering the questions on qualitative research methods. Overall, there were in some cases difficulties integrating the stimulus material with the questions asked which in many cases resulted in a lack of focus on the question.

There was some spread in the marks awarded and candidates scored all along the mark range with some in the low range, most in the middle and few in the higher range. This is an indication that many candidates were not well prepared to answer paper three questions.

The areas of the programme and examination which appeared difficult for candidates

The most difficult question for candidates appeared to be question two that involved knowledge and understanding of the extent to which it is possible to generalize from a single case study. Many candidates used knowledge related to quantitative research (generalization from a population) and those in the higher scoring range could compare this to generalization from a single case study using relevant knowledge. The command term "to what extent" was often not effectively addressed. Quite a few candidates demonstrated knowledge of inferential, representational or theoretical generalization and related this to the stimulus material in the response but knowledge of these terms was not necessary to access high marks.

As for question one it appeared that some candidates did not know that random sampling is not an appropriate sampling method in a case study with few participants. However, most candidates were able to identify a relevant sampling method and explain it in relation to the stimulus material. Some candidates explained that opportunity sampling was used in the study in the stimulus material and would then suggest alternative methods such as purposive sampling and explain why this method could also be appropriate in the study in the stimulus material. Others suggested snowballing as the only sampling method or as a possibility if the study was extended. In question three, many candidates had difficulties addressing how a case study could be used to investigate a problem and only wrote about data collection methods and ethical issues.

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There was a tendency in some papers to base analysis on speculation rather than knowledge of qualitative research applied to the stimulus material.

The areas of the programme and examination in which candidates appeared well prepared

Many candidates showed a good understanding of sampling methods in question one and data collection methods in question three. As for generalization from a single case study, some candidates seemed well prepared and showed understanding of the principles of generalization in qualitative research and could explain when and how it may be done, often with reference to theoretical terms, which indicate a sound knowledge of issues of generalization in a single case study.

The strengths and weaknesses of candidates in the treatment of individual questions

Question 1

The question was generally well answered although quite a few candidates wrote that random sampling would be best. Random sampling is not appropriate in a case study or in qualitative research. Such responses mostly argued that a sample should be representative of the target population and that many participants were needed to achieve that. Such responses made little reference to the stimulus material or overlooked the information in the stimulus material that the sample consisted of only five participants.

Most candidates were able to identify one relevant sampling method and the stronger responses also explained why this sampling method was appropriate in this case study, and what alternative methods could be used and why, using the information in the stimulus material as support. Some candidates explained that opportunity sampling was used in the study in the stimulus material and would often suggest alternative methods such as purposive sampling and explain why this method could also be appropriate in the study in the stimulus material. Yet others suggested snowballing as the only sampling method or as a possibility if the study was extended.

Question 2

The question seemed particularly difficult to a number of candidates who scored zero or very low marks in this question. Responses in the lower end of the mark range typically referred to the type of disaster as a criterion for generalization, or culture, gender, or age as determining the degree to which generalization could be made. This shows limited knowledge and understanding of generalization in qualitative research or from a single case study. However, some candidates seemed very well prepared and were able to either discuss generalization from a single case study based on rich data and findings of other similar case studies. Many candidates were also familiar with the terminology related to generalization in qualitative research, i.e.

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inferential, representational or theoretical generalization and responses in the higher scoring range could also explain this in relation to the stimulus material.

Question 3

The weakest responses neither addressed how a case study could be used to investigate a problem nor suggested relevant data collection methods. Weaker responses did not address the use of a case study and merely described one or two data collection methods in a rather generic way and made very little use of the stimulus material. Some responses stated that participant observation and even covert non-participant observation would be appropriate in this study, but this would be difficult if the information from the stimulus material was used appropriately since it was specifically mentioned that informed consent was obtained and that the researchers went along with the chosen team to the disaster site.

Stronger responses explained what a case study is and how it can be used to investigate a problem like the one in the stimulus material and then explained two or three relevant data collection methods and why they would be particularly relevant in this case study. Such responses typically focused on non-participant observation and various forms of interviews as suitable data collection methods. For example, many explained that focus group interviews could be a useful method since the participants worked as a team and the idea of the research was to find out how the team could support each other in the stressful environment.

Recommendations for the teaching of future candidates

- The main challenge in paper three seems to be that candidates must learn to distinguish between quantitative and qualitative research methods. It is important that candidates mainly use their knowledge of qualitative research methods when answering paper three. A second challenge is to learn to use the stimulus material in an appropriate way to support the argument. Paper three in the present syllabus requires that candidates integrate knowledge of qualitative research methods with specific stimulus material. It is not enough to describe what is in the stimulus material or use it for various speculations without reference to methodology. The stimulus material is intended to serve as a starting point for analysis of how qualitative research methods could be applied to a specific study.

- Candidates should practise "what it is like to be a qualitative researcher" so that they are able to apply relevant methodological knowledge to the stimulus material. This means that teaching should include exposure to a number of qualitative studies and preferably also give candidates the opportunity to conduct some minor research projects themselves in order to get an insight into the reasoning of a qualitative researcher. It is also important that candidates come to understand the difference between quantitative and qualitative methods so that they avoid using too much terminology from quantitative methods. For example, many candidates seemed unaware that terms like “experimenter", "experiment" and "Hawthorne effect" are not really appropriate to use in the context of a qualitative study.

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- The questions based on an introduction with an outline of a study or scenario (the stimulus material) should give candidates an opportunity to demonstrate how to apply relevant knowledge and understanding of qualitative research methods in the context of that study or scenario. Every fifth line in the stimulus material is numbered so that candidates may refer to the lines without having to use extensive quotations. This could be used more effectively in the responses and teaching this paper should involve showing candidates how to find relevant parts of the stimulus material that could support explanation of research methodology.

- This means that candidates should be prepared in such a way that they have both a general knowledge of qualitative research methods as outlined in the guide as well as competence in applying this knowledge in relation to the stimulus material. Using previous exam questions could facilitate this or teachers could simply prepare material and questions themselves when they teach qualitative research methods. It is also recommended to train candidates to make balanced evaluations and discussions instead of claims and speculations that are not supported.

- It is also advised that teachers instruct candidates in what it means to address the command terms in relation to paper three, for example what "explain" means. Too many candidates just speculated on what they thought would be relevant but failed to explain why it could be relevant in relation to the stimulus material.

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