



University of Essex

# **Undergraduate Assessment Guide**

**DEPARTMENT OF PSYCHOLOGY**



# The Department of Psychology

## Undergraduate Assessment Guide

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## Guide to Writing Research Reports

The following set of guidelines provides psychology students at Essex with the basic information for structuring and formatting reports of research in psychology. During your time here this will be an invaluable reference. You are encouraged to refer to this document each time you write a lab report.

The writing of laboratory reports is an essential part of any practical module in Psychology. This is because psychologists (and more generally most scientists) write accounts of their studies using a standard format, which makes explicit certain aspects of the study. There are two main reasons for doing this:

- (1) Ease of communication: it is easier to find what you want from a study if it is written in the standard format.
- (2) Provision of a precise and complete description: the format makes it clear what information is important for scientific communication. This information must be provided in detail. It should be added that many professions now include the skills of technical report writing, which requires clear, direct and concise expression, the ability to summarize and present data, and the ability to form hypotheses and draw valid inferences. Learning to write laboratory reports will provide you with a valuable and transferable skill.

This guide tells you about the **structure and style** that is required for a psychology laboratory report. Since most journal articles are written in similar formats, learning to write such reports will aid you in your reading of the literature. Whenever you read journal articles, think about the formats used and why they have been adopted. Not all articles are perfect, so whenever you come across a section that you do not understand, think about why it is unclear. The fault may lie with the authors who are not being as clear as they could be; if so, how could the section be improved? The books by Howitt and Cramer (2011) and Sternberg (2010) provide additional help on writing reports and general writing style.

The purpose of a lab report is to communicate to others the important points of a piece of research: (i) why you did it, (ii) how you did it, (iii) what you found and (iv) what you think it means. Readers of reports will sometimes want the answer to very precise questions (e.g., Who were the participants? What exactly were the mean scores for the two groups?) and do not want to read the whole report in order to find this information. For this reason it is essential to follow a standard format (with correct headings) which allows the reader to locate the information that he/she requires immediately without having to work through the entire text.

The simple rule for report writing is *remember the reader*. In journals, papers are intended for an audience who know the general background for a topic but nothing about this particular study. People will usually see the title first, then perhaps read the abstract, and only then read the bulk of the report if their attention is caught. The format suggested below is the same as that used in most published papers. Therefore, any APA (American Psychological Association) journal such as *Psychological Review*, or British Psychological Society journal (e.g., *British Journal of Psychology*), is a good place to browse if you are unsure as to correct format or style.

Fine details concerning exact format and required information will depend upon the nature of the study, but most of the studies should follow this format fairly closely. Particularly important is the use of separately headed sections (and sub-sections in the method section). If you do not use these sections correctly you will incur severe marking penalties. The numbers next to each heading are included here to structure these notes; they should not appear in the report itself.

## 1. Title

The title should explain what the study is about as concisely as possible. In many cases, the title will mention the independent and dependent variables. Thus, *The effect of sleep loss on the exploratory behaviour of gerbils* would be a suitable format for a title, as would *Exploratory behaviour in sleep-deprived gerbils*. It can also be beneficial to give some information about the outcome of the study, e.g. *Reduced exploratory behaviour in sleep-deprived gerbils*. Avoid making the title so brief that it contains little information about what the study investigated: for example, *Keeping gerbils awake* would not be a good title. Remember that your reader will initially see the title and nothing else; the title needs to tell the reader whether or not the report is relevant to his/her research interests. Your title should be a brief, but *accurate* reflection of the content of the report.

Don't start a title with phrases like *An investigation into...* or *An experiment to determine...*

Such phrases add no information.

Do not start a title with *Title:* The reader will know that it is the title from its location.

## 2. Abstract

The abstract is a short summary of the report. It should contain a brief description of the rationale of the experiment, and it should also briefly describe the method, results and discussion sections. Avoid fine details such as numbers and the names of statistical tests here. The abstract should be 250 words or less: aim for a word count between 100 and 250 words. A full published paper might not be available to all readers, but the abstract will be (see the *Psychological Abstracts* in the library). Thus, the abstract must contain all the key points from the paper. The abstract should concisely cover (1) Why you did it, (2) What you did, (3) What results you found and (4) What you concluded. Write the Abstract *after* you have written the rest of the report. You may find it difficult to write a short abstract in one go. It may be easier to write a long version first, and then delete parts of it.

## 3. Introduction (Why you did it.)

The Introduction should present the reasoning behind the particular study which you are describing. This means that the reader, having read the introduction, should feel able to anticipate what your study will involve. At the same time your introduction should allow someone who is not an expert to understand why you did this study. For this reason the introduction should begin at a general background level and progress through to the specific reasons for and aims of the study. Start with a short, broad summary of the general research topic, and then narrow the focus to literature that is specifically relevant to the current experiment.

An introduction would normally include a review of past work in the area and an explanation of the theoretical or practical reasons for doing the study. A logical progression of content for an introduction might go something like this:

(1) Describe and define the area that you wish to study, perhaps explaining why it is interesting and/or important, if this is not obvious.

(2) Describe previous work by others (and perhaps yourself) that is relevant to the topic of your investigation.

(3) Explain the motivation for your study, and what your study hopes to achieve. It may be that previous work had methodological problems, or perhaps there is plenty of scope for extending previous work. For example, you may be comparing different theories that had not been tested before. Explaining why previous work was inadequate should lead naturally on to the study that you have run. You do not need to

give specific details here, but it should be clear how the present study addresses unresolved theoretical issues, and/or overcomes the shortcomings of previous studies, and/or how it extends our current knowledge.

End the Introduction with a clear statement of the purpose of your study. If your research is hypothesis-driven, then state your hypothesis/hypotheses clearly, i.e. what you expect to happen and why. If your work is experimental, state your hypotheses specifically in terms of your dependent and independent variables (predictive and predicted variables for a correlational design), so that it is clear to the reader how your hypotheses relate to the experiment, and what you expect to happen. If you are doing exploratory research in which you have no specific hypotheses, describe the aims of your study and what you hope to find out. This final part of the introduction is the real key to understanding the study itself, and the report. If this part is clear then describing and interpreting the results becomes much easier. Do not present your hypotheses in a list. The hypotheses should be described in sentences within the main text.

Writing tips:

Try to make sure that each sentence follows on from the previous one, so there is a logical thread of argument – if you hop around from point to point, it makes it difficult for the reader to follow what you're saying.

Make sure that all the material in the Introduction is relevant to your study – don't give lots of details about studies that are not directly relevant to your study.

Remember to back up your statements with citations, rather than making unreferenced assertions.

#### 4. Method (How you did it.)

The method section describes the key information about how you gathered your data. This section must contain enough information for the reader to be able to repeat the study, but should exclude any irrelevant details. For example, if you are studying the effect of word types on the ability to remember lists of words, then the characteristics of the words that make up the lists are extremely important. You would not be expected to explain in detail how participants were seated at a desk, say, unless you were specifically studying the effects of seating arrangements on memory. Which details are relevant and which are irrelevant vary from study to study. When in doubt, consult a journal article that is related to your work and see which details have been included there.

Your memory for the methods should be clear when you write the method section. Therefore it is a good idea to write (or at least draft) this section as soon as you can after completing the study.

The method section should be divided up into a number of subsections, although the exact choice of subsections will depend on the nature of the study. There are different ways to organise the Method section of a lab report. Below you can see four of the most common but you may be asked to adapt that a little.

Method structure 1

- Participants
- Design
- Materials/Apparatus/Stimuli and Procedure

Method structure 2

- Participants
- Design and Materials/Apparatus/Stimuli

- Procedure

### Method structure 3

- Participants
- Design
- Materials/Apparatus/Stimuli
- Procedure

### Method structure 4

- Participants
- Materials/Apparatus/Stimuli
- Design and Procedure

The sections are individually described below. Keep in mind that the goal of the method section is that after reading it, someone should be able to replicate your exact study.

#### 4a. Participants

This should state how many participants were tested, who they were (i.e., from what population they were drawn), how they were selected and/or recruited (e.g., randomly selected sample, volunteers, module requirement etc.) and any other important characteristics (e.g., mean or median age, the age range or SD, composition in terms of males/females, educational level). Which characteristics are important will depend upon the task you are asking people to perform and the kinds of conclusions you wish to draw. If you study only undergraduate students, you may not be able to generalize to the elderly. If most of your participants are female (a common imbalance in psychology student populations) then you may not be able to generalize to male populations. Depending on the research, these details may be trivial or extremely important.

#### 4b. Design

The *design* of is a description of the experiment's structure. For correlational studies, tell the reader which variables are being correlated. For experimental studies, tell the reader (1) what the dependent and independent variables are, (2) what the levels occurred on each independent variable, and (3) whether each independent variable is a between or within subjects variable.

*For example: This experiment used a between-subjects design. The independent variable was drug dosage (high or low dosage). The dependent variable was the number of problems successfully completed.*

For all experiments, you should also explain how you decided which experimental condition was performed by which participant (between-subjects designs/factors) – usually by random allocation. For within-subjects design, you need to say in what order the conditions were presented. This can be done by *randomizing* the order of trials or by *counterbalancing* blocks of trials.

If the design is simple, then a separate design section may not be necessary, as all the information can be provided in the Procedure section. If your design is more complicated, it can be helpful to describe its structure in a separate Design section, where you can focus just on the experimental design, without being distracted by other details of the procedure. On the other hand, it is sometimes difficult to define the different conditions without going into some aspects of the procedure; in this case, it can be difficult to split the information between separate Design and Procedure sections, and so it would be more appropriate to include the description of the design within the Procedure section, rather than having a separate Design section.

If you have a Design section, you should use this section to define the labels that you use to refer to the different variables (and the different levels of those variables). Use clear and informative labels, and make sure the rest of the report uses those labels consistently. In research where there are two or more conditions in the study, you should use clear and informative names for the conditions (not numbers or letters as labels).

#### **4c. Materials/Stimuli/Apparatus**

Materials are things that were presented to the participants, e.g. instructions, words, pictures, problems, or questionnaires. Apparatus is the equipment that was used (usually to present the materials or take measurements or both). The software used to run an experiment would normally be described in the Apparatus section.

In many studies, there is an obvious distinction between the materials (e.g. images shown to the participants) and the apparatus (e.g. the computer that was used to display the images, or the EEG or fMRI machine that was used to record brain activity); in this case, it is sensible to have two sections, one labelled "Materials" or "Stimuli" and the other labelled "Apparatus".

Some studies just involve trivial items (e.g., pencil, paper, stop-watch etc.), and so an Apparatus section is often not needed. The Apparatus section is only required when more complex equipment is used (e.g., a computer running special software). If purpose-built equipment is used, you should describe it in sufficient detail, using a diagram if necessary, to allow equivalent apparatus to be constructed.

The Materials section should describe the materials and how you devised them (or who did devise them if you did not). The criteria used to select the particular items that you used should be described. For example, if using words as your stimuli for a memory test you should tell the reader about any features of their selection, such as word length, word frequency (in the English Language), or their grammatical role (noun, verb, concrete, abstract, etc). For some materials it may also be useful to provide a list of the items. Please note that listing the materials is no substitute for explaining how you selected them. For extensive materials, listing the items is an inappropriate way of describing the materials within the main body of the text; if there is an extensive list, it should be provided in an appendix. If there are no materials in the experiment, then this section can be omitted.

In some studies, it may not be easy to draw a distinction between the materials and apparatus, and in that case a single section (e.g. headed "Materials and Apparatus") would be appropriate. You may also find yourself in a situation where it is difficult to describe the materials or stimuli without describing elements of the apparatus, or vice-versa. In this case, it would again be appropriate to combine the Materials and Apparatus sections so that you describe them together. Sometimes, the materials are so inextricably linked to the procedure (described below) that it makes more sense to include details of the materials in the Procedure section, instead of having a separate Materials section.

#### **4d. Procedure**

While you describe the Materials, you can also describe the Procedure, which is the order in which the materials were presented to participants.

Be careful to decide which details are necessary for replication and which are not. You do not begin description of the study from the beginning of the afternoon when the lecturer started describing the lab class for the day, only from when you started testing participants. Similarly, if the class data have been written on the blackboard, you do not need to describe this at all (you have already collected your data, and writing it on the blackboard should not have any effect on it).

You should include a description of the instructions given to participants. You do not need to quote the entire instructions in the main text unless the exact wording was important for your results. Any particular



emphasis (e.g., instructing participants to be as fast as possible, or as accurate as possible, or to look closely at each item and try to remember it) should also be mentioned.

You must specify in precise detail the events that occur on each trial, such as any warning signal, how long the stimuli are presented for, how the participant responds, etc. Other details could include the rate of presentation of trials (e.g., one every five seconds), maximum times allowed to come up with an answer and other times, such as lengths of rest periods.

You also need to specify how much practice participants had before the main task (e.g., the number of practice trials) and how many measurements were taken (e.g., the number of experimental trials in each condition).

#### 4e. Data preparation

Begin this section with a description of how you pre-processed your data before doing the statistical tests. This means that you should describe how you got from all of the responses that were made by each participant to the scores that were analysed in the statistical tests. In the event that you discarded some data, you should say what data were discarded and why (i.e., give the “exclusion criterion”). A very common mistake is to forget to report how the raw data were processed before the statistical analysis. For example, if each participant has answered 40 questions, you might give each participant a single score (e.g. percent correct) and then analyse those “percent correct” scores, rather than analysing the responses to the individual questions. If this is how you processed your data before analysis, then you should say so. It’s important to explain this pre-processing stage rather than just saying something like “the data were analysed with a t-test”.

For another example, imagine a face recognition experiment in which each participant in each condition is shown the same set of faces, and the experimenter records the time taken to respond “yes” or “no” to each face. It would be unusual to analyse the responses to the individual faces. Researchers would usually pre-process the data in one of two possible ways: (1) They might find the average reaction time across faces for each participant, to give a single score for each participant on each experimental condition; (2) They might find the average reaction time across participants for each face, to give a single score for each face on each experimental condition. Both are valid ways of pre-processing the raw data, and some papers even report both types of analysis.

### 5. Results (What you found.)

#### 5.1. Describe your data

Provide a concise summary of the data using descriptive statistics (e.g., mean and standard deviation per condition for continuous variables and percentages for categorical dependant variables).

In simple experiments (e.g., 1 independent with 2 conditions and 1 dependant variable), this will often take the form of putting means and standard deviations for each condition.

In more complex studies (with several dependent measures, or three or more conditions), the descriptive statistics are often put in a table or a Figure. You should look at the results sections of relevant research papers to see how data tend to be presented for experiments similar to your own.

All tables and figures should be clearly numbered, and should include a title and, if necessary a caption giving more details. The relevant variables, conditions, and units of measurement should be made clear in the title or caption. Also, make sure that the axes are correctly labelled. Moreover, any time that you include a graph or table, you should refer to it from the text of the report. In other words, your reader should know when they should refer to the figure or table.

It is common to include measures of effect size: this can be done either alongside the other descriptive statistics or can be presented when the statistical tests are reported.

*For PS300 Final-year Research Projects the raw data are not included in the report, but they **must** be handed in to your supervisor separately.*

*Do not cut and paste output from a statistical package into the body of your report (but you may be asked to do so in appendices). You should always think carefully about which information is relevant and useful, and present it in the best way without repetition.*

*In your results section, use the same informative names for the conditions that you set out in your method section. This will help your reader.*

## 5.2. Inferential statistics

Inferential statistics are statistical tests to test your hypothesis. You should link these to aims of the study, and the research hypotheses, as stated in the introduction. It should be clear what test(s) you have used, and on what data the tests were performed. For most statistical tests (e.g., a  $t$ -test) there is a test statistic that should be reported (e.g., the  $t$ -value) along with the  $p$ -value. Often, there is other information to be included (e.g., the degrees of freedom). For each different test, you will need to learn what information to report – This will most likely be taught in your statistics class.

When reporting  $p$ -values, the preferred method is to report the exact  $p$ -value at 3 decimal places (e.g.,  $p = .045$  or  $p = .678$ ). If a computer package shows a  $p$ -value of 0.000, this means that the  $p$ -value is too small to be shown exactly with three decimal places, and this is generally reported as  $p < .001$ .

Here are examples to show you how an investigation of mean differences can be reported in a results section.

The mean (standard deviation) solution times for the primed condition was quicker than for the unprimed conditions: 45.0 (12.3) and 56.3 (14.2) seconds, respectively. An independent-samples  $t$ -test established that the solution times in the primed condition were quicker than the solution times in the unprimed condition,  $t(32) = 2.48$ ,  $p = .019$ . The effect size for this difference is large ( $d = 0.85$ ).

Note that this example includes a clear statement of the direction of any significant effect. In other words, we know that solution times are quicker in the primed condition – not just that there is a difference between the conditions (without being told which one gives the faster times).

Different research fields sometimes have conventions for reporting results that differ slightly from those outlined above. Where this is the case, guidance will be given on how to present your results (e.g., by project supervisors or lecturers for a laboratory class).

## 5.3 Organisation of the Results section

Both descriptive statistics and inferential statistics can be presented in the same paragraph. It is usually best to structure your Results section by research question or hypothesis, rather than by type of analysis.

## 6. Discussion (What you think it means.)

This is the section in which you interpret the results of the study and discuss their meaning. It is important that your discussion relates to the issues raised in the introduction, since this presented the reasons for conducting the study. You should link the arguments made in the Discussion with the issues and research hypotheses raised in your introduction section.

In particular:

- (1) How do your results compare with your research questions and/or predictions?
- (2) How do your results compare with relevant published results?
- (3) What are the implications for future research?

It is a good idea to start with a clear statement of what your study found. When you do this, you will often need to remind the reader of the main goals of the study. Then comment on your results, referring to the predictions or research questions that your study addresses. Say which predictions are supported by your findings, and identify any unexpected results. In the next two parts of the discussion, consider the possible explanations for these findings.

Now, discuss your findings in relation to previous research on the same or related research questions. The most important thing is to say how your results shed light on the theories or previous empirical findings and answer the research questions that you outlined in your introduction. If relevant, this can begin with a comparison between your findings and those of other studies. For instance, is the general level of performance similar to previous studies, or is the distribution of individual scores comparable to previous research? Is the size of mean difference or the strength of relationships similar to that found in other research on this topic? It is in this part of the discussion where you should discuss some of the studies mentioned in your introduction. One suggestion is to look at the methods of other studies as a possible source of any discrepancies between your results and theirs. These comparisons with previous research may provide insight into your results, or may suggest alternative explanations for your findings. Remember, everything that you discuss should be relevant to the theoretical questions that your study set out to address. Make sure that you state which theories are supported by your results, and say how theories may have to be modified in order to account for your findings.

Now that you have stated and discussed your findings, you ought to identify what unanswered questions remain and what new questions have arisen. This leads into what future research it is important to carry out. If there are alternative explanations for your findings, this will provide a good reason for suggesting new studies that could be conducted. You should try to be as specific as you can: say what kind of study should be done, and why it will help to determine which explanation is better. If there are ways that your study could be extended to address new related questions – for instance, by adapting one of the conditions, or modifying the dependent variable(s) – you can discuss these here. Be wary of being too speculative: always make clear the possible consequences and benefits of any changes you propose, backed up with suitable sources.

When discussing what further research is required, try justify these suggestions by explaining why these further studies would be useful or interesting. Never simply conclude that further research is required without saying what the further research possibly could be and why it is relevant. Never simply list a series of possible shortcomings, and say that these could have affected your results in some (unspecified) way. Always make sure that, whatever you say, it is highly specific to the study that you have done and not simply a discussion of general factors that apply to all or most psychological research.

## 7. References

The Department has a guide to referencing that must be used when reporting psychology research. It can be found in the Psychology on-line resources, and it is reproduced below in this Assessment Guide.

## 8. Appendices

The final, optional, section of the report is the Appendix section (or Appendices). The contents of the Appendices usually consist of examples of stimuli and details of stimulus preparation, etc. In some cases you will be asked to place the output of your statistical analyses to ensure that markers understand the analyses you report in the body of your report. Have a separate appendix for each type of material, instead of just 'lumping' everything together in one appendix and number your appendices.

## Guide to Writing a Scientific Essay

The University has written a good general guide to writing essays, with lots of useful advice on writing. This Departmental Guide should be read alongside the University Guide.

Writing an essay on a scientific topic is different from writing an essay on other topics. The main goal of most scientific essays is to explain and/or evaluate one or more theories, accounts or positions. Often this will mean presenting an argument for one of these positions. Always, it will involve presenting evidence for your case. In psychology, evidence is almost always specific findings and conclusions from research that is published in books and journal articles.

Coursework and examination essays will usually take one of a number of specific forms. For instance, you may be asked to “explain”, “compare and contrast”, “assess” or “evaluate”. Give particular thought to what this is asking you to do. For example, if you are required to compare and contrast two theories, you should make sure that both theories are described, and that you set out how the two theories differ and what they have in common. When you present evidence that favours one of these two theories, it should be clear why this evidence supports one theory better than the other (e.g., maybe one theory is consistent with the findings of a published paper, but the other one is not).

Essay questions will ask you to focus on a particular topic. It is vital that your essay addresses this specific topic, and that you do not drift into a discussion of the general area or of a weakly related topic. A good tip is to read each paragraph that you have written, and to ask yourself how well does it answer the question that you have been given, and how well it fulfils the specific goal of your essay. For every paragraph, the point made, and the relevance of this point to the essay, should be explicit. In many cases, that extra short sentence that clearly demonstrates your understanding of the material will make a difference between a first-class mark and a second-class mark.

All essays should have a clear and logical structure as follows: an opening paragraph that should lay out the specific goal and plan for the essay, the body of the essay in which you make your case and present your evidence, and a final paragraph in which you summarize the main points and your conclusion. For this reason, it is worth taking the time to thoroughly plan your essay, to provide focus for when you write. Planning involves deciding what material is relevant, and the order in which you are going to present this material. This order of presenting ideas and evidence should be informed by the conclusions that you are going to make.

The opening paragraph provides context to the reader. You should remember that it is an introduction to your essay, and not an introduction to the general topic or the module for which the essay is being submitted. By the end of this paragraph, the reader should have a clear idea of where your essay is headed and, in brief, what conclusions will be drawn. Like the abstract for a research report, this opening paragraph should be succinct.

The body of the essay is where you lay out your position, and will consist of several paragraphs (typically around 80% of your word count). You should give considerable thought to the content, order and organization of the paragraphs. The organization should reflect what you have been asked to do in the essay, and should have a logical flow and progression from one idea to the next. For instance, if you have been asked to evaluate a theory, one way that you might do so is to have one section that describes the relevant aspects of the theory, another section that sets out evidence that supports the theory, and a third section that identifies findings that are inconsistent with the theory. A fourth section would then draw the evidence that has been presented together to make a reasoned conclusion.

The final paragraph summarizes the main points and the conclusions that you have set out in the main body of the essay. Again, you should pay particular attention to what you have been asked to do in the

essay (e.g., to evaluate, or to assess). The way in which the goals of the essay have been met should be highlighted in this paragraph.

Finally, there should be a references section in which you list the sources that you have cited in the essay. The format for this is the same as for a research report, and is described in this Guide.

## General Notes on Style

Using an appropriate style can be very difficult, even if you have written formal reports before. In time, the conventions described below should become fairly automatic. Again, by reading journal papers you should learn and remind yourself of what the usual practices are.

### 1. Use of personal pronouns (I, we, our, me, etc.)

Be sparing with the use of personal pronouns (we, I, our, me, etc.). Frequent use of personal pronouns can make your writing sound anecdotal (i.e., based on limited evidence), or appear dependent upon your subjective interpretation (e.g., as if others would not draw the same conclusion from the evidence that you have presented). When writing a results section, it is rarely essential to use “I” or “we”. For instance, you would NOT need to write: “I conducted a *t*-test”, as it is obvious that you as the author of the report conducted the test. Similarly, you should NOT write: “I conclude that the result is significant”, as other people would draw the same conclusion given the same data and the same test result. Nor should you describe “our brain” or “our memory”. You should certainly never state that “I personally believe...”. However, you may write that “We administered a questionnaire”.

Any time that you use a personal pronoun you should check that it is clear to whom “we” refers, and that this provides the best way to express what you want to communicate. Conventions concerning the use of personal pronouns do vary from one area of research to another. You can expect to receive guidance where conventions differ from those described above (e.g., from your project supervisor).

### 2. Use of tenses

Tenses can be very difficult to use correctly. These guidelines can only be very general rules of thumb. Basically, anything that is history should be written in the past tense. When you write up your work, even your method and results will be history, and should be described in the past tense. The conclusions of previous workers are history, however yours are still current and should be described in the present tense. The theories and models that were derived from the results and conclusions still make predictions today (even if they are the wrong ones) and their predictions thus should be described using the present tense. Thus, for a previous piece of work that you are describing:

“Smith et al. (1970) found that... they concluded that...and developed the XYZ model. This predicts that...”

If you were discussing the results of *your* experiment:

“It was found that... and thus we conclude that... the ABC model predicts that...”

### 3. Other Points to Note

Avoid contracting words (don't, can't, couldn't, etc.).

Always proof read your work for typos. For example, the spell checker will not alert you to ‘trials’ being incorrectly spelled as ‘trails’.

The word “data” is plural. For example, write: “*the data were collected*”, not “*the data was collected*”.

**Affect (verb):** to have an influence on something: “*something has affected my experiment*”; something has changed my experiment.

**Effect (verb):** to cause something to happen: “*something has effected my experiment*”; something has done my experiment for me.

**Effect (noun):** a consequence or an outcome: “*this is a negative effect*”; this is a bad outcome.

**Affect (noun):** an emotional state: “*this is a negative affect*”; this is a bad mood.

Most common usages are affect (verb) and effect (noun): e.g., “The problems described above affected the results by diminishing the size of the experimental effect.”

**Signposting:** If you tell readers what to expect, it helps them to understand what you have written, and it can help you to organize your ideas.

For example: “Consider now the lines of evidence against Baddeley’s position.”

Use appropriate connecting words as part of your signposting – this helps readers to understand where they are on the ‘route’ that you have mapped out for them.

For example: “Turning to evidence from three types of experiment: First, ... Second, ... Finally, ...”.

Also use connecting words that relate the current sentence or paragraph to the previous one, and try to have some variety in the connecting words that you use (while always making sure that the word that you have chosen is appropriate).

For example: “However, ... Moreover, ... Additionally, ...” or “Conversely, ... ;whereas ...”.

**Summarizing evidence:** Think carefully about the level of detail that is needed to make a point. Always check your writing to ensure that you are not repeating yourself unnecessarily, or using more words than are needed to express an idea. Sometimes, you will want to present the findings from several experiments that have shared the same method (or have very similar methods). In such cases, it will be efficient to describe the details of the method once, and then to present the findings for each study separately. When summarizing a study, it is often useful to make sure that your summary addresses the following three questions: What was done? What was found? What does it mean?

#### 4. Some general advice

On the whole, pieces of information should occur only once in the report, and therefore, if you find yourself repeating large chunks of material in different sections you have gone astray and either one of the occurrences is wrong or perhaps you have not planned the content of your sections properly. The exception to this rule is the abstract, which should contain *only* information reported elsewhere, but of course reported much more concisely.

Write the title and abstract last (once you know what is in the rest of the report), then add this to the front of your report. Keep the raw data and intermediate calculations but do not include them in the report (other than in an appendix).

For more comprehensive guides to the reporting of research read:

Howitt, D., & Cramer, D. (2011). *Introduction to research methods in psychology* (3<sup>rd</sup> ed.). Harlow, Essex: Pearson. (Chs. 5 and 6).

Sternberg, R.J. (2010). *The psychologist’s companion: A guide to writing scientific papers for students and researchers* (5<sup>th</sup> ed.). New York: Cambridge University Press.

## Referencing Guide

The following set of rules provides psychology students at Essex with a quick and easy guide as to what level of referencing is expected when submitting written work, such as coursework essays and laboratory reports. It is based on a summarized version of the Publication Manual of the APA (American Psychological Association) style guidelines, which are followed in most academic writing in psychology.

### **A: Referencing in the main body of the text**

It is highly appropriate (if not essential) to provide a reference in your text whenever you are (a) describing a study or theory, (b) making a claim that needs support, (c) or referring in some other way to previous work.

#### **Rule 1: Each reference consists of author(s) and date**

The reference should consist of the surname of the author(s) and the year of publication.

Example 1A: Smith and Jones (1991) found that reaction times and error rates increase when planning more difficult puzzles.

Example 1B: Reaction times and error rates have been shown to increase when planning more difficult puzzles (Smith & Jones, 1991).

Keen readers will spot that when the reference is not in brackets (as in Example 1A) then the year is in brackets, and the word “and” is used to link authors; but when the reference is in brackets (as in Example 1B) the year is separated from the names by a comma. And the ampersand symbol “&” is used to link the authors.

When a reference is to a paper that has been accepted into a journal but has not yet been published its year is described as “in press”, when a paper has been submitted to a journal but no decision has yet been made its year is described as “submitted”, and a draft of a paper that has not yet been fully written may be referenced as “in prep”.

Example 1C: Smith and Clark (in press) have recently reported additional findings, and their latest research (Smith & Clark, submitted) and work yet to be sent off for publication (Smith & Clark, in prep.) look certain to be influential.

#### **Rule 2: Cite multiple sources in alphabetical then chronological order**

When providing multiple citations, list the citations first alphabetically, then chronologically. The alphabetical ordering is strictly applied, even if a chronological sequence seems more logical:

Example 2A: In the last 30 years the department has carried out four major surveys (Abbott & Smith, 1988; Brown, 1996, 1999; Smith, 1981).

Note that the order is strictly alphabetical, but where two papers have the same author(s), then the references are chronologically ordered.



Keen readers may wonder what to do if two or more different papers are to be cited by the same author and the same year. In this case, use letter suffixes *a*, *b*, *c* to differentiate the sources, and the order of the letters is assigned alphabetically according to the words following the year in the reference list.

Example 2B: In text.

Special educational needs (MacKay, 2000b) and poverty (MacKay, 2000a) have been argued to be important issues that should be addressed in the future.

Example 2B: In Reference list

MacKay, T. (2000a). A millennium without illiteracy? Breaking the link between poverty and reading failure. *Proceedings of The British Psychological Society*, 8, 12-15.

MacKay, T. (2000b). Educational psychology and the future of special educational needs legislation. *Educational and Child Psychology*, 17, 27–35.

This ordering of 2000a and 2000b is used because in the text following (2000), “A” precedes “Educational” in the dictionary, and is used when there is a tie between authors and dates.

### **Rule 3: Use “et al.” if the reference has three or more authors**

If a work has three, four or five authors, then cite all authors on the first occurrence and then the first author followed by et al. for the second and all subsequent occurrences. If a work has six or more authors, then cite only the first author followed by et al. for both first and subsequent occurrences.

If the abbreviation et al. leads to a confusion between two groups of authors, e.g., Hunt, Hartley, Bloggins and Davies (1983) and Hunt, Davies, Ford and Baker (1983), then cite as many of the authors as necessary to distinguish the two citations. Hunt, Hartley et al. (1983) and Hunt, Davies et al. (1983).

### **Rule 4: Use of cited sources**

If a work is cited as discussed in a secondary source, give the name of the original author with a reference only to the secondary source.

Example 4A (in text): Rubin (1986, cited in Sabini, 1992) studied forgetting of everyday events...

Example 4A (in reference list):

Sabini, J. (1992). *Social psychology*. New York, NY: W.W. Norton.

It is expected that, wherever possible, you find and read the original source (e.g., the article by Rubin in the above example) – in order to avoid having to cite a secondary source as above.

### **Rule 5: Direct quotes**

If you are taking a phrase or sentence word for word from a particular source then it should be written within quotation marks. Note that the use of direct quotes should be used sparingly, and reserved for when you want to demonstrate that someone really did make a specific point (perhaps that you wish to provide evidence for or against) or defined something in a specific way. It is not used for regular summaries of work – for these use your own words. When you do wish to use quotes the appropriate format is to provide

source and page numbers in the text and the reference in the references. It is unlikely that you would need more than three or four quotes totaling more than ten lines – more than this and you can expect to be marked down.

Example 5A (in text): Baddeley admitted that he was sometimes uncertain of the theoretical framework within which to explain executive tasks, “at times I have described the central executive as the area of residual ignorance within the working memory system” (Baddeley, 1986, p. 225).

Example 5A (in reference list):

Baddeley, A. D. (1986). *Working memory*. Oxford: Clarendon Press.

## **B: The Reference List**

The purpose of the reference list is to allow readers (or librarians) to find the original material. To allow them to do this it is essential to include the following items of information for each item in the list: author or originator; year of publication; title of work; publication data.

### **Rule 1: Format of Individual References**

Take care to check that all references cited in the text are included, and that dates and spellings of authors' names are consistent in the text and the list. Note that the name of the book or the name of the journal and the journal volume number are *italicized*.

#### **a. Journal articles**

Surname, Initials. (year). Title of paper. *Journal title in italics, volume in italics*, page numbers.

Example:

Smith, A.B., & Clark, E. (1995). Unlimited thinking. *Cognitive Psychology*, 24, 9–15.

Smith, A.B., & Clark, E. (in press). Recent advances in thinking. *Cognitive Psychology*.

#### **b. Books**

Surname, Initials. (year). *Book title in italics*. Place of publication: Name of Publisher.

Example:

Berkowitz, L. (1980). *A survey of social psychology*. (3<sup>rd</sup>). New York, NY: Holt.

#### **c. Edited books**

Surname, Initials. (Ed.) (year). *Book title in italics*. Place of publication: Name of Publisher.

Example:

Wall, T.D. (Ed.) (1987). *The human side of manufacturing technology*. Chichester, UK: Wiley.

#### d. Chapters in edited books

Surname of chapter author, Initials. (year). Title of paper. In Initials and Surname of Editor of Book (Ed.), *Title of edited book in italics*. (pp. page numbers of chapter). Place of publication: Name of Publisher.

Example:

Petrie, K. (1981). Life stress and illness: Formulation of the issue. In B.S Dohrenwend & B.P. Dohrenwend (Eds.), *Stressful life events and their context* (pp.345–401). New York, NY: Wiley.

#### e. Citing internet documents

Unfortunately much of the information on the internet is informal: neither reviewed nor authoritative. The best advice we give is NOT to cite information unless it appears in a scientific journal or in a book, because these sources have been checked for accuracy before publication. Sometimes, academic journals and book chapters are available on-line. **If the article is published in a journal or book, then cite the reference as for a normal book or journal article.** Very occasionally, you may need to cite a more informal article from the internet that does not have full publication information (e.g., a news article, or a data base of images that you have used to construct stimuli).

If you do have to cite an internet source, use the format:

Surname, Initials. (date, including day if relevant). Title of article. *Source in italics*. Retrieved date from path address

Example:

Clay, R. (2008, June). Science vs. ideology: Psychologists fight back about the misuse of research. *Monitor on Psychology*, 39(6). Retrieved 6 November 2008 from <http://www.apa.org/monitor/>

Note that in the text, this would be referenced as Clay (2008) just as any other source.

#### f. Citing module handouts

You are also dissuaded from referencing module handouts in your work, unless the handout is in *lieu* of a module textbook. They are often an unimpressive source of information: we aim to provide the notes so that you can read the articles and the textbooks we cite and recommend for yourselves.

Although we wish students to discontinue from using the handout as the primary source (use published sources instead), it is a worse crime not to provide any reference at all (and so risk accusations of plagiarism, if your assessed work is in fact based on the handout). In this weak case, a reference to the module notes is needed and might be something like the lecturer (date). Module details. Location

Ward, G. (2007). *PS415 Cognitive Psychology II, notes for week 17 (short term memory)*. University of Essex.

## Rule 2: Order of references in Reference List

This should be based primarily on the alphabetical order of the surname of first author. In the event of a tie, the following determines the order (in descending order of importance):

alphabetically on initials of first author;

sole authors take precedence to multiple authors;

alphabetically on subsequent authors;

chronologically if authors tied;

alphabetically by text if authors and date are tied (see Rule 2B).

### References

Abbott, Z., & Smith, F. (1988). Example references and the importance of surnames. *Journal of Made-up Studies*, 2, 67-68.

American Psychological Association (2001). *Publication manual of the American Psychological Association* (5<sup>th</sup> ed.). Washington DC: Author.

Baddeley, A. D. (1986). *Working memory*. Oxford: Clarendon Press.

Berkowitz, L. (1980). *A survey of social psychology* (3<sup>rd</sup> ed.). New York, NY: Holt.

Brown, B. H. (1996). Earlier studies are referenced first when there is a surname tie. *Journal of Made-up Studies*, 10, 267-275.

Brown, B. H. (1999). Later studies are referenced later when there is a surname tie. *Journal of Made-up Studies*, 13, 747-779.

Hunt, A. H., Davies, G. K., Ford, M. M., & Baker, N. (1983). More difficulties of multi-authored papers. *European Journal of Made-up Studies*, 54, 655-672.

Hunt, A. H., Hartley, G. I., Bloggins, B. J., & Davies, K. (1983). Some difficulties of multi-authored papers. *European Journal of Made-up Studies*, 54, 34-98.

MacKay, T. (2000a). A millennium without illiteracy? Breaking the link between poverty and reading failure. *Proceedings of The British Psychological Society*, 8, 12-15.

MacKay, T. (2000b). Educational psychology and the future of special educational needs legislation. *Educational and Child Psychology*, 17, 27-35.

Petrie, K. (1981). Life stress and illness: Formulation of the issue. In B.S. Dohrenwend & B.P. Dohrenwend (Eds.), *Stressful life events and their context* (pp.345-401). New York, NY: Wiley.

Sabini, J. (1992). *Social psychology*. New York, NY: W.W. Norton.

Smith, A. B. (1981). Sole authors come first. *British Journal of Made-up Studies*, 1, 17-28.

Smith, A. B., & Clark, E. (1995). Unlimited thinking. *Cognitive Psychology*, 24, 9-15.

Smith, A. B., & Clark, E. (in prep). Unfinished thinking on thinking.

- Smith, A. B., & Clark, E. (in press). Recent advances in thinking. *Cognitive Psychology*.
- Smith, A. B., & Clark, E. (submitted). New thoughts on thinking.
- Smith, B. D., & Jones, A. (1991). Planning in humans. *Cognition*, 12, 89-123.
- Wall, T. D. (Ed.) (1987). *The human side of manufacturing technology*. Chichester: Wiley.
- Smith, A. B. (1981) Sole authors come first. *British Journal of Made-up Studies*, 1, 17-28.
- Smith, A. B., & Clark, E. (1995). Unlimited thinking. *Cognitive Psychology*, 24, 9–15.
- Smith, A. B., & Clark, E. (in prep). Unfinished thinking on thinking.
- Smith, A. B., & Clark, E. (in press). Recent advances in thinking. *Cognitive Psychology*.

## Categorical Marking Scheme

Instead of writing a number on your assessed work, the marker will write a letter.

The meaning of the letters is as follows:

<b>A+++</b>	<b>95%</b>
<b>A++</b>	<b>90%</b>
<b>A+</b>	<b>85%</b>
<b>A</b>	<b>80%</b>
<b>A-</b>	<b>75%</b>
<b>B+</b>	<b>68%</b>
<b>B</b>	<b>65%</b>
<b>B-</b>	<b>62%</b>
<b>C+</b>	<b>58%</b>
<b>C</b>	<b>55%</b>
<b>C-</b>	<b>52%</b>
<b>D+</b>	<b>48%</b>
<b>D</b>	<b>45%</b>
<b>D-</b>	<b>42%</b>
<b>E5</b>	<b>36%</b>
<b>E4</b>	<b>30%</b>
<b>E3</b>	<b>24%</b>
<b>E2</b>	<b>12%</b>
<b>E1</b>	<b>0%</b>

**The scheme will apply to examination essays, coursework essays, dissertations, and practical reports.**

A categorical marking scheme means that the marker can only give one out of a limited set of marks to each individual piece of work. Five marks are permissible within the first class category (95%, 90%, 85%, 80%, 75%).

Three marks are permissible within the upper second class category (68%, 65%, 62%), the lower second class category (58%, 55%, 52%), and the third class category (48%, 45%, 42%). There are five possible failing marks (36%, 30%, 24%, 12%, 0%).

## Marking Guidelines for Research Reports

For detailed guidance on writing a report, see the 'Guide to Writing Research Reports' section. The notes that follow provide additional guidance on the principles that underpin the marking of a research report. When writing a research report, it is helpful to think about the *purpose* of each element of the report, as this has considerable bearing on the allocation of marks for a research report.

**Organization of the report:** A standard research report will ordinarily be divided into the following main sections: Abstract, Introduction, Method, Results, Discussion, and References. Subheadings should also be used as appropriate (e.g., Participants, Procedure, etc., within the Method section). Appendices may be included at the end of the report, if appropriate. Where it is advisable to amend this model (e.g., a PS300 report with two experiments) the report should be organized in a way that would be acceptable in a psychology journal (e.g., following APA Guidelines).

**Abstract:** The abstract provides a brief summary of the key elements of the research report. It should focus on the study that is described in the report, and should be comprehensible in its own right (i.e., without having to read the entire report).

**Introduction:** The Introduction should lead the reader to an understanding of the nature and value of the study that is being reported, giving enough information for the reader to understand why this study was conducted and the means to appreciate the implications of the study. This would usually involve presenting relevant theory and prior research.

**Method:** The Method section should give the reader a clear and detailed understanding of the study. For special features of the design or procedure (e.g., counterbalancing) it should be clear why this was done. A good target to keep in mind is that the ideal Method section will allow the reader to replicate the study.

**Results:** The Results section shows what was found in the study, by presenting the results of the statistical analysis so that the reader can see what conclusions to draw with respect to the key research questions. This will normally include: succinct and clear descriptions of what analyses or tests have been conducted, the descriptive statistics and inferential statistics arising from these analyses, and statements of what is concluded from these analyses.

**Discussion:** The Discussion should lead the reader to understand the findings of the study and their implications for theory and for interpreting other research on this topic. It is important to remember that this is a discussion that reflects the outcome of the study, not simply a further discussion of the general topic area of the study.

**References:** For guidance on this section see 'References Guide' section.

**Style and Organization:** A research report should be written in a scientific style, with information allocated to the appropriate section of the report. The information in the separate sections should link together to give a complete account of: why the study was done, what was done in the study, what was found, what it

means, and what we learn from the study. As with other written assignments: citations should be included that show the source of the ideas that are introduced or discussed, and the writing should be clear with correct grammar and spelling.

## Marking Guidelines for Research Reports

*Terminology:* In the guidelines that follow, the study that is reported in the research report is referred to as the “target study”.

### Abstract:

An abstract would ordinarily include:

- A statement of the main research question or hypothesis for the target study with some information about what motivated this question/hypothesis.
- A summary of the target study including: what was done in the study, what was found, and what the findings show.
- A statement of the key conclusion(s) of the study in relation to the main research question or hypothesis, with some justification for this conclusion.

An abstract that includes these elements is indicative of a First-Class or 2.1 standard; with the standard of the work being further distinguished by the clarity, level of detail, and efficiency of the writing.

An abstract of 2.2 standard may include these elements but be poorly organized with unnecessary information for some elements and insufficient detail for others. Alternatively, while some valid information is included, key elements may be missing.

Work at Third-Class standard or below may be highly disorganized, have substantial omissions, be difficult to understand, or may fail to provide a meaningful summary of the target study (e.g., identify the topic area for the research with little mention of the target study itself).

### Introduction:

The following elements would ordinarily be expected in a First-Class Introduction:

- A detailed description of theory that focuses on those elements of greatest significance for the target study, with the relevance of this theory for the target study made clear.
- Description and critical appraisal of prior research, with a clear indication of the relevance of this research for the target study. Greater sophistication of appraisal is expected in later years of the degree. In final-year research projects, there is considerable scope for initiative in identifying relevant research, for identifying strengths and weaknesses of this research, and for explaining its relevance to the target study.
- A clear communication of the importance of the research topic and of the target study in particular (e.g., explicitly identifying a gap in the existing literature).
- An organized Introduction that leads in a logical fashion towards the research question(s) or hypotheses that the target study will address.



If such elements are present *consistently* throughout the Introduction, this is indicative of a high First-Class standard. An Introduction that includes the elements listed above – but with some lack of clarity, detail or consistency – would be indicative of a lower First-Class mark.

A 2.1 standard Introduction would ordinarily outline relevant theory and prior research with reasonable clarity, and follow a logical order of presentation. However, the appraisal of this research may be limited, or the description of relevant theory may be *partially* incomplete or ambiguous, or the relevance of the theory/research may be made clear by implication rather than being brought out explicitly.

An Introduction with some relevant theory and research suitably identified and adequately described, but which is *highly* disorganized, is indicative of a 2.2 standard (e.g., where the link between theory and research is absent, or where the relevance of this research/theory to the target study is dubious or unclear).

Introductions of 2.2 or Third-Class standard will often be unbalanced: covering mainly theory with little research described, or covering prior research but with limited reference to the relevant theoretical ideas. Alternatively, work of this standard will give a general introduction to the topic area of the target study, but will be inadequate as an introduction to the target study itself.

Work at 3rd Class or below will often contain important factual errors, or will omit large amounts of material that is essential to an understanding of the target study.

*Note:* A report that demonstrates initiative, originality, or sophistication in the appropriate selection of material for the Introduction is indicative of work of a high standard – and this may compensate for some weaknesses elsewhere.

## Method:

The following should be expected in a First-Class Method section:

- Appropriate choice of sub-sections for organizing the details of the study.
- Sufficient detail of description to allow replication of the study.
- If appropriate, justification or rationale provided for key features of the stimuli/procedure.
- Sufficient detail of description, with sufficient clarity of relationship to the study hypotheses, to support conceptual replications of the study.
- Appropriate choices regarding what not to include (e.g., not including trivial items of apparatus).

If these features are present consistently throughout the Method section with only very minor and occasional ambiguities or omissions, this is indicative of a high First-Class standard. Some ambiguities or omissions may be present in work of a lower First-Class standard, though these should not be weaknesses that are critical to the ability to understand or replicate the methods of the target study.

A 2.1 standard Method would be expected to include most of the features listed above, but may fall short in one or two key areas. For instance, some clarification of ambiguities may be required to allow exact replication of the study (e.g., counterbalancing of stimuli may be mentioned, but the exact system for this may be unclear). Alternatively, the Method may provide a faithful description of what was done, but give no rationale or justification for key details of the method.

Method sections of 2.2 or Third-Class standard will generally be incomplete – and are unlikely to allow for exact replication of the study without considerable clarification or addition of detail. They may be some key omissions or errors, or there may be multiple ambiguities.

Work at Third-Class standard or below will often be poorly organized and contain several errors, or will omit large amounts of material that is essential to replicating the target study.

*Note:* Credit will be given for appropriate inclusion of study materials in appendices. However, if a good understanding of the study methods can be achieved *only* by reference to verbatim material in appendices, this will limit the credit that can be awarded to this portion of report. Where the justification of key features of the method shows particular insight or sophistication, this may compensate for some weaknesses elsewhere. In longer research reports, some tolerance or compensation in marking is expected where the study design is particularly complex – thereby requiring particular skill in explaining the details of the study in a clear, succinct and well-organized fashion.

## Results:

The following can be expected in a First-Class Results section:

- Clear description of any data manipulation to create composite or transformed measures (for subsequent analysis) from raw data.
- Clear descriptive statistics, which are suitable for communicating the findings with respect to the effects under investigation in the study.
- Measures or indications of the direction and size of effects appropriate to the effects under investigation (e.g., raw and/or standardized measures of effect size, as appropriate to the measures used).
- Appropriate selection and use of tables, text or graphs for presenting the results.
- Optimal choice of statistical techniques – accepting the limitations of what students have been taught.
- Appropriate reporting of statistical tests, with proper regard for standard reporting conventions.
- Appropriate statement(s) that provide valid interpretation of statistical tests, with clear statements of what inferences can (or cannot) be made from the data.
- Clear and economic written expression that avoids unnecessary repetition of information, with correct use of statistical terminology.
- Suitable ordering of material (e.g., of the descriptive and inferential statistics for a reported effect).

A Results section where most of these features are consistently present to a high standard will be indicative of a high First-Class standard. Work that falls short in one or two key areas – but which does not compromise the key findings of the study would be in keeping with a lower First-Class mark. For instance, a Results section that presents complete and correct information but which exhibits some inefficiency in the writing style, occasional minor errors, or some suboptimal choices regarding the best means of data presentation (e.g., tables vs. figures) may be awarded a mark in the lower part of the First-Class range.

Errors will be rare in work of a 2.1 standard, and will generally be errors of style, convention or clarity rather than errors of fact or interpretation that compromise the accuracy of the results. A Results section of a 2.1 standard will have most or all of the correct information, but may have some ambiguous or incomplete (as distinct from incorrect) reporting of data or statistical tests. Such instances could include: correct reporting and interpretation of test statistics but some degrees of freedom incorrectly recorded; mean differences correctly reported and analysed but standardized effect sizes or within-group variance missing on some occasions; interactions correctly identified but not fully described; correct and complete information that is poorly organized, formatted or expressed that forces the reader to work hard to follow the results.

Results sections of a 2.2 or Third-Class standard will generally have some errors, ambiguities, or omissions that are substantive with respect to the effects under investigation – increasingly so for work of a Third-Class standard. These errors might include: some key relevant descriptive statistics not included;

inadequate reporting of analyses that makes it unclear what has been analysed or what has been found; using an inappropriate inferential statistical test (or omitting a test when one should be used); incorrect inferences drawn from statistical tests (e.g., non-significant effects declared “significant”).

Work of a lower Third-Class standard or below will have several major errors, or have sufficient omissions (e.g., no inferential statistics) such that the section barely takes the form of a standard results section.

*Note:* Where advanced statistical techniques are used, the challenges that this brings are acknowledged; therefore, some tolerance or compensation in marking is expected where students have (appropriately) used advanced techniques that increase the detail or sophistication of the data analysis. Similarly, in longer research reports, some tolerance or compensation in marking is expected where students have (appropriately) undertaken a large number or variety of analyses – thereby demanding a sustained ability to report a range of findings accurately and making the organization of the report more challenging.

### Discussion:

Most or all of the following elements would ordinarily be expected in a First-Class Discussion:

- A summary of the key findings that clarifies the *meaning* of the reported results.
- An appraisal of the research question(s) or hypotheses outlined in the Introduction in light of the findings of the target study. Greater sophistication of appraisal is expected in later years of the degree. In final-year research projects, it is expected that the best students will show clear evidence of critical analysis, and a nuanced understanding of what can (or cannot) be concluded from the data.
- Presents conclusions that are clearly supported by the data, using appropriate academic language (e.g., neither inappropriately bold nor unduly cautious given the data).
- Appropriate use of psychological theory to shed light on the findings of the target study, and/or using the findings of the study to provide insights into or an evaluation of theory.
- Appropriate use of prior research to shed light on the findings of the target study, and/or using the findings of the study to provide insights into or an evaluation of other research studies.
- Where appropriate, an acknowledgement of any unforeseen weaknesses in the study, and/or suggestions for future research with a rationale provided for these suggestions.
- An organized Discussion that leads in a logical fashion from what was found in the target study to the conclusions and implications of the study findings.

If such elements are present *consistently* throughout the Discussion, this is indicative of a high First-Class standard. A Discussion that includes the elements listed above – but with some lack of clarity, detail or consistency – would be indicative of a lower First-Class mark.

A 2.1 standard Discussion would ordinarily show sound understanding of the findings in relation to the research question(s) or hypotheses and include discussion of relevant theory and prior research that relate to the target study. However, the appraisal the target study may be incomplete, or the relevance of the theory/research that is discussed may be implied rather than being brought out explicitly. Alternatively, a 2.1 standard discussion may be one that includes First-Class discussion of some of the elements listed above, but is weak in (or omits) other elements.

In work of a 2.2 or Third-Class standard, the discussion of the findings will often be superficial: potentially relevant theory is identified but little detail is given and the relevance of the theory is either implied or unclear; mention is made of other potentially relevant research findings but their relationship to those of the target study are superficial, unclear or perhaps tenuous. Weaker discussions will often include unjustified conclusions or speculative proposals that have little or no support from the data, or show a misunderstanding of the design of the study. Alternatively, a Discussion of this standard may be

unbalanced or incomplete (e.g., with most of the section devoted to summarizing findings with little reference to relevant theory or research), or show important misunderstandings.

Work at 3rd Class or below will often contain important factual errors, or will omit large amounts of material that is essential to an understanding of the implications of target study. The weakest Discussion sections may provide very little discussion that genuinely derives from the target study (e.g., simply re-introducing a few key points from the Introduction).

### Overall structure and generic aspects of the report

A good report will:

- Have an informative title.
- Exhibit coherent links between the separate sections, with each section of the report adding to the understanding of the target study.
- When read as a whole, present a complete and coherent account of: why the study was done, the details of the study, the findings of the study and their implications.
- Have information placed in the appropriate section, and avoid unnecessary repetition of information across multiple sections.
- Be written in a scientific style, with clear written expression, good grammar and correct spelling.
- Make use of appropriate and informative citation.
- Include a complete and appropriately formatted Reference section

Credit should be given where a report shows a consistently high standard with respect to these elements. Obvious weaknesses – particularly those that detract from an understanding of the report or the academic integrity of the assignment – will result in a lower mark being awarded.

## Marking Criteria for UG Essays

Marking criteria are interpreted in light of the constraints associated with different assignments. Coursework essays (i.e., those completed outside of timed test conditions) are marked according to what can reasonably be achieved given the prescribed word limit. Examination/test essays (i.e., those written under test conditions) are marked bearing in mind what can be expected given the constraints of working to a time limit and without written sources available.

### **1<sup>st</sup>: A-, A, A+, A++, A+++,**

A high First-Class answer is expected to demonstrate:

- extensive and detailed knowledge (typically of both theory and evidence);
- skill in argumentation, problem solving and/or critical analysis;
- good organization of ideas in respect of the essay question, with a good essay structure and appropriate signposting of the key elements of the essay (e.g., via an introductory paragraph);
- ability to use of materials outside those prescribed without loss of relevance;

A First-Class answer is not necessarily a perfect answer. An exceptional answer will be generously rewarded with full use of the scale above 80% ("A"). An otherwise 2i answer may be awarded a 1st if it excels in one of the areas listed above. Original or unusually insightful ideas may compensate for a shortage of information. In such cases, if a student chooses to spend a high proportion of time in discussing original issues, there will be less time to devote to other issues. The omission of standard information will not prohibit the award of a 1st in such cases.

### **2i: B-, B, B+,**

A 2i answer should show a sound sense of what is relevant to the question, and should demonstrate some breadth and depth of knowledge. This mark is often given to the material used in a 2ii answer when that is effectively organized with respect to the question, or to an essay that includes a more substantial amount of relevant content. The 2i candidate does not necessarily show originality, critical flair, and brilliance in problem solving or literary elegance of a high order. An ability to offer any of these will compensate for weakness elsewhere and may raise an answer close to a First-Class mark.

Good essays will present ideas in an orderly and organized fashion, and a particularly skilful essay structure is indicative of First-Class writing. However, given that this is not easily achieved under time pressure, some tolerance in assessing the structure of an essay is allowed for essays written under examination conditions. Where an examination essay shows particular skill in organizing ideas and content, generous credit should be given. Similarly, a higher level of detail and accuracy of explanation is expected for coursework essays written outside of test conditions than for examination essays written under timed test conditions. Consistent lack of detail in coursework essays will be a limiting factor in the mark that is awarded, and unusual levels of detail in an examination essay will be generously rewarded.

### **2ii: C-, C, C+,**

Includes valid material, but commonly misses important points in the answer (by omission, by error, or by lack of detail/clarity). Identifies a reasonable amount of material that is relevant to the essay question, but does not integrate it very well or show solid understanding of it. A coursework essay that faithfully

reproduces a good deal of what has been taught in class but contributes little from independent reading or thinking is indicative of a 2ii standard. For examination essays, a 2ii will often lack breadth (i.e., covers a few relevant points quite well), or may lack depth (i.e., covers a large number of relevant points but at a fairly superficial level).

### 3rd: D-, D, D+,

Has some knowledge, but it tends to be superficial, incomplete, unintegrated or ill understood. Is capable of errors of fact or reasoning, but some of the time sustains an accuracy that shows some profit from the course. When attempting a problem, tends to identify the area in which discussion must be conducted and contributes some relevant material, but makes errors in the solution of the problem that reveal a lack of discrimination or a failure to learn the whole of a principle or to understand how the parts of a subject relate to each other. Often, passages that are fluently expressed will be found on close examination to say rather little, or be inconsistent. A Year 3 examination essay (for which 1 hour is allotted) that includes the equivalent of three or four paragraphs of relevant content and makes two or three main points that are pertinent the essay question would be typical of a Third-Class essay. If such an answer were produced for an untimed Year 2 or Year 3 coursework essay (e.g., with a 1500 word limit) – a fail mark would be appropriate.

### Marks below Third Class:

Marks below 40% would be appropriate for brief and/or wildly inaccurate answers, or for answers where a substantial portion of the essay is confused or very difficult to understand.

When discriminating between essays within this band, it is useful to categorize the material that is included in the essay according to its relevance to the essay question:

- “Relevant content” – this is content that is clearly pertinent to the essay question (e.g., equivalent to the kind of content that is seen *consistently* in a good essay).
- “Content of general relevance” – this is content that *could* potentially contribute to a valid answer to the essay question, but where the treatment of the material means that the relevance to the essay question is largely lost. For instance, this could be information that is *closely* related to topic to the essay but where no clear link is made between this material and the essay question (e.g., information given about a competitor theory that could be used to critique the theory identified in the essay title, but where this critique is not made). Equivalently, material may fall in this “general relevance” category because it is so poorly explained that it is unclear that the student understands its relevance to the essay question. It would not be unusual to see material of this kind in a Third-Class essay, mixed in with relevant content. However – though some (limited) credit can be given for this material – an essay that consists entirely, or almost entirely, of this kind of content should be awarded a mark below 40%.
- “Content of peripheral relevance” – this is content from the same part of the module (e.g., the same lecture, or the same chapter in the textbook) as the core material for the essay, but which is not obviously relevant to this particular essay question. This material has some relationship to the *topic* of the essay, but this relationship is weak (given the context of the essay question). Only very limited credit can be given for this material. An essay that consists entirely, or almost entirely, of this kind of content would not normally receive a mark above E3 (24%).
- “Irrelevant content” – this is content that is neither relevant to the specific essay question, nor to the topic of the essay question. It may contain valid information, but it will have no clear relationship to the core material for the essay (e.g., it comes from a different part of the module). No credit should be given for such content.

The following would be typical of coursework essays in the “E” band:

- E5 (36%) – A full essay comprising a mixture of relevant and generally relevant content, but with insufficient relevant content for a Third-Class mark.
- E4 (30%) – A short essay with a modest amount of relevant content; OR, a full essay comprised almost entirely of generally relevant content.
- E3 (24%) – A short essay with a modest amount of generally relevant content; OR, a longer essay comprised mainly of peripherally relevant content but with a very small amount of generally relevant content.
- E2 (12%) – Nothing beyond content of peripheral relevance.
- E1 (0%) – Nothing beyond irrelevant content.

For answers to a Year-3 examination (for which 1 hour is allotted), the following (or content equivalent to this) would be typical of answers in the “E” band:

- E5 (36%) – One or two paragraphs of relevant content that makes one main point that is pertinent to the essay question plus two or three further paragraphs of generally relevant content.
- E4 (30%) – A paragraph or two of relevant content that makes one main point that is pertinent to the essay question (but little of further relevance beyond that); OR, Four or more paragraphs of material of general relevance to the essay.
- E3 (24%) – Two or three paragraphs of content of general relevance to the essay (but little of further relevance beyond that); OR, Several paragraphs of peripherally relevant material with a paragraph of generally relevant material.
- E2 (12%) – One paragraph of generally relevant content (but little of further relevance beyond that); OR, Several paragraphs of peripherally relevant material (but nothing of further relevance beyond that).
- E1 (0%) – Nothing of any meaningful relevance to the topic of the essay question

Exceptionally, if time has run short, a student may choose to provide an essay plan in place of an essay. Such answers will not attract a passing mark. Limited credit may be given for essay plans, where the following would be typical:

- E5 (36%) – A full, well-structured, essay plan, where it is clear from the structure/detail of the plan that a very good (First-Class) answer could be produced from the material listed in the plan.
- E4 (30%) – A full structured essay plan, where it is clear from the structure/detail of the plan that a good (2i-Class) answer could be produced from the material listed in the plan.
- E3 (24%) – A full essay plan, where it is clear from the detail of the plan that a reasonable (2ii-Class) answer could be produced from the material listed in the plan.
- E2 (12%) – An essay plan that identifies enough relevant points for a Third-Class essay to be produced.

#### **A few important points for students to consider:**

- Students are expected to show improvement in their work over the year. The markers will therefore take this into consideration when assessing students’ work. For example, handing in work of equivalent quality all year will result in lower and lower marks. Similarly, failure to act on feedback, and therefore to improve the quality of one’s work, will also lead to lower and lower marks.

- More is expected of final-year students than of second-year and first-year students. Consequently, the criteria given above are applied more stringently in the final year than in the first two years. For instance, it is expected that First-Class examination essay in Year 3 will often integrate material from different parts of a module and/or include material that was not presented in lectures. Likewise, a higher level of critical analysis of theory and greater skill in evaluating evidence is expected in Year 3 (e.g., using a *set* of research findings to evaluate or contrast *competing* theories, or evaluating one study in light of the methods or findings of another study).
- Presentation counts towards the overall mark for any piece of coursework. If work does not conform to the formatting regulations provided this will be reflected in the mark awarded.



## Scoring Systems for Multiple-Choice Assessment

Several different systems are used for marking multiple-choice questions in the Department of Psychology. The notes below explain some of the different systems that are used. Any other variations used will be explained by module coordinators.

Systems 1a and 1b are variations of the same system, and apply where there is only one correct answer per question and candidates are instructed to answer all questions. Note that for systems 1a and 1b, the choice of marking system makes no difference to how candidates should approach the assessment. All questions should be answered.

### 1a. Generic linear marking system (one answer per question):

In this system: the candidate starts with a “baseline” number of marks; a fixed number of marks are added for each correct answer; and a fixed number of marks are subtracted from the total for each incorrect answer or for each unanswered question (or when multiple answers are given when only one is required).

Example. In a multiple-choice test with four options per question: the baseline is zero, three marks are awarded for a correct answer, and one mark is subtracted for an incorrect answer (including multiple answers) or unanswered question. If there are 25 questions, the maximum score is 75 marks (if every question is answered correctly). Any candidate with a negative score for their overall number of marks would be awarded zero.

Note that with this marking system, it never benefits a candidate to leave a question unanswered.

### 1b. Additive marking system (one answer per question):

In this system: the candidate starts with a “baseline” number of marks; a fixed number of marks are added for each correct answer; and zero marks are awarded for each incorrect answer or for each unanswered question (or when multiple answers are given when only one is required).

Example. In a multiple-choice test with four options per question: the baseline is zero, one mark is awarded for a correct answer, and no marks are awarded for an incorrect answer (including multiple answers) or unanswered question. If there were 50 questions, the maximum score is 50 marks (if every question is answered correctly).

Note that with this marking system, it never benefits a candidate to leave a question unanswered.

**Sometimes an assessment may include questions with more than one correct answer per question, for which candidates are asked to identify as many correct answers as they can.**

**Note that where different question types that require, or allow for, different kinds of response appear on the same test or examination, this will be clearly indicated on the question paper. For instance, one set of questions may require a single answer, while another set of questions may invite candidates to identify or select multiple options. Candidates should always read the instructions carefully.**

**As noted earlier, any variations to these systems will be explained by module coordinators.**

## Formatting Regulations for Coursework

All students are required to word-process all assessed coursework and submit coursework electronically using the on-line coursework submission system, FASER. This applies to absolutely all coursework. Presentation of work and, in particular, deviation from the following criteria, will be taken into account when assigning a mark. All applicable coursework should be formatted in the following way:

**Page setup:** Use A4 settings in portrait orientation.

**Margins:** At least 2cm all round, and not more than 3cm all round. The preferred measurement is 2.5 cm. Text should be formatted as one single column and should not be right justified.

**Anonymization:** With the exception of the PS300 project, the originator of the work should be identified only by your registration number, and no name should appear anywhere on the work.

**Line spacing:** All body text must be double spaced.

**Font size:** The acceptable range is 12 to 14 points. The preferred size is 12 points. Unusual or decorative fonts will not be permitted.

**Paragraphing:** Paragraphing should be clear. For example, this may be achieved by EITHER (i) a 1cm indent at the beginning of a conventional paragraph, OR (ii) at least a 2cm gap between paragraphs.

**Punctuation:** There should never be a space before full stops, commas, semi-colons, or colons, when these are used for punctuating text. There should always be at least one, conventionally two, space(s) afterwards. The apostrophe is generally used to denote possession. However, for possessive pronouns, such as its, yours, hers, no apostrophe should be used. An apostrophe is **never** used to denote a plural, e.g., "there were two student's in each group" is incorrect.

**Referencing:** Must follow the procedures and formatting described in the referencing guide in this Handbook. This applies to all work submitted for all three years.

**Use of figures and tables:** Figures and tables in laboratory reports should conform to all standard formatting requirements (i.e., appropriately titled, both axes labelled on graphs, units made explicit). These should be computer-drawn and placed in the body of the text, rather than at the end of a report. The insertion of unedited computer printout is not acceptable.

## Coursework Coversheet

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**(Name of group)**

**The title of your manuscript**

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**Date: XX/XX/XX**

**Word Count: XXXX**

