Format, Style, and Suggested Topics for Honors Term Paper

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A term paper on any topic relating neurophysiology to something else, or describing an empirical project, is required in the class. The paper should adhere to the editorial style guidelines of the American Psychological Association. The writing style must be clear, concise, and grammatical, and the work that you turn in must be your own. You may select a topic from the list provided, or choose your own, but please clear it with me before you begin. A timetable of important dates is included. This paper conforms to the guidelines that you should follow; use it as an example.

As stated on the course syllabus, a term paper is required in this course. Its purpose is to allow you to take a more in-depth approach to some area of neurophysiology than is possible in the context of class time. This handout provides information regarding format, style, and other "mechanical" aspects of the paper, as well as some suggested topics.

This assignment can take one of two forms. You might choose to design and conduct an experiment using the procedures that you have learned during the semester. If so, your final paper will be written according to APA style, and will include the following sections: Title Page, Abstract, Introduction, Methods, Results, Discussion, References, (Tables, Figures) — see below. This will not be simply a replication of an earlier lab exercise; instead you must propose an original experiment, collect the data, analyse the data, and reach a conclusion. This paper will probably be on the order of 10-12 pages (excluding Title Page and References) plus whatever figures or tables are necessary to present the data.

As an alternative, you can write a term paper addressing a topic relevant to neurophysiology. The paper must link neurophysiology to another domain — that is, you cannot simply write about action potentials or spike propagation. Instead you must relate a neural property to something "larger." Relate conduction velocity to sensory experience, spatial coding to mind, or neurotransmitter function to free will (I am just throwing ideas out there). Whatever topic you choose, clear it with me before you get too far into it. I would expect this paper to be on the order of 15–20 pages, excluding Title Page and References.

Format

Scientific writing usually follows a strict stylistic format. This allows the reader to focus on the content of the paper rather than on how the material is presented. Your paper is no exception. The paper should adhere to the editorial style of the American Psychological Association, as outlined in the Publication Manual of the American Psychological Association, (6th edition, 2010). This book is in the library, and is available in the bookstore. The following list summarizes some of the major requirements of APA style.

1. Type all parts of the manuscript double-spaced, using Times New Roman 12-point font. Use only one side of the paper. Do not right-justify the text. The page number should appear in the upper right corner of each page.

2. Page 1 should be a numbered title page, giving the title (no more than 12 words), author’s name, and author’s affiliation (in this case, Albion College). Author Note, if necessary, appears below the author’s affiliation. In the top left corner of this page provide the label “Running head:” followed by the actual running head (a shortened version of the title, not exceeding 50 characters), in all caps. On all other pages provide the running head (without the label) in the top left corner.

3. Page 2 should consist of an abstract providing a brief overview of your paper. It should be labeled “Abstract,” and should not exceed 250 words. The abstract should be typed as a single, non-indented paragraph.

4. The body of the paper follows, beginning on Page 3. If you propose and conduct a research project, you will have sections headed Method, Results, etc. If you write a review paper there is no need for such sections; the text can be one uninterrupted section, or can be broken down into subsections, as you deem necessary.

5. Citations of source material in the body of the text should take the form of the name(s) of the author(s) followed by the date of publication; for example, Authorone (1968), Authorone and Authortwo (1984). When there are three, four, or five authors, the names of all authors are required only at the first citation (Firstauthor, Secondauthor, Thirdbauther, & Fourthauthor, 1982); subsequent citations should be shortened (Firstauthor et al., 1982). If there are more than five authors, shorten the citation always, even the first time, to the first author’s last name and “et al.” Citation information that is not part of the sentence is placed within parentheses: “In 1984, Authorone and Authortwo replicated the important early finding by Authorone (1968) that chocolate
facilitates migratory behavior in yaks; others (Firstauthor et al., 1982) have demonstrated this as well.”

6. Following the body of the text, and starting on a separate page, come the References. This is not a bibliography. It should contain only those papers to which you refer in the body of the text, not everything you have read. Arrange the references alphabetically by first author’s last name, and chronologically when two or more papers have the same authors in the same order (unless the papers are identified as parts of a series, in which case use the series order). List all authors’ last names and initials if there are up to seven authors. If there are eight or more authors, include the names of the first six, an ellipsis, and the last author’s name. The format required for various types of reference materials appears in the Reference section of this paper. Be sure to include a reference for each paper that you cite. Accuracy in citing your references is crucial! NOTE: This deviates from APA style, but you must provide a photocopy of the first page of every paper that you cite. This provides some assurance that you had the opportunity to read the papers, rather than relying on someone else’s description of the research (see discussion of primary sources, below). There is an automatic loss of 5% of the total possible value of the paper for each instance in which a photocopy is not provided. Please append the photocopies to the end of the paper.

7. Any Tables or Figures appear after the References. Tables come immediately after the References, and should be double spaced. Figures come last; a figure caption should appear under each figure on the same page. (It is unlikely that Tables and Figures will be required, but if they are, please follow this format.)

Please submit a printed copy of the paper, and email a copy to me at wjwislon@albion.edu. The emailed copy must be in .doc, .pdf, or .pdf format unless you make other arrangements with me ahead of time. The paper should be about 10–20 pages long, excluding title page, abstract, and references. Consult the APA Publication Manual regarding the desired style for items not discussed above, such as numbers, abbreviations, seriation, etc. Your grade will reflect in part the degree to which you comply with APA style guidelines.

Sections

All papers will include the Title Page, Abstract, and Reference sections described above. If you write a traditional term paper you may use whatever additional sections assist the organization of the paper, or no other sections at all. If you describe an empirical study, the paper will use the conventional APA-style sections described here.

Introduction

This section sets the stage for your study. It should include background information describing what is known about the problem that you are addressing, and a brief description of what your study will involve. Despite being a formal section, it is not labeled.

Methods

The Methods section provides a detailed description of what was done such that another investigator could replicate the study. It would typically be broken down into the following subsections:

Subjects (or “Participants” if they are human). Describe the subjects of study. If you used nonhuman animals, provide the species name and include information about their source and their housing conditions, as well as what happened to them at the conclusion of the study. For human participants indicate how they were obtained, and any compensation or incentives that they received. In the case of both human or nonhuman subjects, report the number of participants and descriptive characteristics such as age and sex.

Apparatus or Materials. This section includes a detailed description of the equipment used in the study. Generic items such as stopwatches, rulers, etc. should be listed but no additional information about them needs to be provided. More specialized equipment should be described in detail, including manufacturer (if it is commercially-available equipment) and dimensions. Apparatus that the animal experiences should be described from the animal’s perspective; the color on the outside of a chamber does not matter, but the color seen by the animal does.

Procedure. Here you describe what was done, so that someone else can give subjects the same experience that you did. What the animal (human or otherwise) experienced, for how long, how many times — these things matter. The procedure that you used to construct equipment — probably irrelevant. The section should include a description of the design of the experiment (e.g., “a two-factor mixed design”), information about any drug doses that were used (and how the drug was administered), and information about what was measured.

Results

This section describes what you found, in summary form. You collected some data; the Procedure section told the reader what you measured and how — here you tell the reader about the data. Raw data are typically not reported; instead the Results section usually includes a summary of the data’s central tendency (means, medians, or modes) and its variability (e.g., standard error of the mean, range). If these are provided in a figure or table (which would come at the end of the paper, after the References) then you could be less detailed in your verbal description, but you should still include a description. Do not discuss the implications of the data; that belongs in the Discussion.
Discussion

Here you discuss the findings. What conclusion(s) can you draw from the data? Did the results support your hypothesis? Did anything unexpected or especially interesting occur? How do your findings fit with the published literature? Everything that you say here should be supported by the results that you reported. You can address any problems that might have occurred, or any ways in which you could improve the experiment. You might also address the next step: given what you found, what additional question needs to be answered?

Writing Style

Scientific writing requires clarity and accuracy. Please write grammatically; do not include sentence fragments, verbs that do not agree with their subjects, dangling participles, or split infinitives. If you need assistance with your writing, contact any grammar or composition text, or a reference book such as Hacker (1998) or Strunk and White (1979). (Note: Do not rely on any source other than the APA Publication Manual for information about APA style.)

To ensure that you have presented material clearly, it is very good practice to write the paper, then put it aside for a day or two. If upon your rereading of it the paper still makes sense to you, it is probably fairly clear. If not, do some rewriting. Please be sure to proofread the paper before turning it in. As I have said often in marginal comments on students’ papers, “If you do not care enough to read this paper, why should I?” Please take the time to proofread.

I will read and comment on a printed draft of the paper if you give it to me no later than the date specified below. This will in no way guarantee you any particular grade on the paper, but will allow you to find out if there are some serious oversights that need to be corrected.

Appropriate References

Please realize that you are writing an academic paper, and as such must rely on academic references. This means that the papers to which you refer should appear in scientific journals such as Psychobiology, Brain Research, or Behavioral Neuroscience (there are many others). These are all refereed journals, meaning that papers are reviewed by others knowledgeable in the field before they are published. They are also primary sources, meaning that the papers you read in these journals are written by the scientists who did the research leading to the papers. All of your references should be primary sources, and most should be drawn from refereed journals (although books or book chapters that are primary works are also acceptable).

Magazines such as Psychology Today, Scientific American, or Newsweek are usually not appropriate as references in a scientific paper. Your textbook is also inappropriate. These works are secondary, not primary, sources; they report experiments that were done by others. However, such sources are often good leads, suggesting avenues of investigation into the scientific literature. If Newsweek describes Dr. Smith’s work on drugs that reduce fear, do not cite Newsweek. Instead, find Dr. Smith’s work in scientific journals.

If you retrieve articles electronically, you must have access to the entire article, not the abstract alone. In the case of electronically accessed articles, you must provide with your paper the page containing the title and citation information, and at least one page of text indicating that the actual text of the article, rather than simply the abstract, was available to you. For articles that you accessed electronically, be sure to provide the URL or other information that specifies the online source at the end of the item’s listing in the References.

The most important reason for citing the primary source is accuracy. Relying on a secondary source means accepting someone else’s interpretation of the original work. Often this is fine, but equally often you will discover that the author of the secondary source is biased or inaccurate in his or her interpretation. Thus, your understanding of the original experiment will also be inaccurate or biased.

Academic Honesty

It is unfortunate that this section must be included, but experience suggests that it is necessary.

The work that you turn in must be your own. It is acceptable, in fact it is essential, that your paper be based on the work of other people; their contributions must be acknowledged. It is appropriate to read a paper, take notes on it in your own words, and refer to the findings of that paper in your own words, with proper citation, when you write your paper. It is entirely inappropriate to quote directly without citation, or even to paraphrase with or without citation. Substituting synonyms into someone else’s text and then retyping it is not acceptable. Plagiarism is defined by Guralnik (1970) as the act of taking (ideas, writings, etc.) from (another) and passing them off as one’s own. Pages 15–16 and Sections 6.01 through 6.10 of the APA Publication Manual provide a very good discussion of this issue. Some good web-based sources regarding plagiarism are available through the psychology department’s web page (http://www.albion.edu/psychology). Consult these sources or see me if you have any questions about academic honesty. I would much rather talk with you about these matters before you turn in a paper than afterwards.

Suggested Topics

Your paper may address any topic relating neurophysiology to some other domain. If you choose your own topic, be sure that it is not too broad. Although a paper on “The Neurobiology of Emotions” might seem like a good idea, this is a topic to be dealt with in several volumes, not a 12-page paper.
Perhaps “Control of Fear by Anti-Anxiety Drugs” would be more appropriate.

Whether you choose one of my suggested topics, or come up with one of your own, please clear the topic with me by the date specified below. If by then you have decided on a topic, you will have plenty of time to review the literature, and to see me for assistance if you feel you have reached a dead end.

Here are some possible topics, in no particular order:

- Design and conduct an experiment that extends the laboratory work that we did this semester.
- Pick a historical figure related to neurophysiology and describe his/her contribution. Be sure to fit it into the scientific context of the time.
- Explain the historical basis for the “reticular” notion of the nervous system that Cajal disproved.
- Relate either temporal or spatial coding to a particular perceptual experience in humans.
- Discuss the role played by neurophysiology in the treatment of a behavioral or mental disorder.
- Describe how the nervous system might function in the absence of inhibitory synapses. Would functional, adaptive behavior be possible?
- Discuss the evolution of chemical neurotransmission. (Might be closely related to the topic above.)
- Discuss the philosophical implications of replacing each neuron in a person’s brain with an electronic replica that functions exactly like the original. Would the person be the same person afterwards; if not at what point in the process of swapping out neurons would the individual cease to exist in his/her original form?
- Come up with an equally engaging and fascinating topic on your own.

**Time Table**

1. By October 31: Choose a topic and inform me, in writing, of your choice. Provide at least two references that you expect to use in writing the paper. This is worth 10% of the value of the paper.

2. Scheduled final exam time: Final version of the paper must be handed in no later than this. Late papers will be penalized at a rate of 10% per day. There will be no exceptions to this policy. During this “exam” time you will share with the class what you wrote about in the form of a 5-min presentation.

**References**


