

PAPER REQUIREMENTS AND FORMATTING DETAILS
PSY 401A/501A, *PSYCHOPHYSIOLOGY SEMINAR*

PAPER DUE 29 APRIL, 2013 (3 PM)

Purpose

The paper requirement is structured to address several goals. First, the paper will provide you with an opportunity to investigate an area of human psychophysiology that is of particular interest to you. Second, in the course of this investigation, you will have the opportunity to apply the knowledge acquired during the psychophysiology course as you read original research reports. Third, the paper will serve as an impetus to become very familiar with the details of signal acquisition and analysis in a particular area of psychophysiology. Fourth, this paper may serve as an opportunity for you to propose a study that you may subsequently conduct using psychophysiological measures. Finally, this assignment will give you experience with proposing your ideas using the National Institutes of Health (NIH) grant application format, which may be useful in your future career, and for graduate students in clinical psychology, this will give you practice with the format required for the masters and dissertation proposal documents.

The topic of your paper is limited only by your imagination and by the fact that you will need to approve the general topic with me before you write the paper. To have your topic approved, submit a one or two paragraph prospectus to me via email no later than Monday March 25 (a full week after the conclusion of Spring Break).

General Format

This document details specifically how to make your proposal conform to this NIH grant format. You should write your paper in the form of a grant proposal, using the Public Health Service (PHS) structure used for NIH R01 grants. It is a format that helps writers focus their ideas on a specific study problem, and requires a detailed method for addressing the research question(s).

The overall length requirements are: 10-15 pages for PSYC 401A, and 15-25 pages for PSYC 501A, double spaced with a standard (e.g. 12-point) font. This is approximately the length allowed for the NIH R01 format (13 pages single spaced). Although sections below may refer to single spaced page limits, please use double spacing for your final paper (and just double the single space recommendations that appear from the NIH guidelines below).

The PHS Guidelines follow below in italics, with relevant commentary concerning how to prepare your paper in regular font below each section. Please include Items A, B1, B2, and B3 in your research proposal, with each designed to address specific aspects of your proposal:

- A. **Specific Aims**: What do you intend to do and what specific hypotheses do you have? (NIH Limit: One page single spaced maximum)
- B. **Research Strategy**: (NIH Limit: Twelve pages single spaced maximum)
 - 1. **Significance**: Why is the work important?
 - 2. **Innovation**: How does this work differ from what has been done and how will it advance the field to have an impact?
 - 3. **Approach**: How are you going to do the work and test your hypotheses?

Specific Section Details and Formats

A. Specific Aims.

<NIH Says...>

State concisely the goals of the proposed research and summarize the expected outcome(s), including the impact that the results of the proposed research will exert on the research field(s) involved. List succinctly the specific objectives of the research proposed, e.g., to test a stated hypothesis, create a novel design, solve a specific problem, challenge an existing paradigm or clinical practice, address a critical barrier to progress in the field, or develop new technology.

One to two pages (double spaced) is recommended. This is just a quick overview of the topic. At the end of the section, the reader should be able to appreciate what specific hypotheses you will test, and why they may be important. As a general guideline, you will want to test approximately one to three specific hypotheses, which you will list at the end of this section. So, in short, you say the equivalent of “*here’s an interesting topic, and here’s why it is interesting and might*

need a psychophysiological approach,, and here's what I'll do, specifically testing the following hypotheses..” Do not write this section in haste – it orients the reader (in this case me!) to what will come next, helping the reader appreciate the proposal's merit.

B. Research Strategy.

<NIH Says...>

Organize the Research Strategy in the specified order and using the instructions provided below. Start each section with the appropriate section heading – Significance, Innovation, Approach. Cite published experimental details in the Research Strategy section and provide the full reference in the Bibliography and References Cited section.

1. Significance

<NIH Says...>

- *Explain the importance of the problem or critical barrier to progress in the field that the proposed project addresses.*
- *Explain how the proposed project will improve scientific knowledge, technical capability, and/or clinical practice in one or more broad fields.*
- *Describe how the concepts, methods, technologies, treatments, services, or preventative interventions that drive this field will be changed if the proposed aims are achieved.*

This section will include your literature review. You need to help the reader understand the context into which your proposed study will fit. Some of this review may involve other studies using psychophysiological measures, but of course the review would not be limited to that. If you are studying a psychological disorder, for example, a brief description of that disorder, a short synopsis of its costs to individuals and to society, and a review of relevant work (psychophysiological and/or nonpsychophysiological) on that disorder would all be desirable in this section. Five to Twelve pages (double spaced) is recommended.

The paper should review original research reports in addition to reviews; stated in the negative: do NOT review only review pieces. Because you will have an appreciation for psychophysiological measurement and methods, you should apply this knowledge in your own review of original research reports. This does not mean that you may not include citations of reviews, but keep the empirical-to-review ratio greater than 2:1.

2. Innovation

<NIH Says...>

- *Explain how the application challenges and seeks to shift current research or clinical practice paradigms.*
- *Describe any novel theoretical concepts, approaches or methodologies, instrumentation or interventions to be developed or used, and any advantage over existing methodologies, instrumentation, or interventions.*
- *Explain any refinements, improvements, or new applications of theoretical concepts, approaches or methodologies, instrumentation, or interventions.*

This section is newly emphasized in NIH reviews, and will require that you establish how your proposed work will differ from all that other stuff that's already been done! For those of you in 401A, this may be difficult to establish, but give it a good effort. I'm of course happy to discuss this with you as you develop your proposal. One to two pages (double spaced) is recommended.

3. Approach

<NIH Says ...>

- Describe the overall strategy, methodology, and analyses to be used to accomplish the specific aims of the project. ... [I]nclude how the data will be collected, analyzed, and interpreted as well as any resource sharing plans as appropriate.
- Discuss potential problems, alternative strategies, and benchmarks for success anticipated to achieve the aims.
- If the project is in the early stages of development, describe any strategy to establish feasibility, and address the management of any high risk aspects of the proposed work.

This is the most crucial section of the proposal and should therefore be given the greatest space allocation. Five to twelve pages (double spaced) is recommended. In this section, describe in detail what are you going to do and how are you going to test your hypotheses. In short, the proposal needs to be clear that you are clear in understanding what you intend to do. You should be very specific about the following:

- The basic paradigm and task(s) you would use to address the research question (including number of trials in each of whatever conditions you include, specifics about the stimuli, instructions to subject, etc.).
- Methodological specifics: type of electrodes, placement of these electrodes, type of gel used, recording specifics (e.g., amplifier type, amplification factor), reference site(s), time constant(s) used, low pass filter setting(s), digital sampling rate, length of sampling epoch, number of samples prior to stimulus onset, how will you deal with artifacts (eye blink, muscle...), would you use any off line filters (digital, woody).
- A brief explanation of what measures or features would be of interest (e.g. which component of the ERP, what frequency band in the EEG, what features in the EKG, what measures of SC, etc.) and why (based on the literature) these measures would be expected to be responsive to your experimental manipulation.
- A brief description of your analysis plan: For example, will you use a repeated measures ANOVA, or a MANOVA, or a discriminant function analysis, or Fisbee's foolproof test? Just detail how you would make sure your data can address your research question. As you detail how you intend to analyze the data, be sure to make it clear how your analyses will test your specific hypotheses that you listed in Section A. What kind of finding would support your hypothesis? What would refute it?

This section can include some previous results or pilot data if you have any, but most of you will not. Some of you in PSY 501A may have pretested measures or piloted some aspects of the procedure or a related procedure. This will convince the reviewer (in this case me) that you are likely to be able to carry out the work.