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

PAPER DUE MAY 5, 2008 (3 PM)

Purpose

The purpose of the paper requirement is threefold. First, the paper should 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 may serve as an opportunity for you to propose a study that you would like to conduct using psychophysiological measures.

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 no later than Monday March 31 (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 National Institutes of Health (NIH) small grants (R03) and F-series fellowships. It is a format that helps writers focus their ideas on a specific study problem, and for those of you in Psych 501A or those of you planning to go to graduate school, it's a format that you'll need to use at some point in your career.

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.

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-D 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?
- **B.** Background and Significance: Why is the work important and what work has been done that forms the background of your proposal?
- **C.** Preliminary Studies: What has already been done in your lab or advisor's lab?
- **D.** Research Design and Methods: How are you going to do the work and test your hypotheses?

Specific Section Details and Formats

A. Specific Aims.

<NIH Says…> List the broad, long-term objectives and what the specific research proposed in this application is intended to accomplish, e.g., to test a stated hypothesis, create a novel design, solve a specific problem, or develop new technology. This should be a succinct opening statement of the problem, aims, and hypotheses.

One or one and a half 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. Background and Significance.

<NIH Says…> Briefly sketch the background leading to the present application, critically evaluate existing knowledge, and specifically identify the gaps that the project is intended to fill. State concisely the importance and relevance of the research described in this application by relating the specific aims to the broad, longterm objectives.

Essentially, this is 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 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.

C. Preliminary Studies/Progress Report.

<NIH Says…> Preliminary Studies. For new applications, use this section to provide an account of the principal investigator/program director's preliminary studies pertinent to the application information that will also help to establish the experience and competence of the investigator to pursue the proposed project. Peer review committees generally view preliminary data as an essential part of a research grant application. Preliminary data often aid the reviewers in assessing the likelihood of the success of the proposed project.

For most of you, this section will not apply. Some of you in 501A may have pretested measures or piloted any aspects of the procedure or a related procedure. This would be included here. This is also the section in which you can and should describe relevant work done in the lab(s) within which your study is to be conducted, especially work in progress that would not be included under Section B. If your study is planned to be a part of a larger project, your can use this section to describe the parent study.

It is possible you have no preliminary studies. This is fine. If you have nothing to include in this section, simply put "Not Applicable" and move on. If you've already started any aspect of the study, describe what you've done here.

D. Research Design and Methods.

<NIH Says…> Describe the research design and the procedures to be used to accomplish the specific aims of the project. Include how the data will be collected, analyzed, and interpreted as well as the data sharing plan as appropriate. Describe any new methodology and its advantage over existing methodologies. Discuss the potential difficulties and limitations of the proposed procedures and alternative approaches to achieve the aims. As part of this section, provide a tentative sequence or timetable for the project. Point out any procedures, situations, or materials that may be hazardous to personnel and the precautions to be exercised.

This is the most crucial section of the proposal and should therefore be given the greatest space allocation. Five to twelve pages 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?