LABORATORY MANUAL

PRINCIPLES OF PSYCHOLOGY: EXPERIMENTAL FOUNDATIONS

PSYCHOLOGY 122
2001

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Principles of Psychology: Experimental Foundations

St. Olaf College
Psychology 122

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Introduction

In this section of the Psychology 122 Laboratory Manual, we will introduce you to the organization of the laboratory component of the course, and the contents of this manual.

Laboratory Organization/Schedule

During the first laboratory session your lab will be subdivided into two sections (A1/A2 for Tuesday labs, or B1/B2 for Wednesday labs). This division will set the lab schedule that you will follow for the remainder of the semester. Content of the laboratory curriculum is identical for all sections; only the sequence differs.

Preceptors

At the top of the lab schedule sheet you will find the name of the preceptor who will be with your group for the duration of the semester. The preceptors are upper-class students in psychology who have indicated an interest in teaching, either in secondary school or college. They will be primarily responsible for teaching and grading each of the labs, although a faculty member will be present in the laboratory at all times to answer questions and assist the preceptor should questions arise. The preceptors will grade laboratory work, with supervision by the faculty. Please note that preceptors are more than laboratory assistants; they are students registered for an upper level class on laboratory teaching and they work closely and meet frequently with each other and with the four faculty participating in the course. They teach one laboratory section and move with this section from one laboratory to another week by week, working first with one faculty member in one space, and then with another faculty member in another space. They are the only teacher who stays with the class throughout the semester.

Grading

Your grade in Psychology 122 is earned through completion of the class component (59.45%) and the laboratory component (40.55%). The following table shows how all points are allocated:

Class					% of	% of
Component	Number	Item	Pts each	Total	Grade	Grade
	3	Exams	150	450	41.47	
	9	Quizzes	5	45	4.15	
	1	Final	150	150	13.82	59.45
Lab						
Component	1	Lab exam	100	100	9.22	
	1	Lab notebook	150	150	13.82	
	1	Poster display	100	100	9.22	
	9	Citation skeletons	10	90	8.29	40.55
		TOTAL		1085		100.00

Research: Setting, Design, and Data Collection

Scientific research always consists of three components: a research setting, a research design, and a data-collection technique. Let's look briefly at each of these components.

In the traditional experimental approach to research, behavior is studied in a controlled laboratory setting in which variables are manipulated and isolated. It is important to realize, however, that observations of behavior in natural settings often influence the hypotheses that are tested in laboratories. Therefore, research is often conducted in natural settings ("the field"). The naturalistic approach is also valuable because it enables researchers to study people or animals and their behavior in complex, real-life situations.

There are three basic types of research designs. The experimental method systematically investigates one or more dependent variables by manipulating one or more elements in the environment (the independent variables). Comparing the effectiveness of two different methods for teaching children to do math is an example of an experiment, but children must be randomly assigned to the two groups in order for the experiment to be considered valid. A correlational study attempts to discern a connection between two or more variables. A strong correlation implies a connection between variables; it does not indicate causation. As an example, the association between parents' discipline styles and the psychological development of their children is almost always studied using a correlational approach; that is, families are studied as they are, rather than being told by a researcher how to behave. A descriptive study describes a specific phenomenon without systematically investigating relationships between variables. Descriptive studies are often useful when a researcher is beginning to learn about the phenomenon. For example, researchers interested in children's reactions to being dropped off or picked up at daycare may simply observe these situations and describe what they see. Information from a descriptive study is often a good source of ideas for correlational studies and experiments.

There are two types of data-collection methods: self-report and observational. Self-report methods rely on subjects to provide information upon the request of the researcher. Questionnaires and interviews are typical of this method. Observational techniques do not rely on subjects' self-descriptions for data collection. Instead, the researcher makes observations in a consistent and objective manner.

This diagram in Figure 1 outlines how these three components can be combined. For example, the lower right-hand box in front designates a descriptive study, conducted in the field, that obtains its data via observation.

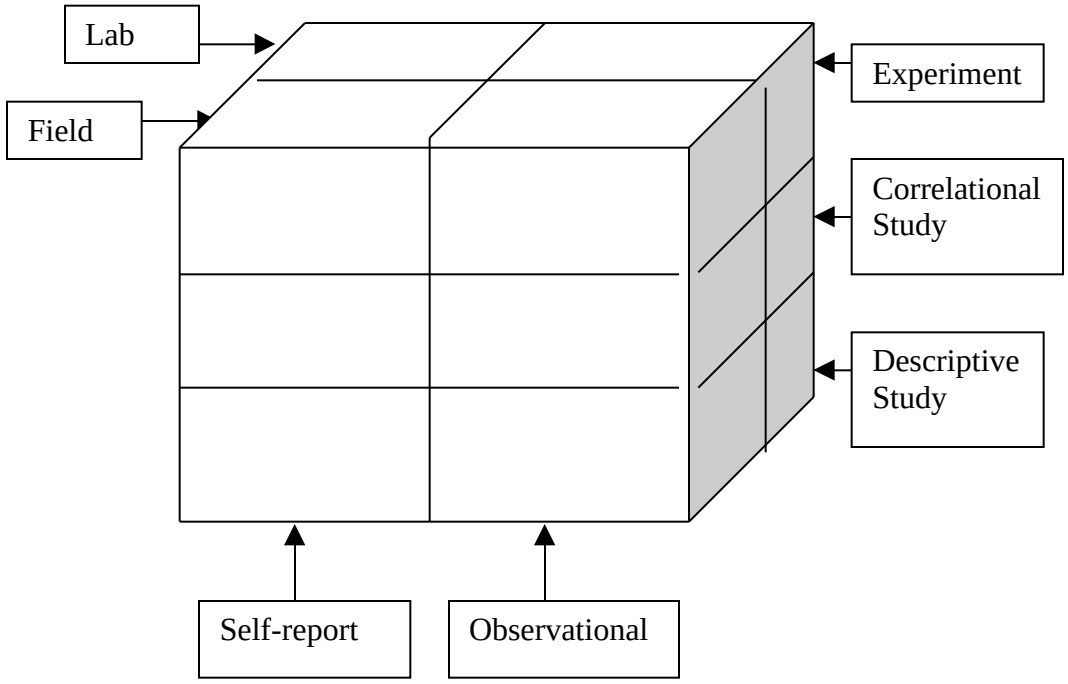

Figure 1. Three dimensions of research strategy (Gray, 1991)

Citation Skeletons

In Psychology 122 we hope to develop your reading/thinking skills in dealing with the psychological literature. We also wish to prepare you for each week's lab. To that end, a sequenced set of activities will be part of the laboratory program. Pre-laboratory assignments will be assigned for labs 2-9. These assignments are lab specific and need to be completed before attending lab every week. **Individuals who do not complete the pre-labs may not attend the lab until they do**. No Exceptions!

These assignments, known as "Citation Skeletons" will help you analyze and remember the main ideas of assigned pre-laboratory readings. They will also require you to read your lab manual before coming to lab. A sample "Citation Skeleton" is reproduced below. Point values for each part are also indicated.

☐ **1. Reference** :(As illustrated in the references section of each lab)**-.5 point**

☐ **2. Institutional Affiliation of first author:** (Often listed on first page of article itself)**-.5 point**

☐ **3. Type of article or chapter:** (e.g., research study; literature review; popular press article)**-.5 point**

☐ **4. Goal of article:** (What are they trying to do?)**-.5 point**

For Review articles: Skip to backside of Citation Skeleton, and fill that out.
For Research Studies: Fill out the following, plus backside of Citation Skeleton. [If the research article describes several studies, pick one to use in filling out the rest of the material of this Citation Skeleton]

☐ **5. Sample and size:** (If an empirical study, this information usually found in Methods section)**-.5 point**

☐ **6. List terms defined conceptually**; (Usually found in Introduction or Discussion sections)**-.5 point**

☐ **7. Operational definition of one key concept** (Usually found in methods section; vital to collecting data)**-.5 point**

☐ **8. <u>Design</u>:** (Usually found in Methods section)**-.5 point**

☐ **9. <u>Procedure:</u>** (Usually found in Methods section)**-.5 point**

☐ **10. <u>Findings/Results:</u>** (Usually found in Results section; state in <u>narrative</u> form)**-.5 point**

☐ **11. <u>Steps or conclusions suggested by the article:</u>** (Usually found in the Discussion section; what do the data mean?)**-1 point**

☐ **12 <u>Criticisms of the article</u>:** (What might have been done better? What limitations exist in the study?)**-.5 point**

☐ **15. <u>So what next?</u>** (Give some ideas for further research that could be done. What would you like to investigate further?)**-.5 point**

☐ 16. **<u>Lab-specific question 1</u>**:**-1.5 points**

☐ 17. **<u>Lab-specific question 2</u>**: **1.5 points**

Laboratory Notebook

Each student will need to purchase an 80-sheet AMPAD # 26-252 Composition Book (lined, not graph paper) with sewn-in pages to serve as a laboratory notebook. It is available from the bookstore for about $2.00. You will also need to purchase rubber cement to use to paste data into your notebook (NOTEBOOKS WILL NOT BE ALLOWED TO HAVE ANY LOOSE MATERIAL IN THEM). As soon as you get your notebook, put your name on it, and then

number each side of each page in the upper right corner. You will number pages consecutively up to 160. Your notebook will be used to take notes during each laboratory period, and also for preparation of a formal write-up of each laboratory experiment. The "notes" section will be used for informal recording of data, comments, etc. Start each lab on a new page, and include title of the lab, date, and names of lab partners. "Formal" write-up of each lab will be done using the pages immediately after the "notes" section. For each lab, you will be expected to include the following information in your Formal write-up:

INFORMAL WRITE-UP

- Notes: This section contains any rough notes that you make during the lab exercise (data, pictures, facts, etc.). Answers to critical thinking questions also belong in this section. Your preceptor should be able to easily identify these answers.

FORMAL WRITE-UP

- Introduction: Here, you introduce the problem to be investigated, comment briefly on the assigned reading, and use it to develop a hypothesis for the week's experiment.
- Method: includes a statement regarding your experimental subjects, materials or apparatus, and procedures.
- Results: This section is for your data, which may be displayed numerically, graphically, with tables, and with figures. All graphs tables and figures need to be labeled. Narratively describe your data in this section. Save explanation of the findings for the Discussion section.
- Discussion: In this section, you reflect on the results of your study, and interpret your findings in relation to your initial expectations. It is also important to integrate your findings with the topic(s) discussed in the "Required Lab Reading." That is, how do your findings relate to what you included about the readings in your Introduction section? You may also need to answer one or more of the discussion questions. This section should also include possible sources of error and ideas for future research.

There is no required length for lab write-ups, but the maximum is 8 pages per lab, so carefully choose what you are going to write. You should be as concise as possible, but need to include all relevant information. Do not ramble on to fill up space. Meaningless paragraphs will not impress your preceptor.

Poster Display

Student lab groups will prepare a poster display of the play project for presentation at the final lab sessions. You are required to use a poster dimensioned 22 x 28 inches. You may choose to purchase whatever color poster board you wish from the Bookstore supply, but you must use one 22 x 28 inches. As you will see later, the play project runs through the most of the semester, and serves as an integrating laboratory experience. For the field work portion of this project you will be given a letter of introduction that you may show in case anyone questions your activity.

Laboratory Examination

There will be a laboratory examination at the end of the semester. You will be asked to use the skills you have developed in the 122 lab in developing/evaluating the design of an experiment, define some terms from lab, etc. Additional details will be forthcoming.

The Laboratory Manual

Each of the laboratory exercises in this manual has been prepared according to a standard format:

Introduction: The purpose of the laboratory is introduced. Basic concepts are discussed. The framework for the laboratory (i.e., where it "fits" in the domain of psychology) is established.

Objectives: This is a bulleted list of the specific objectives of each exercise. As you conduct and write up each experiment, you should refer back to this list and comment (in your lab notebook) on your findings in the context of these objectives.

Terms: This is a list of important terms for each laboratory. You will need to master this vocabulary in order to appreciate fully each laboratory exercise. Mastery of these terms is vital for successful completion of the lab final examination.

Critical Thinking Questions: Throughout the lab you will come across questions that are surrounded by a box and are labeled with a ***CT*** symbol.

CT	**Why do you think there is no sound from the station?**

These are critical thinking questions, and serve to broaden and deepen your understanding of the laboratory exercise. All of these questions should be clearly labeled and answered **in the notes section** of your lab write-up

Methods: The specific details to be followed in each exercise are included in this section. Careful reading prior to each lab period (as well as willingness to ask the Preceptor or Professor in lab) will facilitate data collection, analysis, etc. In most cases, the Methods are further subdivided into the following three subsections:

- Participants/Subjects– Description of (human) participants or (infrahuman) subjects.
- Materials/Apparatus – Materials and/or apparatus used in the experiment. Research reports include this information so that someone else will be able to replicate your study.
- Procedure – These are the specific procedures/steps you should follow as you carry out your study. These procedures also reveal another aspect of the report, one that will enable replication.

Discussion Questions: Each lab concludes with discussion questions that will help you contemplate your laboratory exercise. All discussion questions should be answered in the discussion section of your laboratory write-up, unless otherwise specified by your preceptor. Preceptors may choose to address the questions as a class, or may have you complete only a few of the questions. Preceptors will specifically state which questions must be answered for each lab.

References: We have included several different forms of reference material for you.

Required Lab Reading: This is the article you are to have read prior to each laboratory period. It is also the article, which will be the basis for your "Citation Skeleton." These articles can be obtained from the reserve desk in Rolvaag Library. You are also expected to incorporate appropriate reference to this article in your report write-up. This article reference is highlighted in the laboratory manual by a gray box, e.g.:

Guttman, N. & Kalish, H.I. (1966). Experiments in discrimination. In T. Verhave (Ed.), *The Experimental Analysis of Behavior* (pp. 209-216). New York: Appleton-Century-Crofts.

Suggested Readings: This is a list of other resources (books, journal articles) which you may wish to explore should you wish to better understand in the area of investigation which is covered by each laboratory.

Web Links – For many lab, a few annotated links are provided to world wide web pages with material relevant to the investigation. Just type the URL (e.g., http://www.med.harvard.edu/AANLIB/ into your favorite browser (Netscape Navigator or Internet Explorer) and examine this potentially helpful (and in many cases, fascinating) material.

Lab Procedure Questions

At various points in the procedure of the laboratory exercises, you will find questions. These questions will be written in bold and answers to them must be included in the *Notes* section of your lab write-up.

The faculty and preceptors wish you the best with this course. Please do not hesitate to contact us with any suggestions for improvements!

Welcome to the fascinating world of psychology!