

App. 2-20-07  
Senate info 3-27-07

To Provost 2/23/07  
06-38

## Undergraduate Distance Education Review Form

(Required for all courses taught by distance education for more than one-third of teaching contact hours.)

### Existing and Special Topics Course

Received

FEB 10 2007

Liberal Studies

Course: PSYC 280

Instructor(s) of Record: Dr. Cora Lou Sherburne

Phone: 724-357-2723

Email: sherburl@iup.edu

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### Step One: Proposer

A. Provide a brief narrative rationale for each of the items, A1- A5.

1. How is/are the instructor(s) qualified in the distance education delivery method as well as the discipline?

I graduated from the University of Kentucky with a Ph.D. in Behavioral and Neural Studies in Psychology in 1995, and then taught for five years at a small, selective liberal arts college in the Midwest. I have taught PSYC 280 (Psychological Inquiry; a research methods course for psychology minors) four times since coming to IUP in 2000 and have taught more advanced versions of research methods courses 13 times. My teaching of this course has been observed by my colleagues in the Psychology Department, as well as by the Department Chair. In order to transform PSYC 280 into a course that is appropriate for distance education, I am working with Dr. Kim Husenits, who has developed other online psychology courses. I will continue meeting with Kim, as well as others in the department who have developed such courses, as I proceed with designing this distance education course. Furthermore, as department webmaster and one who uses the project directory service extensively for my courses, I am already familiar with many of the issues involved in distance learning.

2. How will each objective in the course be met using distance education technologies?

Objective 1. You should gain a basic understanding of the scientific approach to knowledge and how it is applied in the conduct of psychological research.

Students will be required to read the textbook and read/engage in the supplemental materials that I will provide (e.g., PowerPoint presentations, PDF lectures, and on-line quizzes). Chapter 1 (Scientific Understanding of Behavior) and my supplemental materials for this chapter address this objective most directly, but the rest of the readings and materials are grounded in this objective.

Objective 2. You should become knowledgeable about the ethical issues involved in doing psychological research and how these influence each phase of a research project from its conception to dissemination of findings. In particular, we will focus on the American Psychological Association's (APA) ethical guidelines.

Students will be required to read the textbook and the supplemental materials that I will provide (e.g., PowerPoint presentations, PDF lectures, and on-line quizzes). Chapter 3 (Ethical Research) and my supplemental materials for this chapter address this objective most directly, but ethical issues will be integral to my coverage of Chapters 4 (Studying Behavior), 6 (Observing Behavior), 7 (Survey Research), 8 (Experimental Design), 9 (Conducting Experiments), and 11 (Quasi-Experimental and Single-Subject Designs), as well.

Objective 3. You should become familiar with the basic approaches to doing psychological research (e.g., observational, correlational, and experimental), and gain an understanding of the advantages of disadvantages of each.

Students will be required to read the textbook and read/engage in the supplemental materials that I will provide (e.g., PowerPoint presentations, PDF lectures, and on-line quizzes). Chapter 4 (Studying Behavior) and my supplemental materials for this chapter address this objective most directly, but each of the textbook chapters and my supplemental materials for them relate directly to this objective as well.

**Objective 4.** You should gain a basic knowledge of how researchers measure psychological constructs and the tools they use to do so (e.g., surveys, reaction time), the statistics they use to describe their findings, and the statistical tests they use to make assessments about how likely it is that their findings occurred by chance.

Students will be required to read the textbook and read/engage in the supplemental materials that I will provide (e.g., PowerPoint presentations, PDF lectures, and on-line quizzes). Chapters 5 (Measurement Concepts) 12 (Description and Correlation), and 13 (Inferential Statistics), and my supplemental materials for these chapters address this objective.

**Objective 5.** You should become knowledgeable about a number of basic issues which affect a researcher's ability to draw conclusions from findings. These include -- but are not limited to -- reliability, validity, experimenter bias, demand characteristics, and generalizability.

Students will be required to read the textbook and read/engage in the supplemental materials that I will provide (e.g., PowerPoint presentations, PDF lectures, and on-line quizzes). Chapters 4 (Studying Behavior), 9 (Conducting Experiments), and 14 (Generalizing Results) and my supplemental materials for these chapters address this objective.

**Objective 6.** As a writing-intensive course, Psychological Inquiry should help you improve your ability to express your knowledge, ideas, and thinking in written form.

Students will complete weekly writing assignments and half of each of their exams will consist of essay questions.

3. How will instructor-student and student-student, if applicable, interaction take place?

An email icon on the course Homepage will allow students to send me email messages. My IUP email address and phone number are listed on my syllabus. I may also include a discussion option for this course which would allow students to communicate with me and each other.

4. How will student achievement be evaluated?

Student achievement will be evaluated in several ways, including evaluations of their performance on exams and written assignments. The course will be divided into weekly units that revolve around the textbook, and the units will also include supplemental material (e.g., textbook supplemental materials, my PDF lectures and PowerPoint presentations, and on-line quizzes). For each unit, the students will take an exam, with questions that are based on the textbook chapter and any supplemental materials.

5. How will academic honesty for tests and assignments be addressed?

Responses to the writing assignments and essay questions are not likely to be available from paper writing services because I wrote these assignments myself. Although I will use some multiple-choice exam questions from the textbook's supplemental materials, I wrote most of these questions myself and it is highly unlikely (probably impossible) that students would be able to find answers to them online while taking an exam. In addition, I will work with Dr. Lynda Federoff, who has developed multiple on-line courses and successful academic integrity safeguards, in incorporating these safeguards into my course. If I do suspect a violation, I will deal with it in accord with IUP's academic integrity policy. My syllabus also includes a statement about IUP's academic integrity policy.

- B. Submit to the department or its curriculum committee the responses to items A1-A5, the current official syllabus of record, along with the instructor developed online version of the syllabus, and the sample lesson. This lesson should clearly demonstrate how the distance education instructional format adequately assists students to meet a course objective(s) using online or distance technology. It should relate to one concrete topic area indicated on the syllabus.

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### **Step Two: Departmental/Dean Approval**

Recommendation:  Positive (The objectives of this course can be met via distance education)

Negative

**Objective 4.** You should gain a basic knowledge of how researchers measure psychological constructs and the tools they use to do so (e.g., surveys, reaction time), the statistics they use to describe their findings, and the statistical tests they use to make assessments about how likely it is that their findings occurred by chance.

Students will be required to read the textbook and read/engage in the supplemental materials that I will provide (e.g., PowerPoint presentations, PDF lectures, and on-line quizzes). Chapters 5 (Measurement Concepts) 12 (Description and Correlation), and 13 (Inferential Statistics), and my supplemental materials for these chapters address this objective.

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**Objective 6.** As a writing-intensive course, Psychological Inquiry should help you improve your ability to express your knowledge, ideas, and thinking in written form.

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- B. Submit to the department or its curriculum committee the responses to items A1-A5, the current official syllabus of record, along with the instructor developed online version of the syllabus, and the sample lesson. This lesson should clearly demonstrate how the distance education instructional format adequately assists students to meet a course objective(s) using online or distance technology. It should relate to one concrete topic area indicated on the syllabus.

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### **Step Two: Departmental/Dean Approval**

Recommendation:  Positive (The objectives of this course can be met via distance education)

Negative

J. Mary Lou Yund 2/13/07  
Signature of Department Designee Date

Endorsed: David Burch 2/14/07  
Signature of College Dean Date

Forward form and supporting materials to Liberal Studies Office for consideration by the University-wide Undergraduate Curriculum Committee. Dual-level courses also require review by the University-wide Graduate Committee for graduate-level section.

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**Step Three: University-wide Undergraduate Curriculum Committee Approval**

Recommendation:  Positive (The objectives of this course can be met via distance education)  
 Negative

Gail S. Sedquist 2/20/07  
Signature of Committee Co-Chair Date

Forward form and supporting materials to the Provost within 30 calendar days after received by committee.

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**Step Four: Provost Approval**

Approved as distance education course  Rejected as distance education course

[Signature] 2/21/07  
Signature of Provost Date

Forward form and supporting materials to Associate Provost.

Psychology 280, WebCT  
Psychological Inquiry  
Summer II, 2007

Instructor: Cora Lou Sherburne, Ph.D.

Email: [sherburl@iup.edu](mailto:sherburl@iup.edu)

724-357-2723

We will communicate with each other primarily through email. I will check my email regularly (at least once a day) Monday - Friday, and respond to your questions. When you email me, always include a subject line that includes "PSYC 280" (I get numerous Spam and Phishing emails everyday and delete most messages without opening them. I don't want to miss one of yours!)

Course Catalog Description:

Prerequisites: PSYC 101, Psychology minors. Introduces students minoring in Psychology to issues central to carrying out and interpreting empirical research in the field. Become more sophisticated consumers of empirical research findings. May not take this course for credit after successful completion of PSYC 290.

Course Objectives: The course is organized around the following specific objectives:

1. You should gain a basic understanding of the scientific approach to knowledge and how it is applied in the conduct of psychological research.
2. You should become knowledgeable about the ethical issues involved in doing psychological research and how these influence each phase of a research project from its conception to dissemination of findings. In particular, we will focus on the American Psychological Association's (APA) ethical guidelines.
3. You should become familiar with the basic approaches to doing psychological research (e.g., observational, correlational, and experimental), and gain an understanding of the advantages of disadvantages of each.
4. You should gain a basic knowledge of how researchers measure psychological constructs and the tools they use to do so (e.g., surveys, reaction time), the statistics they use to describe their findings, and the statistical tests they use to make assessments about how likely it is that their findings occurred by chance. Don't worry! You won't have to do the tests. Instead, you will learn about the basic logic underlying their use.
5. You should become knowledgeable about a number of basic issues which affect a researcher's ability to draw conclusions from findings. These include - - but are not limited to -- reliability, validity, experimenter bias, demand characteristics, and generalizability.
6. As a writing-intensive course, Psychological Inquiry should help you improve your ability to express your knowledge, ideas, and thinking in written form.

Required Text:

Cozby, Paul C. (2004). *Methods in Behavioral Research (8<sup>th</sup> Edition)*. McGraw-Hill.  
ISBN: 0072523425

suggest that you use these quizzes to study for your exams as the multiple-choice questions on your exams will be similar conceptually to the quiz questions.

Writing Assignments (20% of your grade): These writing assignments (5 of them; 4 points each) are designed to assess your understanding of the concepts we've covered and to prepare you for the essay questions on your exams. Although the exam questions will be different (most often) from those you address in your writing assignments, you should get an idea of the kinds of questions I am likely to ask on the exam and my feedback should help you improve your exam performance.

Exams (70% of your grade). The format of each of the five exams (14 points each) will be multiple-choice (4 points) and essay (10 points). The exams will cover material from assigned readings, lectures, and in-class activities. The first four exams will not be cumulative, except in the sense that your understanding of some new concepts may depend on the mastery of material covered in previous parts of the course. The fifth exam, the Final Exam, will be cumulative: It will be based on everything we've covered in the course (i.e., all assigned readings, lectures, and in-class activities).

Make-ups. Make-ups to be taken without penalty are permitted only when arrangements have been made in advance of the test date. Without such arrangements and/or without a valid reason, make-ups may be permitted at the discretion of the instructor but will be penalized one letter grade for each elapsed day. The form of a make-up may differ from that of the original exam. No make-ups on extra-credit opportunities (if any) will be given under any circumstances.

Grades: Your final grade will be determined based on the following scale: A = 90% (89.5-100), B = 80% (79.5-89.4), C = 70% (69.5-79.4), D = 60% (59.5-69.4), F = below 60% (< 59.5). The total number of points for this course is 100, so it should be easy for you to determine how many points you need to get the grade you want.

Attendance Policy: There is no formal attendance policy for this course. However, the full benefit of the course can only be achieved if you attend class. (You may also miss extra credit opportunities.) Moreover, absence from class (for any reason) is not an acceptable excuse for failure to know what is going on. You are responsible for all assignments, materials, and awareness of schedule changes, etc., even if you miss class. I suggest that you obtain lecture/discussion notes and information about assignments and schedule changes from a responsible classmate. The same applies to "tardies": When you arrive late to class, you may miss important information.

Integrity: Academically, your work is to be your own; University policies and procedures regarding plagiarism and violations of academic integrity will be followed. If you haven't read these policies, do so.

<http://www.iup.edu/registrar/catalog/acapolicy/index.shtm#Academic%20Integrity%20Policy%20and%20Procedures>

It is also expected that you will maintain ethical and respectful behavior regarding the class and each other.

**Final Proviso:** Dates/provisions are subject to change; any such changes will be announced in class.

<u>Course Outline</u>	
Topics	Reading Assignments/ Activities
8/27 – 8/31	
<b>Chapter 1 - Scientific Understanding of Behavior</b> <ul style="list-style-type: none"> <li>• Uses of Research Methods</li> <li>• The Scientific Approach</li> <li>• Goals of Science</li> <li>• Basic and Applied Research</li> </ul>	Chapter 1.
9/3 – 9/7	
<b>Chapter 2 - Where to Start</b> <ul style="list-style-type: none"> <li>• Hypotheses and Predictions</li> <li>• Sources of Ideas</li> <li>• Library Research</li> <li>• Anatomy of a Research Article</li> </ul>	(Labor Day: 9/3 No Classes) Chapter 2. 9/7: Chapters 1&2 Practice Quiz.
9/10 – 9/14	
<b>Chapter 3 - Ethical Research</b> <ul style="list-style-type: none"> <li>• Milgram's Obedience Experiment</li> <li>• The Belmont Report</li> <li>• Assessment of Risks and Benefits</li> <li>• Informed Consent</li> <li>• The Importance of Debriefing</li> <li>• Alternatives to Deception</li> <li>• Justice and the Selection of Participants</li> <li>• Researcher Commitments</li> <li>• Federal Regulations and the Institutional Review Board</li> <li>• APA Ethics Code</li> <li>• Research with Human Participants</li> <li>• Ethics and Animal Research</li> <li>• Risks and Benefits Revisited</li> <li>• Misrepresentation</li> </ul>	Chapter 3. 9/12: Chapter 3 Practice Quiz; Writing assignment #1 due.
9/17 – 9/21	
----- <b>Chapter 4 - Studying Behavior</b> <ul style="list-style-type: none"> <li>• Variables</li> <li>• Operational Definitions of Variables</li> <li>• Relationships Between Variables</li> <li>• Nonexperimental Versus Experimental Methods</li> <li>• Independent and Dependent Variables</li> <li>• Causality</li> <li>• Choosing a Method: Advantages of Multiple Methods</li> <li>• Evaluating Research: Three Types of Validity</li> </ul>	9/17: Exam 1 ----- Chapter 4.
9/24 – 9/28	
<b>Chapter 4, continued.</b>	9/24: Chapter 4 Practice Quiz.

<p><b>Chapter 5 - Measurement Concepts</b></p> <ul style="list-style-type: none"> <li>• Reliability of Measures</li> <li>• Construct Validity of Measures</li> <li>• Reactivity of Measures</li> <li>• Variables and Measurement Scales</li> </ul>	<p>Chapter 5. 9/28: Chapter 5 Practice Quiz</p>
10/1 – 10/5	
<p><b>Chapter 6 - Observing Behavior</b></p> <ul style="list-style-type: none"> <li>• Quantitative and Qualitative Approaches</li> <li>• Naturalistic Observation</li> <li>• Systematic Observation</li> <li>• Case Studies</li> <li>• Archival Research</li> <li>• Describing Personality and Individual Differences</li> </ul>	<p>Chapter 6 10/3: Chapter 6 Practice Quiz; Writing assignment #2 due</p>
10/8 – 10/12	
<p><b>Chapter 7 - Asking People about Themselves: Survey Research</b></p> <ul style="list-style-type: none"> <li>• Why Conduct Surveys?</li> <li>• Constructing Questions to Ask</li> <li>• Responses to Questions</li> <li>• Finalizing the Questionnaire</li> <li>• Administering Surveys</li> <li>• Survey Designs To Study Changes Over Time</li> <li>• Sampling From A Population</li> <li>• Sampling Techniques</li> <li>• Evaluating Samples</li> </ul>	<p>10/8: Exam 2</p>
10/15 – 10/19	
<p><b>Chapter 8: Experimental Design: Purposes and Pitfalls</b></p> <ul style="list-style-type: none"> <li>• Confounding and Internal Validity</li> <li>• Basic Experiments</li> <li>• Assigning Subjects to Experimental Conditions</li> <li>• Independent Groups Designs</li> <li>• Repeated Measures Designs</li> <li>• Matched Pairs Design</li> <li>• Developmental Research Designs</li> </ul>	<p>Chapter 8. 10/19: Chapters 7&amp;8 Practice Quiz.</p>
10/22 – 10/26	
<p><b>Chapter 9: Conducting Experiments</b></p> <ul style="list-style-type: none"> <li>• Selecting Research Participants</li> <li>• Manipulating the Independent Variable</li> <li>• Measuring the Dependent Variable</li> <li>• Additional Controls</li> <li>• Additional Considerations</li> <li>• Analyzing and Interpreting Results</li> <li>• Communicating Research to Others</li> </ul>	<p>Chapter 9.</p>
10/29 – 11/2	
<p><b>Chapter 11: Quasi-Experimental and Single Case Experimental Designs</b></p> <ul style="list-style-type: none"> <li>• Program Evaluation</li> <li>• Quasi-Experimental Designs</li> </ul>	<p>Chapter 11 10/31: Chapters 9&amp;11 Practice Quiz; Writing assignment #3 due</p>



<ul style="list-style-type: none"> <li>• Single Case Experimental Designs</li> </ul>	
11/5 – 11/9	
<p style="text-align: center;">----</p> <b>Chapter 12: Understanding Research Results: Description and Correlation</b> <ul style="list-style-type: none"> <li>• Scales of Measurement: A Review</li> <li>• Analyzing the Results of Research Investigations</li> <li>• Frequency Distributions</li> <li>• Descriptive Statistics</li> <li>• Graphing Relationships</li> <li>• Correlation Coefficients: Describing the Strength of Relationships</li> <li>• Effect Size</li> <li>• Statistical Significance</li> <li>• Regression Equations</li> <li>• Multiple Correlation</li> <li>• Partial Correlation and the Third-Variable Problem</li> <li>• Structural Models</li> </ul>	<p>11/5: Exam 3</p> <p>Chapter 12</p> <p style="text-align: center;">----</p>
11/12 – 11/16	
<p>Chapter 12, continued</p> <p style="text-align: center;">----</p> <b>Chapter 13: Understanding Research Results: Inferential Statistics</b> <ul style="list-style-type: none"> <li>• Samples and Populations</li> <li>• Inferential Statistics</li> <li>• Null and Research Hypotheses</li> <li>• Probability and Sampling Distributions</li> <li>• Example: The t and F Tests</li> <li>• Type I and Type II Errors</li> <li>• Interpreting Nonsignificant Results</li> <li>• Choosing a Sample Size: Power Analysis</li> <li>• The Importance of Replications</li> <li>• Significance of a Pearson r Correlation Coefficient</li> <li>• Computer Analysis of Data</li> <li>• Selecting the Appropriate Test</li> </ul>	<p>11/12: Chapter 12 Practice Quiz;</p> <p>Chapter 13</p> <p style="text-align: center;">----</p>
11/19 – 11/23: Thanksgiving Break No Class	
11/26 – 11/30	
Chapter 13, continued	11/30: Chapter 13 Practice Quiz; Writing assignment #4 due
12/3 – 12/7	
<b>Chapter 14: Generalizing Results</b> <ul style="list-style-type: none"> <li>• Generalizing to Other Populations of Research Participants</li> <li>• Cultural Considerations</li> </ul>	<p>12/3 Exam 4</p> <p>Chapter 14.</p> <p>12/7: Practice (Final Exam) Quiz; Writing assignment #5 due</p>

<ul style="list-style-type: none"> <li>• Generalizing to Other Experimenters</li> <li>• Pretests and Generalization</li> <li>• Generalizing from Laboratory Settings</li> <li>• The Importance of Replications</li> <li>• Evaluating Generalizations via Literature Reviews and Meta-Analysis</li> <li>• Using Research to Improve Lives</li> </ul>	
12/10	
	12/10: Final Exam Review Session Final Exam: TBA

Psychology 280, WebCT  
Psychological Inquiry  
Summer II, 2007

Instructor: Cora Lou Sherburne, Ph.D.  
Email: [sherburl@iup.edu](mailto:sherburl@iup.edu)  
724-357-2723

We will communicate with each other primarily through email. I will check my email regularly (at least once a day) Monday - Friday, and respond to your questions. When you email me, always include a subject line that includes "PSYC 280" (I get numerous Spam and Phishing emails everyday and delete most messages without opening them. I don't want to miss one of yours!)

Course Catalog Description: (Psychological Inquiry) introduces students minoring in psychology to issues central to carrying out and interpreting empirical research in the field. Students will become more sophisticated consumers of empirical research findings. Students who have completed PSYC 290 successfully are not permitted to take this course for credit.

Course Objectives: The course is organized around the following specific objectives:

1. You should gain a basic understanding of the scientific approach to knowledge and how it is applied in the conduct of psychological research.
2. You should become knowledgeable about the ethical issues involved in doing psychological research and how these influence each phase of a research project from its conception to dissemination of findings. In particular, we will focus on the American Psychological Association's (APA) ethical guidelines.
3. You should become familiar with the basic approaches to doing psychological research (e.g., observational, correlational, and experimental), and gain an understanding of the advantages of disadvantages of each.
4. You should gain a basic knowledge of how researchers measure psychological constructs and the tools they use to do so (e.g., surveys, reaction time), the statistics they use to describe their findings, and the statistical tests they use to make assessments about how likely it is that their findings occurred by chance. Don't worry! You won't have to do the tests. Instead, you will learn about the basic logic underlying their use.
5. You should become knowledgeable about a number of basic issues which affect a researcher's ability to draw conclusions from findings. These include - - but are not limited to -- reliability, validity, experimenter bias, demand characteristics, and generalizability.
6. As a writing-intensive course, Psychological Inquiry should help you improve your ability to express your knowledge, ideas, and thinking in written form.

Required Text:

Cozby, Paul C. (2004). *Methods in Behavioral Research (8<sup>th</sup> Edition)*. McGraw-Hill.  
ISBN: 0072523425

This book may be purchased at the IUP bookstore or through online book sellers.

Website for our textbook:

[http://highered.mcgraw-hill.com/sites/0072523425/information\\_center\\_view0/](http://highered.mcgraw-hill.com/sites/0072523425/information_center_view0/)

**Course Format:** All of the material for this course will be presented through WebCT. The course is organized in terms of weekly units, and each unit will consist of several elements. For each unit, you will have a textbook reading assignment. Each unit will also include some supplemental material, such as a lecture from me (PDF format), a PowerPoint presentation on the textbook material, and websites to explore. For each unit, you will have a quiz, a writing assignment, and an exam. The quizzes and writing assignments will be located in the Assignments tool, as well as in their respective units.

Due dates for all assignments are given in the course outline below. In addition, you can find all the assignment due dates on the WebCT course calendar by clicking on the Calendar tool.

**Evaluation Methods:** Your grade will be determined by your completion of five quizzes, your performance on five writing assignments, and your performance on five exams.

**Quizzes: (10% of your final grade).** You will receive full credit (1 point each) for each of the quizzes as long as you complete them on time. I suggest that you take these seriously as the multiple-choice questions on your exams will be similar conceptually to the quiz questions. You may take the quizzes over again as many times as you like. You may submit your responses to these at any time during the week, but they must be completed by 11:55pm on the ending date specified. Quizzes will not time out automatically, but you will not be allowed to submit your responses after the deadline. (If you do not finish the quiz by the ending time, you will get a zero for that quiz).

**Writing Assignments (20% of your grade):** These weekly assignments (4 points each) are designed to assess your understanding of the concepts covered in each unit and to prepare you for the essay questions on your exams. Although the exam questions will be different (most often) from those you address in your writing assignments, you should get an idea of the kinds of questions I am likely to ask on the exam and my feedback should help you improve your responses. You may submit these assignments at any time during the week, but they must be completed by 11:55pm on the ending date specified. These submissions will not time out automatically, but you will not be allowed to submit your responses after the deadline. (If you do not submit by the ending time, you will get a zero for that assignment).

**Exams (70% of your grade).** The format of each of the five exams (14 points each) will be multiple-choice (4 points) and essay (10 points). The exams will cover material from assigned readings, lectures, PowerPoint presentations, and supplemental activities. The first four exams will not be cumulative, except in the sense that your understanding of some new concepts may depend on the mastery of material covered in previous parts of the course. The fifth exam, the Final Exam, will be cumulative: It will be based on

everything we've covered in the course (i.e., all assigned readings, lectures, PowerPoint presentations, and supplemental activities). There will be a time limit of one hour for each exam. Once you get started on an exam, you cannot go back to it at another time. Each student must complete the exams independently. You may take each week's exam at any time during the week, but they must be completed by 11:55 p.m. on the ending date specified for that exam on the syllabus and course calendar. If you do not take an exam by the ending time, you will get a zero for that exam. Exams will time out AUTOMATICALLY, and you will not have access to them after the deadline.

Grades: Your final grade will be determined based on the following scale:

A = 90% (89.5-100), B = 80% (79.5-89.4), C = 70% (69.5-79.4), D = 60% (59.5-69.4), F = below 60% (< 59.5). The total number of points for this course is 100, so it should be easy for you to determine how many points you need to get the grade you want.

### General Policies

- The deadlines for exams and written assignments must be followed. You will be allowed to submit a late assignment or take a make-up exam only in extreme, documented circumstances beyond your control (e.g., death in the family or severe illness). The form of a make-up assignment or exam may differ from that of the original.
- Integrity: You must do the writing assignments and exams ON YOUR OWN. University policies and procedures regarding plagiarism and violations of academic integrity will be followed. If you haven't read these policies, do so. <http://www.iup.edu/registrar/catalog/acapolicy/index.shtm#Academic%20Integrity%20Policy%20and%20Procedures> It is also expected that you will maintain ethical and respectful behavior regarding the class and each other.
- Notify me immediately if you are experiencing technical problems, and I will see what I can do to help.
- Most, if not all, of our communication will take place through email. Email messages between faculty and students are professional communications. Therefore, I expect your email messages to be written clearly, with correct punctuation, grammar, and spelling. I will ask you to rewrite messages that have mistakes. Remember, part of my job as an instructor of this course is to help you improve your writing ability.

<u>Course Outline</u>	
Topics	Assignments/ Activities
<b>Week 1</b>	
<p><b>Chapter 1 - Scientific Understanding of Behavior</b></p> <ul style="list-style-type: none"> <li>• Uses of Research Methods</li> <li>• The Scientific Approach</li> <li>• Goals of Science</li> <li>• Basic and Applied Research</li> </ul> <p><b>Chapter 2 - Where to Start</b></p> <ul style="list-style-type: none"> <li>• Hypotheses and Predictions</li> <li>• Sources of Ideas</li> <li>• Library Research</li> <li>• Anatomy of a Research Article</li> </ul> <p><b>Chapter 3 - Ethical Research</b></p> <ul style="list-style-type: none"> <li>• Milgram's Obedience Experiment</li> <li>• The Belmont Report</li> <li>• Assessment of Risks and Benefits</li> <li>• Informed Consent</li> <li>• The Importance of Debriefing</li> <li>• Alternatives to Deception</li> <li>• Justice and the Selection of Participants</li> <li>• Researcher Commitments</li> <li>• Federal Regulations and the Institutional Review Board</li> <li>• APA Ethics Code</li> <li>• Research with Human Participants</li> <li>• Ethics and Animal Research</li> <li>• Risks and Benefits Revisited</li> <li>• Misrepresentation</li> </ul>	<p>Read Chapter 1. Do Chapter 1 PowerPoint Slideshow Read Chapter 1 Lecture</p> <p>Read Chapter 2. Do Chapter 2 PowerPoint Slideshow Read Chapter 2 Lecture Take Chapters 1&amp;2 Practice Quiz.</p> <p>Read Chapter 3. Do Chapter 3 PowerPoint Slideshow Read Chapter 3 Lecture Take Chapter 3 Practice Quiz.</p> <p>Complete written assignment #1 by 7/12 Take Exam #1 by 7/15</p>
<b>Week 2</b>	
<p><b>Chapter 4 - Studying Behavior</b></p> <ul style="list-style-type: none"> <li>• Variables</li> <li>• Operational Definitions of Variables</li> <li>• Relationships Between Variables</li> <li>• Nonexperimental Versus Experimental Methods</li> <li>• Independent and Dependent Variables</li> <li>• Causality</li> <li>• Choosing a Method: Advantages of Multiple Methods</li> <li>• Evaluating Research: Three Types of Validity</li> </ul> <p><b>Chapter 5 - Measurement Concepts</b></p> <ul style="list-style-type: none"> <li>• Reliability of Measures</li> <li>• Construct Validity of Measures</li> <li>• Reactivity of Measures</li> <li>• Variables and Measurement Scales</li> </ul>	<p>Read Chapter 4. Do Chapter 4 PowerPoint Slideshow Read Chapter 4 Lecture Take Chapter 4 Practice Quiz.</p> <p>Read Chapter 5. Do Chapter 5 PowerPoint Slideshow Read Chapter 5 Lecture</p>

<p><b>Chapter 6 - Observing Behavior</b></p> <ul style="list-style-type: none"> <li>• Quantitative and Qualitative Approaches</li> <li>• Naturalistic Observation</li> <li>• Systematic Observation</li> <li>• Case Studies</li> <li>• Archival Research</li> <li>• Describing Personality and Individual Difference</li> </ul>	<p>Read Chapter 6. Do Chapter 6 PowerPoint Slideshow Read Chapter 6 Lecture Take Chapters 5&amp;6 Practice Quiz.</p> <p>Complete written assignment #2 by 7/19 Take Exam #2 by 7/22</p>
<p>Week 3</p>	
<p><b>Chapter 7 - Asking People about Themselves: Survey Research</b></p> <ul style="list-style-type: none"> <li>• Why Conduct Surveys?</li> <li>• Constructing Questions to Ask</li> <li>• Responses to Questions</li> <li>• Finalizing the Questionnaire</li> <li>• Administering Surveys</li> <li>• Survey Designs To Study Changes Over Time</li> <li>• Sampling From A Population</li> <li>• Sampling Techniques</li> <li>• Evaluating Samples</li> </ul> <p><b>Chapter 8: Experimental Design: Purposes and Pitfalls</b></p> <ul style="list-style-type: none"> <li>• Confounding and Internal Validity</li> <li>• Basic Experiments</li> <li>• Assigning Subjects to Experimental Conditions</li> <li>• Independent Groups Designs</li> <li>• Repeated Measures Designs</li> <li>• Matched Pairs Design</li> <li>• Developmental Research Designs</li> </ul> <p><b>Chapter 9: Conducting Experiments</b></p> <ul style="list-style-type: none"> <li>• Selecting Research Participants</li> <li>• Manipulating the Independent Variable</li> <li>• Measuring the Dependent Variable</li> <li>• Additional Controls</li> <li>• Additional Considerations</li> <li>• Analyzing and Interpreting Results</li> <li>• Communicating Research to Others</li> </ul>	<p>Read Chapter 7. Do Chapter 7 PowerPoint Slideshow Read Chapter 7 Lecture Take Chapter 7 Practice Quiz.</p> <p>Read Chapter 8. Do Chapter 8 PowerPoint Slideshow Read Chapter 8 Lecture</p> <p>Read Chapter 9. Do Chapter 9 PowerPoint Slideshow Read Chapter 9 Lecture Take Chapters 8&amp;9 Practice Quiz.</p> <p>Complete written assignment #3 by 7/26 Take Exam #3 by 7/29</p>
<p>Week 4</p>	
<p><b>Chapter 11: Quasi-Experimental and Single Case Experimental Designs</b></p> <ul style="list-style-type: none"> <li>• Program Evaluation</li> <li>• Quasi-Experimental Designs</li> <li>• Single Case Experimental Designs</li> </ul> <p><b>Chapter 12: Understanding Research Results: Description and Correlation</b></p> <ul style="list-style-type: none"> <li>• Scales of Measurement: A Review</li> <li>• Analyzing the Results of Research Investigations</li> <li>• Frequency Distributions</li> <li>• Descriptive Statistics</li> <li>• Graphing Relationships</li> <li>• Correlation Coefficients: Describing the Strength of Relationships</li> </ul>	<p>Read Chapter 11. Do Chapter 11 PowerPoint Slideshow Read Chapter 11 Lecture</p> <p>Read Chapter 12. Do Chapter 12 PowerPoint Slideshow Read Chapter 12 Lecture Take Chapters 11&amp;12 Practice Quiz.</p>

<ul style="list-style-type: none"> <li>• Effect Size</li> <li>• Statistical Significance</li> <li>• Regression Equations</li> <li>• Multiple Correlation</li> <li>• Partial Correlation and the Third-Variable Problem</li> <li>• Structural Models</li> </ul> <p><b>Chapter 13: Understanding Research Results: Inferential Statistics</b></p> <ul style="list-style-type: none"> <li>• Samples and Populations</li> <li>• Inferential Statistics</li> <li>• Null and Research Hypotheses</li> <li>• Probability and Sampling Distributions</li> <li>• Example: The t and F Tests</li> <li>• Type I and Type II Errors</li> <li>• Interpreting Nonsignificant Results</li> <li>• Choosing a Sample Size: Power Analysis</li> <li>• The Importance of Replications</li> <li>• Significance of a Pearson r Correlation Coefficient</li> <li>• Computer Analysis of Data</li> <li>• Selecting the Appropriate Test</li> </ul>	<p>Read Chapter 13. Do Chapter 13 PowerPoint Slideshow Read Chapter 13 Lecture Take Chapter 13 Practice Quiz.</p> <p>Complete written assignment #4 by 8/2 Take Exam # 4 by 8/5</p>
<p><b>Week 5</b></p>	
<p><b>Chapter 14: Generalizing Results</b></p> <ul style="list-style-type: none"> <li>• Generalizing to Other Populations of Research Participants</li> <li>• Cultural Considerations</li> <li>• Generalizing to Other Experimenters</li> <li>• Pretests and Generalization</li> <li>• Generalizing from Laboratory Settings</li> <li>• The Importance of Replications</li> <li>• Evaluating Generalizations via Literature Reviews and Meta-Analysis</li> <li>• Using Research to Improve Lives</li> </ul>	<p>Read Chapter 14. Do Chapter 14 PowerPoint Slideshow Read Chapter 14 Lecture Take Final Exam Practice Quiz.</p> <p>Complete written assignment #5 by 8/7 Take Exam # 5 (Final) by 8/9</p>



## Sample Online Lesson

### Lesson for Chapter 8

For this part of Week 3, the students are required to:

1. Read chapter 8 in the Cozby textbook.
2. Go through the Chapter 8 PowerPoint presentation.
3. Read my lecture and do the exercise on internal validity.

During Week 4, the students will do a quiz and a writing assignment on Chapters 8 and 9. Sample items from these assignments for Chapter 8 are included in Appendix B.

These requirements are consistent with Objective 3 (becoming familiar with the basic approaches to doing psychological research) because they introduce the students to some of the most basic experimental and nonexperimental designs. These requirements are also consistent with Objective 4 (becoming knowledgeable about basic issues which affect a researcher's ability to draw conclusions from findings) because they address internal validity issues. The exercise gives students an opportunity to assess their understanding of the concepts and to build that understanding through several detailed examples.

### Introduction to Chapter 8

In this section of Week 3, you will learn about some of the most commonly used experimental designs. You will also learn about some nonexperimental designs and the problems they present in terms of drawing conclusions about causation (i.e., threats to internal validity). These requirements are consistent with Objectives 3 and 4.

1. Read chapter 8 in your textbook.
2. Do the PowerPoint slideshow for Chapter 8. This should help you to understand the textbook reading because it summarizes the main points and illustrates them graphically.
3. Read my lecture (# 8) on basic experimental design.
4. Do the internal validity exercise.



- Was there some other event that co-occurred with the manipulation that could have been the real cause?

## 2. One Group, Pretest and Posttest

Measure all participants on the DV before and after the manipulation (treatment). Look for a change in the DV across tests.

	DV	Manipulation	DV
Participants -->	Smoking	--> Patch -->	Smoking

- We can evaluate the degree to which each participant's behavior has changed, but we still cannot determine why.
  - Some other event may have occurred while the manipulation was taking place.
  - The lack of an appropriate control makes it impossible to know.

## B) Non-equivalent Control Group

- Have two groups with each getting one level of the IV.
- But the groups are NOT formed by random assignment. Rather, the researcher takes advantage of naturally occurring groups.

Example: take group of smokers who have decided to quit smoking and give them the patch.

For comparison, take another group of smokers who have not decided to quit smoking.

	IV	DV
Group 1	Patch	Smoking
Group 2	No Patch	Smoking

- This is still not a true experiment and does not allow a conclusion about cause and effect.
  - It could be that the smokers' decision to quit is responsible for any effect; not the patch.
  - Alternatively, it could be that the patch is ineffective on people who do not want to quit.
- Because there were pre-existing differences between the groups, we cannot conclude that the IV produced any difference in the DV.
- All three designs have less internal validity than a true experiment.

## III. Threats to Internal Validity

A) Each of the following is a potential confound: something that rivals the IV as an explanation of any difference obtained in the DV.

1. Maturation: The biological processes of aging and growth that normally occur.

2. History: Events that occurred while the study was being conducted.
3. Testing: Changes in the subject's score that result from previous testing (practice, reactivity, memory of previous performance).
4. Instrumentation: Changes in the accuracy/calibration of the instrument over time. This can be a problem with human observers, especially.
5. Regression to the mean: On repeated testing, extreme scores tend to be less extreme. If participants are selected because of extreme scores, then it is likely that they will change on repeated testing because of error in the original measurement.
6. Selection: The groups of participants are not equivalent at the start of the study.
7. Attrition : If more participants from one group leave the study than from the other group(s), the conditions are no longer equivalent.

#### B) Comparing the Designs

Some of these problems can happen with any study. Most are just a problem with non-experimental designs.

Problem	One-Shot	Pre/Post	Nonequivalent Control Group
Maturation	Yes	Yes	
History	Yes	Yes	
Testing		Yes	
Instrum.		Yes	
Regression		Yes	Maybe
Selection			Yes
Attrition	Maybe	Maybe	Maybe

Several example of each of these threats are given in your textbook. Test your ability to identify these threats now by doing the exercise on threats to internal validity (this will be in the assignments folder. For now, see Appendix A.)

#### IV. Between Subjects Designs:

Form multiple groups of participants using random assignment to conditions and each participant/group goes through only one level of the IV.

Three basic versions of this design:

- Posttest only
- Pretest-Posttest
- Solomon four group

##### A) Posttest only (type of design described in Section I above)

- Randomly assign participants to conditions.
- Introduce IV manipulation.
- Measure effects on the DV (post-test).

##### B) Pretest-Posttest

- Randomly assign participants to conditions.
- Measure the DV (pretest).
- Introduce the IV manipulation.

- Measure the DV (posttest).

### C) Comparison

1) Advantage of the *pre-post* design: We can compare each participant's score after the IV manipulation to that before.

- This allows elimination of some of the differences between participants as a source of error variance.
- The design is *more sensitive* than the posttest only.

2) Advantage of posttest-only design: There is no possible contamination of the posttest DV by the participants' familiarity with the DV from the pretest. The *pre-post* design has the *potential problem of testing effects*.

### D) Solomon Four-Group

- 1) Posttest only, experimental
- 2) Posttest only, control
- 3) Pre & Posttest, experimental
- 4) Pre & Posttest, control

- *This design has two independent variables.*
  - experimental versus control conditions
  - testing (pre-post vs. post only).
- If there is any effect of testing, with this design it can be measured. If there isn't any effect of testing, in future work the posttest only design could be used.
- With this design, if the manipulation interacts with repeated testing, this interaction could be detected.
- A disadvantage of the design is that it is more labor-intensive than the other two designs.

### E) Using Matching in Subject Assignment

1. Participant characteristics are measured in advance and sets of equivalent participants are formed. Participants *from these sets* are then randomly assigned to conditions such that each condition has the same number of participants from each of the sets.

Example: In study of how to improve memory using mnemonics, you might match on age because age has a large influence on memory performance.

Matching increases the odds that the groups in a between-subject design are equivalent. However, because you cannot match on everything, it cannot *guarantee* equivalent groups.

Matching is generally done for variables known to pose a problem if they are not equally distributed.

Example: If you wanted to do an experiment to determine whether a new statistics-teaching technique is superior to an older one, you might do a pretest first to assess

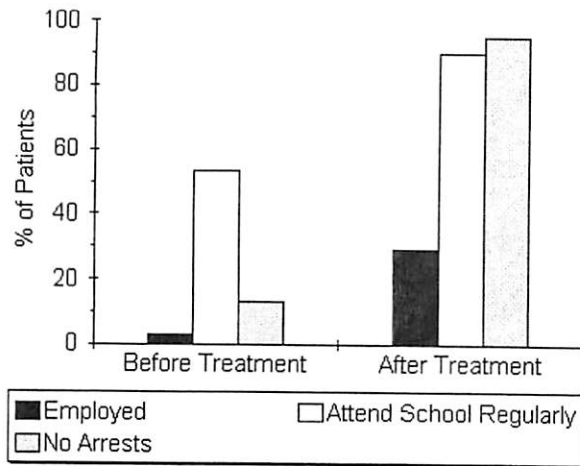
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+ add'l pages

## Appendix A Internal Validity Exercise

*Decide whether or not the following experiments are internally valid. If not, identify the source of threat to internal validity.*

1. Mark found that if he got angry while giving a presentation, he became less articulate. Mark happened to be a psychologist, and he became so interested in this phenomenon that he decided to try to replicate it in the laboratory. Student volunteers were randomly assigned to one of two groups. Participants in the Angry Group were shown a videotape of mass murderers bragging about their crimes; participants in the Non-Angry Group were shown a documentary of equal length about the history of the university. Immediately afterwards, they all completed a questionnaire designed to assess their anger level. Then, participants in both groups performed a discrimination task in which they were presented with four words at a time and they had to select the word that differed in meaning from the other three. While Mark was a bit worried about his ability to elicit differential hostility from the two groups, he need not have been. Participants in the Angry Group reported being five times madder than participants in the Non-Angry Group. In fact, half of the participants in the Angry Group became so upset, they left before ever starting the discrimination task. Consistent with Mark's own personal experience, on the discrimination task the reaction times of Angry Group participants were 32% slower and they made almost twice the number of errors than Non-Angry Group participants. Mark concluded that anger impedes performance.

2. When juveniles in the care of foster parents get into extreme trouble with the law, they are sent to Correction House, a rehabilitative group home. Correction House has a reputation for treating "the worst of the worst," a last stop for offenders before imprisonment. The rehabilitative program at Correction House consists of a token economy, in which points are earned for appropriate social behaviors (e.g., attending school, proper hygiene, reading books, etc.) and lost for inappropriate behaviors (e.g., panhandling, sleeping in, cutting classes, etc.). Points can be exchanged for backup reinforcers, such as the opportunity to play video games, watch TV, or leave the home to attend special events. One year, information was collected on patients one month before entering the program and one month after leaving it. The typical patient stay at Correction House was about six months. We can conclude that the rehabilitative program at Correction House improved the juveniles' behavior on all three dependent measures.



3. The managers of two apartment buildings in the same city with electrical heating were concerned about the electricity consumption of the residents. Electricity was included in the monthly rental fee. They decided to conduct an experiment. First, in April, they read each meter three times a week at the same time of day in both buildings. Then, on May 1, a meeting was called for residents in Apartment 1. They were told that the total savings earned by the building, based on a comparison to their consumption in the previous month, would be divided by the number of apartments, and a cheque for that amount would be sent to each of them. Residents in Apartment 2 also had a meeting on that same day, but they were told only of the ecological benefits of energy conservation. Electricity consumption in Apartment 1 was 15% lower in May than in April, but in Apartment 2 it remained unchanged. We can conclude that the group contingency was effective in reducing electricity consumption.

4. Barry, a basketball coach, wanted to decrease the number of turnovers made by his team. He believed that a starting player should lose the ball to the opposing team no more than two times per game. Earlier statistics indicated that this was a reasonable goal for all his starters, although no one player achieved it consistently from game to game. His new coaching strategy involved the following: In the team meeting following a game, Barry read out loud the number of turnovers committed by each player, and he publicly criticized those starting players who did not meet the goal. He found that chastised players tended to do better the next game, and, because of its apparent success, he continued with his new coaching strategy.

5. Alan was a graduate student in psychology completing an experiment for his Masters thesis. His hypothesis was that psychopaths show less responsiveness in social situations involving aversive feedback. Participants identified as psychopaths were assigned to one group and normal participants were assigned to a comparison group. All participants were required to learn a task in which they were to navigate their way through a maze. If a subject made an incorrect turn at any choice point in the maze, Alan would say "Wrong." The group of psychopaths took three time longer to learn the task than the group of normal participants. Alan concluded that the psychopathic group was less responsive to his "wrong" feedback than the normal group.

## Appendix B Quiz and Writing Assignment Items

### Quiz Items

- 1) Compared with within-subjects designs, between-groups designs:
  - a) require fewer subjects
  - b) are less sensitive
  - c) have fewer problems with order effects
  - d) b & c above
  - e) all the above
  
- 2) \_\_\_\_\_ is used to achieve equivalence between the groups of participants.
  - a) Random assignment
  - b) Random selection
  - c) Probability sampling
  - d) Simple random sampling
  
- 3) A Solomon four-group design is
  - a) a combination of both the posttest only and pretest-posttest designs.
  - b) used when there are four independent variables.
  - c) used to assess the impact of selection bias.
  - d) a combination of random assignment and random selection.
  
- 4) In an experiment examining the impact of noise on memory, participants were asked to recall a list of words in a noisy room and then were asked to recall a list of words in a quiet room. This is an example of a(an) \_\_\_\_\_ design.
  - a) independent groups
  - b) Solomon four-group
  - c) repeated measures
  - d) counterbalanced square

### Written Assignment Items

If in doubt, write more than you think is necessary! Explain clearly, operationally define terms (if necessary), and give examples. Use correct grammar, punctuation, and spelling.

- 1) True experiments enable us to draw strong conclusions about causality. Nonexperimental approaches do not. Explain why each of these is the case and give examples to clarify your points.
- 2) What is counterbalancing? Under what circumstances is it used? What is the purpose of counterbalancing? Discuss the three types of counterbalancing.
- 3) What is "matching"? Describe its advantages and the circumstances under which it should be used.



statistics knowledge and ability. You would then match pairs of participants based on their scores (e.g., the two highest scorers would be a “set”, etc.) and randomly assign one from each pair to the different teaching methods.

## 2. Post-hoc Matching – Analysis of Covariance.

- Form groups using random assignment only.
- During the experiment, collect information that might be related to the DV (e.g., age in memory example).
- A statistical technique (Analysis of Covariance) is then used to eliminate the influence of this participant characteristic from the data.

## 3) The problems with matching:

a) It's a lot of work and you cannot match on everything. In the most extreme case, if you measured everything about a participant, the participant would be unique and no match could be found.

b) If you get participant attrition, it destroys the equivalence of groups. You must drop matched participants to maintain equivalence.

## V. Ultimate “Matching”: Repeated Measures Designs

**Within Subject (Repeated Measures) Experimental Design** Each participant is run through every level of the independent variable(s). This is the Within Subject design.

### A) The Design

Because each participant goes through all of the conditions, each participant serves as her own control. This makes the within-subject design extremely sensitive. Because the DV is measured repeatedly (with each IV condition), this is also called a repeated measures design.

### B) Counterbalancing.

Because each participant goes through multiple conditions, it is possible for her experience in one condition to alter her performance in the next condition. This is a carry-over effect.

Two examples of this are effects of practice (getting better with repetition via learning) and fatigue (getting worse with repetition via tiring, boredom, distraction).

The key element here is to have different participants go through the IV conditions in different orders. This is called counterbalancing. Counterbalancing the order of conditions distributes carryover effects. That is, we want all levels of the IV(s) to have exactly the same carryover. Thus, carryover is minimized as a confounding variable by making sure that each condition contains the same carry-over effects.

There are three basic approaches to counterbalancing: complete, random and Latin-square.

### 1. Complete counterbalancing

If your independent variable has only two levels, then there are only two possible orders for presenting the conditions. Together, these orders constitute complete counterbalancing. Complete counterbalancing requires that all possible orders of conditions be used.

For  $n$  conditions, there are  $n!$  (read as "n factorial") orders for complete counterbalancing.

$n!$  is:

$n \times n-1 \times n-2 \times n-3 \times \dots \times 2 \times 1$

2! is 2

3! is 6

4! is 24

5! is 120

If your experiment has lots of conditions, this would require lots of participants. So, for more than 3 or 4 conditions, this is usually impractical. However, whenever, it can be used, complete counterbalancing is preferred.

### 2. Random counterbalancing

The order of conditions for each participant is determined by chance. This is analogous to random assignment in the between-subject design. Averaged over many orders, the carry-over effects will be equally distributed.

### 3. Latin-square

In the Latin-square, the goal is to distribute carry-over effects equally by having each condition occur in each ordinal position (1st, 2nd, 3rd, ..., last). In addition, we would like each condition to be preceded and followed by each other condition. Here, we are balancing carry-over effects that may reflect particular combinations of conditions. This is a balanced Latin-square. There is a simple formula for the orders to be used. I'll illustrate with the orders for a set of 6 conditions.

The formula for ordering the conditions for the first participant (row) is:

1, 2,  $n$ , 3,  $n-1$ , 4,  $n-2$ , ...

( $n$  is the number of conditions)

Then, for each succeeding participant (row), add one to each condition. If the condition was number  $n$ , make it number 1. For 6 conditions, we have:

	Condition					
Part.	1st	2nd	3rd	4th	5th	6th
1	1	2	6	3	5	4
2	2	3	1	4	6	5
3	3	4	2	5	1	6
4	4	5	3	6	2	1
5	5	6	4	1	3	2
6	6	1	5	2	4	3

The number of participants must be some multiple of the number of orders. If you have 6 orders, then there should be 6, 12, 18, ... participants with each order run equally often.

### C) The Time Interval Between Conditions

In a within-subject design, you need to choose the time interval between conditions carefully.

1) To minimize fatigue: you want to reduce or eliminate any fatigue the participant may experience from repeated testing.

2) To reduce carry-over effects. Some conditions produce longer lasting effects. In drug trials where different dosage levels are tried within subjects, time is needed for one dose to clear the patient's system before starting the next dose. If a design manipulates mood (e.g., anger, sadness, joy), then you need time for the participant to return to baseline before the next condition.

## VI. Comparing the Experimental Designs

### A) Within designs are more efficient.

Because each participant is exposed to all conditions, fewer participants are needed. However, more time per participant is required. If the time commitment is too large, participants will drop out. Consequently, a between-subjects design is sometimes chosen based on this pragmatic consideration.

B) Within designs are more sensitive. Because each participant participates in all conditions, each participant serves as her/his own control. Thus, this design is insensitive to individual differences and more likely to reveal differences caused by the independent variable. That is, the within design guarantees "equivalent groups" before the experiment is started.

C) The between design does not suffer from carryover effects. Because each person participates in only one condition, there are no carryover effects. This is critical when a condition produces permanent carryover effects. For example, to investigate the influence of Head Start on young children's performance in school, you'd have to use a between design. You cannot return the child, once they have gone through the program (or not) to their earlier age to start again. The effects of maturation, which co-occur, are permanent. Similarly, a study of two methods of teaching algebra must employ a between design. Participants can't "unlearn" the material that they have been taught.

### D) Which Design Mimics the "Real World"

This question requires us to know something about how the factors we investigate occur in the world. A study to investigate perception of colors under different lighting would probably use a within design since people are exposed to colors under different lighting conditions. The within would mimic our experience in the real world. However, to study the influence of a defendant's appearance on jury behavior, we would probably use a between design. In real court cases, jurors participate in one trial.

6. Overweight volunteers agreed to participate in an experimental low maintenance weight loss program. On the basis of a coin flip, each participant was assigned to either the Record-Before Group or the Control Group. Participants in the Record-Before Group were instructed to write down everything they ate at any given sitting immediately prior to eating it; participants in the Control Group were not given this instruction. All participants were weighed on the first day, and many expressed shock when told their true starting weight. For the next month, all participants had weekly one-on-one sessions with a therapist who provided empathic listening. One month later, participants were weighed again. Participants in the Record-Before Group lost a mean of 10 pounds, while participants in Control Group, on average, did not lose any weight. We can conclude that self-monitoring in the form of writing down everything one soon plans to eat was effective with respect to weight loss.

7. There is evidence to suggest that building fluency with basic facts improves one's ability to remember those facts at a later time, to recall those facts under distracting conditions, and to apply those facts to new situations. Fluent performance is accurate and fast. Michael was very interested in this topic and it formed the basis of his dissertation. First, he measured the typing speed of his participants, and then he matched them into pairs on the basis of similar ability. One person in each pair was randomly assigned to the Fluency Group and the other person to the Accuracy Group. In the acquisition stage, on each trial, participants responded to a deck of 10 flashcards dealing with the definitions of Freudian defense mechanisms. The task was to type the term when presented with the definition. Michael ran a person in the Accuracy Group first, until he or she achieved three consecutive 100% correct trials. Then, he ran the matched counterpart in the Fluency Group the same number of trials, with the added instruction to "go as fast as you can." Immediately afterwards, participants were given a case study of a neurotic person and they were asked to write an essay in which they were to provide a Freudian analysis of that case. Michael kept the essays of the two groups separate from each other. He handed over the two piles to a colleague for assessment. She graded all forty essays in one night, a grueling task, and returned them to Michael the next day. In every case, the participants in the Fluency Group responded faster in the acquisition stage than their matched counterparts in the Accuracy Group and their essays were scored as much better by Michael's colleague. Michael concluded that the building fluency with definitions of Freudian defense mechanisms improved his participants' Freudian analysis capabilities.

8. Wilma's parents and teacher were concerned about her noncompliance, so they consulted a behavior therapist. They all decided together that the first order of business was to gauge the extent of the problem. For the next week, her teacher recorded all instances of the target behavior at school and her parents recorded all instances at home. Noncompliance was defined a failure to respond to an instruction within 10 seconds. The resultant data indicated that, when asked to do something, Wilma was four times more likely to obey the instruction at home than at school. They concluded that the problem was considerably worse at school, and consequently they decided to employ a different behavioral procedure in each setting.

9. Waitpersons at two affiliated restaurants with poor sales figures had asked for raises in hourly pay that the owners could not afford. The owners wondered if there could be an alternative mutually beneficial arrangement between them and their employees, and so they requested help from researchers in the field of organizational behavior management. For the next four pay periods, the researchers recorded the mean dollar earned per hour of work (wages), a statistic important to the waitpersons, and sales per labor hour (productivity), a statistic important to the owners. Then, during a staff meeting at each restaurant, the waitpersons were told that each of them would be paid 7% of their gross sales rather than a fixed amount per hour. This pay change was scheduled to start concurrently with a new "two-for-one special" promotion in local newspapers. Data continued to be recorded for four more pay periods. The researchers discovered, much to the owners' delight, that productivity rose by 15% at Restaurant A and 12% at Restaurant B (and much to the waitpersons' delight, wages increased by 30% at Restaurant A and 20% at Restaurant B). We can conclude that the new performance contingent pay system improved the waitpersons' productivity, a conclusion bolstered by the fact that the effect was replicated across the two restaurants.

10. If you learn to respond to French words with their English equivalents, or to English words with their French equivalents, are you then better able to learn the reversed task? In an attempt to answer this question, Diana used a deck of 16 computerized flashcards, each card consisting of a French word and English word with the same meaning. On any given trial, the cards were shuffled and participants were required to respond to all 16 cards. Diana randomly assigned student volunteers from PSYC 100 into two comparison groups. In Group A, participants first learned the task "given the French words, type the English words" (F-E); then, the task was reversed, and they learned "given the English words, type the French words" (E-F). In Group B, participants first learned the task "given the English words, type the French words" (E-F), and then they learned the reversed task (F-E). The criterion for learning each task was 100% correct across three consecutive trials, and the dependent measure was the number of trials required to reach this criterion. We can conclude that learning the cards in one direction resulted in faster learning in the opposite direction.

**Table**

*The mean number of trials to reach the learning criterion on each of the two bi-directional tasks for the two groups of participants. Group A first learned "given the French words, type the English words" (F-E); then, they learned "given the English words, type the French words" (E-F). Group B learned the two tasks in the opposite order.*

**Trials-to-Criterion**

Group A		Group B	
Task 1 (F-E)	Task 2 (E-F)	Task 1 (E-F)	Task 2 (F-E)

20	10	22	9
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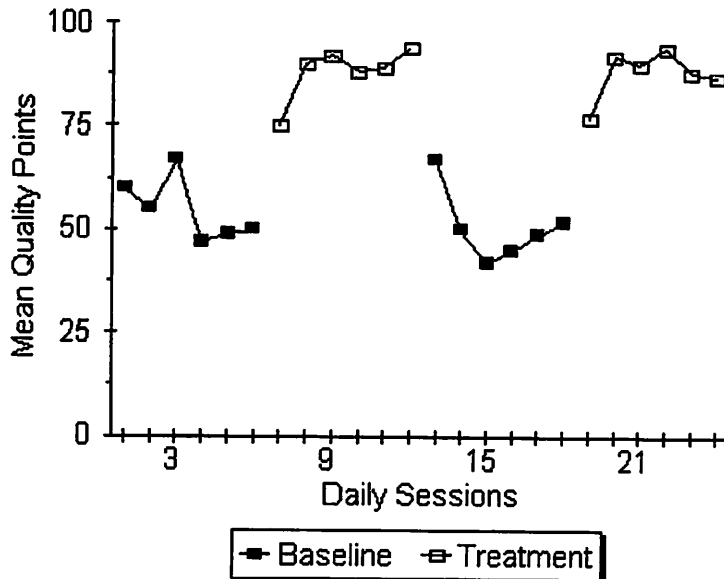
11. Based on her own experience, Professor Lucas strongly believed that study groups enhance student learning. During the very first class she taught, she encouraged her students to contact Joe, a Learning Skills Specialist, at Counselling Services. She told them that Joe and his colleagues would help them form groups, make arrangements for where and when to meet, and supervise the meetings. About half the students took Professor Lucas' advice. They met once a week in their respective study groups for the duration of her course. Counselling Services kept a record of participating students, which Professor Lucas used for her data analysis. Her dependent measure was the final exam grade, which was marked by her teaching assistant. She discovered that students who met weekly with study groups (Study Group condition) scored two letter grades higher than students who did not meet weekly with study groups (Control condition). She attributed the higher exams scores to the study group meetings.

12. Organizational behavior management specialists were consulted to improve the customer service of bank tellers. Eleven target behaviors for each transaction between the teller and a customer were identified and assigned points:

- (1) time to service (0-12 points);
- (2) greeting (10 points);
- (3) expression of concern, such as "How are you?" (5 points);
- (4) using customer's name (10 points);
- (5) talking only to customer (10 points);
- (6) additional assistance, such as "Can I be of further help?" (6 points);
- (7) minimizing small talk (0-6 points);
- (8) responding to customer's inquiries (0-11 points);
- (9) expression of appreciation, such as "The bank appreciates your business" (10 points);
- (10) closing, such as "Have a nice day" (5 points);
- (11) voice tone (15 points).

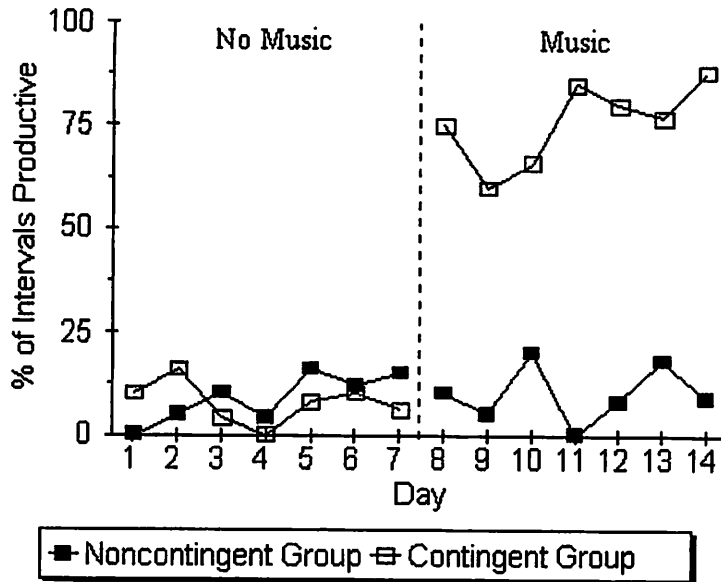
Transactions exceeding 85 points were deemed acceptable by management. There was a microphone at each teller window that allowed random monitoring and on-the-spot scoring by Harry, a trained observer, in another room. In addition, all transactions monitored by Harry were tape recorded. Joan, another trained observer, randomly selected 25% of these tape recordings and scored them herself. In Week 1, teller behavior was simply watched and recorded (Baseline). Then, in Week 2, a program was put in effect, which involved the manager individually praising tellers if their current score was at or above 85 points or if their current score exceeded the previous day's score (Treatment). This program was withdrawn in Week 3 (Baseline) and reintroduced in Week 4 (Treatment). Neither Harry nor Joan knew when baseline or treatment was operative. The mean score of all teller sessions recorded each day by Harry was calculated. Joan's scores for any given session were in exact agreement with Harry's

scores 95% of the time. We can conclude that the treatment was responsible for enhanced customer service by the bank tellers.



*Figure Caption. Mean quality points across daily sessions. During some sessions there was no intervention (Baseline) and during other sessions the intervention was operative (Treatment).*

13. It was the start of a new swim season, and the coach was already concerned about her swimmers' lack of effort during the 20-minute dry-land portion of practice. She felt they didn't take it seriously enough, and too often they would be talking or slacking off rather than doing the required stretches and exercises. She consulted with a sports psychologist. He suggested that she write the names of all 20 swimmers on individual slips of paper, scramble them, and then pick ten without looking. This would be used to assign swimmers to a Noncontingent Group (the first ten) and a Contingent Group (the remainder). The coach thought it would be easier simply to assign the swimmers to groups on the basis of friendship, but she changed her mind after the psychologist explained the rationale for this slightly more cumbersome procedure. Then, each practice day for one week, observers recorded the swimmers' productive behaviors during the dry-land training portion and calculated the percentage of one minute intervals in all swimmers in a group were being productive. Finally, swimmers in the Contingent Group were told if their dry-land productivity as a group for the day was 15% better than their average in the previous week then music would be played at the following practice. The productivity of the Noncontingent Group had no bearing on the playing of music. We can conclude that making music contingent on the swimmers' dry-land productivity resulted in an increase in that productivity.



*Figure Caption. The percentage of one minute intervals during the 20-minute dry-land portion of practice in which all swimmers in each of the two groups were being productive across days. Data were collected for one week in the absence of the programmed intervention (No Music) and then during the subsequent week when music was played as a consequence of the productive behavior of Contingent Group swimmers (Music).*

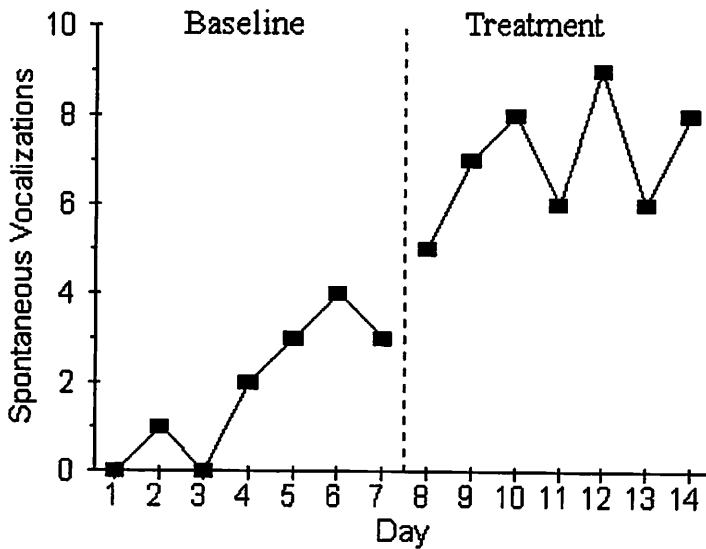
14. Mrs. Grayson, a high school teacher, believed that her Dramatic Arts course not only improved her students' ability to act but also their ability to socially interact. She decided to put this hunch to the test. She hired, Sam, an experimental psychologist. At the beginning of the school year, Sam administered a questionnaire to two classes of similarly aged students taught by Mrs. Grayson, one in English and the other in Dramatic Arts. The questionnaire was designed to measure social adjustment. Then, at the end of the school year, having finished their respective courses, the students once again completed the questionnaire. A few students were enrolled in both courses, so they were excluded from the data analysis. On the first test, both groups scored in the "normally adjusted" range; on the second test, the English class retained its "normally adjusted" status while the Dramatic Arts class improved to within the "well adjusted" range. Looking over these results, Mrs. Grayson was even more convinced that her course in Dramatic Arts enhances her students' social skills.

15. Randy was a graduate psychology student interested in learned helplessness. Before testing his own theories on the matter, he first wanted to replicate the basic experiment demonstrating the existence of this phenomenon. His participants were 20 rats housed in a group cage. He took the rats from that cage, one at a time, and exposed them to their respective conditions. The first ten rats were assigned to the Experimental Group, and the last ten rats were assigned to the Control Group. In Phase 1, each rat was placed in a chamber where periodic electrical shocks were delivered. Control Group rats could terminate the shocks by pressing a lever; Experimental Group rats could not escape the shocks. Then, in Phase 2, each rat was placed in another chamber; here, a 10 second tone



preceded each shock, and if the rat pulled a chain during this warning stimulus the shock could be prevented. Consistent with previous research, Randy found that Control Group rats learned to pull the chain in Phase 2, while Experimental Group rats were much less likely to learn to do so. We can conclude that the history of inescapable shock impeded acquisition of the avoidance behavior (chain pulling).

16. Mrs. Smith's husband suffered a stroke, one result being that he very rarely spoke. Mrs. Smith consulted a behavior therapist and together they designed a reinforcement program. First, for one week, she was to act normally and place a tick mark in a specified column on a data sheet every time her husband spontaneously vocalized to her (Baseline). The next week she was to continue to keep count, but she was also to touch, praise, and smile at her husband following each of his spontaneous vocalizations (Treatment). At the beginning of the program, she sometimes got confused and placed a tick mark in the wrong column, but eventually she got it right. We can conclude that the reinforcement program was responsible for improving Mr. Smith's spontaneous vocalizations.



*Figure Caption. The number of spontaneous vocalizations across days of the experiment. Data were collected first in the absence of the programmed intervention (Baseline) and then while the intervention was in effect (Treatment).*

17. Psychoanalysts at two different hospitals were asked to judge the well-being of a young man being interviewed on videotape. By the flip of a coin, psychoanalysts at a publicly-funded hospital were assigned to the Normal Group and psychoanalysts at a privately-funded hospital were assigned to the Abnormal Group. In the Normal Group, the doctors were told that the young man was a job applicant; in the Abnormal Group, the doctors were told that he was a patient. The mean adjustment rating by psychoanalysts in the Normal Group was 7 out of 8 compared to a 3.5 out of 8 rating by doctors in the Abnormal Group. We can conclude that the psychoanalysts' ratings were affected by the label used to describe the young man.

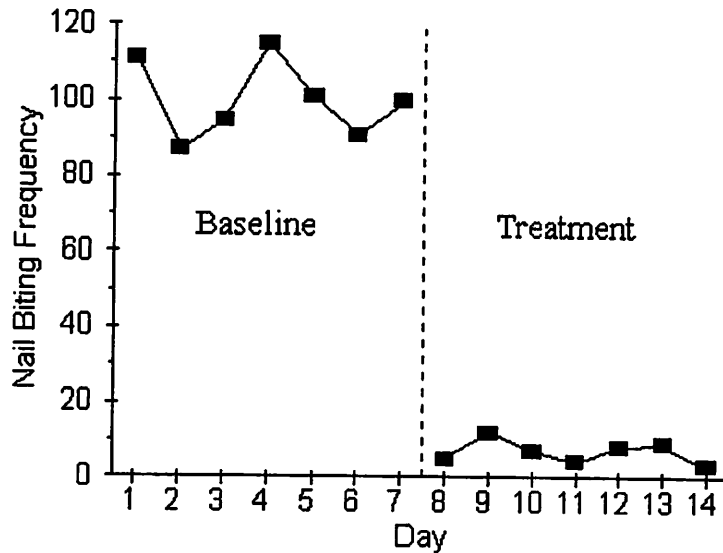
18. To assess the effects of delaying negative reinforcement, the following experiment was conducted. Participants watched a confederate performing a task under coercive conditions. The confederate winced in pain in apparent reaction to continuous electric shock. Periodically, a light signaled the participants to press a button, after which they were required to evaluate the confederate's task performance. The button press also appeared to relieve the confederate's suffering for 10 seconds. For Group A, the button press immediately stopped the suffering; for Group B, the button press stopped the suffering after a three second delay. The dependent measure was reaction time from the onset of the signaling light to the button press. University student volunteers were assigned to one of these two groups on the basis of a coin flip. About 25% of the participants in each group discontinued their participation midway through the experiment, citing ethical concerns. Response latency for remaining Group A participants was significantly faster than for remaining Group B participants. We can conclude that delaying negative reinforcement prolonged response latency.

19. Researchers were interested in whether modeling would improve an infant's ability to make a neat pincer grasp, which involves gripping a small object with the thumb and one finger. The participants, whose beginning age was approximately eight months old, were observed in the laboratory during two, one hour sessions. In the first session, the infants' parents presented them with a pea every five minutes along with a verbal prompt to pick it up. Then, in the next session, about two months later, the infants' parents used this same procedure, but they also modeled the correct behavior immediately prior to the verbal prompt. The infants used the appropriate motor response to pick up the pea about 10% of time in the first session and about 45% percent of the time in the second session. We can conclude that modeling increased the likelihood with which infants made a neat pincer grasp.

20. Professor Beach wanted to demonstrate to his cognitive psychology class how using retrieval cues can improve memory. First, he read a list of 16 words in random order to his class, and immediately afterwards he had them write down all the words they could remember. On average, they recalled about seven words. Then, he told them that the words could be sorted into four categories: automobiles, cutting instruments, sports, and fruits. Professor Beach encouraged his students to do this in their minds while listening to the list again, after which they would be given another chance to recall the words. On the second test of recall, students remembered, on average, 14 words. Professor Beach told his students that this proves the effectiveness of using retrieval cues as a mnemonic strategy.

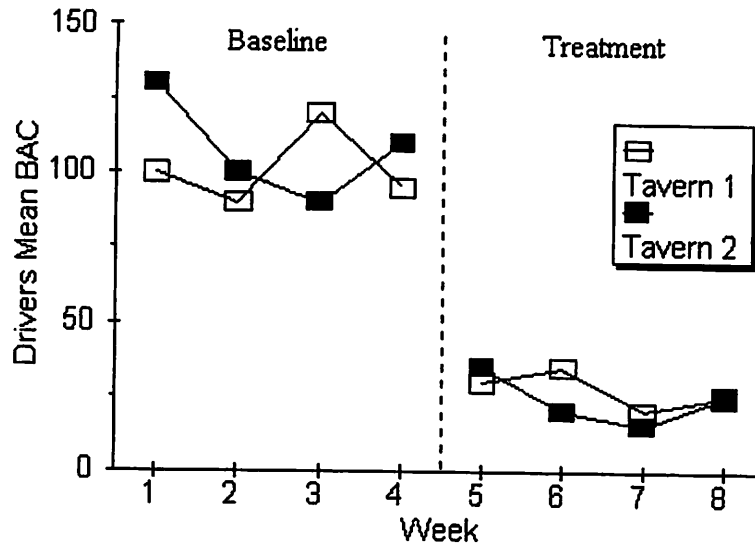
21. Jack had a bad habit of biting his nails. Having had some training in psychology, he felt confident to conduct a self-experiment. First, he needed to know how often he typically bit his nails as a comparison measure. Every day for a week, each time he caught himself doing so, he made a tick mark in a small daily calendar he kept in his pocket (Baseline). At the end of the week, he tallied the tick marks and was surprised to find that the problem was even worse than he thought: he bit his nails about a hundred times a day! Then, while continuing to monitor himself, he started a week long self-punishment program (Treatment). Whenever he found himself in the middle of biting his

nails, he snapped an elastic band around his wrist. He tried to schedule things so that no other significant changes in his life coincided with the start of his treatment program. Jack concluded from looking at this graph that his self-punishment procedure was effective.



*Figure Caption. The number of nail biting episodes across days. Data were collected first in the absence of the programmed intervention (Baseline) and then while the self-punishment procedure was in effect (Treatment).*

22. Behavioral researchers attempted to use their skills to combat the problem of impaired driving. For one month, on Saturday nights they measured the blood alcohol content (BAC) of departing patrons at each of two taverns (Baseline). The patrons were compensated for agreeing to do this with lottery tickets. Then, they implemented a treatment package, which included (1) placing cards on tables in the taverns instructing patrons how to pace their drinking to stay under the legal limit, (2) providing individual feedback on BAC to departing patrons, and (3) posting a large poster in each tavern indicating the percentage of patrons who drove home intoxicated the previous week. Data continued to be recorded for one more month on Wednesday nights (Treatment). We can conclude that the treatment package reduced the mean BAC of departing patrons at each of the two taverns.



*Figure Caption. The mean blood alcohol content (BAC) of drivers departing Tavern 1 and Tavern 2 across weeks. Data were collected one night a week, first in the absence of the programmed intervention (Baseline) and then while the intervention package was in effect (Treatment).*