APPENDIX

Online Practical Tips for Conducting an Ethical and Valid Study

PLANNING YOUR PROCEDURES

You have reviewed the literature, developed a hypothesis, operationalized your variables, and given sound reasons for testing your hypothesis. However, your preliminary work is still not done. You must go from having a general idea of what you are going to do (e.g., "I am going to test my hypothesis using a simple experiment") to having a specific plan.

Writing out your plan helps you meet two APA guidelines designed to stop you from doing an unethical study. First, APA guidelines state that you should seek out the advice of experienced researchers to determine whether the study should be done. Based on your detailed proposal, those researchers can give you informed advice. Second, the guidelines state that you should obtain, if your school requires it, prior approval from your school to conduct research (see Institutional Approval, section 8.01, in Box 1). To get your school's approval, you will need to submit a written proposal.

If your study is ethical, writing the proposal will help you do two things to make the study more ethical. First, it will help you anticipate and reduce any risks to the people who would participate in the study—a key APA ethical guideline (see Avoiding Harm, section 3.04 of the APA ethical code, in Box 1). Second, you can share your written plan so that others can tell you about safeguards and alternatives you did not consider.

ETHICAL CONSIDERATIONS IN HUMAN RESEARCH

Because having a good written plan is so important, you will probably have to submit such a plan to your professor before doing any research. However, your professor's approval may not be enough. For example, your professor may tell you that you must submit your research to the department's ethics

BOX 1 The American Psychological Association's Principles Covering the Treatment of Human Participants

2.05 Delegation of Work to Others

Psychologists who delegate work to employees, supervisees, or research or teaching assistants or who use the services of others, such as interpreters, take reasonable steps to (1) avoid delegating such work to persons who have a multiple relationship with those being served that would likely lead to exploitation or loss of objectivity; (2) authorize only those responsibilities that such persons can be expected to perform competently on the basis of their education, training, or experience, either independently or with the level of supervision being provided; and (3) see that such persons perform these services competently. (See also Standards 2.02, Providing Services in Emergencies; 3.05, Multiple Relationships; 4.01, Maintaining Confidentiality; 9.01, Bases for Assessments; 9.02, Development and Use of Assessments; 9.03, Informed Consent in Assessments; and 9.07, Assessment by Unqualified Persons.)

3.04 Avoiding Harm

Psychologists take reasonable steps to avoid harming their clients/patients, students, supervisees, research participants, organizational clients, and others with whom they work, and to minimize harm where it is foreseeable and unavoidable.

3.10 Informed Consent

a. When psychologists conduct research or provide assessment, therapy, counseling, or consulting services in person or via electronic transmission or other forms of communication, they obtain the informed consent of the individual or individuals using language that is reasonably understandable to that person or persons except when conducting such activities without consent is mandated by law or governmental regulation or as otherwise provided in this Ethics Code. (See also Standards 8.02, Informed Consent to Research; 9.03, Informed Consent in Assessments; and 10.01, Informed Consent to Therapy.)

b. For persons who are legally incapable of giving informed consent, psychologists nevertheless (1) provide an appropriate explanation, (2) seek the individual's assent, (3) consider such persons' preferences and best interests, and (4) obtain appropriate permission from a legally authorized person, if such substitute consent is permitted or required by law. When consent by a legally authorized person is not permitted or required by law, psychologists take reasonable steps to protect the individual's rights and welfare.

c. Psychologists appropriately document written or oral consent, permission, and assent. (See also Standards 8.02, Informed Consent to Research; 9.03, Informed Consent in Assessments; and 10.01, Informed Consent to Therapy.)

4. Privacy and Confidentiality

4.01 Maintaining Confidentiality

Psychologists have a primary obligation and take reasonable precautions to protect confidential information obtained through or stored in any medium, recognizing that the extent and limits of confidentiality may be regulated by law or established by institutional rules or professional or scientific relationship. (See also Standard 2.05, Delegation of Work to Others.)

4.02 Discussing the Limits of Confidentiality

a. Psychologists discuss with persons (including, to the extent feasible, persons who are legally incapable of giving informed consent and their legal representatives) and organizations with whom they establish a scientific or professional relationship (1) the relevant limits of confidentiality and (2) the foreseeable uses of the information generated through their psychological activities. (See also Standard 3.10, Informed Consent.)

b. Unless it is not feasible or is contraindicated, the discussion of confidentiality occurs at the outset of the relationship and thereafter as new circumstances may warrant.

BOX 1 Continued

4.04 Minimizing Intrusions on Privacy

a. Psychologists discuss confidential information obtained in their work only for appropriate scientific or professional purposes and only with persons clearly concerned with such matters.

5.01 Avoidance of False or Deceptive Statements

a. Public statements include but are not limited to paid or unpaid advertising, product endorsements, grant applications, licensing applications, other credentialing applications, brochures, printed matter, directory listings, personal resumes or curricula vitae, or comments for use in media such as print or electronic transmission, statements in legal proceedings, lectures and public oral presentations, and published materials. Psychologists do not knowingly make public statements that are false, deceptive, or fraudulent concerning their research, practice, or other work activities or those of persons or organizations with which they are affiliated.

b. Psychologists do not make false, deceptive, or fraudulent statements concerning (1) their training, experience, or competence; (2) their academic degrees; (3) their credentials; (4) their institutional or association affiliations; (5) their services; (6) the scientific or clinical basis for, or results or degree of success of, their services; (7) their fees; or (8) their publications or research findings.

6. Record-Keeping and Fees

6.01 Documentation of Professional and Scientific Work and Maintenance of Records

Psychologists create, and to the extent the records are under their control, maintain, disseminate, store, retain, and dispose of records and data relating to their professional and scientific work in order to (1) facilitate provision of services later by them or by other professionals, (2) allow for replication of research design and analyses, (3) meet institutional requirements, (4) ensure accuracy of billing and payments, and (5) ensure compliance with law. (See also Standard 4.01, Maintaining Confidentiality.)

6.02 Maintenance, Dissemination, and Disposal of Confidential Records of Professional and Scientific Work

a. Psychologists maintain confidentiality in creating, storing, accessing, transferring, and disposing of records under their control, whether these are written, automated, or in any other medium. (See also Standards 4.01, Maintaining Confidentiality; and 6.01, Documentation of Professional and Scientific Work and Maintenance of Records.)

8. Research and Publication

8.01 Institutional Approval

When institutional approval is required, psychologists provide accurate information about their research proposals and obtain approval prior to conducting the research. They conduct the research in accordance with the approved research protocol.

8.02 Informed Consent to Research

a. When obtaining informed consent as required in Standard 3.10, Informed Consent, psychologists inform participants about (1) the purpose of the research, expected duration, and procedures; (2) their right to decline to participate and to withdraw from the research once participation has begun; (3) the foreseeable consequences of declining or withdrawing; (4) reasonably foreseeable factors that may be expected to influence their willingness to participate such as potential risks, discomfort, or adverse effects; (5) any prospective research benefits; (6) limits of confidentiality; (7) incentives for participation; and (8) whom to contact for questions about the research and research participants' rights. They provide opportunity for the prospective participants to ask questions and receive answers. (See also Standards 8.03, Informed Consent for Recording Voices and Images in Research; 8.05, Dispensing with Informed Consent for Research; and 8.07, Deception in Research.)

(Continued)

BOX 1 **Continued**

b. Psychologists conducting intervention research involving the use of experimental treatments clarify to participants at the outset of the research (1) the experimental nature of the treatment; (2) the services that will or will not be available to the control group(s) if appropriate; (3) the means by which assignment to treatment and control groups will be made; (4) available treatment alternatives if an individual does not wish to participate in the research or wishes to withdraw once a study has begun; and (5) compensation for or monetary costs of participating including, if appropriate, whether reimbursement from the participant or a third-party payor will be sought. (See also Standard 8.02a, Informed Consent to Research.)

8.03 Informed Consent for Recording Voices and Images in Research

Psychologists obtain informed consent from research participants prior to recording their voices or images for data collection unless (1) the research consists solely of naturalistic observations in public places, and it is not anticipated that the recording will be used in a manner that could cause personal identification or harm or (2) the research design includes deception, and consent for the use of the recording is obtained during debriefing. (See also Standard 8.07, Deception in Research.)

8.04 Client/Patient, Student, and Subordinate Research Participants

a. When psychologists conduct research with clients/patients, students, or subordinates as participants, psychologists take steps to protect the prospective participants from adverse consequences of declining or withdrawing from participation.
b. When research participation is a course requirement or opportunity for extra credit, the prospective participant is given the choice of equitable alternative activities.

8.05 Dispensing With Informed Consent for Research

Psychologists may dispense with informed consent only (1) where research would not reasonably be assumed to create distress or harm and involves (a) the study of normal educational practices, curricula, or classroom management methods conducted in educational settings; (b) only anonymous questionnaires, naturalistic observations, or archival research for which disclosure of responses would not place participants at risk of criminal or civil liability or damage their financial standing, employability, or reputation, and confidentiality is protected; or (c) the study of factors related to job or organization effectiveness conducted in organizational settings for which there is no risk to participants' employability and confidentiality is protected or (2) where otherwise permitted by law or federal or institutional regulations.

8.06 Offering Inducements for Research Participation

a. Psychologists make reasonable efforts to avoid offering excessive or inappropriate financial or other inducements for research participation when such inducements are likely to coerce participation.
b. When offering professional services as an inducement for research participation, psychologists clarify the nature of the services, as well as the risks, obligations, and limitations. (See also Standard 6.05, Barter With Clients/Patients.)

8.07 Deception in Research

a. Psychologists do not conduct a study involving deception unless they have determined that the use of deceptive techniques is justified by the study's significant prospective scientific, educational, or applied value and that effective nondeceptive alternative procedures are not feasible.
b. Psychologists do not deceive prospective participants about research that is reasonably expected to cause physical pain or severe emotional distress.

BOX 1 Continued

c. Psychologists explain any deception that is an integral feature of the design and conduct of an experiment to participants as early as is feasible, preferably at the conclusion of their participation, but no later than at the conclusion of the data collection, and permit participants to withdraw their data. (See also Standard 8.08, Debriefing.)

8.08 Debriefing

a. Psychologists provide a prompt opportunity for participants to obtain appropriate information about the nature, results, and conclusions of the research, and they take reasonable steps to correct any misconceptions that participants may have of which the psychologists are aware.
b. If scientific or humane values justify delaying or withholding this information, psychologists take reasonable measures to reduce the risk of harm.
c. When psychologists become aware that research procedures have harmed a participant, they take reasonable steps to minimize the harm.

8.10 Reporting Research Results

a. Psychologists do not fabricate data. (See also Standard 5.01a, Avoidance of False or Deceptive Statements.)
b. If psychologists discover significant errors in their published data, they take reasonable steps to correct such errors in a correction, retraction, erratum, or other appropriate publication means.

8.11 Plagiarism

Psychologists do not present portions of another's work or data as their own, even if the other work or data source is cited occasionally.

8.14 Sharing Research Data for Verification

a. After research results are published, psychologists do not withhold the data on which their conclusions are based from other competent professionals who seek to verify the substantive claims through reanalysis and who intend to use such data only for that purpose, provided that the confidentiality of the participants can be protected and unless legal rights concerning proprietary data preclude their release. This does not preclude psychologists from requiring that such individuals or groups be responsible for costs associated with the provision of such information.

Source: Ethical Principles of Psychologists and Code of Conduct. (2002). American Psychologist, *57*, 1597–1611. Reprinted with the kind permission of the American Psychological Association.

committee or that you must submit your research to your school's Institutional Review Board (IRB).

Dealing With the IRB

What will determine whether you have to submit your research to your school's IRB? If you are doing research that you want to present at a conference or publish in a journal, you will need to submit your study to your school's IRB.

But what if you are doing a study for a class assignment and have no intention of presenting or publishing your results? We can't give you a simple answer to this question because, although all IRBs are governed by the same laws, all IRBs do not interpret the laws in the same ways. By law, IRBs are supposed to evaluate research and, by law, research is defined as "a systematic investigation, including research development, testing and evaluation, designed to develop or contribute to generalizable knowledge" (45 C.F.R. Part 46, Section 46.102). Given the law, it seems clear that your study would not have to be reviewed by the IRB. In practice, however, about half of all IRBs believe that such class projects need to be reviewed.

BOX 2 Sample Ethical Review Form

Title:

Researcher:

1. State either the main hypothesis to be tested or the problem to be investigated:
2. Will extra credit be given to students who participate in the project?

   Yes **No**

3. Will students who participate in the project be paid?

   Yes **No**

4. Will participants include anyone other than students from our school?

   Yes **No**

5. Will participants include children under 18, adults who are not legally competent, individuals with mental or physical disabilities, prisoners, or pregnant women?

   Yes **No**

   If yes, circle group or groups.
6. Will participants be video/audiotaped?

   Yes **No**

7. Will anyone other than the researchers be able to find out how an individual participant responded (are participants' responses coded in such a way that others could identify a particular participant's responses)?

   Yes **No**

8. Does the research deal with sensitive aspects of participants' behavior such as illegal conduct, drug use (including alcohol), or sexual behavior?

   Yes **No**

9. Will participants be exposed to any psychological stress such as fatigue, assault on values, or threats to self-esteem?

   Yes **No**

10. Will participants be exposed to physical stress (electric shock, cold temperatures, etc.)?

    Yes **No**

11. Are there any deceptive elements to the study?

    Yes **No**

12. Are participants free to withdraw at any time without penalty?

    Yes **No**

Attach the following:

1. Draft of the method section: Describe, in detail, the methodology of your study (essentially, how will the study be conducted from start to finish, as far as human participants are concerned?). Be specific about any manipulations used and any measurement instruments involved.
2. Copies of questionnaires, surveys, tests, or other paper-and-pencil measures to be used in the study.
3. Informed consent form.
4. Debriefing form.
5. Confidentiality statement.

If you have to submit your research to an IRB, you will probably need to fill out a form like the one in Box 2. As you can tell from that form, if your study does need to be reviewed by an IRB, you will have to do much more than say that you want to do some research. You must have a specific hypothesis to be tested, and you must have your procedures clearly spelled

out—including what you will say to participants before they agree to be in the study, and what you will say to them after they have participated in the study.

Understanding the Different Levels of IRB Review

If your study must go through the IRB process, it will go through one of three levels of review. The levels differ primarily in terms of how many people will evaluate your proposal. In the least rigorous review, "exempt from full board review," the IRB chairperson may be the only one to review your proposal. In the "expedited review," the IRB chairperson and one other person may be the only ones to review your proposal. In the most rigorous review, called "full board review," the entire IRB—a committee which must consist of at least one nonscientist and at least one person not affiliated with your school—may read and debate your proposal.

The level of review you get does not affect the kind of proposal you submit. In every case, you should submit a detailed, polished proposal. However, the level of review you get does affect how far in advance you must submit your proposal. If your proposal is classified as exempt from full board review, you may get approval to start your study in less than a week after you submit your proposal. If, on the other hand, your proposal must undergo full board review, you will probably not get approval to start your study for at least three weeks after you submit your proposal.

The level of review you get will depend on your study and the IRB chair. If your research involves minimal risk, the chair might agree to exempting your research from full board review. Usually, to get an exempt rating, you would have to answer "no" to questions 2–11 in the sample review form. You may be surprised to find that offering extra credit (question 2) could get your research negative attention from the IRB. One reason that giving participants extra credit can get you into trouble is that some students may feel they need extra credit to pass the course. Those students may feel they have no choice but to participate. In such a case, you would be in danger of violating APA principle 8.06a: "offering excessive . . . inducements for research participation when such inducements are likely to coerce participation."

If you are going to offer extra credit, you need to reassure the committee that students will not feel forced to participate. One way to reassure the committee is to make it clear that you will provide an alternative extra credit assignment (such as having students read and summarize a research article) for those who cannot or do not want to participate in your study.

Now that you realize how IRBs react to giving extra credit as an incentive, you can probably guess how they react to giving money as an incentive: They are not enthusiastic. Their concern, shared by APA, is that people may get an offer they do not feel they can refuse. Thus, as APA's guidelines suggest (see 8.06 in Box 1), you should probably avoid paying participants. If you must pay them, the pay should usually be low—about minimum wage.

Note that questions 4 and 5 require you to think about who will be in your sample. To get approval for your project before you graduate, you usually will have to limit your participants to students at your school. Thus, you should probably answer "no" to question 4. Answering question 5 (about vulnerable and special populations) is trickier. For example, what are you going to do about the 17-year-old freshman who wants to be in your study? If you would

include that person, many IRBs will still consider your research exempt (even though you are testing a minor)—but not all. Similarly, although most IRBs would encourage you to exclude participants who are not legally competent, some may consider excluding those people discrimination.

Questions 6 and 7 show that the more anonymous the participant will be, the more likely the research will be rated exempt. Question 8 shows that the less sensitive the information you are collecting, the more likely the research will be reviewed at the exempt level. Similarly, Questions 9 and 10 (about whether your study will create physical or psychological stress) show that the more harm your study may create, the more closely it will be reviewed.

Question 11, which asks about deception, is a tricky one because, as Forsyth (2008) points out, "Technically, IRB's do not permit deception; rather, they permit investigators to omit an element of the consent process" (p. 7). If your study involves deception, you will probably have to convince the IRB that the deception does not hurt the participants or violate their rights (e.g., participants would have participated even if they had known of the deception), that the deception was necessary to get accurate answers to the research question, and that participants will be fully debriefed as soon as possible (Forsyth, 2008).

Question 12, ("Can participants withdraw without penalty?"), on the other hand, should be an easy question. If you answer "no," the committee would reject your proposal—and believe that you needed to be educated about participants' rights.

In short, it is hard to predict how a particular IRB chair will classify your research. However, if you are not studying a vulnerable population, you are not collecting sensitive information, and you are carefully safeguarding the data, your research might be exempt. Your chances of getting an exempt status are better if you are not manipulating a treatment to see whether it has effect. Thus, if you are observing, surveying, interviewing people, or using any of the methods described in Chapter 7, you are more likely to get an exempt review than if you do an experiment.

Avoiding IRB Problems

Regardless of what level of review your research receives, you should write a proposal that makes the IRB more likely to trust that you will act in a professional and ethical manner (Forsyth, 2004). Specifically, according to Forsyth (2004), to maximize the chances that your IRB approves your proposal, you should make sure your proposal

1. is free of typos
2. includes an informed consent form (a form describing the study and that the participant signs, thereby indicating that the participant agrees to participate in the research), like the one in Box 3 that
    - uses simple, nontechnical language
    - uses the word "research" in it
    - states any foreseeable risks or discomforts that might cause the participant to decide not to participate
    - states whom to contact if participants have a concern
    - states that the participant's participation is totally voluntary
    - states that the participant can quit the study at any time, without giving a reason, and without any penalty

BOX 3 Sample Informed Consent Form

TITLE: Personnel Decision-Making

IRB APPROVAL NUMBER: 2007_018

PRINCIPAL INVESTIGATOR: Dr. Mitchell, (555) 555-5555; mitchell@clarion.edu, Psychology Department, Clarion University, Clarion, PA 16214

CO-INVESTIGATOR: Freda L. Student, (555) 393-5556, student@clarion.edu, 212 Givens Hall, Clarion University, Clarion, PA 16214

DESCRIPTION: The research study that I have been asked to participate in is investigating personnel decision-making. I will be asked to read personnel files of two job applicants and then asked to decide which of the two individuals I would be more likely to hire. I will be asked to justify my decision. The study will take about 30 minutes of my time.

PAYMENTS AND COSTS: To compensate me for my time, I will be paid $5.00. Other than my time, there will be no costs to me.

BENEFITS AND RISKS: The main benefit I will receive is that of gaining firsthand experience about how a research study is conducted and what I learn during debriefing. There are no reasonably foreseeable risks to me.

CONFIDENTIALITY: The responses I give will be kept confidential. Although the researchers may write up the results of this study, my name will never be used. Therefore, I consent to publication for scientific purposes.

RIGHT TO REFUSE OR END PARTICIPATION: I can withdraw from the study at any time without any problems. That is, if I choose to withdraw, I will receive full credit for participating. Furthermore, if participating becomes too stressful, I should withdraw from the study. Finally, I have the right to skip any questions that I do not wish to answer.

DEBRIEFING: After I have finished the study, the researcher will explain the study and gladly answer any questions I might have. If I have any questions about the research after that, I should feel free to call Dr. Mark Mitchell at (814) 555-5555 or e-mail Dr. Mitchell at mitchell@Clarion.edu.

CONCERNS ABOUT THE STUDY: If I have concerns about whether my rights as a research participant have been violated or if I have suffered any research-related harm (be it physical, psychological, social, or financial), I can contact Dr. Ramirez, the chair of Clarion University's IRB, phone: (814) 393-2389, e-mail: ramirez@clarian.edu; address: 157 Harvey Hall, Clarion University, Clarion, PA 16214.

NAME (PRINTED) _____.

I have read both pages of this statement and have had all my questions answered.
Therefore, I give my written consent to participate in this investigation.

Signature _____ Date _____

Signature of person obtaining consent

_____ Date _____

- states that the participant's responses will be confidential (if responses won't be confidential, this should be explained)
- describes the steps you will take to protect confidentiality of data, including such details as where you will keep the data, who will have access to the data, and a statement that the computer files will be password protected

3. contains a confidentiality form—a written pledge to keep the data confidential, and not to talk about the participants to anyone other than the investigators—signed by everyone who will work on the research
4. states the steps you have taken to make participants anonymous, such as not having them put their names on the answer sheet

5. states the steps you have taken to keep participants' responses confidential such as assigning each participant a code number and storing the code numbers and the participants' names in one place and the data in a different place
6. includes a debriefing form (a summary or a script of what the researcher will tell the participant about the study after the participant has finished the study) that

    - uses simple, nontechnical language
    - is about one full page typed
    - describes the hypotheses, why the procedures were used, and why the study was important

Weighing and Reducing Risks

Even if your research is approved by a review board, you must be extremely careful not to harm your participants. Ideally, your participants should feel just as well when they leave the study as they did when they began. Unfortunately, even in the most harmless of studies, protecting your participants from discomfort is much easier said than done.

Realize that any experience may be traumatic to some participants. Trauma can occur from things you would never think of as being traumatic. Because any study has risks and because you will not know all of the risks, *do not begin any study without your professor's permission.*

To begin to sensitize yourself to the risks involved in your proposed study, list the 10 worst things that could possibly happen to participants. If you are using human participants, be aware that not everyone will react in the same way. Some may experience trauma because the study triggers some painful memory, or they may feel badly because they think they did poorly or because they think their behavior ruined your study. Realize that because some of your participants may be under a lot of stress, some may be grieving, and some may have a mental illness, some of your participants may be unsettled by manipulations or stimuli that you might not consider upsetting. Because participants are often fragile, you should list some serious consequences in your worst-case scenario.

Recruiting Participants in a Way That Reduces Risk

Because any study has the potential for harm, the possibility of severe consequences does not mean that your professor will not allow you to do the study. However, you and your professor should think about ways to minimize the risks.

Screen Participants. One method of minimizing risks is to screen out "vulnerable participants." For instance, if there is any reason to believe that your study may increase heart rate or blood pressure, you may want to make sure that only people in good health participate. If your study might harm people with low self-esteem, you may want to use only well-adjusted participants

who have high levels of self-esteem. Therefore, you might give a measure of self-esteem to potential participants to eliminate those with low self-esteem.

Provide Informed Consent. Not only should you screen participants, but you should also let participants screen themselves. That is, participants should be volunteers who give their **informed consent:** They should know what the study is about before volunteering for it.

How informed is informed consent? Very informed, when it comes to telling participants about any unpleasant aspect of the study. If participants are going to get shocked or exposed to loud noise or extreme cold, they should be informed of this beforehand. Consequently, if your study does involve unpleasantness, you may have difficulty getting participants to volunteer.

Informed consent is considerably less informed when it comes to more innocuous aspects of the study. After all, the study would be ruined if participants knew everything that would happen (and why it happened) before it happened. So, although participants are usually told the truth, they are not always told the whole truth. For example, a memory experiment's description would mention that participants have to memorize words, but might omit the fact that the researcher is looking at the order in which the words are recalled or that there is a surprise recall of all the lists at the end of the study.

Because participants are not fully informed about your study, there may be some things about it that they dislike. For example, suppose a participant finds the task too difficult or finds it upsetting to try the surprise recall task. What can you do?

One protection against these unexpected problems is to make sure participants understand that they can quit the study at any time. So, before the participants begin your study, tell them that if they find any aspect of the study uncomfortable, they can *and should* escape this discomfort by quitting the study. Assure them that it is their duty to quit if they experience discomfort and that they will still get full credit.

How to Modify the Study to Reduce Risk

You have seen that you can minimize ethical problems by letting participants know what they are in for and by letting them gracefully withdraw from the study. You should also minimize harm by making your study as humane as possible. You can make your study more ethical by reducing the strength of your treatment manipulation, carefully selecting stimulus materials, and by being a conscientious researcher.

Be More Positive and Less Negative. Instead of comparing an unpleasant manipulation with a neutral one, consider comparing a pleasant manipulation with a neutral one. For example, if you want to look at the effects of mood on memory, rather than compare participants you have put into a bad mood with neutral mood participants, compare participants you have put in a good mood with neutral mood participants.

If you must use an unpleasant manipulation, consider making it minimally unpleasant. Rather than focusing exclusively on how using extreme levels of your predictor variable may help you get a significant change in the criterion variable, recognize that extreme levels may harm your participants.

For example, 24 hours of food deprivation is more likely to cause hunger than 12 hours. However, 24 hours of deprivation is more stressful to the participant. In short, if you plan an unpleasant manipulation, remember your participants' welfare and minimize the unpleasant consequences as much as possible.

Make Your Stimulus Materials More Neutral. By modifying your stimulus materials, you may be able to prevent them from triggering unpleasant memories. For instance, if you were interested in the effects of caffeine on memory for prose, you would not want the prose passage to cover some topic like death, divorce, alcoholic parents, or rape. Instead, you would want to use a passage covering a less traumatic topic such as sports. If the sports article referred to someone's death or hospitalization, you might want to delete that section of the article.

How to Conduct the Study in a Way That Reduces Risk

Often, it is not the study that causes ethical problems, but the researcher's arrogance. For example, an arrogant researcher may rush through research sessions providing only superficial explanations and almost no time for questions and feedback. Although we know of a few participants who were hurt as a direct result of a research manipulation, we know of many more who were hurt because the researcher failed to treat them with respect. To ensure that you are sensitive, courteous, and respectful to all of your human participants, you should give your participants three things: time, power, and a thorough debriefing.

Give Participants Your Time. First, when scheduling your research sessions, make sure you leave a 10-minute gap between the end of one session and the beginning of the next. Some investigators feel that, like a physician, they should efficiently schedule people one after another. Their attempt at efficiency results in participants having to wait for the investigator, the investigator having to rush through the formalities of greeting participants, or—even worse—the investigator rushing through debriefing (debriefing involves explaining the purpose of the study and addressing all the participant's questions and concerns). Thus, the overly efficient investigator, like the overly efficient physician, appears not to care. Although such careless and uncaring behavior may sometimes be tolerated in physicians, it is never acceptable for psychological researchers.

After a research participant has given an hour of his or her time, you should be more than willing to answer any questions the participant has. Furthermore, if you rush through greeting or debriefing each participant, the participants will see you as uncaring. Consequently, they will be less likely to tell you about any psychological discomfort they felt and less likely to accept any aid you might offer. Thus, the first step is to walk, rather than to run, participants through your study.

Give Participants Power. Second, give the participants power. That is, allow participants to rate your study on a scale such as the one in Table 1. Give

TABLE 1
Sample Debriefing Rating Scale

Being a participant in psychology studies should provide you with a firsthand look at research. On the scale below, please indicate how valuable or worthless you found being in today's study by circling a number from –3 to +3.

WORTHLESS –3 –2 –1 +1 +2 +3 VALUABLE

If you wish to explain your rating or to make comments on this study, either positive or negative, please do so below.

Note: This scale is a slightly modified version of a scale that has been used at The Ohio State University.

each participant's rating sheet to your instructor. Following this simple procedure helps you to be a conscientious and courteous researcher.

Debrief Participants. Third, thoroughly debrief your participants. Although you should try to anticipate and prevent every possible bad reaction a participant may have to being in your study, you will fail. Inevitably, your procedures will still cause some unpleasantness. After the study is over, you should try to address this unpleasantness by informing participants about the study, reassuring them that their reactions were normal, and expressing your appreciation for their participation.

You should also listen to participants and be sensitive to any unexpected, unpleasant reactions to your study. By being a good listener, you will often be able to undo any damage you have unwittingly done.

Occasionally, however, ordinary debriefing will not undo the harm caused to the research participant. For participants who are upset with their responses, you should ask them whether they want you to destroy their data. For participants whom you cannot calm down, you take them to talk to a professor, counselor, or friend—even if this means canceling the next research session.

In addition to detecting and removing any harm that may have been produced by your study, during debriefing you should do the following:

1. Correct any misleading impressions you gave the participant (e.g., if you implied that you had a device that could read people's minds or if you gave them false feedback about their performance on a task, you should explain that those statements are false).
2. Summarize the study in nontechnical terms (many departments believe this summary should be both written and oral, the written part being about one full page typed, describing the hypotheses, why the procedures were used, and why the study was important).
3. Provide participants an opportunity to ask whatever questions they may have (many departments want you to provide a number for participants to call so research participants can ask follow-up questions).
4. Thank the participant for participating.
5. Explain why deception was necessary (if deception was used).

Debriefing is a good time to assess the degree to which you and your co-investigators are conducting the study in an ethical manner. To do so, ask participants to complete an anonymous questionnaire that assesses their perceptions of the study. Such a questionnaire might include the following questions:

1. Could you quit the study at any time?
2. Were you given enough information to decide whether you wanted to participate? If not, what should you have been told before you took part in the study?
3. What was the purpose of this research?
4. Were you treated with respect?
5. Was the researcher polite?
6. Did you have all your questions answered?
7. Were you deceived in any way? If so, did the researcher provide justification for the deception? Are you satisfied with that justification? Why or why not?
8. Did you experience more discomfort than you would in your day-to-day activities? If so, did the researcher provide sufficient justification for discomfort? What caused this discomfort?
9. Do you think your responses will be kept confidential?

In summary, you should be very concerned about ethics. Because ethics involves weighing the costs of the study against the potential benefits, you should do everything you can to minimize the risk of participants becoming uncomfortable. If, despite your efforts, a participant experiences discomfort, you should use the debriefing to reduce that discomfort.

ETHICAL CONSIDERATIONS IN ANIMAL RESEARCH

As in human research, conducting research with nonhuman animals in an ethical manner is vital. Unethical treatment of animals is inhumane and, in many cases, illegal. However, we have not spent much time on ethics in animal research for two reasons.

First, the basic concepts that govern human research also govern animal research. For example, pain and discomfort should be minimized. Likewise, any study that inflicts stress must be justifiable on the basis that (a) the study is likely to produce some benefit that outweighs the risks, and (b) there is no other way to get that potential benefit.

Second, because humane treatment of animals is so important, APA has taken the following three steps to almost guarantee that you cannot do animal research without knowing APA's ethical standards:

1. If you conduct research with animal participants, you must be trained in the humane care, handling, and maintenance of animals.
2. As a student, you cannot conduct research with animals unless you are supervised by someone who is well trained in both animal research and in how to handle, care for, and maintain animals.
3. A copy of the ethical guidelines relating to animal research must be posted in the animal lab. (See Box 4.)

BOX 4 Guidelines for Ethical Conduct in the Care and Use of Animals

I. Justification of the Research

A. Research should be undertaken with a clear scientific purpose. There should be a reasonable expectation that the research will (a) increase knowledge of the processes underlying the evolution, development, maintenance, alteration, control, or biological significance of behavior; (b) determine the replicability and generality of prior research; (c) increase understanding of the species under study; or (d) provide results that benefit the health or welfare of humans or other animals.

B. The scientific purpose of the research should be of sufficient potential significance to justify the use of animals. Psychologists should act on the assumption that procedures that would produce pain in humans will also do so in other animals.

C. The species chosen for study should be best suited to answer the question(s) posed. The psychologist should always consider the possibility of using other species, nonanimal alternatives, or procedures that minimize the number of animals in research, and should be familiar with the appropriate literature.

D. Research on animals may not be conducted until the protocol has been reviewed by an appropriate animal care committee, for example, an institutional animal care and use committee (IACUC), to ensure that the procedures are appropriate and humane.

E. The psychologist should monitor the research and the animals' welfare throughout the course of an investigation to ensure continued justification for the research.

II. Personnel

A. Psychologists should ensure that personnel involved in their research with animals be familiar with these guidelines.

B. Animal use procedures must conform with federal regulations regarding personnel, supervision, record-keeping, and veterinary care.*

C. Behavior is both the focus of study of many experiments as well as a primary source of information about an animal's health and well-being. It is therefore necessary that psychologists and their assistants be informed about the behavioral characteristics of their animal subjects so as to be aware of normal, species-specific behaviors and unusual behaviors that could forewarn of health problems.

D. Psychologists should ensure that all individuals who use animals under their supervision receive explicit instruction in experimental methods and in the care, maintenance, and handling of the species being studied. Responsibilities and activities of all individuals dealing with animals should be consistent with their respective competencies, training, and experience in either the laboratory or the field setting.

III. Care and Housing of Animals

The concept of psychological well-being of animals is of current concern and debate and is included in Federal Regulations (United States Department of Agriculture [USDA], 1991). As a scientific and professional organization, APA recognizes the complexities of defining psychological well-being.

Procedures appropriate for a particular species may be inappropriate for others. Hence, APA does not presently stipulate specific guidelines regarding the maintenance of psychological well-being of research animals. Psychologists familiar with the species should be best qualified professionally to judge measures such as enrichment to maintain or improve psychological well-being of those species.

A. The facilities housing animals should meet or exceed current regulations and guidelines (USDA, 1990, 1991) and are required to be inspected twice a year (USDA, 1989).

B. All procedures carried out on animals are to be reviewed by a local animal-care committee to ensure that the procedures are appropriate and humane.

The committee should have representation from within the institution and from the

*U.S. Department of Agriculture. (1989, August 21). Animal welfare; Final rules. *Federal Register*. U.S. Department of Agriculture. (1990, July 16). Animal welfare; Guinea pigs, hamsters, and rabbits. *Federal Register*.U.S. Department of Agriculture. (1991, February 15). Animal welfare; Standards; Final rule. *Federal Register*.

(Continued)

BOX 4 **Continued**

local community. In the event that it is not possible to constitute an appropriate local animal-care committee, psychologists are encouraged to seek advice from a corresponding committee of a cooperative institution.

C. Responsibilities for the conditions under which animals are kept, both within and outside of the context of active experimentation or teaching, rests with the psychologist under the supervision of the animal-care committee (where required by federal regulations) and with individuals appointed by the institution to oversee animal care. Animals are to be provided with humane care and healthful conditions during their stay in the facility. In addition to the federal requirements to provide for the psychological well-being of nonhuman primates used in research, psychologists are encouraged to consider enriching the environments of their laboratory animals and should keep abreast of literature on well-being and enrichment for the species with which they work.

IV. Acquisition of Animals

A. Animals not bred in the psychologist's facility are to be acquired lawfully. The USDA and local ordinances should be consulted for information regarding regulations and approved suppliers.

B. Psychologists should make every effort to ensure that those responsible for transporting the animals to the facility provide adequate food, water, ventilation, space, and impose no unnecessary stress on the animals.

C. Animals taken from the wild should be trapped in a humane manner and in accordance with applicable federal, state, and local regulations.

D. Endangered species or taxa should be used only with full attention to required permits and ethical concerns. Information and permit applications can be obtained from:

Fish and Wildlife Service
Office of Management Authority
U.S. Dept. of the Interior
4401 N. Fairfax Dr., Rm. 432
Arlington, VA 22043
703-358-2104

Similar caution should be used in work with threatened species or taxa.

V. Experimental Procedures

Humane consideration for the well-being of the animal should be incorporated into the design and conduct of all procedures involving animals, while keeping in mind the primary goal of experimental procedures—the acquisition of sound, replicable data. The conduct of all procedures is governed by Guideline I.

A. Behavioral studies that involve no aversive stimulation to, or overt sign of distress from, the animal are acceptable. These include observational and other noninvasive forms of data collection.

B. When alternative behavioral procedures are available, those that minimize discomfort to the animal should be used. When using aversive conditions, psychologists should adjust the parameters of stimulation to levels that appear minimal, though compatible with the aims of the research. Psychologists are encouraged to test painful stimuli on themselves, whenever reasonable. Whenever consistent with the goals of the research, consideration should be given to providing the animals with control of the potentially aversive stimulation.

C. Procedures in which the animal is anesthetized and insensitive to pain throughout the procedure and is euthanized before regaining consciousness are generally acceptable.

D. Procedures involving more than momentary or slight aversive stimulation, which is not relieved by medication or other acceptable methods, should be undertaken only when the objectives of the research cannot be achieved by other methods.

E. Experimental procedures that require prolonged aversive conditions or produce tissue damage or metabolic disturbances require greater justification and surveillance. These include prolonged exposure to extreme environmental conditions, experimentally induced prey killing, or infliction of physical trauma or tissue damage. An animal observed to be in a state of severe distress or chronic pain that cannot be alleviated and is not essential to the purposes of the research should be euthanized immediately.

BOX 4 Continued

F. Procedures that use restraint must conform to federal regulations and guidelines.
G. Procedures involving the use of paralytic agents without reduction in pain sensation require particular prudence and humane concern. Use of muscle relaxants or paralytics alone during surgery, without general anesthesia, is unacceptable and should be avoided.
H. Surgical procedures, because of their invasive nature, require close supervision and attention to humane considerations by the psychologist. Aseptic (methods that minimize risks of infection) techniques must be used on laboratory animals whenever possible.
    1. All surgical procedures and anesthetization should be conducted under the direct supervision of a person who is competent in the use of the procedures.
    2. If the surgical procedure is likely to cause greater discomfort than that attending anesthetization, and unless there is specific justification for acting otherwise, animals should be maintained under anesthesia until the procedure is ended.
    3. Sound postoperative monitoring and care, which may include the use of analgesics and antibiotics, should be provided to minimize discomfort and to prevent infection and other untoward consequences of the procedure.
    4. Animals cannot be subjected to successive surgical procedures unless these are required by the nature of the research, the nature of the surgery, or for the well-being of the animal. Multiple surgeries on the same animal must receive special approval from the animal-care committee.
I. When the use of an animal is no longer required by an experimental protocol or procedure, in order to minimize the number of animals used in research, alternative uses of the animals should be considered. Such uses should be compatible with the goals of research and the welfare of the animal. Care should be taken that such an action does not expose the animal to multiple surgeries.
J. The return of wild-caught animals to the field can carry substantial risks, both to the formerly captive animals and to the ecosystem. Animals reared in the laboratory should not be released because, in most cases, they cannot survive, or they may survive by disrupting the natural ecology.
K. When euthanasia appears to be the appropriate alternative, either as a requirement of the research or because it constitutes the most humane form of disposition of an animal at the conclusion of the research:
    1. Euthanasia shall be accomplished in a humane manner, appropriate for the species, and in such a way as to ensure immediate death, and in accordance with procedures outlined in the latest version of the American Veterinary Medical Association (AVMA) Panel on Euthanasia.**
    2. Disposal of euthanized animals should be accomplished in a manner that is in accord with all relevant legislation, consistent with health, environmental, and aesthetic concerns, and approved by the animal-care committee. No animal shall be discarded until its death is verified.

VI. Field Research
Field research, because of its potential to damage sensitive ecosystems and ethologies, should be subject to animal-care committee approval. Field research, if strictly observational, may not require animal-care committee approval (USDA, 1989, p. 36126).
    A. Psychologists conducting field research should disturb their populations as little as possible—consistent with the goals of the research. Every effort should be made to minimize potential harmful effects of the study on the population and on other plant and animal species in the area.
    B. Research conducted in populated areas should be done with respect for the property and privacy of the inhabitants of the area.
    C. Particular justification is required for the study of endangered species. Such research on endangered species should not be conducted unless animal-care committee approval has been obtained and all requisite permits are obtained (see IVD).

**Write to: AVMA, 1931 N. Meacham Road, Suite 100, Schaumburg, IL 60173, or call (708) 925-8070.

Source: *Guidelines for Ethical Conduct in the Care and Use of Animals* (1996). Reprinted with the kind permission of the American Psychological Association.

Because you will be shown how to take care of the animals, because you will be supervised, and because the guidelines will be right in the lab, you probably will not violate ethical principles out of ignorance. However, because violating ethical procedures in animal research may violate federal law, you should be very careful.

If you are conducting research with animals, you should consult APA's ethical guidelines for animal research (see Box 4). In addition, you should work closely with your research supervisor. Finally, figure out some strategy so that you do not forget to take care of your animals. Unless you have a system, it is easy to forget to check on your animals during the weekend. Animals need food, water, gentle handling, and a clean living environment *every single day*.

MAXIMIZE THE RESEARCH'S BENEFITS: THE OTHER SIDE OF THE ETHICS COIN

We have discussed ways of minimizing harm to animal subjects and human participants. However, minimizing harm is not enough to ensure that your study is ethical. You must also ensure that the potential benefits will be greater than the potential harm. Thus, an extremely harmless study can be unethical if the study has no potential benefits. In other words, just as you owe it to your participants to reduce potential harm, you owe it to your participants to maximize the potential benefits of your study. You maximize that potential by making sure your study provides accurate information. To provide accurate information, your study needs to have power and validity.

Have Adequate Power

One of the most serious obstacles to obtaining accurate information is lack of power (power is the ability to detect relationships). There is no point in doing a study that is so powerless that it will fail to find anything.

To have power, you should use a strong manipulation, a sensitive dependent measure, well-standardized procedures, a sensitive design, and enough participants. Often, your biggest obstacle to finding a significant effect will be a lack of participants.

As a general rule, you should have at least 16 participants in each group.[1] However, the number of participants you need in each group will be affected by the sensitivity of your design, how similar your participants are to each other, the number of scores you get from each participant, the size of the difference you expect to find between conditions, and the sensitivity of your dependent measure.

If you have a within-subjects design, a reliable and sensitive dependent variable, and expect a rather large difference between your conditions, you may be able to use fewer than 16 participants per group. If, on the other

[1] Having more participants will give you more power. Indeed, some (Cohen, 1990) would consider 64 participants per group to be a reasonable minimum. We have talked about minimums. Are there maximums? Could you have a design that was too powerful? Some would argue that in some cases, researchers use so many participants that even the smallest of effects, no matter how practically and theoretically insignificant, would be statistically significant. However, having an overpowered design is rarely a problem for novice researchers.

hand, you are using a between-subjects design, heterogeneous participants, a relatively insensitive dependent measure, and a manipulation that has only a small effect, you may want at least 100 participants per condition.

Have Adequate Construct Validity

After ensuring that your study has adequate power, we would like to be able to tell you that you can take it easy and relax. Unfortunately, however, you cannot relax. Power is not your only concern when conducting psychological research. You must also ensure that the construct validity of your results is not destroyed by

1. researchers failing to conduct your study in an objective, standardized way
2. participants reacting to how they think you want them to react to the treatment, rather than reacting to the treatment itself

Minimize Researcher Bias

If you use more than one investigator, you may be able to detect **researcher effects** by including the researcher as a factor in your design. In other words, randomly assign participants to both a condition and to a researcher. For example, if you have two treatment conditions (A and B) and two researchers (1 and 2), you would have four conditions: (1) A1, (2) B1, (3) A2, and (4) B2. After having Research 1 run conditions 1 and 2 and Researcher 2 run conditions 3 and 4, you could do an analysis of variance (ANOVA) using researcher as a factor to see whether different researchers got different results.[2]

Using ANOVA to detect researcher effects can be useful. However, there are at least two reasons why using it may not eliminate researcher effects.

First, this statistical approach will tell you only whether one researcher is getting different results than other researchers. If all your researchers are biased, you may not get a significant researcher effect. (Besides, if you are the only researcher, you cannot use researcher as a factor in an ANOVA.)

Second, and more importantly, detecting researcher effects is not the same as preventing researcher effects. To prevent researcher effects, you must address the three major causes of failing to conduct studies in an objective and standardized manner: (1) the loose-protocol effect, (2) the failure-to-follow-protocol effect, and (3) the researcher-expectancy effect.

Avoid the Loose-Protocol Effect. Some studies fall victim to the ***loose-protocol effect***: The instructions are not detailed enough to enable the researchers to behave in a standardized way. Fortunately, you can avoid the loose-protocol effect.

Before you start your study, carefully plan everything. As a first step, you should write a set of instructions that chronicles the exact procedure for each participant. These procedures should be so specific that by reading and

[2] You may want to consult with your professor as to the type of ANOVA you should use. Experts argue about whether one should use a conventional ANOVA model or a "random effects" ANOVA model.

following your instructions, another person could run your participants the same way you do.

To make your instructions specific, you might want to write a computer program based on these instructions. Because computers do not assume anything, writing such a program forces you to spell out everything down to the last detail. If you cannot program, just write the script as though a robot were to administer the study. Write each step, including the actual words that researchers will say to the participants. The use of such a script will help standardize your procedures, thus reducing threats to validity.

Once you have a detailed draft of your protocol, give it a test run. For example, to ensure that you are as specific as you think you are, pretend to be a participant and have several different people run you through the study using only your instructions. See how each individual behaves. This may give you clues as to how to tighten up your procedures. In addition, you should run several practice participants. Notice whether you change procedures in some subtle way across participants. If so, adjust your instructions to get rid of this variability.

At the end of your test runs, you should have a detailed set of instructions that you and any co-investigator can follow to the letter. To double-check your protocol, be sure it addresses all the questions listed in Table 2.

Avoid the Failure-to-Follow-Protocol Effect. Unfortunately, even if you write your protocol (procedures) in detail, you or your co-investigators may still fail to follow it. To avoid the researcher failure-to-follow-protocol effect, you need to make sure that (a) all investigators know the procedures, and (b) that everyone is motivated to follow them.

TABLE **2**
Protocol Checklist for Research With Human Participants

- I have my professor's permission to conduct the study.
- I have operational definitions of any variables that I will manipulate or measure.
- I have a suitable place to run my participants.
- I know how many participants I will need.
- I know how I will recruit and select my participants.
- I know how I will make the sign-up sheets available to potential participants.
- I have included a description of the study (including how long it takes and whether participants will get money or extra credit) on the sign-up sheet.
- If I am offering extra credit, I know how I will notify professors about which students participated.
- I have developed a consent form.
- If I am conducting an experiment, I know how I will assign participants to condition.
- I have written a detailed research protocol.
- I have written out the oral instructions I will give the participants.
- I have written out what I will say during debriefing.
- I now consistently follow the protocol.

To make sure investigators learn the procedures, you should hold training sessions. Supervise investigators while they practice the procedures on each other and on practice participants.

Once researchers know the right way to run the study, the key is to make sure that they are motivated to run the study the same way every time. To do this, you might have them work in pairs. While one researcher runs the participants, the other will listen in through an intercom or watch through a one-way mirror. You may even wish to record research sessions.

If your researchers still have trouble following procedures, you may need to automate your study. For instance, you might use a computer to present instructions, administer the treatment, or collect the dependent measure. Because computers can follow instructions to the letter, they can help standardize your procedures. Of course, computers are not the only machines that can help. Other machines that could help you give instructions and present stimuli include automated slide projectors, tape recorders, and DVD players. Countless other devices could help you record data accurately, from electronic timers and counters to noise-level meters.

Avoid the Researcher-Expectancy Effect. The final source of researcher bias is the **researcher-expectancy effect:** Researchers' expectations are affecting the results. You can take three steps to prevent the researcher-expectancy effect:

1. Be very specific about how investigators are to conduct themselves. Remember, researcher expectancies probably affect the results by changing the investigator's behavior rather than by causing the investigator to send a telepathic message to the participants.
2. Do not let the investigators know the hypothesis.
3. Do not let investigators know what condition the participant is in—making the investigator "blind." Although making investigators blind is easiest in drug experiments where participants take either a placebo or the real drug, you can make investigators blind in nondrug experiments. For example, if you present stimuli in booklets, you can make the booklets for different conditions look very similar. In that way, an investigator running a group of participants might not know whether the participant was in the experimental or control condition. For some studies, you may be able to use a second investigator who does nothing except collect the dependent measure. You could easily keep this second investigator in the dark about what treatment the participant received.

Minimize Participant Bias

Unfortunately, in psychological research, you must be aware not only of researcher effects, but also of **participant bias:** participants trying to behave in a way that they believe will support the researcher's hypothesis. Fortunately, there are various ways to prevent participants' expectancies from biasing your results.

Consider "Blind Techniques." For starters, you might make your researcher blind to reduce the chance that the participant will get any ideas from the researcher. Thus, the techniques for reducing researcher expectancies that we just discussed may also reduce the effects of participants' expectancies. In

addition to making the researcher blind, you should also try to make the participant blind.

Consider Between-Subject Designs. In addition, you may also be able to prevent participants from guessing your hypothesis by skillfully choosing your research design. In experimental investigations, for example, you might use a between-subject design rather than a within-subject design because participants who are exposed to only one treatment condition are less likely to guess the hypothesis than participants who are exposed to all treatment conditions.

Use Placebo Treatments So Participants Don't Know What You Are Manipulating. Another design trick you can use to reduce the impact of participants' expectancies is to give the participants who do not receive the treatment a placebo (fake) treatment. Placebo treatments prevent participants from knowing that they are not getting the real treatment. Therefore, if you have comparison condition(s), use placebo treatment(s) rather than no-treatment condition(s). That way, all groups think they are receiving the treatment. Thus, any treatment effect you find will not be due to participants changing their behavior because they expect the treatment to have an effect.

Use Unobtrusive Measurement Strategies So Participants Don't Know What You Are Measuring. Participants are less likely to know the hypothesis if they do not know what you are measuring. Obviously, if participants do not even know you are observing them, as in some field experiments, they will not know what you are measuring. Thus, if your hypothesis is an obvious one, you might consider doing either (a) a field study or (b) a lab study in which you put participants in one room and secretly monitor them from another room.

Even if the participant knows you are watching, the participant does not have to know what you are watching. That is, you can use unobtrusive measures. For example, you might put the participant in front of a computer and ask the participant to type an essay. Although the participant thinks you are measuring the essay's quality, you could have the computer programmed to monitor speed of typing, time between paragraphs, number of errors made, and number of times a section was rewritten. In addition, you might also tape-record and videotape the participant, monitoring his or her facial expressions, number of vocalizations, and loudness of vocalizations.

Create Experimental Realism So Participants Don't Play a Role. Rather than trying to hide or disguise the study's purpose, you might try to prevent participants from thinking about the study's purpose by designing a study that has a high degree of **experimental realism:** psychologically engaging participants in the task. If your study has a high degree of experimental realism, participants are not constantly saying to themselves: "What does the researcher really want me to do?" or "If I were a typical person, how would I behave in this situation?" Note that experimental realism does not mean the study is like real life; it means that participants are engrossed in the task. As you

know from video games, even an artificial task can be very high in experimental realism.

Summary: Maximize Benefits

Before now, you might have been surprised to see experimental realism and other strategies for reducing participant effects in a section on ethics. However, you now know that planning an ethical study involves taking into account many factors. Not only must you ensure the safety of your participants, but you must also demonstrate the validity of your methods. To avoid overlooking an important ethical consideration, consult Box 1 and your professor.

BEYOND THE PROPOSAL: THE PILOT STUDY

Planning can go only so far. So, even after you have carefully designed your study, modified it based on comments from your instructor, and been given your professor's go-ahead to run it, you may still want to run several participants (friends, family members, other members of the class) just for practice. By running practice participants, you will get some of the "bugs" out of your study. Specifically, by running and debriefing practice participants, you will discover

1. whether participants perceived your manipulation the way you intended
2. whether you can perform the study the same way every time or whether you need to spell out your procedures in more detail
3. whether you are providing the right amount of time for each of the research tasks and whether you are allowing enough time in between tasks
4. whether your instructions were clear
5. whether your cover story was believable
6. whether you need to revise your stimulus materials
7. how participants like the study
8. how long it takes you to run and debrief a participant

In short, running practice participants helps you to fine-tune your study. Because it is so useful, many professional investigators run enough practice participants to constitute a small study—what researchers call a *pilot study*.

CONDUCTING THE ACTUAL STUDY

The dress rehearsal is over. You have made the final changes in your procedures and your proposal. Now you are ready for the real thing—to conduct your study. This section will show you how.

Be Prompt, Prepared, and Polite

As you may imagine, some of your prospective participants may be apprehensive about the study. Participants often are not sure whether they are in the right place—or even whether the researcher is a Dr. Frankenstein.

To put your participants at ease, let them know they are in the right place, and be courteous. You should be both friendly and businesslike. The expert investigator greets the participant warmly, pays close attention to the

participant, and seems concerned that the participant knows what will happen in the study. The expert investigator is obviously concerned that each participant is treated humanely and that the study is done professionally.

Being professional does not hurt how participants view you. Why? First, most participants like knowing that they are involved in something important. Second, some will view your professionalism as a way of showing that you value their time—which you should.

So, how can you exude a professional manner? Some novice investigators think that they appear professional when they act aloof and unconcerned. Nothing could be less professional. Participants are turned off by an indifferent, apathetic attitude. They feel that you do not care about the study and that you do not care about them.

To appear professional, you should be neatly dressed, enthusiastic, well-organized, and prompt. "Prompt" may be an understatement. You should be ready and waiting for your participants at least 10 minutes before the study is scheduled to begin. Once your participants arrive, concentrate exclusively on the job at hand. Never ask a participant to wait a few minutes while you socialize with friends.

What do you lose by being a "professional" investigator? Problem participants. If you seem enthusiastic and professional, your participants will also become involved in doing your study—even if the tasks are relatively boring. Thus, if you are professional in your manner and attitude, you will probably not even have to ask the participants to refrain from chatting throughout the study. Similarly, participants will stop asking questions about the study if you say, "I will explain the purpose at the end of the study."

Tips on Getting Participants to Follow Instructions: Repeat, Repeat, Repeat, and Test

After you have established rapport, you need to give your participants instructions. To get participants to follow instructions to the letter, you might

1. repeat the instructions
2. orally paraphrase the instructions
3. have participants read the instructions
4. run participants individually
5. invite participants to ask questions
6. have participants demonstrate that they understand the instructions by quizzing them or by giving them a practice trial before beginning the study

Stick to the Protocol

Once the study has begun, try to follow the procedure to the letter. Consistently following the same procedures improves power and reduces the possibility of bias. Therefore, do not let participants change your behavior by reinforcing or punishing you. For instance, imagine you are investigating long-term memory. You want to expose participants to information and then see what they can write down. However, if you do this, participants may be writing down information that is in short-term memory. Thus, you would not be assessing long-term memory. Therefore, you add a counting backward task that should virtually eliminate all of the information from short-term

memory. Specifically, in your memory study, participants are exposed to information, are supposed to count backward from a number like 781 by 3s for 20 seconds, and then are asked to recall the information. Ideally, their recall will represent only what they have in long-term memory.

Unfortunately, many participants will find the counting task unpleasant, embarrassing, or simply an unwanted nuisance. Consequently, some participants will thank you for telling them they can stop; others will plead nonverbally for you to stop. Clearly, you cannot let any of these strategies stop you from making them count backward for the full 20 seconds. If you vary your procedures from participant to participant based on each participant's whims, your study will have questionable validity.

Debrief

Once the study is over, you should debrief your participants. In debriefing, you should first try to find out whether the participants suspected the hypothesis. Simply ask participants what they thought the study was about. Then, explain the purpose of your study.

If you deceived your participants, you need to make sure they are not upset about it. You also need to make sure that they understand why deception was necessary. Participants should leave the study appreciating the fact that there was one and only one reason you employed deception: It was the only way to get good information about an important issue.

Making sure participants accept your rationale for deception is crucial for three reasons. First, you do not want your participants to feel humiliated or angry. Second, if they get mad, they may not only be mad at you, but also at psychologists in general. Perhaps that anger or humiliation will stop them from visiting a psychologist when they need help. Third, the unhappy participant may spread the word about your deception, ruining your chances of deceiving other participants.

After explaining the purpose of the study, you should answer any questions the participants have. Although this may sometimes seem like a waste of time, you owe it to your participants. They gave you their time, and now it is your turn.

After you have dealt with participants' questions and doubts, give them an opportunity to rate how valuable they felt the study was. This encourages you to be courteous to your participants, lets you know whether your study is more traumatic than you originally thought, and makes participants feel that you respect them because you value their opinions.

After participants rate your study, you should assure them that their responses during the study will be kept confidential. Tell them that no one but you will know their responses. Then, ask the participants not to talk about the study because it is still in progress. For example, you might ask them not to talk about the study until next week. Finally, you should thank your participants, escort them back to the waiting area, and say good-bye.

ETHICAL CONCERNS AFTER THE STUDY IS OVER: THE NEED TO PROTECT CONFIDENTIALITY

You might think that once a participant leaves the study, your responsibilities to that participant end. Wrong! You are still responsible for guaranteeing the

participant's privacy. Knowledge about a given participant is between you (the investigator) and the participant—*no one else*. Never violate this confidentiality. To ensure confidentiality, you should take the following precautions:

1. Assign each participant a number. When you refer to a given participant, always use the assigned number—never that participant's name.
2. Never store a participant's name and data in a computer—this could be a computer hacker's delight.
3. If you have participants write their names on booklets, tear off and destroy the cover of the booklet after you have analyzed the data.
4. Store a list of participants and their numbers in one place and the data with the participants' numbers on it in another place.
5. Don't gossip! There is rarely a reason to talk casually about a participant's behavior. Even if you do not mention any names, other people may guess or think they have guessed the identity of your participant. We realize that it is hard to keep a secret. However, to talk freely about someone who participated in your study is to betray a trust. Furthermore, keeping secrets will, for many of you, be an important part of your professional role: Therapists, researchers, consultants, lawyers, and physicians all must keep their clients' behaviors confidential.