CONDUCTING PSYCHOLOGICAL RESEARCH FOR SCIENCE FAIRS: A TEACHER'S GUIDE AND RESOURCE MANUAL

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INTRODUCTION

In an effort to advance psychology as a scientific discipline, the APA Teachers of Psychology in Secondary Schools (APA-TOPSS) has created this document to serve as a guide that would increase high school psychology teachers' comfort with teaching the scientific method and engaging students in the research process. Ideally, this manual will accomplish two goals. The first goal is to enable teachers to be more comfortable with leading students through classroom demonstrations illustrating the scientific method. The second goal is to empower psychology teachers to mentor their students in conducting original psychological research that could be entered into a local science fair. Science fairs provide students with an opportunity to engage in exciting discoveries, learn, and receive potential awards and recognition. This resource provides guidance to teachers of high school psychology courses as they engage students in the scientific method and eventually supervise students who wish to participate in local, regional, and national science fair competitions in psychology.

The scientific method should be a fundamental component of any high school psychology course. Additionally, active learning experiences are central to a successful high school psychology course. Conducting research pairs these two elements together to create a dynamic learning experience for students as they make connections between science and behavior. Not all high school psychology teachers have strong backgrounds in teaching about the scientific method or in conducting scientific research. This guide provides a step-by-step outline of the scientific method, demystifying the process for those unfamiliar with it. Concrete examples of research projects are also provided. Teachers can use the examples to conduct classroom demonstrations or as starting points for independent projects for students.

The scientific method should be a fundamental component of any high school psychology course.

The science fair process may seem intimidating for the uninitiated. As teachers and students become more comfortable with the scientific method, entering a science fair becomes a realistic and exciting possibility. Science fair entries can range from extremely simple demonstrations to those that entail sophisticated research design and statistical analysis. Sophisticated projects often involve researchers who are external to a local high school, yet students can enter a science fair without this support. We have included a list of reference texts that will provide teachers with additional resources to assist students in designing more sophisticated projects. We also make recommendations about how students can secure the assistance of a university faculty mentor on the APA Web site as they design and conduct their projects.

The goal of this manual is to encourage high school psychology teachers to engage their students in active learning and critical thinking through the scientific method. Psychology has pursued a scientific understanding of human behavior for more than 120 years. Not only can psychology students learn more about human behavior by engaging in research, but they also will find that science fairs offer scholarships and opportunities that can help them at the next levels of learning. The bright stars of psychology's tomorrow are sitting in high school psychology classrooms today, and we need to encourage them to pursue psychology as a science. Introducing students to the scientific method early in their psychological education will help those stars shine their brightest in the future.

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OVERVIEW

Supervising a competitive student science fair project can be exciting, challenging, and rewarding. Psychology lends itself to projects that students find engaging and interesting because they encounter so many psychological phenomena in everyday life. We offer guidance for facilitating students in their selection of a topic and review of the literature and for helping them formulate a hypothesis, design and conduct the study, analyze the results, and, finally, prepare and enter the project into a science fair. Deadlines for science fairs change annually, therefore, a set of Web sites with comprehensive listings of science fairs and other competitions is included in Appendix A.

This process will entail a significant investment of time for both student and mentor over the course of one semester or an entire academic year. It is important for a faculty mentor to acknowledge the commitment of time. Therefore, we begin this manual with a suggested timeline and series of steps that will help to guide the research endeavor. We recommend that both student and mentor review the timeline early so that the project can be adequately developed.

Any project begins with the selection of a good research question, and we offer specific suggestions about how to guide students in their selection of a topic. Developing a good research question can be a lengthy and frustrating process. Initially, it is important for the mentor to generate enthusiasm for the scientific investigation of a psychological phenomenon.

Subsequent to identification of an interesting topic, students should search the literature to find out what research has already been done and to identify a specific question of interest for the project. We offer suggestions for assisting students in the literature review, development of a research question, and creation of research hypotheses. Specific suggestions for accomplishing these steps are provided in the second section of this manual. Introductory information about research design and statistics appears in the third section, and additional resources are identified in the event that further reference materials are needed. As the project begins to evolve, it may become evident that additional resources could strengthen its quality. Although we provide the basic outline in this manual, it may be useful to involve an external mentor to assist in the project. A local university faculty member may be able to offer guidance in the areas of design and analysis. It is also possible that a local university or research psychologist may be able to provide the student with access to laboratory facilities.

Clear and practical guidance for data collection, with particular reference to the use of human participants, is provided in the section entitled "Conducting the Study."

Information about use of animals has been included in Appendix F in the event that a student decides to engage in research with animals. Finally, we provide information about writing and presenting the results of the study and in taking the final step of submission to a science fair.

PLANNING THE PROJECT

DEVELOPING A TIMELINE

Psychological research, as with any area of scientific inquiry, entails a considerable amount of time, and teachers can assist students in developing a timeline to guide this process. Students must derive a research question and a hypothesis, as well as a method for conducting the study, collecting and analyzing data, and presenting the results. A suggested timeline that will allow students to use the scientific method to complete a psychology science fair project is included in Appendix B. The timeline provides an integrated approach to using the scientific method, while simultaneously meeting science fair deadlines.

IDENTIFYING A TOPIC

The first step toward participation in a science fair is for students to become enthusiastic about a topic, preferably a topic that fully captures their interest and imagination. Teachers can serve as a catalyst for generating enthusiasm by introducing the idea of a science fair project early in the school year. Developing a research idea is often the most difficult and intimidating step.

One way to select a topic is to consider a psychological question. Research questions can also be derived from daily news items or from scientific publications. The science section of a major newspaper or the *APA Monitor on Psychology* offers a nonthreatening entrèe into scientific research. The APA, as well as many other psychology related professional organizations, maintains an extensive Web site (*www.apa.org*) with many accessible summaries of current

research on a wide variety of topics. For example: Are girls more politically active than boys? Is it more difficult for an older person to get hired for a job than a younger person? Do drug education programs in health class decrease drug use? Why are so many high school students tired so much of the time? Additionally, students can review award-winning entries from previous science fairs. For example, the following titles were winners at an earlier International Science and Engineering Fair (ISEF):

- A Look at Youth in Trouble: Using Simple Ethics To Detect Potentially Troubled Teens
- Speed and Cell Phones: Are Male or Female Brains Better Suited for the Task?
- Social Cognition and Jury Bias Toward the Elderly in the Courtroom
- Effects of Specific Motivational Strategies in Conjunction With Locus of Control on Performance Improvement
- Catching Liars: An Innovative Study in Infrared Lie Detection
- Generation Y: Attitudes and Perceptions Toward the Aging Process

In addition to selecting a topic of interest, it is also important for teachers to assist students in identifying a mentor, if one is needed, who can assist in the research process. Depending on the topic, students may enlist the aid of the psychology teacher, or they may need to find a mentor who is external to the high school. For instance, most high schools don't have the equipment that would be necessary to perform a project using brain scans or artificial intelligence. Therefore, a university or medical school mentor could be extremely valuable. Even if external resources are not necessary, sometimes a university mentor can provide valuable assistance with a particular content area or with data analyses.

As students obtain empirically based articles, they may benefit from guidance regarding how to successfully read and interpret information that is presented in these articles.

An alternative means of developing a research project and acquiring a college mentor is to look into the research under way by psychology faculty or faculty in related fields at a local university. Many college faculty members are open to helping serious and highly motivated students learn more about the research process. Any research project will usually have tasks that a high school student can do, and even though it is likely unglamorous work, such as data entry or equipment preparation, it would give students firsthand experience with research. In the best of circumstances, the faculty member might help the student develop a project and help the student carry it out. At worst, the faculty member would likely be willing to discuss possible research ideas that the student could pursue on his or her own. Many faculty members maintain Web sites that list their research interests, and reviewing these Web sites is a good and nonthreatening way to start this process. This approach is best suited for students who are genuinely interested in pursuing psychology as a career and see their project as a first step toward that goal rather than an end unto itself.

Performing a Literature Review

Once students have identified a topic, it is important to find scientific (empirically based) reference materials that can be used to develop the project. Students are often reluctant to search for materials that are not immediately accessible or available online. Despite the challenge associated with using empirically based journals, it is important that students learn to use scientific journals that are available either in a print version or through online access. College and university librarians can provide information about search strategies that can be used to find psychological articles in PsycINFO or related social science databases. (PsycINFO is an abstract database that can be used to find scientifically based articles and books.) High school students can usually access a university's library with special permission, and it is recommended that the teacher establish a contact with the university librarian to arrange for instruction on how to use the library and for information about the library's resources. Using a collegiate library will not only help students conduct their literature review, but also provide opportunities to check out a local college campus.

As students obtain empirically based articles, they may benefit from guidance regarding how to successfully read and interpret information that is presented in these articles. Research articles follow a commonly used format—an abstract, literature review, method, results, discussion, and references. Often, articles can be complicated; therefore, the following guide for reading journal articles might serve as a valuable guide for students.

Abstract—Most journal articles begin with a brief overview of the study. The overview, or abstract, provides a description of the topic, the method, and the findings. A quick review of the abstract will allow the reader to determine whether the full article will be of interest. Additionally, the abstract provides a framework for understanding the rest of the article. This framework is particularly useful for young readers, who should read the abstract very carefully before proceeding to the body of the article.

Introduction/Literature Review—The introduction contains the purpose of the research, a review of literature related to the research, the hypotheses being tested, and the predictions for the results along with a rationale of how the predictions flow from the hypotheses. A summary of previous information, or literature related to the study, usually constitutes the beginning of the article. Authors also provide background information that led to development of a particular study. Sometimes, authors will provide extensive references to related studies, which can be a valuable source of additional material about the topic.

Method—This section details exactly how the researcher conducted the study and who served as participants. All the information necessary to repeat (i.e., replicate) the study generally appears in this section. The Method section includes information about apparatus (i.e., physical equipment) or instrumentation (e.g., survey) that was used for both the independent and dependent variables. The complete procedure used to administer the independent variable, control extraneous variables, and measure the dependent variable is described in this section. This section of a published study often serves as a guide for developing a new study.

Results and Discussion—In these two sections, the researchers report what they found (Results) and what it all means (Discussion). The Results section will be the most difficult to understand because it typically includes a lot of statistical information. Fortunately, the typical journal article is set up so that the findings are repeated in the Discussion section (without the statistical details) and then explained. Therefore, even without being able to fully understand the statistical details in the Results section, a reader can usually determine what occurred by carefully reading the Discussion section. The Discussion section will often contain ideas about research projects that build on the present research, and this can be a source of research ideas for students.

References—The References section of an article is often an underestimated source of valuable information. The sources cited in the article can provide additional linkages to related articles that may help in development of a project. Students need to do a thorough review of the literature in order to make sure that their project has not been done before, to help them develop the best possible research project, and to help them write up and present their project once it is done.

In addition to providing students with an overview about the structure of an article, it may also be beneficial to provide students with a worksheet for reviewing journal articles if they need additional structure to guide their literature review. A sample worksheet that can be distributed to students is included in Appendix C.

Formulating a Hypothesis

A review of the literature provides students with information that can be used to develop a research study, yet the teacher/mentor may need to help students formulate a specific hypothesis and select a research design. Because this may be the first time that a student has undertaken research, it is advisable to use an established design and instrumentation that has been previously validated for use in research. For example, if students want to study the relationship between self-esteem and classroom performance, they would be well advised to use an empirically validated self-esteem scale rather than try to develop a new one from scratch. Basing the research project on an established method and procedure from previous research not only saves time, it increases the likelihood that the student will conduct a successful research project. Although it may appear from reading journal articles that researchers got the research method and design perfect the first time, most researchers go through an extensive series of experiments in which they refine their methods and figure out how to overcome difficulties before they get to the set of experiments that finally get published. By basing a research project on a published study, the student is taking advantage of another person's work, saving precious time, and avoiding many unforeseen difficulties. Students should be encouraged to do variations or extensions of published research. Research that is grounded in prior work has the best chance of succeeding and the best chance of making a meaningful scientific contribution.

Students should be reminded that a hypothesis is a testable prediction of a relationship between variables. For example, a student might propose the following research question: "What is the relationship between eating breakfast and academic performance?" This question could lead to a variety of hypotheses, such as:

1. Students who eat breakfast will have higher GPAs than students who do not eat breakfast.
2. Students who eat protein for breakfast will have higher GPAs than students who do not eat protein for breakfast.

A review of the literature will provide valuable background information that will help students develop a hypothesis or specify a relationship between breakfast and grades that is scientifically warranted. Teachers should remember that articles published in scholarly journals usually test multiple hypotheses with multiple experiments. Students will probably need to limit the scope of their research projects to test one or two specific hypotheses rather than try to test a large set of hypotheses. A guiding principle for student research is to keep the project simple, straightforward, and easy to understand, especially if the student has not done research before.

Once the student has formulated a hypothesis, it is important for the student to design a process for evaluating the hypothesis. Generally, a study can be designed using an experimental or nonexperimental approach. In order to establish a cause and effect relationship, psychologists would need to use an experimental method. Sometimes it is difficult (or even impossible) to conduct a laboratory experiment. For example, in order to experimentally test the hypothesis that students who eat breakfast will have higher grades, students would need to be randomly assigned to a group that eats breakfast or a group that does not eat breakfast. After some period of time, grades from these two groups would be compared. It may be difficult to conduct this study by randomly assigning students to a specific group. Therefore, a quasi-experimental study might be conducted. Rather than randomly assigning students to experimental groups, participants may simply record whether or not they ate breakfast, and grades would then be compared to reported behavior. This type of study might use a survey to investigate the hypothesis.

Even after a hypothesis is formulated, many decisions remain. An appropriate set of research participants must be identified, questionnaire measures or instrumentation must be carefully selected, and detailed procedures must be developed. Again, the background literature can be a fertile source of ideas, and this information can be used to create a study that is similar to, but not an exact replication of, an earlier study.

DESIGNING THE PROJECT

IDENTIFYING RESEARCH PARTICIPANTS

Although this guide provides examples for working primarily with humans, research participants can be human or nonhuman. The type of participant you choose will depend on the time, resources, and availability of these participants. The APA has published guidelines for the use of both human and nonhuman participants, and these guidelines must be taken seriously whenever any research project is conducted. The complete text of these guidelines and regulations can be found at: *www.apa.org/science/research.html*.

Humans are likely the most accessible participants for high school psychology classes. Although it may be difficult to find a group of adult participants, it is often desirable to use adults rather than children, for whom permission from a parent or guardian must be obtained. Ethical concerns, such as coercion, are also greatly reduced when students study adults rather than their peers. Every person who decides to participate in the study must provide informed consent; additional information about this process is included in the section about research ethics. Many students are interested in studying people with a behavior disorder, such as depression, an eating disorder, or schizophrenia, but this is extremely difficult for a student to do because of privacy and increased ethical concerns and also practical problems, such as finding enough participants. Using healthy adults will greatly reduce the heightened ethical considerations that must be undertaken when working with more vulnerable groups of participants (i.e., children, prisoners, or other people who are not free to make decisions without feeling pressure).

DESIGN AND PROCEDURE

One hallmark of good experimental research is that the researcher randomly assigns people to different conditions in order to detect differences that are actually due to the independent variable (the variable that is thought to be the cause in a cause-effect relationship). If a study is designed with more than one condition (e.g., treatment and control), randomly assigning participants to different groups strengthens the study. Random assignment can be conducted using simple methods, such as the flip of a coin for two conditions, the roll of a die for up to six conditions, or a random drawing. For example, as participants arrive for the study, or even before they arrive, the experimenter selects a slip of paper listing one of the treatment conditions from a box containing slips of paper that assign each of the treatment conditions. Each slip should be returned to the container in order to meet the underlying assumption that each participant has an equal chance for assignment to a group. Although this one example of a method of random assignment is unsophisticated, this type of process will ensure that random assignment consistent with scientific principles has been conducted. Random assignment can also be conducted using more sophisticated methods that can be found in the reference texts at the conclusion of this document.

Although it may be difficult to find a group of adult participants, it is often desirable to use adults rather than children, for whom permission from a parent or guardian must be obtained.

Sometimes it is not possible to randomly assign participants to a particular condition. If participants are not randomly assigned to a particular condition, then the study is termed "quasi-experimental" or "nonexperimental." For example, a new teaching method might be used in one classroom, while an older method is used in a second classroom. Thus, students in each classroom would receive a different instructional method. In this case, students were not randomly assigned to the different classrooms. Despite the lack of random assignment, all other aspects of the study are similar to an actual experimental approach. To control conditions within the quasi-experimental study, the researcher should maintain as much consistency as possible for each group. For example, if instructions about how to complete an instrument are given to participants, these instructions should be scripted and read (verbatim) to the participants in order to ensure consistency. Maintaining similar conditions will not allow for a true experimental conclusion, but it will substantially strengthen the study.

A nonexperimental study does not include random assignment, and thus, would not allow for a cause and effect

relationship to be established. However, a nonexperimental study may provide useful information that would inform the scientific community. Survey research, observational studies, and correlational research are all considered nonexperimental or quasi-experimental. For example, it would be possible to observe and record the frequency of hand washing in a restaurant. When designing a nonexperimental study, students should strive to select instruments and develop observation techniques that will provide reliable and valid results. Specific procedures must be employed when conducting a study of this type, and this type of study may be simpler for the beginning student.

A sound psychological project will clearly identify exactly how the independent variable (the condition that is manipulated) will be applied and how the dependent variable (the response of the participant) will be measured.

Regardless of whether an experimental, quasi-experimental, or nonexperimental study is used, the procedure for conducting the project should be carefully documented. For example, if participants are asked to view videotape, the researcher should carefully describe the conditions under which the tape was viewed (e.g., in a classroom or laboratory). Documentation of conditions can be included in the written report that describes the study.

Independent Variable or Treatment Conditions

A sound psychological project will clearly identify exactly how the independent variable (the condition that is manipulated) will be applied and how the dependent variable (the response of the participant) will be measured. This clear description of variables is often referred to as "operationalization" of the variables.

Operationalizing variables may allow for a discussion about the possible variables or conditions that may have an effect on the response that the student is interested in studying. It is important to note that sometimes confounding variables may be influential. A confounding variable may be linked to the dependent variable such that it makes it difficult to determine if the independent variable is the factor that makes a difference in the project. It is not always possible to control all of these influencing factors, but it is possible for the student to consider that other variables may be present.

The design of the project includes a clear description of the independent variable or the specific manipulation of a particular condition. One frequently employed technique is to compare one group of people who receive a treatment against a second group of people who do not receive a treatment in order to determine if the treatment has had an effect on the behavior of the participants. The treatment should be well defined and described in terms that are clear.

For example, a student may wish to conduct research on the effect of sleep deprivation on learning. The hypothesis might be that sleep deprivation hinders learning compared to a good night's sleep. The independent variable in this study is the amount of sleep. One possible operationalization of sleep deprivation would be two consecutive nights with 4 hours or fewer of sleep. An operational definition of a good night's sleep might be two consecutive nights of sleep with a minimum of 7 hours of sleep. The dependent variable is learning. The operationalization of learning might be the number of words remembered after 5 minutes from a list of 40 random words presented visually for 5 seconds each. Because this is a true experiment, participants would be randomly assigned to one of the conditions. Every variable, other than the independent variable, should be kept constant to avoid confounding variables. If, for example, the sleep deprivation group were to drink a caffeinated beverage before the learning task, because that is a variable and as such could influence their performance, the results of the task would no longer reflect only sleep deprivation. So, in this example, to guard against this, no participant should be allowed to drink caffeinated beverages.

The hypothesis that is developed specifically addresses a relationship between variables. Usually an independent variable and a dependent variable are identified. For example, if a researcher wanted to investigate the difference in gender when evaluating credibility of an eyewitness, the hypothesis would state that "there is a difference in how credible a witness is perceived based on whether the witness is male or female." However, a statement of the hypothesis does not clearly define or operationalize the variables. Therefore, the student must explicitly state exactly how the project will be undertaken. In a recent award-winning entry, the student researcher provided detailed information about the length of the videotape that each group watched and exact details about the tape so that others would know exactly what happened. This is just one example of operationalization of an independent variable.

Designing a project to investigate a particular psychological phenomenon can be considerably more complex. Therefore, it is important to consider using one of the research design texts that are recommended in the Resources Section of this document.

Dependent Variable or Collection of Data

The dependent variable is the outcome measure that gauges the impact of the independent variable. Equipment may be used to measure a dependent variable, such as a response to a computerized task (e.g., how long it takes people to identify a series of photos as male or female), a physical change in function (e.g., how many M&Ms participants ate while waiting to meet another person), or a response to a survey. Research in psychology frequently employs the use of a survey or similar self-report document to measure the dependent variable. If a student is measuring a response that is a common human characteristic (e.g., personality, anxiety), an expedient way to measure the characteristic or variable is to use an existing instrument. Students should consider the reliability and validity of the instrument for the study that they are conducting. Good instruments will be reliable and valid. Reliability means that the survey yields consistent

results; in other words, someone who completes the instrument several times should score about the same each time. A survey that has validity means that the instrument measures what it is supposed to measure; it is accurate within the context of use. There are many types of reliability and validity but, in general, reliability and validity are reported to range between .00 and .99. The best way to have students find reliable and valid instruments is to encourage them to pay close attention to the instruments described in the articles they obtain during the initial literature review.

When evaluating a survey instrument for use in a project, it is also important to consider copyright issues. If the instrument is copyrighted, permission to use the instrument must be granted by the author, and/or the necessary copies must be purchased. Some instruments are available for general use. A listing of noncommercial instruments designed to measure common characteristics can be found in the Directory of Unpublished Experimental Mental Measures (Goldman & Mitchell, 2003). This directory also contains information about how the instrument can be obtained.

If a previously published instrument is not available, it is possible to write several questions to measure a dependent variable. This procedure should be considered as a last resort, because measures of reliability and validity will generally not be available. However, if the instrument simply asks participants to report factual information, this method will probably be acceptable for use in the project.

Instrumentation

Research that is reported in journals typically uses highly specialized equipment for the precise presentation of stimuli and measurement of behavior. Students and teachers will often not have access to this kind of equipment. In fact, the instrumentation requirements will probably be one of the factors determining whether or not a student can conduct a particular research project. Students and teachers, however, should not automatically discard a research idea because of instrumentation. In much research that uses high-tech equipment, it is often possible to find low-tech methods that still allow students to conduct perfectly acceptable research. Reaction times may be able to be measured by a stopwatch with acceptable accuracy, or frequency of a behavior may be measured instead. Stimuli can be presented on an overhead projector or through PowerPoint or flashcards. A lot of good research is accomplished with only paper and pencil. Remember that good science is not synonymous with high-tech equipment.

Research Ethics

Before any project is actually conducted, it is important that the project be reviewed for sound ethical practices. Students should be aware that the review process is essential because it is designed to protect all human beings and/or animals that participate in any type of research study. The review process also ensures that the study has been designed and will be conducted in accordance with ethical practice.

All studies must be reviewed by an independent oversight group that has been established at the local school or university. Federally registered institutions, such as universities, generally maintain an Institutional Review Board (IRB), and some also maintain an Institutional Animal Care and Use Committee (IACUC). Use of the IRB/IACUC process ensures the best possible care is taken to protect people and animals that participate in the study. Similarly, it ensures that the project has been designed in accord with appropriate protections. If a university faculty member is sponsoring the student, it is best to use the university IRB/IACUC for review. The university faculty member should direct and advise the student about the application and approval process at the local campus.

Because most regional fairs provide students with an opportunity to compete at the national competition, it is advisable to follow the procedures defined by the particular competition as a minimum set of criteria. Thus, if a university faculty member is not directing the student's research, then the local school must constitute an IRB to ensure that the participants (i.e., people or animals) are treated appropriately. It is advised that the local IRB consist of a minimum of three individuals. In order to address conflicts of interest, the review panel should not include the adult sponsor or the faculty supervisor of the project. The panel should include a science teacher, a school administrator, and a scientist (e.g., school psychologist) who is familiar with psychological research.

Materials to be developed and reviewed must include a clear set of procedures. If human participants are going to be recruited, it is important to specify exactly how those participants will be obtained. For example, if participants will be recruited through advertising, the IRB or a similar panel should review a copy of the advertisement. Using minors is more difficult, so additional safeguards should be undertaken if minors are used in a project. Parental consent is required if minors participate. Recruitment materials sent to parents should be carefully reviewed to ensure that there is no evidence of coercion. Because of the complexity of using minors in research, it is strongly recommended that an established IRB review any project that proposes use of minors.

People who volunteer to participate in a research study should be provided with information about the study that might influence their willingness to participate. After potential risks are identified, those involved in the study should use this information to develop an informed consent statement to give to participants before they take part in any aspect of the study. Each participant should be provided with the documents, and it should be clear to each participant that he or she has the right to stop participating in the study at any time and for any reason. Additionally, participants should be told that they can request that their data be removed from the study. The informed consent document should include: (a) A statement about the type of research that is being undertaken, (b) the approximate amount of time that will be required, (c) information about what will happen or the procedures that will occur, (d) information about any potential risks or benefits of participation, (e) information about how the data will be safeguarded and limits to confidentiality, (f) information about whom to contact if additional information is needed, and (g) clear instructions that a person can stop participating at any time (without penalty) and have the data destroyed.

Therefore, it is helpful to consider how each participant might respond to a particular treatment or question that might be asked. A copy of this document should be provided to each person who volunteers for the study. Again, it is important to note that adult volunteers can independently provide informed consent; parental permission must be obtained before a child volunteer is asked to participate. After a parent provides permission for a child to participate, the child should also be informed about the study and given an opportunity to elect to not participate in the study.

After the informed consent document has been developed, care should be exercised in using the document. The teacher should ensure that data are carefully collected and stored consistent with the method that was specified in the IRB proposal and on the informed consent document. In other words, the teacher should have a mechanism for ensuring that data are maintained in a secure environment. Whenever possible, it is advisable to collect data anonymously or remove identifying information from data that has been collected. Removal of this information helps to ensure that specific information about a participant is not inadvertently disclosed.

Finally, participants should be debriefed. Participants should be provided with a copy of the informed consent document that they signed. Additionally, they should be provided a more detailed explanation (written) about the study. A handout explaining the purpose of the research and information about how to contact the faculty supervisor should be provided in the event that participants have any questions or concerns. If the research project involved deception or some potentially distressing information (such as a measure of depression or self-esteem that might reflect negatively on the participant), then extra care in debriefing is warranted. Tips and strategies for debriefing in these kinds of situations can be found in the more extensive texts listed in the Resources section.

Appendix E contains sample documents that can be used for submission to an IRB. More information about the federal regulations that govern the review process and IRBs at research institutions is available from the U.S. Department of Health and Human Services Office of Human Research Protections (OHRP) Web sites. A current listing of sites can be found at *www.apa.org/ed/TOPSS/homepage.html.*

A Final Note on Designing Research

One of the most common pitfalls that students encounter in conducting research is trying to make their project too broad in scope. Students want to design an experiment to answer all the research questions once and for all. The end result typically is an experiment so complicated that the results are difficult if not impossible to interpret. Experienced researchers know that a series of simple, straightforward experiments is preferred to a comprehensive, complex one. This principle is especially important for student research, where there is usually only one chance to get everything right and unforeseen complications are likely. A good student research project is simple in that it addresses one or two questions in a complete manner. It is also true that research can be simplistic by not addressing obvious alternative explanations. The teacher needs to help students achieve the right balance of depth and breadth. Keeping the experiment simple reduces student frustration, promotes student ownership of the project, and maximizes the educational benefit to the student, regardless of how the experiment turns out.

CONDUCTING THE PROJECT

After the project has been designed and the appropriate approval process has been undertaken, it is time for the student to actually conduct the project. Clear and careful planning is essential. If the project has been carefully designed, this portion of the project often is the least time consuming. Nevertheless, students should be carefully supervised as they administer an independent variable or treatment(s) and as they collect data for the dependent variable. Pilot testing the procedures that will be used, before officially conducting the study, is strongly recommended. Students should practice the instructions and manipulations using their peers acting as participants in order to make sure the procedures are well rehearsed for the real participants. This way they can get feedback from the acting participants about what is unclear or confusing. Pilot testing can help ensure that the independent variable is effective and that extraneous variables are controlled. The teacher should witness a pilot test run before the experiment is run with actual participants. Doing so will help reduce student errors and ensure ethical practices to protect participants. There is nothing more frustrating to students than to complete an entire experiment and then find out that they made a fundamental and preventable error that invalidates the findings.

First, students should adhere to the specific procedures that protect their participants. In other words, informed consent documents should be carefully administered to the participants, and all procedures specified in the IRB materials should be followed. In the event that minors are used in the study, permission must be obtained from the parent or guardian, and informed consent must be obtained from the minor participant. It is important that the student researcher be provided with clear instructions for storing the documents in a secure location.

The design of the project should include specific details regarding the actual process that will take place in the study. For example, if the design specifies that participants are going to watch a videotape prior to completing a self-report instrument, then it is important to ensure that the student researcher is able to complete the procedural details exactly as stated. Again, procedures should ensure that data are collected and stored in a secure location.

At the conclusion of an experimental session, and usually before debriefing, students should administer a posttest questionnaire. This questionnaire should do at least three things. First, it should ask whether participants understood and followed directions and gave the experiment a sincere effort—it is important to determine if the participants took the experiment seriously, or, if not, whether the results should be discarded. Ask participants to be honest, and stress that results are confidential and there is no penalty involved. Second, the questionnaire should contain some sort of manipulation check to see if the operationalization of at least the independent variable was effective. One of the most common ways that an experiment fails is that the manipulation of the independent variable is too weak or ambiguous. Third, the questionnaire should ask whether the participants were aware of the hypothesis of the study and if this affected their performance. The posttest questionnaire is also a convenient place to gather other information that might be useful, such as demographic information and any background information relevant to the current research.

DETERMINING RESULTS OF THE PROJECT

Data analysis should be part of the experimental design. It is easy to design a project that is difficult if not impossible to analyze, and this is especially true of student research projects. Analyzing data that have been collected can be expedient if a study was properly designed. To ensure that an analysis can be conducted, the spreadsheet should be designed and the appropriate statistics for use in the study should be identified prior to collection of any data. Designing a spreadsheet for the data in advance of collecting data may lead to a discovery that the data collection method is not clear. If a problem is encountered when the spreadsheet is designed, changes can be made in data collection prior to undertaking the study.

One of the most common pitfalls that students encounter in conducting research is trying to make their project too broad in scope.

Statistical analysis of data serves two goals: It describes the results, and it draws conclusions and makes generalizations about the results. Descriptive statistics, such as graphs, tables, means, and standard deviations, are used to summarize the data and make clear the basic trends in the data. Inferential statistics, such as *t* tests, allow researchers to determine the statistical significance of the results. Both kinds of statistics should be used so that for every prediction made in the experiment, the researcher describes whether the data matched the prediction and concludes whether the result was statistically significant or due to chance variation.

Data analysis can be daunting for many researchers, yet not everyone must be a statistician in order to conduct a sound study. A simple guide to elementary data analysis techniques has been included in Appendix D. More complex techniques may require the assistance of someone who has particular expertise in statistics. If this is the case, we suggest that a university faculty member be consulted.

INTERPRETING AND DISCUSSING THE RESULTS OF THE PROJECT

In addition to determining the results of the study, students need to interpret and discuss the implications of the data. First, the student should relate the findings back to the hypotheses and predictions made in the introduction. Was the hypothesis supported? Did the results come out in the predicted direction? Second, the student should place the results of the current study in the context of prior research on the same topic. Does the present research replicate prior work? Does it support one hypothesis over another? Does it contradict prior results? In this section, students should

discuss the implications of the results for the theory, research, or practical applications. This is where students get to put their spin on the results. They can point out the next experiments that should be done to follow up on the present results. Students should anticipate questions and criticisms that people might have about the experiment and address them. Next, the students should discuss the problems encountered during the research. Were there unforeseen and uncontrolled factors that might have influenced the results? If so, they should be mentioned and discussed. Students should make suggestions about how these problems might be overcome in future research. Finally, students should close with a summary of the main points of the study, as positive a take-home message as is possible. The report should not end on a critical, negative note.

Students have a tendency to be overly critical of their research. They spend the discussion section dismissing their work. If they did a good job of designing and conducting the study, then they should take the results seriously from the perspective that the results are valid. On the other hand, there will be unforeseen problems, and students should also be honest in exploring the impact and consequences of these factors. In the discussion section, students are allowed to present more than one possible explanation of the data.

PRESENTING THE PROJECT

Upon completion of the project, students must prepare a presentation or poster board. Although not all science fairs require a research paper, it is helpful to write a research paper first and to extract key components for display on the presentation board. The paper can be available at the science fair, and it can even be submitted for publication. Minimally, each contest requires an abstract that summarizes the study. The abstract should include the purpose of the study, the procedures that were used, the data collected, along with an explanation of the data, and conclusions about the study. Science Service provides a sample abstract at its Web site (*www.sciserv.org*). The key components for the research paper and the presentation board are described below:

- The Introduction begins with a statement of the problem that is being investigated. It should establish a context for the project by reviewing related work in the field. The introduction generally ends with a statement of hypotheses.
- The Method describes participants (e.g., who, how many, the selection process), the materials used (e.g., surveys), and the procedures employed. This section should include sufficient detail so that the reader could replicate the study using the information provided.
- The Results section states the findings but does not explain what they mean. This section should make clear which statistical tests were conducted and should provide the numerical results, including the probability (*p*) values.
- The Discussion is where results are explained. This section should make clear whether or not the findings support the original hypotheses. Explanations should tie back to the literature that was presented in the introduction. In addition, this section should include logical ways to extend the research.
- The optional References page(s) should include only those sources cited in the paper in APA format (*http://www.apastyle.org/previoustips.html*).
- An optional Acknowledgements page thanking everyone who helped with the process of designing, carrying out, and writing up the study can be included.

It is important that all involved consider the guidelines for each science fair regarding the project exhibit board. Although the board should be attractive and clear, it is important to adhere to the rules of the sponsoring fair. Components of the poster can be created in a basic word processing program or in a slide presentation program (e.g., PowerPoint). Individual pieces can then be mounted on the display board. Display boards are typically available at office supply stores. Suggestions for preparing effective poster presentations can be found at the Office for Teaching Resources in Psychology (*http://www.lemoyne.edu/OTRP/otrpresources/poster.pdf*).

APPENDIX A
SCIENCE COMPETITIONS FOR PSYCHOLOGY

A psychology science fair project can be entered through a category that has been labeled "social and behavioral sciences." Local high school fairs often provide the first opportunity to compete, with additional regional and national competitions available for winners of local competitions. More than 143 regional science fairs are available in the United States, and most of these fairs are affiliated with the Intel International Science and Engineering Fair (ISEF). Because entry requirements vary with each regional fair, we refer you to the local sponsor for specific information. This appendix includes information about the largest national science fair competition (ISEF) and other related science-oriented competitions available to high school students.

Intel International Science and Engineering Fair (ISEF)

This is open to students with winning entries from local, state, and regional ISEF-affiliated fairs. The Intel ISEF is the world's largest precollege celebration of science. Held annually in May, the ISEF brings together more than 1,200 students from 40 nations to compete for scholarships, tuition grants, internships, scientific field trips, and the grand prize—a $50,000 college scholarship and a high-performance computer. Students who win a local or regional competition are invited to advance to larger competitions. Eligibility information and complete instructions are listed at the Science Service Web site: *www.sciserv.org*. Check this site for information on local, state, and regional ISEF-affiliated fairs that are open to all students.

The American Psychological Foundation (APF)/APA Teachers of Psychology in Secondary Schools (TOPSS) Scholars Essay Competition

Students must respond to a specific research question that is published annually at the APA-TOPSS Web site. Entrants conduct a literature review, formulate a hypothesis, and propose a method to investigate the research question. This competition does NOT require collection or analysis of data. Winners are selected on the basis of a demonstrated ability to: (a) complete a critical analysis and synthesis of empirical research, (b) design an original project, and (c) generate a quality research proposal to empirically test the effectiveness of a program or intervention that will address the research question. Psychology faculty at the college level serve as judges. More information is available on the TOPSS Web site, *www.apa.org/ed/TOPSS/homepage.html*.

The APF/APA TOPSS Excellence in High School Student Research Awards

Annually the APA, through TOPSS, offers an award program cosponsored by the APF to recognize outstanding research projects conducted by high school students. Professors of psychology at the college and university level evaluate the submissions and determine the winning papers. More information is available on the TOPSS Web site, *www.apa.org/ed/TOPSS/homepage.html*.

Intel Science Talent Search (STS)

STS is open only to high school seniors in the United States and territories and American students attending school abroad. Each year, almost 2000 students accept the challenge of completing an entry for the STS, with finalists competing for the top prize, a $100,000 scholarship. The Intel Science Talent Search School Award recognizes excellence in teaching and school support of individual student research. Each school will receive an award of $1,000 for each semifinalist named. For complete details and procedures for submitting entries, please check the Science Service Web site at *www.sciserv.org/sts/*.

RESOURCES

- **The University of Florida Web site** (*http://www.cpet.ufl.edu/sciproj/*) offers useful information about the steps involved in designing a project and helpful tips on how to prepare for science fairs that are affiliated with the International Science and Engineering Fair.

- **Chris Gould at the University of Southern California** maintains a virtual library of state, regional, national, and international science fairs: *http://physics.usc.edu/~gould/ScienceFairs/*.

- **The Science Service Organization** publishes rules and guidelines for entering projects for Intel ISEF and Intel STS. Contact Science Service via the Web at *http://www.sciserv.org/contact.asp*.

- **This comprehensive science fair Web site**, *http://faculty.washington.edu/chudler/fair.html*, provides specific information to help students design strong psychology projects. Links to additional sites provide information about ideas for science fair projects, guidelines for preparation of projects, and steps for completing a successful project.

- **Updated links** will be available at *www.apa.org/ed/TOPSS/homepage.html*.

APPENDIX B
SCIENCE FAIR PLANNING SCHEDULE

Date of National Science Fair Competition____/____/___

Date of Local Science Fair Competition____/____/___

Deadlines for application in desired competitions should be added to the appropriate week within the timeline below.

14 weeks before the local science fair_____
- Assist students with selection of topic.
- Provide students with information about conducting a literature review.
- Review with students sources for gathering information/ liturature.
  - — Library resources
  - — Online resources

13 weeks before the local science fair_____
- Assist students in obtaining necessary literature for topic.
- Provide students with the Journal Article Review Form.
- Contact university faculty for mentorship support as necessary.
- Instruct students to begin a logbook for recording all information relevant to their study.

12 weeks before the local science fair_____
- Assist students in the development of a research hypothesis.
- Identify the independent and dependent variable to be used in the study.
- Consider whether to use humans or animals in the study.
- If human participants are to be used, identify desired group of participants.
- If animals are used refer to animal research guide.
- Identify necessary materials/apparatus for use in the project.

11 weeks before the local science fair_____
- Obtain necessary materials/apparatus for use in the project.
- Investigate potential procedures for conducting the project.
- Evaluate availability of resources for conducting the project.
- Consider issues of participant welfare.
- Develop recruitment materials for obtaining participants.

10 weeks before the local science fair_____
- Complete forms for Institutional Review Board (IRB) process.
- Attach all necessary supporting documentation to IRB application (e.g., copies of surveys).
- Submit IRB application for review.

9 weeks before the local science fair_____
- IRB APPROVAL MUST BE GRANTED BEFORE PROCEEDING.
- Secure an appropriate location for conducting the project.
- Ensure that all materials are available for beginning the project.
- Begin to recruit participants for the study.
- Prepare location for project.
- Make copies of all necessary documents for use with participants (e.g., informed consent information).

8 weeks before the local science _____
- Conduct the project.
- Provide informed consent information.
- Assign participants to conditions.
- Administer treatment or survey.
- Debrief participants.
- Secure any materials that may have been used in the project.

7 weeks before the local science fair_____
- Continue collecting data on the project.
- Begin entering data for analysis.
- Continue recording information in log.

6 weeks before the local science fair_____
- Conduct analysis of the data.
- Begin writing analysis of the data.

5 weeks before the local science fair_____
- Consult experts for support with data analysis.
- Begin to integrate results into a discussion of the study.
- Develop a preliminary draft of a complete research paper.

4 weeks before the local science fair_____
- Refine the draft of the research paper.
- Use the draft to begin designing a display of the study.
- Obtain display materials to be used in the science fair.

3 weeks before the local science fair_____
- Draft text and graphs using guidelines that are appropriate for display.
- Print and design materials for use in display.
- Continue work on research paper to accompany the display.

2 weeks before the local science fair_____
- Write the abstract to conform to rules of the science fair.
- Continue work on the research paper.
- Complete display board.

1 week before the local science fair_____
- Evaluate completeness of the board.
- Evaluate additional materials to add to the display.
- Finish the final research report.
- Practice presentation of results.

APPENDIX C
SAMPLE JOURNAL ARTICLE REVIEW FORM

To facilitate your understanding, make sure you put the information into your own words.

Article citation
(Use APA format found at *http://www.apastyle.org/previoustips.html.*)

Briefly state the main idea of the article:

Participants (people or animals on whom the study was conducted):

Procedure:

Materials:

Results:

Significance/relevance to your topic:

Name: _____ **Date:** _____/_____/_____

APPENDIX D
DATA ANALYSIS

Most standard spreadsheet programs (e.g., Excel, Quattro Pro) allow for basic statistical analysis. It is relatively simple to obtain basic descriptive statistics (i.e., measures of central tendency, measures of variability, and measures of relationship), elementary inferential statistics (i.e., correlation, *t* test, and chi-square), along with graphs and charts. If a sophisticated statistical analysis is proposed, and it is beyond the scope of the teacher's expertise, it is important to obtain support from a knowledgeable colleague or college faculty member. A brief review of a few simple and frequently used methods of analysis is provided below.

Chi-square (x^2)(test for independence)—This test is used to compare two groups (e.g., men and women) against another categorical variable (e.g., Democrat and Republican). Under normal circumstances, proportions (or the number of men and women of each party) would be expected to be equal. The number of people in each group (frequency) would be used to conduct this analysis. The result indicates whether the proportion in each group differs significantly from the expected equality. This simple analysis can be conducted using formulas that are available in an elementary statistics text. It may be easier to conduct a chi-square without aid of a computer program.

***t* test (for two different treatments)**—This test allows for comparison of two different groups when the dependent variable has a numerical value that is of at least an interval level scale. An interval level of measurement implies equal distances or intervals between values (e.g., test scores, elapsed time). For example, in order to determine if one teaching method is better than another, exam scores from two groups of students would be used for a comparison by a *t* test. The result indicates whether the difference between the groups is significant.

Pearson Correlation Coefficient (*r*)—A correlation would be used to determine if a relationship exists between two variables. For example, a correlation would provide an index of relationship if one group of students provides information about two different characteristics (e.g., number of hours of TV watched and GPA).

APPENDIX E
TEMPLATES AND SAMPLE FORMS FOR RESEARCH PROJECTS

This appendix provides templates and forms that can be used by teachers leading students through a research process. These forms provide a step-by-step guide for students as they engage in this mode of inquiry. Please note that the forms should be modified for each project. If the project will be entered in a contest (e.g., ISEF), respective forms from the competition should be used. Contest requirements vary, and failure to abide by them may result in disqualification. Included in this appendix are the following forms:

TEMPLATES

Research Description for the Institutional Review Board (IRB)
Research Consent Form
Research Consent Form for Minors
Demographic Data Sheet

SAMPLES

Sample Research Description for the IRB
Sample Research Consent Form

TEMPLATE FOR RESEARCH DESCRIPTION FOR THE IRB

PROJECT TITLE: _____

INVESTIGATOR(S): _____

SCHOOL NAME: _____

ADULT SPONSOR: _____

Please attach the following materials to this form:

- The answers to the questions posed below
- A copy of the consent and, if minors are involved, assent forms
- A copy of all materials to be used in the study

1. What is the purpose of the study?

2. What activities/procedures does participation in the study involve?

3. Who will the participants in the research be, and how will they be selected?

4. How much time will participation involve?

5. Will people be paid to participate?

6. What risks or discomforts (e.g., physical, psychological, social, legal) can be reasonably expected due to participating in this research?

7. What potential benefits does the research offer to the individual participant?

8. What potential benefits does the research offer to society?

9. How will informed consent be obtained? Keep in mind that informed consent is a process, not just a form.

10. How will the confidentiality of the data be maintained?

11. Where will the research take place?

TEMPLATE FOR RESEARCH CONSENT FORM

PROJECT TITLE: _____

INVESTIGATOR(S): _____

SCHOOL NAME: _____

ADULT SPONSOR: _____

1. What is the purpose of the study?

2. What activities/procedures does participation in the study involve?

3. How much time will my participation take?

4. Will I be paid to participate?

5. What risks or discomforts (e.g., physical, psychological, social, legal) can be reasonably expected due to participating in this research?

6. What potential benefits can the research offer to me?

7. What potential benefits does the research offer to society?

8. How will the confidentiality of my data be maintained?

PARTICIPANT RIGHTS

- Your participation in this study is voluntary.
- You have the right to withdraw from the study at any time, for any reason, without any penalty.
- Any information derived from the research project that personally identifies you will not be voluntarily released or disclosed without your consent.

QUESTIONS ABOUT THE STUDY

If you have questions about this study, please contact the adult sponsor named above at the following phone number:

My signature means that I agree to participate in this study.

PARTICIPANT'S SIGNATURE: _____

DATE:____/____/____

PARTICIPANT'S PRINTED NAME:_____

TEMPLATE FOR RESEARCH CONSENT FORM FOR MINORS

PROJECT TITLE: _____

INVESTIGATOR(S): _____

SCHOOL NAME: _____

ADULT SPONSOR: _____

1. What is the purpose of the study?

2. What activities/procedures does participation in the study involve?

3. How much time will my child's participation take?

4. Will my child be paid to participate?

5. What risks or discomforts (e.g., physical, psychological, social, legal) can be reasonably expected due to participating in this research?

6. What potential benefits can the research offer to my child?

7. What potential benefits does the research offer to society?

8. How will the confidentiality of my child's data be maintained?

PARTICIPANT RIGHTS

- Your child's participation in this study is voluntary.
- You have the right to withdraw your child from the study at any time, for any reason, without any penalty.
- Any information derived from the research project that personally identifies your child will not be voluntarily released or disclosed without your consent.

QUESTIONS ABOUT THE STUDY

If you have questions about this study, please contact the adult sponsor named above at the following phone number: .

My signature means that I agree to have my child participate in this study.

PARTICIPANT'S PRINTED NAME: _____

GUARDIAN'S PRINTED NAME: _____

GUARDIAN'S SIGNATURE/CONSENT: _____

DATE: ____/____/____

TEMPLATE FOR DEMOGRAPHIC DATA SHEET

For the purposes of analyzing our data, it would be helpful to know a little information about you. Please check the correct response.

1. Sex:
   - ☐ Male
   - ☐ Female

2. Race:
   - ☐ A. White
   - ☐ B. African American
   - ☐ C. Asian American
   - ☐ D. Hispanic
   - ☐ E. Native American
   - ☐ F. Other (Please specify.) _____

3. Date of Birth:____/____/____

SAMPLE RESEARCH DESCRIPTION FOR THE INSTITUTIONAL REVIEW BOARD (IRB)

PROJECT TITLE: Attitudes Toward and Use of Computers in Adults
INVESTIGATOR(S): Joan Neeson
SCHOOL NAME: Central High School
ADULT SPONSOR: Ms. Madeline Kreeger

Please attach the following materials to this form:

- The answers to the questions posed below
- A copy of the consent and, if minors are involved, assent forms
- A copy of the materials to be used in the study.

1. What is the purpose of the study?

The purpose of this study is to explore how adults use and feel about computers.

2. What activities/procedures does participation in the study involve?

Participants will be given a 27-item survey composed of close-ended questions about their use of and attitudes toward using computers. A copy of this survey is attached. They will also be asked for some demographic information (e.g., gender, race). A copy of the demographic data sheet is also attached.

3. Who will the participants in the research be, and how will they be selected?

Volunteers will be solicited at a local library; permission to collect data at the library will be acquired from the library staff. A flyer will be posted on the door of the library, and the researchers will sit at a table with a large poster that advertises the study.

4. How much time will participation involve?

The survey takes approximately 10 minutes to complete.

5. Will people be paid to participate?

There is no payment for participation.

6. What risks or discomforts (e.g., physical, psychological, social, legal) can be reasonably expected due to participating in this research?

No more risk is anticipated than that typically involved in daily life. Participants will merely be asked to answer the questions on a short survey. However, it is possible that some participants experience some anxiety related to computers and, if so, the survey questions might trigger similar feelings.

7. What potential benefits does the research offer to the individual participant?

There are no potential benefits for the participant.

8. What potential benefits does the research offer to society?

It is hoped that the research will shed light on how adults of various ages in the 21st century are using computers and the valence of their feelings toward this type of technology.

9. How will informed consent be obtained?

Potential participants will be greeted by the researcher and told:
"I am conducting a study on how adults use and feel about computers. Participation is voluntary and would involve only 10 minutes of your time. Would you be willing to participate?"
If the participant agrees, the researcher would ask the participant to read the consent form and to ask any questions s/he might have. Participants would be given a copy of this form to keep.

10. How will the confidentiality of the data be maintained?

Informed consent forms will not be linked to the survey that the participant completes. Informed consent forms will be immediately submitted to the sponsoring teacher, and the teacher will lock the forms in a file cabinet. The survey and the demographic data sheet will be stored in a separate secure location by the teacher. The completed sheets will not leave school property.

11. Where will the research take place?

The research will take place at the Anytown Public Library, 12 Reading Avenue, Anytown, NY.

Because the survey referenced does not actually exist, a copy is not included. Normally a copy of the survey or instrument would be submitted to the IRB.

SAMPLE RESEARCH CONSENT FORM

1. What is the purpose of the study?

The purpose of this study is to explore how adults use and feel about computers.

2. What activities/procedures does participation in the study involve?

You will be given a 27-item survey composed of close-ended questions about your use of and attitude toward using computers. You will also be asked for some demographic information (e.g., gender, race).

3. How much time will my participation take?

The survey takes approximately 10 minutes to complete.

4. Will I be paid to participate?

There is no payment for participation.

5. What risks or discomforts (e.g., physical, psychological, social, legal) can be reasonably expected due to participating in this research?

No more risk is anticipated than that typically involved in daily life. Participants will merely be asked to answer the questions on a short survey. However, it is possible that some participants experience some anxiety related to computers and, if so, the survey questions might trigger similar feelings.

6. What potential benefits can the research offer to me?

There are no potential benefits for the participant.

7. What potential benefits does the research offer to society?

It is hoped that the research will shed light on how adults of various ages in the 21st century are using computers and the valence of their feelings toward this type of technology.

8. How will the confidentiality of my data be maintained?

The data and the consent forms will be stored separately in secure locations at the sponsoring institution.

PARTICIPANT RIGHTS

- Your participation in this study is voluntary.
- You have the right to withdraw from the study at any time, for any reason, without any penalty.
- Any information derived from the research project that personally identifies you will not be voluntarily released or disclosed without your consent.

QUESTIONS ABOUT THE STUDY

If you have questions about this study, please contact the adult sponsor named above at the following phone number: (555) 555-5555.

My signature means that I agree to participate in this study.

PARTICIPANT'S SIGNATURE: _____

DATE:____/____/____

PARTICIPANT'S PRINTED NAME:_____

APPENDIX F
RESEARCH WITH ANIMALS*

RESEARCH ETHICS WITH ANIMALS

With the decision to use live animals for teaching and research purposes comes a responsibility to care humanely for them and to minimize pain or discomfort whenever possible. Working with research animals is a privilege, and our society has developed important rules and guidelines to ensure that these animals are treated humanely. For example, the use of vertebrate animals in teaching and research at colleges and universities must comply with strict U.S. government regulations set forth in the Animal Welfare Act and/or the Public Health Service Policy on Humane Care and Use of Laboratory Animals, as well as the guidelines found in the Guide for the Care and Use of Laboratory Animals. Likewise, projects in secondary schools that are intended for publication or science fair exhibition must comply with the requirements of the journal or fair sponsor (e.g., the Intel International Science and Engineering Fair), which rely on these same government standards. By following these rules and guidelines, researchers ensure that animals are treated humanely and safeguard the continued use of animals in important behavioral research.

Because many psychologists conduct animal research, the American Psychological Association has established the Committee on Animal Research and Ethics (CARE), a committee whose mission is to help safeguard responsible animal experimentation. In response to this charge—and in the hope that all professional educators will join us in helping to protect the welfare of animals used in research and teaching—CARE has developed guidelines for the use of animals in behavioral projects in schools (K-12). These guidelines have been derived from the rules and regulations mandated by the federal government as well as APA guidelines for animal research in colleges and universities across the country, and they have as their basis important ethical principles that safeguard the humane treatment of animals.

*Cited from APA Committee for Animal Research and Ethics. (2003) Guidelines for the use of animals in behavioral projects in schools (K-12). Washington, DC: American Psychological Association. (*http://www.apa.org/science/AniResbro03.pdf*)

APPENDIX G
RESOURCES

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Information contained in this manual does not represent the official policy of the American Psychological Association.

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