USING SPSS FOR WINDOWS TO ENHANCE, NOT OVERWHELM, COURSE CONTENT

The recent introduction of SPSS for Windows allows for data analysis to be employed in substantive courses as well as methods courses. Data analysis using SPSS for Windows complements the otherwise typical activities (paper writing, class presentations) of a substantive course. This article focuses on its use in upper-division sociology classes where substantive issues are developed require only about five hours of computer time and are used in conjunction with a text.

USING SPSS FOR WINDOWS IN A SUBSTANTIVE COURSE

SPSS for Windows is a statistical analysis and data management software package produced by SPSS, Inc. It uses a graphic environment that is negotiated by the use of a mouse and a series of windows, menus, and dialog boxes. SPSS has three basic components. First, the package has a data editor in the form of a spreadsheet; this window enables the user to enter or import data while seeing the rows and columns of the data set. From this spreadsheet window, the user can select functions from a menu to perform statistical analysis and produce charts and graphs. Second, SPSS has an output window that displays the results of statistical runs. The results can be edited in this window. The third component is a chart window in which a variety of charts and graphs are displayed and can be customized. SPSS also has a syntax window for performing analysis by using the syntax required for previous versions. Learning this syntax was the major obstacle to using SPSS in the classroom, but now it is no longer necessary to do so. Moreover, I have seen students panic in the face of a screen full of uninterpretable syntax that the screen is now free of such code that is a dramatic improvement for beginning users. (A more detailed review of the software is found in Sudd 1994.) SPSS for Windows is expensive, but its Stantonware version is discounted substantially. Information about this version can be obtained from Prentice-Hall.

In the course I teach, a junior-level course on group processes, SPSS enables students to conduct their own research. I provide them with survey data that is relevant to substantive issues in the course. Using SPSS and this data set, the students test their own hypotheses, which are generated in response to the course material. I create a complex package, but it is not difficult to learn to use. Some of my students have had little or no exposure to computers; they need a basic idea by testing them, and how presentation of numerical results and graphs can greatly enhance an undergraduate term paper.

In substantive courses, the use of SPSS is computer-related issues are setting up an SPSS data file for students to use and choosing a data set that is relevant to the course. I have 35 students, and access to a network of 20 PCs with SPSS on the network. By using a network, I can create a class account that enables students to log in directly to SPSS, and can have a data file copied to a temporary storage directory. In this way, students will have access to a copy of the data file, which they may edit without affecting the original (for example, by deleting half the cases). The lack of a network does not seem problematic, however, because students will want to keep their own copies of the data set in any case; they will need access only to the software, wherever it may be located.

Finding an appropriate data set involves more detective work. I have used data that I collected and the General Social Survey. Many data sets exist, which are relevant to all sociological specialties. Knoke and Harl (1995), which is a textbook on using SPSS in a methods course and comes with a floppy disk with some data from the GSS.

PEDAGOGICAL ADVANTAGES

Using SPSS for Windows in an upper-division undergraduate course is advantageous for reasons other than teaching either computer literacy or statistics and methods. I consider the learning of these skills a serendipitous outcome of the project. As a teach-
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First, students become more invested in learning about social science research by doing it. Using SPSS allows students to experience the process of social research rather than simply hearing or reading about the findings. Though they do not generate the survey, they can formulate hypotheses that interest them. A methods course also may profit from this type of exercise, but a substantive course can devote most of its time to exploring a research area. Thus a connection between students' hypotheses and course material can be linked intimately. The formulated hypotheses then become tantamount to a challenge, engaging students' interest in the material. Although none of my students have burst into tears when their hypotheses were not confirmed, most express disappointment or gratification upon learning the statistical outcomes.

Not only do students profit from generating their own testable hypotheses; they also benefit from comparing their own hypotheses with those of their classmates. This investment is invaluable to the development of critical thinking skills. Such skills emerge when students attempt to explain why their hypotheses failed to be confirmed when others' were confirmed, when they observe others proposing hypotheses contradictory to their own, and when they evaluate alternative explanations offered by others for the same prediction. The search for these answers draws students' attention back to the substantive issues of the course, investing students in the material as it is presented. Moreover, their opinions are clarified more fully by their comprehension of the course readings, to ask critical questions about previous research on the basis of their own considerations of the data set.

Although the main point of this article is that students can learn substantive issues more effectively by using SPSS, the methodological benefits should not be overlooked. A third advantage is that SPSS helps students to become familiar with the stages of research. It enables them to engage in a series of activities in which they generate hypotheses, conduct a literature review, test their hypotheses, and report their findings. Finally, students become familiar with the Windows environment, up-to-date statistical software, and the look and feel of data analysis. This kind of familiarity is valuable to students in almost any job market.

SAMPLE COURSE DESIGN

Below I describe the activities that I have developed for introducing SPSS into my course on group processes. These include lectures, papers, and presentations in addition to SPSS exercises. SPSS for Windows is meant here to complement the otherwise typical activities (paper writing, class presentations) of a substantive course. Therefore its use is minimized, not maximized as it might be in a methods course. The sequence involves approximately five hours of computer time for each student, including a hands-on introduction. Because my course meets for only 50 minutes, this sequence is not seriously diminished. It does not diminish the amount of time devoted to other class activities such as lecture and discussion. The two primary goals of using SPSS are to test students' hypotheses and to help them produce high-quality term papers. Below I describe one such integration; this is meant to represent many other statistical and pedagogical possibilities.

SEQUENCE OF ACTIVITIES

Step 1: 50-minute introduction to the Windows environment. Students unfamiliar with Windows require an overview of the Windows environment—for example, using menus, saving and copying files, and using a mouse. I have found that about half the members of my classes (who are upper-division students) are somewhat familiar with Windows, and about three-quarters are somewhat familiar with computers in general. This 50-minute, hands-on introduction enables students who have had no experience with computers to begin familiarizing themselves with Windows; it would be well enough to allow me to suggest (with little guilt) that they continue their introduction through an on-line tutorial.

Step 2: Survey questionnaire. Students receive a copy of the survey questionnaire to complete on their own. In this way, we can become familiar with the questionnaire items and can draw a connection between the survey and the substantive issues discussed in the course. By filling out the questionnaire, students become invested in the outcomes of the larger survey; it allows them to compare their own responses with those of others in the data set.

Step 3: Lecture introduction to the project. The objective of this lecture is to facilitate students with the survey, hypothesis formulation, and the sequence of activities, so that they understand the use of SPSS for the project as a whole, and its culmination in a final term paper. Hypothesis formulation is introduced at this point with examples of bivariate relationships found in the data set. In my course, for example, two themes are developed: conflicts between the individual and the group, and conflicts between groups. Students have tested the following hypotheses, among others: 1) Males will be more cooperative with other group members than will females. 2) The more strongly individuals express confidence in the future, the more cooperative they will be. Responses from an individualistic culture will be more cooperative with out-group members than with in-group members. 3) Respondents from an individualistic culture will be more cooperative with out-group members than with respondents from a collectivistic culture.

Step 4: SPSS Exercise #1. In this 50-minute exercise, students are introduced to SPSS for Windows by examining the survey data set. They explore the data set to learn its organization and to establish a clear link between the spreadsheet and the questionnaire. Figure 1 displays the typical format in which the relevance and the mechanics of each procedure are presented in a "cookbook" and a "workbook" style. The instructions are exact, so that students can complete the assignment without resorting to a manual; workbook questions serve as a pedagogical check.

Next, students add their own survey responses to the data set, that gaining experience in data entry. Although students find it
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Easy to use SPSS for Windows, the package is sophisticated and the many windows and menus options are confusing at first. This first exercise should be devoted to familiarizing students with the package, without actually asking them to carry out any statistical operations.

Some students have told me that the initial computer exercises are not difficult, but nevertheless produce some anxiety. This anxiety seems to diminish as the students become more familiar with the routines. One student commented: "I think the SPSS assignments get easier as the weeks go by. The first one was very confusing, but I think that was because it was the first time doing it and because we had not familiarized ourselves with the computer yet."9

Step 1. Paper #1: Once students are familiar with the data set and the themes of the course have been well established, they can formulate testable hypotheses using the variables in the data set. I require students to formulate three hypotheses and argue in their defense without conducting outside research. This step encourages students to formulate hypotheses that they themselves believe rather than what sociologists believe. It is also intended to stimulate their "sociological imagination." In my experience with this assignment, I have been surprised by how strongly students resist operationalizing data in their ideas. Therefore the process of reducing their general theoretical claims to specific scale predictions is useful practice in critical and logical thinking.

One student understood how directing and testing ideas involved her in the project: "I like the fact that you designed the course so that we did not see the actual results of the study until after we had a chance to make our own arguments. This helped me think about my own arguments in depth rather than simply looking at the data."9

Step 2: Paper #2. In this exercise, students begin to concentrate on the variables related to their hypotheses. They are asked to distinguish between independent and dependent variables and to specify the relationship between their theoretical variables and operational measures. They also must produce some descriptive statistics for their variables (e.g., frequencies, ranges) and create histograms. Students are asked to answer a series of questions about their variables, which can be obtained only by conducting the statistical operations correctly. Finally, the required production of histograms reinforces their efforts to obtain information directly from the SPSS output. Students typically have difficulty in interpreting numerical output immediately; the charts make this task much easier.

Several students remarked on the value of seeing their data represented visually in graphs. Although the assignments could be redirected easily toward generating more sophisticated output, the mastery of descriptive statistics is not among my limits. One student wrote, "I like seeing the results of our hypotheses and data on graphs. Visualizing the information really helps me to understand it better."9

Step 7: Presentations. Students are asked to present their hypotheses and descriptive statistics in class. They make transparencies of their histograms to use as part of their presentations. This assignment not only provides students with public speaking experience, but it also supplies me with valuable feedback on students' understanding of the data. Students find this exercise valuable to them because they are generally surprised by the diversity of hypotheses generated by the same data set. Also, class members who have had trouble grasping the materials are helped by seeing others explain their ideas and findings. Finally, because all the hypotheses are related to course themes, these themes are reflected back to the students through other students' eyes, thus adding depth to the substantive issues covered in the course. Presentations are made again after the students' hypotheses have been tested.

Step 8: Paper #3. In this paper, students are required to do some outside research to find support for one of their hypotheses. The literature review enables them to compare their own beliefs with those of sociologists and to examine research articles that model the very process they are pursuing. The investment in attempting to test their own hypotheses deepens their reading of the research: rather than merely summarizing the articles, they have a viewpoint to focus their analysis, forcing them to consider the validity of their hypotheses as well as of the research. The opportunity to conduct a literature review in conjunction with data analysis is an important reason why the use of SPSS should not be limited to a methods course, where a substantive review is likely to be superficial. For this reason, the literature review is a required component of all the assignments.

Step 9: SPSS Exercise #3. In this exercise, students test their hypotheses using the simple dialogues. For bivariate hypotheses in a course that is not devoted to statistics or research methods, this dialogue is an important reason why the use of SPSS is likely to be superficial. For this reason, the literature review is a required component of all the assignments.

In this exercise, students test their hypotheses using the simple dialogue. For bivariate hypotheses in a course that is not devoted to statistics or research methods, this dialogue is an important reason why the use of SPSS is likely to be superficial. For this reason, the literature review is a required component of all the assignments.

Step 10: SPSS Exercise #4. In the final exercise, students are asked to produce bar charts showing the results of their computations of means and crosstabulations (with fit lines) for their correlations. These are helpful for reinforcing the students' interpretation of the data and for making interesting and effective class presentations. They also look impressive. The scatterplots in particular help students understand the relationship between individual responses and aggregate outcomes, and moderate many individuals' tendency to state their findings in absolutes. Students can observe incidences of outliers and can see the general scatter that clouds most social research data and conclude that the potential for obtaining "perfect" predictions.

Step 11: Paper #4. This paper provides the students with the final opportunity to summarize their paper as one model for writing a final paper. If students have had trouble grasping the materials are helped by seeing others explain their ideas and findings. Finally, because all the hypotheses are related to course themes, these themes are reflected back to the students through other students' eyes, thus adding depth to the substantive issues covered in the course. Presentations are made again after the students' hypotheses have been tested.

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Figure 2. Instructions for Generating a Cross-Tabulation with Illustration

To calculate a cross-tabulation of two variables: a. Click on the STATISTICS menu. b. Click on CROSSTABS. c. Move the independent variable to the row box. d. Move the dependent variable to the column box. e. Click on OK. f. Click on CONTINUE. g. Click on OK.

Gender by Q4: Frequency of Recycling Behavior

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Notes:
1. Students' reactions come from an e-mail query of mine comparing the SPSS exercises, sent during the week of the last computer assignment. The opinions are representative, but the responses were not anonymous and should be taken only as anecdotal.

4. There are some limitations to using SPSS as the primary data analysis tool in a social science research course. However, the package is still widely used in many courses and provides a flexible and powerful tool for data analysis. It is important for students to become familiar with the software and to understand its capabilities and limitations.

5. When conducting a literature review, students should consider the use of fit lines in scatterplots. This can help clarify the relationship between variables and can provide insight into the validity of their hypotheses.

6. The use of SPSS in a course that is not devoted to statistics or research methods can be useful in reinforcing students' interpretation of the data and for making interesting and effective class presentations. However, it is important to balance the use of software with critical and logical thinking, as well as to ensure that students can still interpret the data without relying solely on the software output.

7. The final exercise should provide students with the opportunity to summarize their findings, reflect on their hypotheses, and draw conclusions. It can also be used as a platform for presentations or oral reports, allowing students to further develop their communication skills.

8. In step 10, students are asked to generate bar charts showing the results of their computations. This exercise helps them visualize the data and can be used to reinforce their understanding of key variables and their relationships.

9. In step 7, students are required to present their hypotheses and descriptive statistics in class. This provides an opportunity for students to receive feedback on their work and to engage in discussions with their peers.
The activities reported here are useful pedagogical tools for teaching sociology as well as enjoyable exercises. Students appreciate the opportunity to use computers as part of the field educational project. Effectively; it allows what was once reserved for graduate students and professors to be done with such ease. I was at first really skeptical of student experience. Though students initially are nervous because the project is both complex and new to them, they find each stage manageable and worthwhile. In the words of one student, "I was so surprised to find myself doing all these complex graphs and charts with such ease. I was at first really skeptical and a little worried that I wouldn't be able to get the credit because I thought I was too computer-illiterate." The quality of the output and graphs, and the "friendliness" of the software environment, make a positive impression on students as they generate analyses that look (and are) sophisticated.

The project described here attempts to balance creative opportunity with structured guidance. That is, while students have the opportunity to pursue their own ideas, they receive enough guidance to allow them to vent these ideas. The point of using SPSS for Windows in a substantive course is not to teach methods or computing skills (though these are valuable in their own right), but to provide students with a tool that does not overwhelm their learning of substantive issues. SPSS enhances their learning experience by allowing them to engage the material actively and analytically. My experience with this project thus far suggests that student desire to learn is increased as they move from being readers of social research to practitioners, capable not only of formulating ideas, but also of putting them to the test. SPSS for Windows offers students an excellent means to become such practitioners.

REFERENCES


David Kemp is a PhD candidate in sociology at the University of Washington, studying the pursuit of self-interest and the promotion of the common good. His dissertation research focuses on the clash between morality and nationality in an age of individualism. He has taught three courses that use computers in the classroom, one of which employs SPSS for Windows. Address correspondence to the author at the Department of Sociology, CR-40, University of Washington, Seattle, WA 98195; e-mail: KARP@U.WASHINGTON.EDU.

JEROLD M. STARR
West Virginia University

TEACHING THE VIETNAM WAR: A SOCIOLOGICAL APPROACH

Since 1987 I have taught a full-semester course on the Vietnam War every spring. The course always has a long waiting list and receives rave reviews from the students. Why have I decided to keep this course focused on the Vietnam War? Well, I was excited when the war was a "mistake," but few claim to know what we should have done differently. In fact, two-thirds cannot find Vietnam on a world map, more than half "do not have a clear idea what the war was about," and one-third do not even know which side the United States supported (ABC News/Washington Post 1985).

These figures are alarming, not only because the war is so recent, but also because Vietnam, according to new Pentagon pronouncements, is a clear case of the emerging pattern of U.S. military strategy, including "low-intensity conflict" (e.g., guerrilla warfare, counterinsurgency, pacification), rapid deployment forces (as in the Panama invasion), and surprise bombing raids (as in Libya) (Gordon 1990).

As a reflection of the war's importance, a 1985 national survey found that 347 college courses included coverage of the Vietnam War (Survey of "Vietnam Era" Courses 1985). The war was the principal subject in 220 of these courses. In 1991 a survey of courses that focused exclusively on the war yielded 89 completed questionnaires (Hagopian 1993). More than half (55%) of the courses were in history; almost one-fourth (23%) were in government or political science. Nine courses were offered in English, but only two, including my own, in sociology. Also in 1991, the ASA Teaching Resources Center published Teaching the Sociology of Peace and War: A Curriculum Guide (MacDougall and Raisz 1991). The guide includes ideas for 20 courses. Excluding my own, only two include any reading on the Vietnam War; in both cases the coverage is brief.

I do not understand why sociologists have been so slow to seize this opportunity. I can testify that teaching my course on the Vietnam War has brought concerns from my personal life and my scholarly life into a satisfying synthesis. I was trained as a graduate student in sociology in 1964-1969, the early years of the Vietnam War. My political consciousness and sociological interests were formed by that event.

Research by Stehr and Larson (1972) demonstrates, in fact, that sociology as a discipline was changed profoundly by the politics and protests of the 1960s. In their study of changes in specialization among sociologists over the period 1950-1970, these authors found declining interest among younger sociologists in areas associated with "problem of order" approaches to sociology such as structural functionalism and studies of socialization, social control, and integrative institutions. On the other hand, sociologists displayed increasing interest in areas associated with "conflict and change" approaches, which study power, inequality, and ideology (Stear 1983).


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