

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 themes are developed in some depth. Specifically, I will discuss how a few SPSS exercises can help organize students' ideas by testing them, and how presentation of numerical results and graphs can greatly enhance an undergraduate term paper.

DAVID R. KARP

University of Washington

EDUCATORS COMMONLY ARGUE THAT LEARNING is enhanced by practical experience. Such is the case with sociological concepts, but rarely have we been able to engage students in sociological research that makes theoretical explanations salient and the art and science of research relevant. The recent introduction of SPSS for Windows, however, allows for data analysis to be employed for teaching substantive issues.¹ Students' ease in using this package enables them to conduct primary research without subordinating the substantive content of a course to methodological and technological issues. Previous versions of SPSS (for the mainframe, PC, or Macintosh) required advanced instruction before nonspecialists could use them easily and effectively.

Although a wide variety of classes may profit from using SPSS for Windows, including graduate courses and methods courses, this article focuses on upper-division sociology classes where substantive themes are developed in some depth. I will briefly discuss the nature of SPSS for Windows and some problems of using computers in the classroom, but I will emphasize how SPSS for Windows can be used to enhance the substantive topics of a sociology

¹ Many of the arguments for using SPSS for Windows may apply as well to other software packages used in the classroom, such as Microcase and CHIPendale. This discussion is not meant to be a comparative review; users are encouraged to explore the relative advantages of each. I prefer SPSS because I use it for my own research and remain up-to-date with it, and because I believe it is as easy to use as other packages (if not easier) and more varied in its potential application.

course without allowing statistics and methods to become the primary topics of discussion. Specifically, I will discuss how a few SPSS exercises can help organize students' ideas by testing them, and how presentation of numerical results and graphs can greatly enhance an undergraduate term paper.

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 windows or components. First, the package has a data editor in the form of a spreadsheet; this 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 wide 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 of SPSS. 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 is a dramatic improvement for beginning users. (A more detailed review of the software can be found in Stull 1994.) SPSS for Windows is expensive, but its Studentware 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 materials. SPSS is a sophisticated and 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 introduction to the "point-and-click" environment. Nevertheless, all of my students quickly master the tasks described in these exercises. The SPSS exercises that I have developed require only about five hours of computer time and are used in conjunction with a term paper.

The use of SPSS for Windows (or any computer package) in the classroom poses problems; computer availability is the most obvious. Ideally, one would wish to make a computer available for each student and to be present when students carry out their assignments. Because most instructors, including myself, cannot meet these conditions, I have designed a limited number of computer exercises that do not create excessive difficulties with availability or scheduling. I must divide my class in two because our computer lab is not large enough for the whole class; I schedule each group to meet on only five occasions (one general introduction and four individual exercises) so that I can be present while they work at the computer. My presence is helpful but not essential. I have structured the exercises so that students can accomplish them without my assistance, but novices to the Windows environment inevitably will have questions, and it is impossible to predict all of the traps students may encounter. My exercises have a "cookbook" quality to minimize this problem and to prevent the course from becoming a seminar on using this soft-

ware. Students use the software as a tool, and become familiar with it by following careful instructions, not by searching through its on-line help screens. Again, the course emphasizes the formulation of ideas in response to substantive issues, not the inventive use of SPSS.² By organizing a series of short exercises that are improved by the instructor's presence but do not require it, I help to reduce at least some of the problems of computer availability and scheduling.

Two other 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. Kiecolt and Nathan (1985) review a number of general data sets, including the GSS. Another important source is Babbie and Halley (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-

² Some students enjoy and profit from using SPSS innovatively. As an extra-credit assignment I provide one such opportunity (the creation of a clustered bar chart without offering any instruction except a visual example).

ing tool, SPSS for Windows provides several pedagogical advantages.

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 this empirical process than if they had simply reviewed others' research because this process forces them to articulate their ideas clearly when they operationalize their hypotheses and to reconsider those hypotheses in light of the empirical evidence.

Second, students write sophisticated papers in which they are made to think (and write) clearly about their ideas. The sequential process of formulating and testing hypotheses and explaining the findings helps them to organize the presentation of their beliefs. By integrating three consecutive writing assign-

ments (hypotheses, literature review, and data analysis) with tables and charts, students produce an impressive-looking paper that has the basic elements of a journal article. The opportunity to write a paper in this style improves their comprehension of the course readings, which include several research articles and literature reviews. Many of my students begin 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 learning 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 the results in class and in a paper. 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 found useful for integrating SPSS into my course on group processes.³ 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 a total of 50 hours, this sequence does not seriously 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 integra-

³ At the time of this writing, I have used these activities in my course for four consecutive quarters.

Figure 1. A Segment of Assignment 1, Showing Both "Cookbook" and "Workbook" Styles

How can you find information about each **variable** (a variable is a question on the survey and a column on the spreadsheet)? To find information about one, we must see how it is defined. For example, look at the variable GENDER on the spreadsheet. Notice how each **response** is a number (1 or 2) instead of a word (e.g., male or female). We need to know which number goes with which gender. The responses in the spreadsheet are called **values**, which are always numbers. These values always need labels (called **value labels**) to define them and give them meaning.

To see how a variable is defined:

- click on the UTILITIES menu.
- click on VARIABLES.
- in the left hand box, click on GENDER.
- click on other variables to see how they are defined.
- after answering the questions below, click on CLOSE to exit.

What are the value labels of each value for GENDER?

If a respondent answers "1" for CULTURE, what is his/her culture?

We intuitively know what the variable GENDER means, but the meaning of variable S1 isn't intuitive. This variable needs a variable label as well as a value label. What is the variable label for S1 and what are its value labels?

tion; this is meant to represent many other statistical and graphical 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 works 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, they 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 object of this lecture is to familiarize students with the survey, hypothesis formu-

lation, and the sequence of activities, so that they understand the use of SPSS, 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 competitive with other group members than will females. 2) The more strongly individuals express confidence in the future, the more cooperative they will be. 3) Respondents from an individualistic culture will be more cooperative with out-group members than will 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, thus gaining experience in data entry. Although students find it

easy to use SPSS for Windows, the package is sophisticated and the many windows and menu options are confusing at first. This first exercise should be devoted to familiarizing students with the package, without 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 computers yet."⁴

Step 5: 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 their ideas. Therefore the process of reducing their general theoretical claims to specific bivariate predictions is useful practice in critical and logical thinking.

One student understood clearly how eliciting and testing ideas invested 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."

Step 6: SPSS Exercise #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

⁴ Students' reactions come from an e-mail query of mine regarding the SPSS exercises, sent during the week of the last computer assignment. The quotations are representative, but the responses were not anonymous and should be taken only as anecdotal.

relationship between their theoretical variables and operational measures. They also must produce some descriptive statistics for their variables (e.g., frequencies, means, ranges) and create histograms. In addition, 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 simple and cannot be overemphasized. 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."

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 the benefits of public speaking, but also supplies me with valuable feedback on students' understanding of the data. Students find the presentations interesting 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 of the hypotheses are related to course themes, these themes are reflected back to the students through other students' eyes, thus adding perspective to the substantive issues covered in the course. Presentations are made again after the students' hypotheses have been tested.

Step 8: Paper #2. 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

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

To calculate a cross-tabulation of two variables:

- click on the STATISTICS menu.
- click on SUMMARIZE.
- click on CROSSTABS.
- move the independent variable to the row box.
- move the dependent variable to the column box.
- click on CELLS.
- click on ROW PERCENTAGES.
- click on CONTINUE.
- click on OK.

Gender by Q4: Frequency of Recycling Behavior

Row Pct	Q4						Row Total
		never 1	rarely 2	sometimes 3	usually 4	always 5	
Male	1	11.6	18.9	9.1	32.1	28.3	318 50.2
Female	2	1.9	5.7	7.6	32.9	51.9	316 49.8
Column		43	78	53	206	254	634
Total		6.8	12.3	8.4	32.5	40.1	100.0

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 that focuses 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 sacrificed in favor of other activities.

Step 9: SPSS Exercise #3. In this exercise, students test their hypotheses using the simplest of statistics. For bivariate hypotheses in a course that is not devoted to statistics or research methods, I have found it sufficient to rely on comparisons of means and correlations. Alternatively, cross-tabular analysis may be sufficient for basic hypothesis testing. The advantage of using SPSS for Windows is clear when we consider the few steps necessary to test hypotheses. Figure 2, for example, shows the nine steps necessary in generating a common cross-tabulation. The table is a simple but effective referent enabling students to distinguish the effects of levels of an independent variable on a dependent variable. Tests of significance are beyond the scope of these exercises; some students who have taken a statistics course,

however, are encouraged to conduct the relevant test. This elaboration would be an obvious place for a lengthier set of exercises.

Step 10: SPSS Exercise #4. In the final exercise, students are asked to produce bar charts showing the results of their comparisons of means and scatterplots (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 and reduces the potential for obtaining "perfect" predictions.

Step 11: Paper #3. Students are asked to describe the data set and the results of their analyses as well as offering their own interpretation of the data. They are also required to revise their first two papers and to combine them with this final paper as one model of social research: hypotheses, literature review, data analysis, and conclusion. These papers tend to be long (despite page limits) because students have so much to say at this point. They have also completed the project in stages; this approach helps them to organ-

ize the paper and minimizes the anxiety of having to produce a long term paper.

CONCLUSIONS

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 an organized sequence of activities in a term project. SPSS for Windows is a breakthrough statistical package precisely because it enables novices to employ it quickly and effectively; it allows what was once reserved for graduate students and professors to become part of the undergraduate educational 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 figure it out, (but) the instructions were very easy and clear. I didn't think that I would be able to get the credit because I thought I was so 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 test 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 students' 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

- Babbie, Earl R. and Fred Halley. 1995. *Adventures in Social Research: Data Analysis Using SPSS*. New York: Pine Forge.
- Kiecolt, K. Jill and L.E. Nathan. 1985. *Secondary Analysis of Survey Data*. Newbury Park, CA: Sage.
- Stull, Judith C. 1994. "SPSS for Windows." *Teaching Sociology* 22:136-7.
- David Karp 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 rationality 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, DK-40, University of Washington, Seattle, WA 98195; e-mail: KARP@U.WASHINGTON.EDU.

TEACHING THE VIETNAM WAR: A SOCIOLOGICAL APPROACH

The Vietnam War was the longest in U.S. history. Two out of three Americans believe that it was a "mistake," but few know what we should have done differently. Because of its importance, well over 300 college courses include coverage of the war. Very few, however, are in sociology. The war presents a great opportunity to teach students the critical thinking skills needed for informed citizenship. I describe in detail some of the text, formats, and assignments I use in my highly popular course on this subject. I also show how the war offers a great opportunity to demonstrate the relevance of sociological concepts and issues to illuminating the related controversies. I present examples from deviance, social control, political sociology, race relations, and social stratification.

JEROLD M. STARR
West Virginia University

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 Vietnam? That war was the longest and the second most expensive in this nation's history. The human, environmental, and economic costs were enormous. Public opinion polls over the years consistently have shown that two out of three Americans believe 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 syllabi 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 slow to seize this opportunity. I can testify that teaching my course on the 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 (Starr 1983).