

Chapter 2B

IBM SPSS Statistics

Processes for Mac

WE DEAL in this chapter with the grim reality that SPSS was for many years designed primarily for the PC. We as Mac users “know” that we have a superior operating system, have more intuitive operations and sequences, and in general believe we can thrash the heck out of any PC. To add insult to injury the first eleven editions of this book included the PC bias right in its title: *SPSS for Windows Step by Step*.

SPSS created a version of their program for Mac eons ago, but for many years the Mac version worked differently (and not good differently). Only with SPSS 16.0 did they create fully parallel programs, that is, once you get into the program, whether you are a PC or a Mac user, the screens and the sequences are essentially identical.

What we as authors have chosen to do is to write two complete versions of Chapter 2 introducing SPSS sequences and processes: one Chapter 2 for PC users and the other for Mac users. In *this* Chapter 2 everything you see employs Mac screen shots and terminology. This chapter will also alert you to any significant differences between the two operating systems and provide you with the grounding to make maximum use of the rest of the book.

Throughout the remainder of the book we retain the PC screens, but, other than minor variations, the screens and sequences for PC and Mac are identical. Many of our readers have used prior editions of our book even though they have the Mac OS version of SPSS. Even though they have not had difficulty, this chapter should now make it even easier.

2.1 Selecting

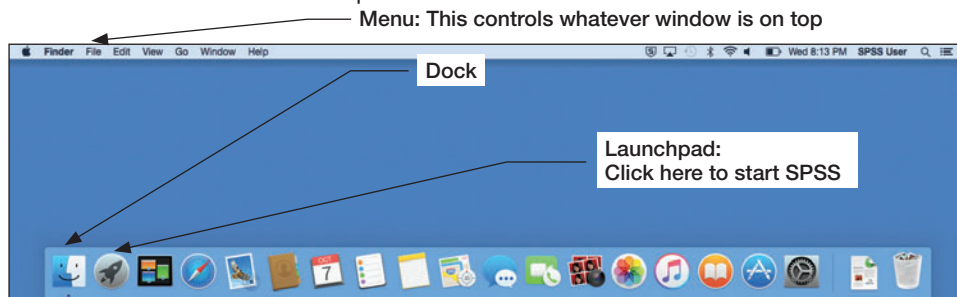
For most purposes you can use your mouse, touchpad, or touchscreen the same as you would most other programs, such as Microsoft Word. The point and click, double click, and dragging operate in ways similar to major word processing programs although sometimes SPSS has unique responses. Important differences will be noted in the chapters where they apply. The right click (on a mouse) or two-finger click (on a touchpad) is usually used to provide options of what you can do to whatever you clicked. In this book a left-mouse click (on a mouse), a one-fingered click (on a touchpad), or a one-fingered touch (on a touchscreen) is designated by a small picture of clicking cursor (☞). A right- or two-fingered mouse click will be identified in words.

2.2 The Desktop, Dock, and Application Folder

Once you have arrived at the desktop, your screen should look something like that shown below. It may not look exactly like this, but it will be similar. The menu of commands across the top control the currently selected program, day and time appear to the right, and the Dock, once activated, reveals icons that access the different programs on your machine.

There are two main types of icons on the Dock: Application icons represent a particular program, while folder icons actually contain other icons (usually several programs that are related). If you are lucky, someone has already put the SPSS icon on the dock and you can just click on it; if not, you will need to click a couple more times to open SPSS.

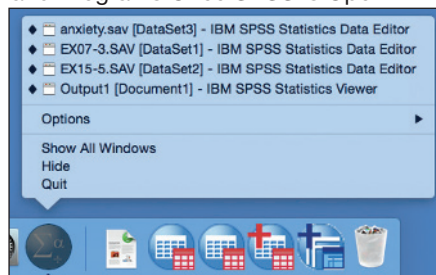
Screen 2.1 The Mac Desktop and Dock



To open SPSS if it's not already on the dock, simply click the Launchpad icon (🌐), then click on the IBM folder (📁), and then click on SPSS Statistics icon (📊).

In addition to starting the SPSS program, the other important skill when using the Dock is changing between programs. This is especially important because SPSS is actually a collection of several programs. When you first start the SPSS system, the Data Editor program is started, but as soon as you perform some statistics on your data, another program (in another window) is started: the Output program. In addition, it is possible to have several data files open at the same time.








Screen 2.2 Accessing SPSS Files and Programs Once SPSS is Open



The SPSS icon that appears at the bottom of the screen can include within it several different programs (data files and output). To access any of the programs that aren't easily seen on the screen, move your cursor to the SPSS icon and right-click or two-finger click. In Screen 2.2 there are three data files open (the first three files listed three icons to the left) and one output file open (the fourth file listed). To select a particular file, just click on its name.

2.3 Common Buttons

A number of buttons occur frequently within screens and around the borders of windows and screens. The standard push buttons have the same function in any context. The most frequently used ones are identified and explained on the next page:

| Icon | Description |
|---|--|
|  | This is the green zoom button. It is similar to the maximize button on a PC but does more. The zoom button, when clicked, will not only expand a program to fill the screen but will return it to its initial size if you click the button again. |
|  | This is the yellow minimize button. When you click it the program disappears from the screen and moves down to the right side of the Dock as a small icon. A click on the icon will restore the program again. |
|  | This is the red close button. Its function is to quit the open window. However, it does not necessarily quit the program. As a general rule, applications that can have multiple windows open at any given time remain open when the window's close button is clicked. Single window applications on the other hand will quit. |
|  | Within the SPSS context, this button will usually paste (move text from one location to another) a designated variable from a list in one location to an active box in another location. Such a move indicates that this variable is to be used in an analysis. |
|  | This button is the reverse. It will move a variable from the active box back to the original list. |
|  | These are up, down, right, and left scroll arrows that are positioned on each end of a scroll bar. Most data or output files are longer than the open window and in many instances also wider. The scroll arrows and scroll bars allow you to view either above, below, to the right, or to the left of what is visible on the screen. |
|  | A click on a down arrow will reveal a menu of options (called a drop-down menu) directly below. Screen 2.4 shows two such buttons to the right of Look in, and Files of type. |

2.4 The Data and Other Commonly used Windows







What follows are pictures and descriptions of the most frequently used windows or screens in SPSS processes. These include:

1. The initial screen on entry into SPSS. This includes detail concerning the meaning of each icon and a brief description of the function of each command,
2. The **Open File** dialog, which identifies several different ways to access a previously created file, and
3. A main dialog box, which, although different for each procedure, has certain similarities that will be highlighted.

Following these three presentations the output window (the initial window that appears following completion of data analysis) and instructions (dealing with how to edit and manipulate output prior to printing results) are presented. This chapter concludes with a description of how to print or export output and a variety of options available with the **Options** option.

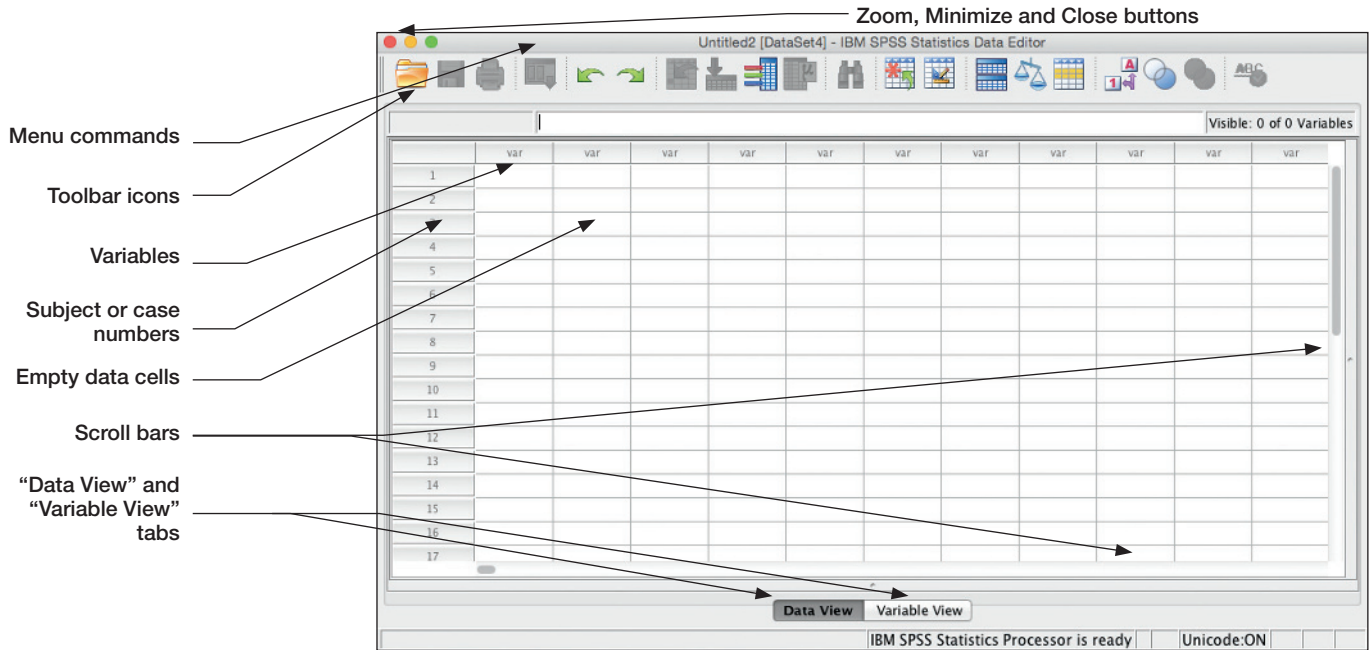
2.4.1 The Initial Screen, Icon Detail, and Meaning of Commands

To access the initial SPSS screen successively click the following icons:

| In Screen | Do This | Step 1 |
|------------|--|---------------|
| 2.1 |   →   →   | Front1 |

Screen 2.3 (shown below) is a slightly modified version of Screen 1 on the inside front cover. When you start the SPSS program, Screen 2.3 is the first screen to appear:

Screen 2.3 Initial Data Screen



| Icon | Function | Icon | Function | Icon | Function |
|------|--------------------------------|------|---|------|---|
| | Click this to open a file | | Find data | | (upper left corner) the "+" sign indicates that this is the active file |
| | Save current file | | Insert subject or case into the data file | | Shifts between numbers and labels for variables with several levels |
| | Print file | | Insert new variable into the data file | | Go to a particular variable or case number |
| | Recall a recently-used command | | Split file into subgroups | | Use subsets of variables/use all variables |
| | Undo the last operation | | Weight cases | | Access information about the current variable |
| | Redo something you just undid | | Select cases | | Spell check |

Screen 2.3 pictures a full-screen image of the data editor, with a detailed breakdown of the toolbar buttons. The menu bar (the commands) and the toolbar are located at the top of the screen and are described below. When you start SPSS, there are no data in the data editor. To fill the data editor window, you may type data into the empty cells (see Chapter 3) or access an already existing data file (described later in this chapter).

TOOLBAR The toolbar icons are located below the menu bar at the top of the screen. The icons were created specifically for ease of point-and-click mouse operations. It must be noted that even in SPSS applications the format of the icon bar may vary slightly. The toolbar shown above applies to the Data Editor window; a different toolbar is shown (pages 34–35) that applies to the output window. Also note that some of the icons are bright and clear and others are “grayed.” Grayed icons are those that are not currently available. Note for instance that the Print File icon is grayed because there are no data to print. When data are entered into the data editor, this icon becomes

clear because it is now available. The best way to learn how the icons work is to click on them and see what happens.

THE MENU BAR The menu bar (just above the toolbar) displays the commands that perform most of the operations that SPSS provides. You will become well acquainted with these commands as you spend time in this book. Whenever you click on a particular command, a series of options appears below and you will select the one that fits your particular need. The commands are now listed and briefly described:

- **SPSS Statistics:** Mostly used to access **Preferences**.
- **File:** Deals with different functions associated with files, including opening, reading, and saving, as well as exiting SPSS.
- **Edit:** A number of editing functions, including copying, pasting, finding, and replacing.
- **View:** Several options that affect the way the screen appears; the option most frequently used is Value Labels.
- **Data:** Operations related to defining, configuring, and entering data; also deals with sorting cases, merging or aggregating files, and selecting or weighting cases.
- **Transform:** Transformation of previously entered data, including recoding, computing new variables, reordering, and dealing with missing values.
- **Analyze:** All forms of data analysis begin with a click of the Analyze command.
- **Graphs:** Creation of graphs or charts can begin either with a click on the Graphs command or (often) as an additional option while other statistics are being performed.
- **Utilities:** Utilities deals largely with fairly sophisticated ways of making complex data operations easier. Most of these commands are for advanced users, and will not be described in this book.
- **Add-ons:** If you want to perform advanced statistics that aren't already in SPSS, these menu options will direct you to other programs and services that SPSS can sell you.
- **Window:** Deals with the position, status, and format of open windows. This menu may be used instead of the taskbar to change between SPSS windows.
- **Help:** A truly useful aid with search capabilities, tutorials, and a statistics coach that can help you decide what type of SPSS procedure to use to analyze your data.

2.5 The Open Data File Dialog Window

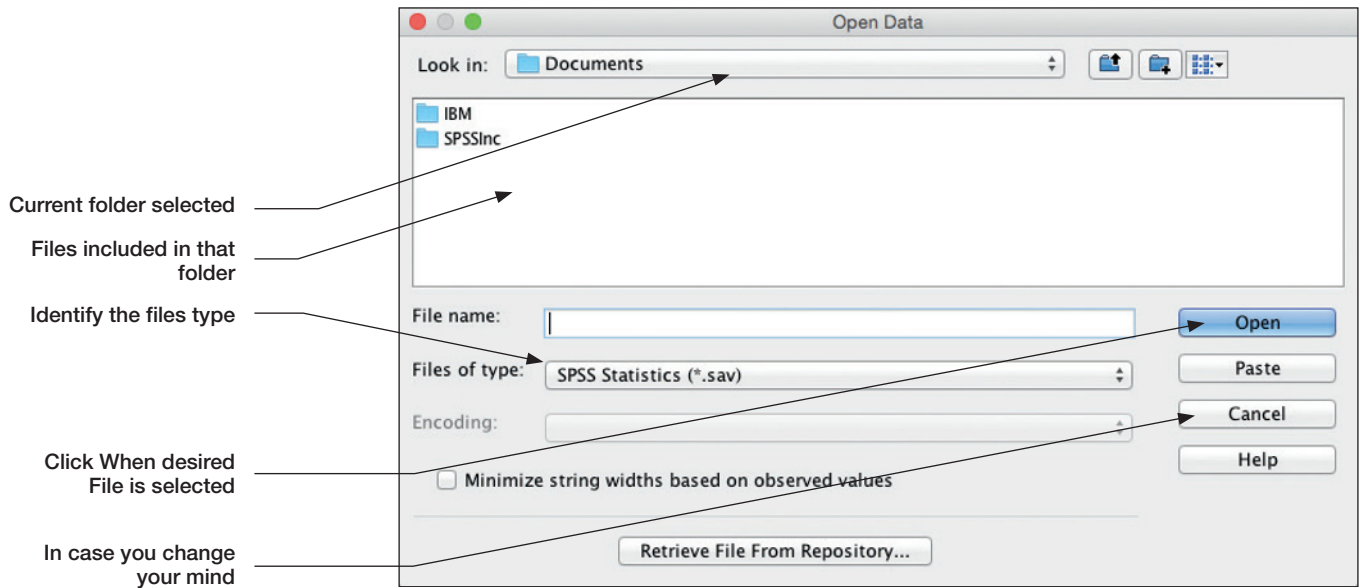
The Open File dialog window provides opportunity to access previously created data files. On the following page we show the Open File window with key elements identified. To access this window, it is necessary to perform the following sequence of steps.

From Screen 2.3, perform the following procedure to access the Open File window.

| In Screen | Do This | Step 2 |
|-----------|--|--------|
| 2.3 |  File → Open →  Data [or  ] | 2.4 |

To assist in description of the functions of this window, we will make use of the data file presented in the first chapter (and described in greater detail in Chapter 3). The name of the file is **grades.sav**. All data files created in the IBM SPSS Statistics Data Editor are followed by a period (.) and the three-letter extension, **.sav**; depending on your settings, the **.sav** may or may not appear in the Open Data dialog window.

Screen 2.4 Open Data Dialog Window



If you wish to open a data file, there are two simple ways this may be accomplished.

If the **grades.sav** file is visible in the list of files:

| In Screen | Do This | Step 3 |
|-----------|-------------------|-------------|
| 2.4 | grades.sav | Menu |

A second option is to simply type the file name in the **File name** box, making sure the folder and disk drive (above) are correct, and then click on the **Open** button:

| In Screen | Do This | Step 3a |
|-----------|---|-------------|
| 2.4 | type grades.sav → Open | Menu |

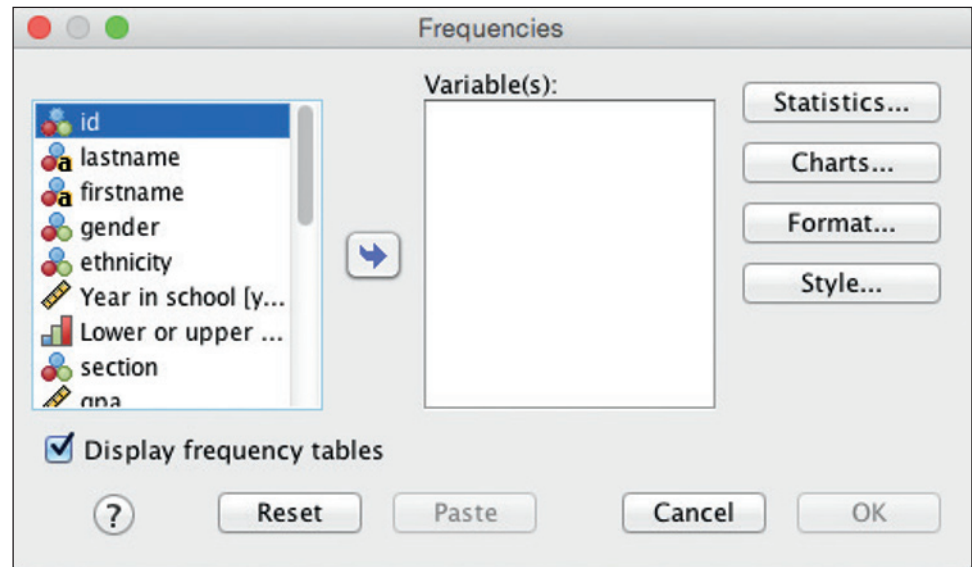
If you are reading a data file that was not created on the SPSS for Windows data editor, you need to identify the file type before SPSS can read it accurately. If, for instance, you are reading an Excel file (**grades.xls** in this case) your file will not appear unless you click the to the right of **Files of type** and select **Excel (*.xls, *.xlsx, *.xlsm)**. Then the file name should appear in the window above and you can double click to access that file.



The result of either of these operations is to produce a screen with the menu of commands across the top and the data from the **grades.sav** file in the data editor window. Notice (Steps 3 or 3a above) that the menu screen is the outcome (shown to the extreme right in each of the boxes) of each of these operations. The menu of commands across the top of the screen is what allows further analysis to take place.

2.5.1 An Example of a Statistical-Procedure Dialog Window

There are as many statistical-procedure dialog windows as there are statistical procedures. Despite the fact that each is different from its fellow, there are fundamental similarities in each one. We illustrate by use of the dialog window for Frequencies (Chapter 6). In all such boxes, to the left will be a list of available variables from the data file. To the right will be another box or even two or three boxes. Although the title of this (or these) box(es) (to the right) will differ, they are designed to show which

Screen 2.5 Sample Statistical Procedure Dialog Window



variables will be processed in the analysis. Between the boxes will be  and/or  buttons to move variables from one box to another.

For all statistical-procedure dialog boxes five buttons are the same; the five buttons are always at the bottom of the dialog box:

- **OK:** When all variables and specifications are selected, click the OK button to compute the statistics.
- **Paste:** A click of the paste button will open a syntax window with the specifications identified in the dialog boxes pasted into the syntax box in a command-file format. Those acquainted with computer programming will enjoy this option. The reason this option is available is because the current format (although simpler) has certain limitations that make it less flexible than the command file format. If you wish to tailor your program to fit your specific needs then it is often useful to work with a command file. Clearly this requires reasonable fluency in SPSS syntax. In SPSS 23 the command file is also printed at the top of the Output section of each analysis.
- **Reset:** One characteristic of these main dialog boxes is called persistence. That means if one analysis is completed and the researcher wishes to conduct another, upon returning to the dialog box, all the same variables and specifications remain from the previous analysis. If that is what you wish, fine. If not, click the Reset button and the variables will all return to the variable list and all specifications will return to the defaults. There is one other way of returning all statistical procedure dialog windows to the default settings: open a different data file (or close and re-open SPSS and open the same data file again).
- **Cancel:** For immediate exit from that procedure.
- **?**: Similar to Help on the main command menu except that this help is context specific. If you are working with frequencies, then a click on the help button will yield information about frequencies.

Finally the four buttons to the right of the window (**Statistics, Charts, Format, Style**) represent different procedural and formatting options. Most main-dialog boxes have one or more options similar to these. Their contents, of course, depend on the statistical procedure you are performing.

2.5.2 Keyboard Processing, Check Boxes, and Radio Buttons

Keyboard operations can greatly speed up certain SPSS operations. As a starting point the keyboard can be used to negotiate the data screen, in most instances, much more quickly. When you open an SPSS data screen and click on the upper left cell (or any cell for that matter) that cell is highlighted with blue. Here is how different keystrokes allow you to negotiate the screen.

Tab: blue highlight moves down

Return: highlight moves down

Cursor keys: highlight moves up, down, right, or left

Home: moves highlight to the first variable in the row

End: moves highlight to the last variable in the row

⌘-Home or **⌘-End:** moves highlight to the upper left or lower right corner of the data set

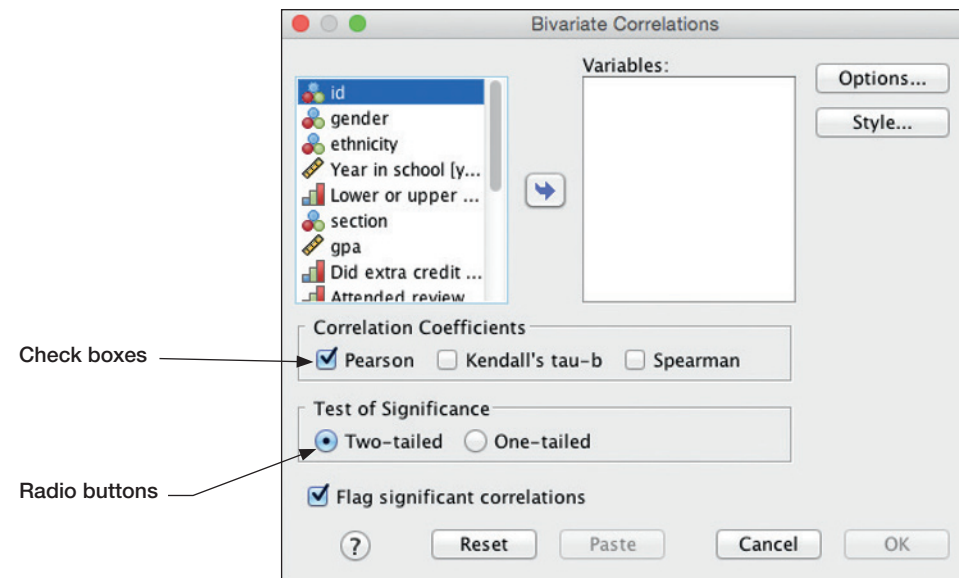
Shift + cursor keys: selects blocks of data starting with any highlighted cell

Mac also makes use of the command (**⌘**) key to allow certain frequently used operations to take place with the use of keystrokes. These keystrokes are identified by including the command-key stroke combination to the right of the operation. For instance, for the operation “Quit SPSS Statistics” the screen shows **Quit SPSS Statistics ⌘-Q**. This means that you can exit the program either by clicking this button or by pressing the keys **⌘-Q**.

Finally, there are two different types of selections of options that may take place within dialog boxes. Note the window from Chapter 10. Notice the **Test of Significance** box near the bottom; it contains radio buttons. They are called radio buttons because if one is selected the others are automatically deselected (as in a car radio—if you select one channel you deselect the others).

Check boxes are shown under the **Correlation Coefficients** heading and at the very bottom of the dialog box. With check boxes you simply select those you desire. You may select all three, two, one, or none of them. A selection is indicated when a appears in the box to the left of the option. For radio buttons, click on a different option to deselect the present option. In check boxes, click on the box a second time to deselect it.

Screen 2.6 Sample Dialog Window with Radio Buttons and Check Boxes



2.6 The Output Window

The “Output” is the term used to identify the results of previously conducted analyses. It is the objective of all data analysis. SPSS has a long and storied history of efforts to create a format of output that is clear yet comprehensive. The current version uses a tables-with-borders format. When utilizing options described below, this is relatively clear, but output can still be very awkward and occupy many pages. It is hoped that the information that follows will maximize your ability to identify, select, edit, and print out the most relevant output. This is an important section since Output is almost always edited before it is printed.

The initial output screen is shown on the inside back cover (and below). Each chapter that involves output will give instructions concerning how to deal with the results displayed on this screen. Our focus here is to explain how to edit output so that, when printed, it will be reproduced in a format most useful to you. Of course, you do not have to edit or reorganize output before you print, but there are often advantages to doing so:

- Extensive outputs will often use/waste many pages of paper.
- Most outputs will include some information that is unnecessary.
- At times a large table will be clearer if it is reorganized.
- You may wish to type in comments or titles for ease or clarity of interpretation.
- SPSS systematically prints the syntax file at the top of every output and the location of your file. You may simply delete this information if you wish.

This chapter will explain the SPSS output window (and toolbar), how to delete output that you no longer need, how to add comments to your file, how to re-arrange the order of the output, and how to save the output.

Screen 2.7 The SPSS Output Navigator Window

The screenshot shows the SPSS Output Navigator window. On the left is an outline view of the output, with arrows pointing to the 'Toolbar icons', 'Output', and 'Outline view of output'. The main area displays the 'Frequencies' output for the file '[DataSet1] /Users/spssuser/Desktop/Data Files/grades.sav'. It includes a 'Statistics' table, a 'Frequency Table' for 'ethnicity', and a 'Frequency Table' for 'gender'.

Statistics

| | ethnicity | gender | grade |
|---|-----------|--------|-------|
| N | Valid 105 | 105 | 105 |
| | Missing 0 | 0 | 0 |

Frequency Table


ethnicity

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|--------------|-----------|---------|---------------|--------------------|
| Valid Native | 5 | 4.8 | 4.8 | 4.8 |
| Asian | 20 | 19.0 | 19.0 | 23.8 |
| Black | 24 | 22.9 | 22.9 | 46.7 |
| White | 45 | 42.9 | 42.9 | 89.5 |
| Hispanic | 11 | 10.5 | 10.5 | 100.0 |
| Total | 105 | 100.0 | 100.0 | |

gender

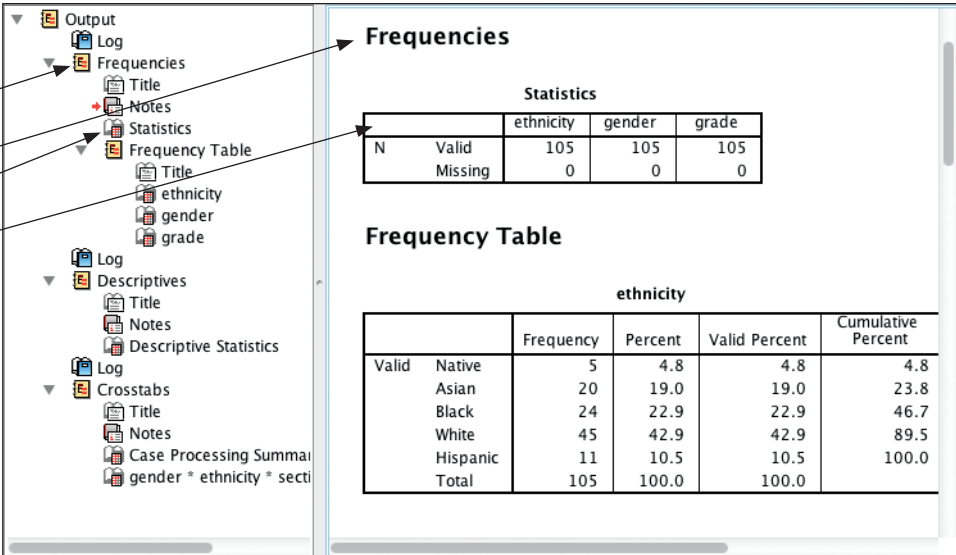
| | Frequency | Percent | Valid Percent | Cumulative Percent |
|--------------|-----------|---------|---------------|--------------------|
| Valid Female | 64 | 61.0 | 61.0 | 61.0 |
| Male | 41 | 39.0 | 39.0 | 100.0 |
| Total | 105 | 100.0 | 100.0 | |

IBM SPSS Statistics Processor is ready | Cases: 100 Unicode:ON

| Icon | Function | Icon | Function |
|---|--|---|---|
|  | Click to open a file |  | Show all variables |
|  | Click to save a file |  | Select most recent output |
|  | Print output |  | Promote: Make the currently selected output into a heading |
|  | Print preview (see what the printout will look like) |  | Demote: Make the currently selected output into a subheading |
|  | Export output to text or web (HTML) file |  | Display everything under the currently selected heading |
|  | Recall a recently used command |  | Hide everything under the currently selected heading |
|  | Undo or redo the last operation |  | Display the currently selected object (if it is hidden) |
|  | Go to SPSS Data Editor (frequently used!) |  | Hide the currently selected object (visible in outline view only) |
|  | Go to a particular variable or case number |  | Insert heading (above titles, tables, and charts) |
|  | Get information about variables |  | Insert title above output |
|  | User-defined subset of the data |  | Insert text at strategic locations within the output |

Screen 2.7 summarizes the key elements of the output window, as well as providing a detailed description of toolbar items on the output window. In this sample, several procedures have been performed on the **grades.sav** file; don't worry about the content of the analysis, just pay attention to what SPSS will allow you to do with the output.

You will notice that several of the toolbar icons are identical to those in the SPSS Data Editor window; these buttons do the same thing that they do in the Data Editor, but with the output instead of the data. For example, clicking the print icon prints the output instead of the data.



This title refers to this output object

This title refers to this output object

Frequencies

Statistics

| | | ethnicity | gender | grade |
|---|---------|-----------|--------|-------|
| N | Valid | 105 | 105 | 105 |
| | Missing | 0 | 0 | 0 |

Frequency Table

ethnicity

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|----------|-----------|---------|---------------|--------------------|
| Valid | Native | 5 | 4.8 | 4.8 | 4.8 |
| | Asian | 20 | 19.0 | 19.0 | 23.8 |
| | Black | 24 | 22.9 | 22.9 | 46.7 |
| | White | 45 | 42.9 | 42.9 | 89.5 |
| | Hispanic | 11 | 10.5 | 10.5 | 100.0 |
| | Total | 105 | 100.0 | 100.0 | |

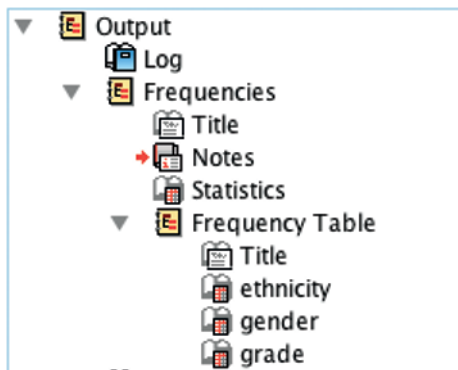
One of the most important things to learn about the SPSS output window is the use of the outline view on the left of the screen. On the right side of the window is the output from the SPSS procedures that were run, and on the left is the outline (like a table of contents without page numbers) of that output. The SPSS output is actually composed of a series of output objects; these objects may be titles (e.g., “Frequencies”), tables of numbers, or charts among other things. Each of these objects is listed in the outline view.

You will notice that there is no “Notes” section in the output window to correspond with the “Notes” title in the outline view. That’s because the notes are (by default) hidden. If you want to see the notes, first click on the word “Notes” and then click on the open-book icon (📖) at the top of the page. The closed-book icon will then become an open-book icon and the notes will materialize in the window to the right. Click the close-book icon (📕) and the notes will disappear and the book will close.

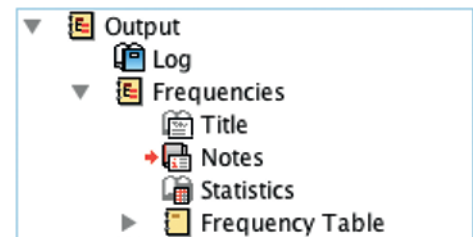
The outline view makes navigating the output easier. If you want to move to the Crosstabs output, for example, you merely need to click on the word “Crosstabs” in the outline view, and the crosstabs will appear in the output window. If you want to delete the Descriptives section (perhaps because you selected an incorrect variable), simply click on the word “Descriptives” (to select that menu item) and then click Delete. If you want to move some output from one section to another (to re-arrange the order), you can select an output object (or a group of output objects), and select Edit and then click Cut. After that, select another output object below which you want to place the output object(s) you have cut. Then select Edit and click Paste After.

If you have been working with the same data file for a while, you may produce a lot of output. So much output may be produced, in fact, that it becomes difficult to navigate through the output even with the outline view. To help with this problem, you can “collapse” a group of output objects underneath a heading. To do this, click on the ▼ sign to the left of the heading. For example, if you want to collapse the Frequencies output (to get it out of the way and come back to it later) simply click on the ▼ to the left of the title Frequency Table. If you want to expand the frequencies heading later, all you have to do is click on the ▼ to the left of the title Frequency Table. This operation is illustrated below.

Clicking on the lower ▼ . . .



. . . Will collapse the Frequency Table Objects to this



One very useful command when you are working with output is the insert-text command (📄). When you click this button, an SPSS Text object is inserted. In this box, you can type comments to remind yourself what is interesting about the SPSS output (for example, “The next chart would look good in the results section” or “Oh, no, my hypothesis was not supported!”). Once you have typed your comments, click on another SPSS object to deselect the SPSS Text object.

Now that you have learned the basics of getting around within SPSS output, there is one more major concept to learn. When SPSS produces output, whether it be charts or tables, you can make changes in the format of that output. Although this book will not describe all of the procedures that you can perform to modify the appearance of charts and tables, some basic operations will be described that will allow you to make your

charts and tables more attractive or easier to read. The basics of editing charts and graphs are described in Chapter 5; the basic processes of modifying tables are described here.

2.7 Modifying or Rearranging Tables

First, we will start with some background and theory of how tables work. It is important to realize that, although SPSS automatically arranges tables for you—it decides what to put in the columns and rows—the arrangement of a table is somewhat arbitrary. For example, in the crosstabulation of **gender × ethnic × section** (described in Chapter 8), by default SPSS places the ethnicity in the columns, and section and gender in rows:

gender * ethnic * section Crosstabulation

| Count | | | ethnic | | | | | Total |
|-------|--------|--------|--------|-------|-------|-------|----------|-------|
| | | | Native | Asian | Black | White | Hispanic | |
| 1 | gender | female | | 6 | 2 | 9 | 3 | 20 |
| | | male | | 1 | 5 | 7 | 0 | 13 |
| | Total | | 7 | 7 | 16 | 3 | 33 | |
| 2 | gender | female | 3 | 5 | 6 | 11 | 1 | 26 |
| | | male | 1 | 4 | 1 | 7 | 0 | 13 |
| | Total | 4 | 9 | 7 | 18 | 1 | 39 | |
| 3 | gender | female | 1 | 2 | 6 | 6 | 3 | 18 |
| | | male | 0 | 2 | 4 | 5 | 4 | 15 |
| | Total | 1 | 4 | 10 | 11 | 7 | 33 | |

Although there is nothing wrong with this arrangement, you might want to rearrange the table, depending on what exactly you are trying to demonstrate. It is important to remember that you are not changing the content of the statistics present within the table, you are only rearranging the order or the format in which the data and statistics are displayed.

You will notice in the table (above that), there are both rows and columns. The columns contain the various categories of **ethnic**. The rows contain two different levels of headings: In the first level is the course **section**, and in the second level is the **gender** of the students. You will notice that each level of the second heading (each gender) is displayed for each level of the first heading (each section). This table has one layer: The word “**Count**” (the number of subjects in each category) is visible in the upper left hand corner of the table. In most tables, there is only one layer, and we will focus our discussion here on arranging rows and columns.

In order to edit and change the format of an output table, you must first double click on the output object in the output view (the right portion of Screen 2.7). When you do that, the toolbars will disappear, and in the menu bar will appear a new item: **Pivot**. In addition to this, some of the options available on the various menus change. We will describe some of the options available on the **Pivot** and **Format** menus, including **Transpose Rows and Columns**, **Pivoting Trays**, **Rotate Inner Column Labels**, and **Rotate Outer Row Labels**.

You will notice in the sample table shown above that the columns are much wider than they need to be to display the numbers. This is so the columns will be wide enough to display the labels. Clicking on **Format** followed by **Rotate Inner Column Labels** will fix this problem by making the column labels much taller and narrower, as shown to the right. If you decide you prefer the previous format, simply click on **Format** followed by **Rotate Inner Column Labels** once again, and the old format will be restored. It is also possible to change the orientation of the row titles. This makes

| ethnic | | | | | |
|--------|-------|-------|-------|----------|-------|
| Native | Asian | Black | White | Hispanic | Total |
| | 6 | 2 | 9 | 3 | 20 |
| | 1 | 5 | 7 | 0 | 13 |
| | 7 | 7 | 16 | 3 | 33 |
| 3 | 5 | 6 | 11 | 1 | 26 |
| 1 | 4 | 1 | 7 | 0 | 13 |
| 4 | 9 | 7 | 18 | 1 | 39 |

the section numbers tall and narrow. But this also makes the heading “Section” tall and narrow, and renders the table itself narrower.

When SPSS produced the sample **gender × ethnic × section** table, it placed ethnicity in the columns, and course section and gender in the rows. A researcher may want these variables displayed differently, perhaps with ethnicity in the rows, and both gender and class section in the columns. In order to make this change, you may use either **Transpose Rows and Columns** or **Pivoting Trays**. Clicking **Pivot** followed by **Transpose Rows and Columns** is the simplest way to rearrange rows and columns. If we were to choose this command on our sample output table, then the rows would become columns and the columns rows, as shown below:

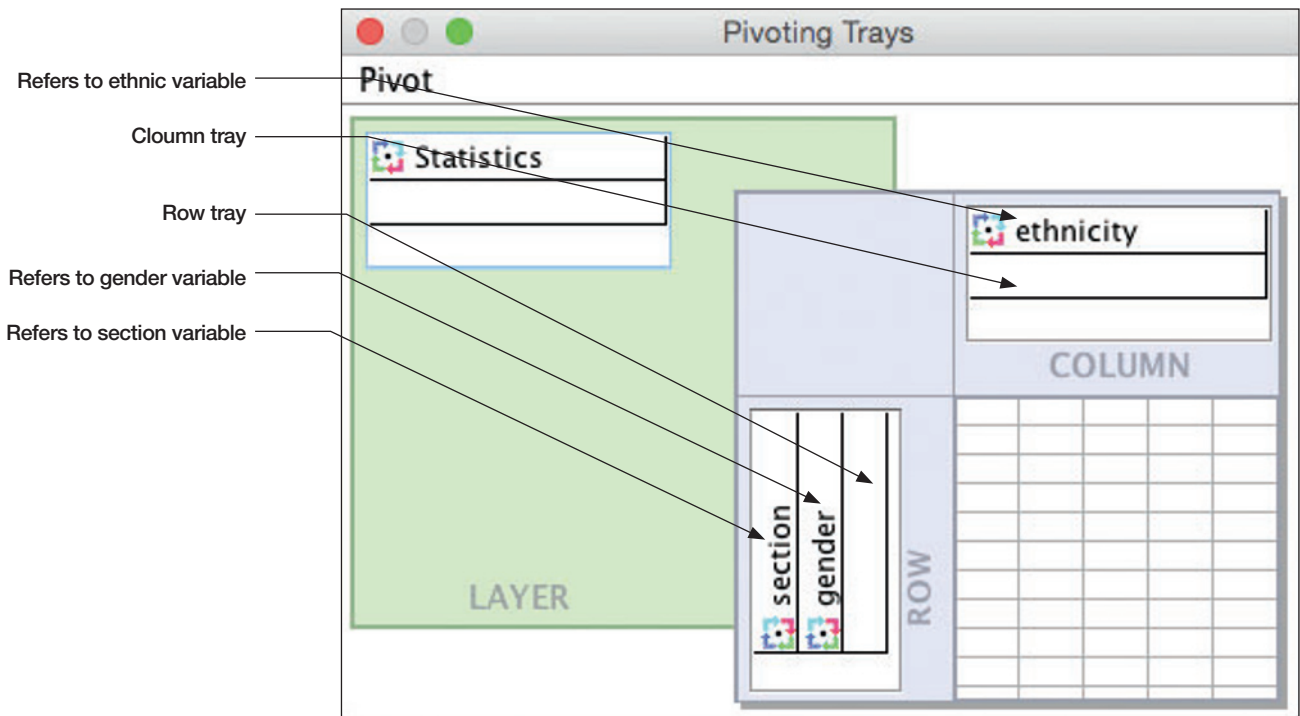
gender * ethnic * section Crosstabulation

Count

| | | section | | | | | | | | |
|--------|----------|---------|------|-------|--------|------|-------|--------|----|-------|
| | | 1 | | | 2 | | | 3 | | |
| | | gender | | Total | gender | | Total | gender | | Total |
| female | male | female | male | | female | male | | | | |
| ethnic | Native | | | | 3 | 1 | 4 | 1 | 0 | 1 |
| | Asian | 6 | 1 | 7 | 5 | 4 | 9 | 2 | 2 | 4 |
| | Black | 2 | 5 | 7 | 6 | 1 | 7 | 6 | 4 | 10 |
| | White | 9 | 7 | 16 | 11 | 7 | 18 | 6 | 5 | 11 |
| | Hispanic | 3 | 0 | 3 | 1 | 0 | 1 | 3 | 4 | 7 |
| Total | | 20 | 13 | 33 | 26 | 13 | 39 | 18 | 15 | 33 |

A somewhat more complex and sophisticated way of rearranging columns and rows is to use **Pivoting Trays**. Selecting this option (a subcommand on the **Pivot** menu, or double-click on the table in the output window) will produce a new window that allows you to rearrange rows and columns (Screen 2.8). This window will also allow you to rearrange layers, but because the arrangement of layers usually doesn’t need to be changed, we won’t worry about layers in this discussion.

Screen 2.8 Pivoting Trays Window




The pivoting tray window consists of different trays: a tray for **ROW** variables and a tray for **COLUMN** variables. “Statistics” is a separate **LAYER** and refers to the data that fill the cells. In our example **ethnicity** is in the column tray, with **section** and **gender** both in the row tray.

You may click and drag any of the variables from an original location to a different location. For example, if you want to rearrange the order of the **section** and **gender** variables, you could click and drag **section** to the blank box to the right of **gender**. This would rearrange the rows so that the gender was the main heading level, with three levels of each section for each of the two levels of gender.

You can also rearrange variables between rows and columns, by dragging a variable icon from one tray to another. For example, if you wanted to make **section** a major column heading with levels of ethnicity displayed for each section, you would drag the **section** variable icon to the same row as the **ethnic** variable and **section** will become the major heading.

The best way to understand pivoting tables is simply to experiment with them. Because of the persistence function, it’s not at all difficult to run the analysis again if you get too confused.

Once you have done all of this work making your output look the way you want it to look (not to mention doing the statistical analyses to begin with), you may want to save your work. This, by the way, is quite different from saving the data file (always followed by a “.sav” suffix). Output is generally saved with a “.spv” suffix. The required sequence step follows:

| In Screen | Do This | Step 4 |
|-----------|--|-----------------------------------|
| 2.7 |  File →  Save → <input type="text" value="type"/> yourname.spv →  Save | <input type="text" value="Menu"/> |

2.8 Printing or Exporting Output

Toward the end of the Step by Step section of each chapter, skeletal information is provided concerning printing of output and/or graphs. Every time this is done the reader is referred to this section in this chapter for greater detail. If you desire more complete information than provided here, please refer to the SPSS manuals.

The first time you print, it is a good idea to select **File** and then click the **Page setup** option. This very intuitive dialog box lets you specify whether the orientation of printed material will be portrait (longer dimension is vertical) or landscape (longer dimension is horizontal), the scale (100%, larger, or smaller), and the size and source of your paper.

In order to print your output, the material that you wish to print must be designated—that is, you must select the portions of your output that you want printed. If you know that you want all of your output printed, then you don’t have to designate the material prior to printing. We don’t, however, recommend making this a habit: Save the trees. (You don’t have to hug them if you don’t want, but at least think about what you are going to print before you start.)

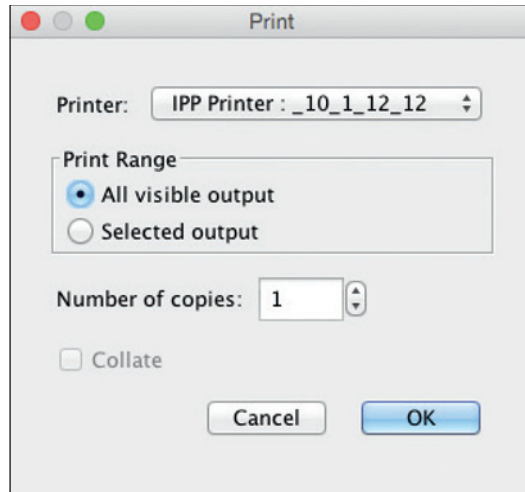
To print a section of the output you must highlight the portion of the file you wish to reproduce before beginning the print sequence. This may be accomplished by

1. Clicking on the folder or output object you want to print on the left side of the SPSS output window;
2. Clicking on a folder or output object on the left side of the SPSS output window, then holding down the **Shift** key while selecting another folder or output object (this will select both objects you clicked and all the objects in between); or

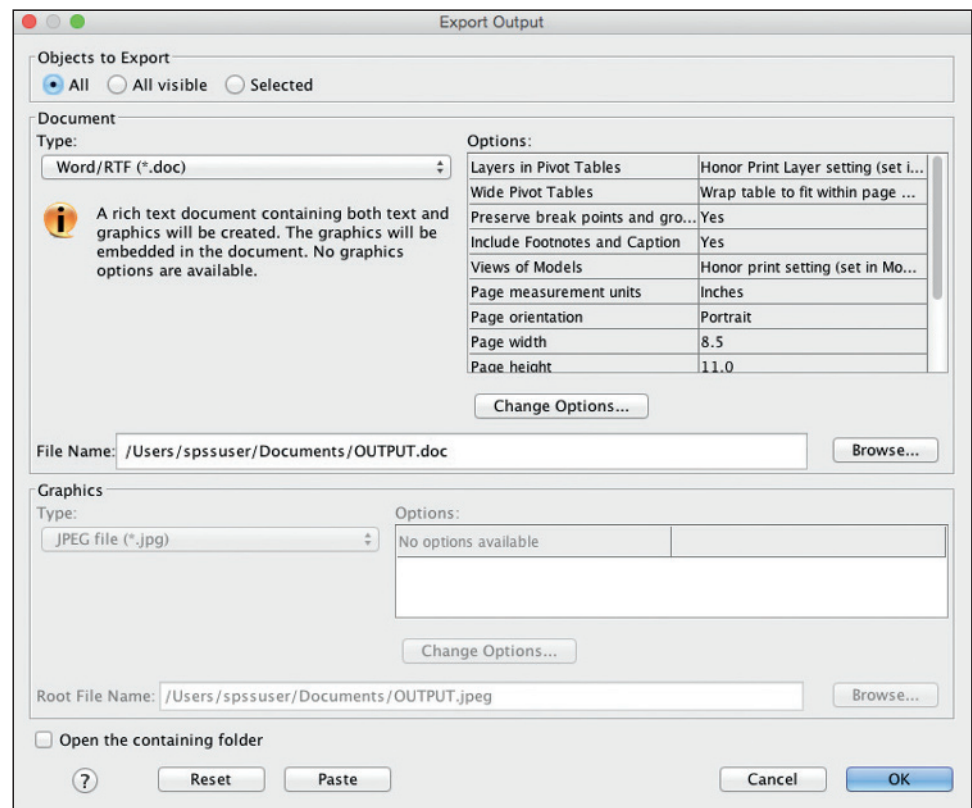
- Clicking on a folder or object on the left side of the SPSS output window, then holding down the **⌘** key while clicking on one or more additional folders or objects (this will select only the folders or objects that you click on).

Printing starts with a click on the **File** command followed by a click on the **Print** option. This causes a small dialog box to open (Screen 2.9) allowing you to choose which printer you want to use, how many copies to print, and whether to print just the designated (selected) part of the output or the entire output. No formatting options are allowed in this dialog box. You must use the **Page setup** procedure (described in the previous page) prior to printing.

Screen 2.9 Print Dialog Box



Screen 2.10 Export Output



Once all of the options in the **Print** dialog have been specified as desired, click the **OK** button and watch your output pour from the printer.

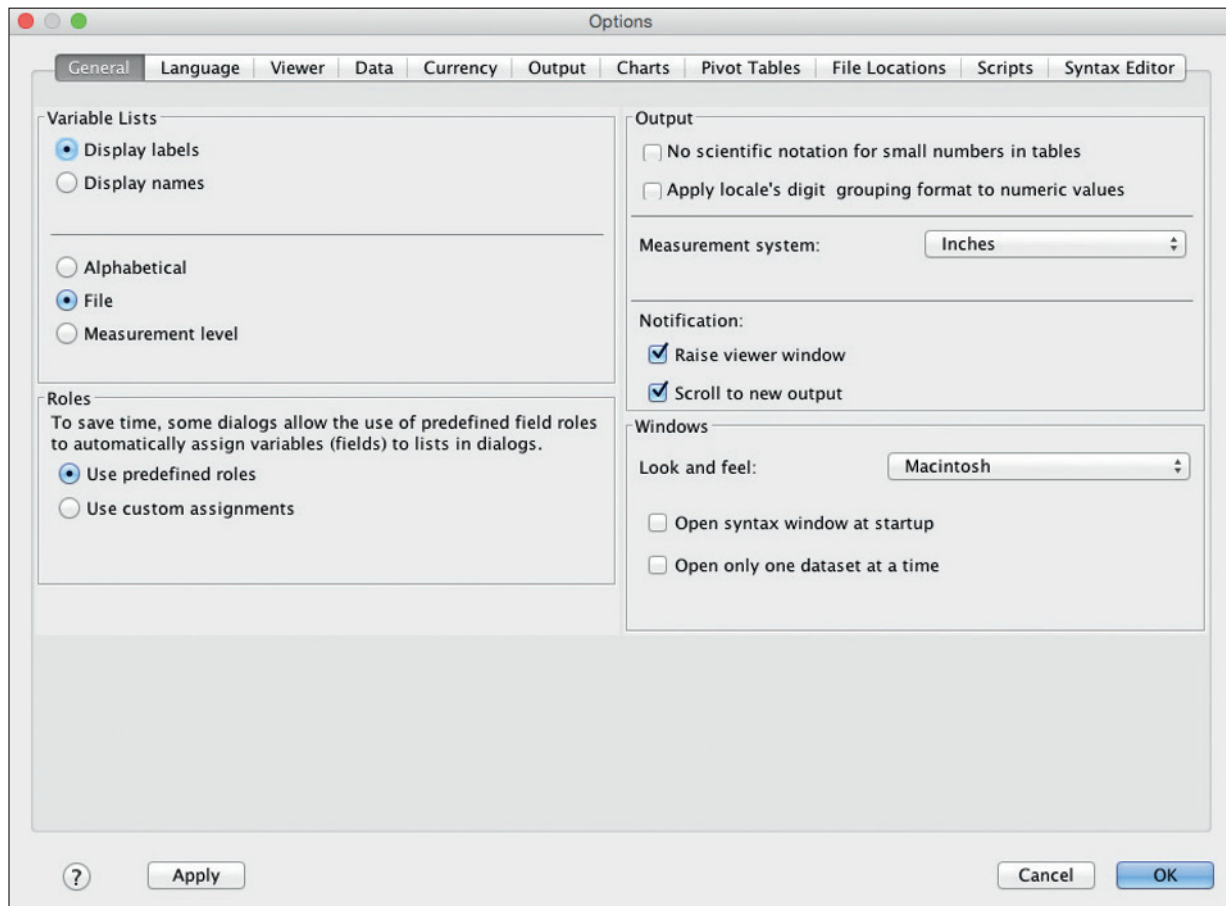
Of course, you may not find it necessary to print the output on paper. You can always open the output on SPSS and view it on the screen . . . but what if you want to view the output on a different computer, one that doesn't have SPSS? In that case, instead of printing your output, you can export it in PDF format, which can be read on any computer with Adobe Reader or a variety of other free programs. To do that, select **File** and then click the **Export** option. Screen 2.10 will appear.

You can export your output to many formats—Microsoft Word, HTML, Excel, PowerPoint—but it is usually best to select **Type** → **Portable Document Format (*.pdf)**. Other formats are often difficult to read. Then you merely have to tell SPSS where to save your file and what to name it (by clicking the **Browse** button), and you will have an output that you can view anywhere.

2.9 The “Options . . .” Option: Changing the Formats

Under the **Edit** → **Options . . .** (or **SPSS Statistics** → **Preferences . . .**) sequence lies a wide variety of alternatives to SPSS defaults. An awareness of the available options allows you to format many features associated with the appearance of the SPSS screen, dialog windows, and output. We reproduce the dialog window here and then identify the selections that we have found to be the most useful.

Screen 2.11 Options Window



Notice (Screen 2.11) that there are 11 more tabs across the top; each deals with a different set of functions. Here are the options we use most frequently:

General tab (currently visible): Under **Variable Lists**, you may find it useful to **Display names** (rather than labels); it makes your output more informative, particularly if you have a lot of variables with names that aren't obvious. It is sometimes useful to select **No scientific notation for small numbers in tables**. If you know the data file well, stay with the default **File** order so that variables will be listed in the original order. If you are dealing with a large data file (or one that you don't know very well), then **Alphabetical** may be a better solution.

The **Viewer** tab allows you to specify the format of your output by selecting font, font size, or special effects such as bold, underline, italics, and color.

Output tab: If your variable labels are long, you will probably want to change the four boxes to the left to (from top to bottom) of **Names, Labels, Names, Labels** rather than the default of all **Labels**. Then click **Apply** to secure the new setting. The default option (all four are **Labels**) often creates a mess by filling your output with cumbersome descriptions rather than precise names.

Pivot Tables tab: There are 28 different options that deal with the format of the tables used in your outputs. You may selectively choose those output formats that best suit your needs. For instance in a large table, one of the "compact" formats will allow you to get more information on a single page.

There are others, many others, but this gives you a start.