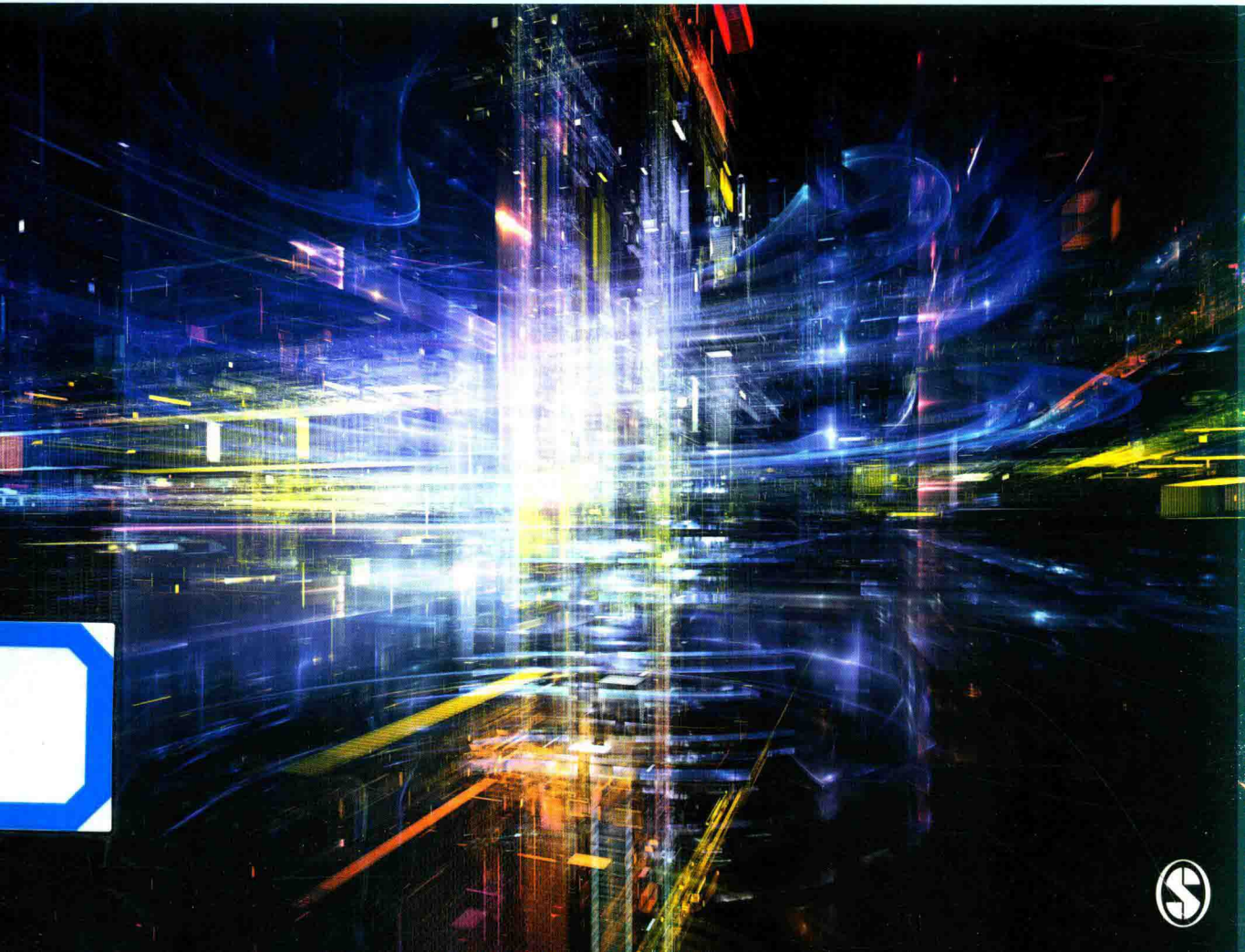


# HOW TO USE **SPSS** SYNTAX

An Overview of  
Common Commands

Manfred te Grotenhuis • Chris Visscher



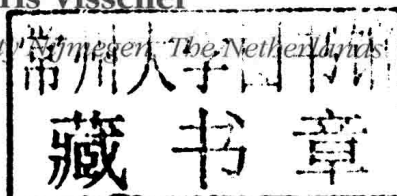
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An Overview of Common Commands

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# About the Authors

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**Manfred te Grotenhuis** is an Assistant Professor of Quantitative Data Analysis and an affiliate of the Interuniversity Center for Social Science Theory and Methodology (ICS). He has more than 50 published articles to his credit. Some of his statistical contributions have appeared as articles in leading journals, such as *American Journal of Sociology*, *American Sociological Review*, *Journal for the Scientific Study of Religion*, and *International Journal of Epidemiology*. He has been teaching statistics at the Faculty of Social Sciences at Radboud University Nijmegen, the Netherlands, since 1995 and has written several introductory books on SPSS and statistics. He is a recipient of his university's biennial teaching award. He loves/hates to ride a 20-mile cycling time trial. He earned his Ph.D. in sociology from Radboud University Nijmegen.

**Chris Visscher**, with more than 30 years of teaching statistics, is a principal lecturer. In 1986, he wrote an SPSS syntax manual for students, probably the first of its kind. He is very fond of Gregorian chants and never misses an opportunity to chant, be it in the office, in church, or at students' house parties at three in the morning! He did his master's in sociology from Radboud University Nijmegen, the Netherlands.

# Preface

---

**T**he SPSS program (which originally stood for **S**tatistical **P**ackage for the **S**ocial **S**ciences) is one of the most commonly used statistical software packages. Due to its popularity, it is not surprising to find many SPSS textbooks available nowadays. In almost all these books, however, the emphasis is on the many SPSS menus. Clearly, the advantage of using menus is ease of use, although not all of SPSS's capacities are accessible this way. Furthermore, no record is kept of the commands executed via the menu's buttons, meaning that replicating statistical work is difficult, and it is also very hard to check what was done in the first place. This is especially troubling when something has gone (awfully) wrong. For these reasons, more skilled SPSS users store all of their work in so-called syntax files. By doing so, one is able to not only replicate and check but also make full use of the large variety of tools within the program. The makers of SPSS again acknowledged this approach of using the program; in Version 17, the syntax facility has been restyled and made more user friendly.

*How to Use SPSS Syntax* presents an overview of common SPSS commands and contains a collection of more or less independent sections where one can find specific information. All syntax in this book can be run by *any* version of SPSS.

We have assumed that the reader has some basic knowledge of SPSS, which can be obtained from any introductory SPSS textbook. For didactical reasons, we use clear-cut examples from real scientific research, while the reader is invited to replicate the findings. We have also included the relevant outcomes for reference. All data and syntax, and a lot more, can be found on the Internet pages (see <http://www.ru.nl/mt/syntax/home>) that go with this textbook.

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I wish to thank my mentor Theo van der Weegen, who never grew tired of pointing out the relevance of SPSS syntax in social science research. When I first entered Radboud University as a student in 1990, I was amazed at his SPSS programming skills. In fact, they still seem magical to me. Many times I have thought that we had finally stumbled on the limits of SPSS syntax, but he never failed to stretch them even further. The SPSS commands presented in this book are only a (very useful) glimpse of his “magic.” Luckily, we are able to show some more of it on the Internet pages that go with this textbook. I would also like to thank Hans Schmeets and Peer Scheepers for inviting me to write an English version of my Dutch textbook on SPSS syntax. It surely helped pave the way to this international edition. To write books, you must be half crazy at the very least; thanks to Anita for letting me be so from time to time.

—*Manfred te Grotenhuis*

Way back in the 1980s, the head of the department of methodology, Professor Bert Felling, asked me to write a student's guide to SPSS syntax. The seeds for this were already planted in 1981 by my colleagues Theo van der Weegen and the late Jacques van der Putten. I am sure they would be proud to see their initial ideas published with SAGE more than three decades later.

—*Chris Visscher*

We both wish to express our gratitude to Rob Eisinga, Bert Felling, Nan Dirk de Graaf, Ariana Need, and Peer Scheepers for providing all the relevant statistical data collected in the Netherlands from 1979 to 2005. Marijn Scholte greatly helped in translating the original Dutch textbook *SPSS met Syntax*. Special thanks to Matthew “Iron Man” Bennett for correcting our initial manuscripts and for providing indispensable advice on English usage. We extend our special thanks to Marijn Haverbeke and all other students

from Radboud University Nijmegen, the Netherlands, whom we had the privilege to meet and who contributed to the improvement of our SPSS syntax lecture materials over the past 25 years. We thank the people at IBM SPSS for kindly allowing us to use the screenshots of their program. Last but not least, we are most grateful to the staff at SAGE Publications, in particular Vicki Knight, who immediately got enthusiastic about the project and made us feel at home within a day, and her editorial assistant, Jessica Miller.

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# How to Use SPSS Syntax

# ***Brief Contents***

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# SPSS Syntax Usage

## 1.1 Introduction

SPSS<sup>1</sup> is a user-friendly program because most options can be found in clear menus. More experienced users will, however, use syntax files, in which commands are stored to modify and/or to analyze the data. Syntax files keep track of every modification and analysis, making it possible to control and to replicate scientific results—two necessary conditions for scientific research. This book provides an overview of the most commonly used commands in terms of SPSS syntax. It is by no means meant to be a complete overview. For specialized applications, we refer to the very extensive manual, which is included in the program as a PDF file (see the help menu) for the exact notation of the commands. Moreover, a set of examples for specialized commands can be found on the Internet pages that support this book (see <http://www.ru.nl/mt/syntax/home>).

When using SPSS syntax, you will find that there are often several ways to achieve the same results. In such cases, we have striven to explain the least complicated method.

Some familiarity with modifying and analyzing statistical data is required from the reader as this book only deals with the practical use of SPSS syntax and not the underlying statistical techniques. For an approachable introduction to these techniques that does not require prior knowledge of mathematics, we refer the reader to *Discovering Statistics Using SPSS* (2012) by Andy Field.

*How to Use SPSS Syntax* is set up as a collection of independent sections where information can be found on specific commands. So it is possible to skip parts of the book that deal with topics that one is not familiar with or that are not needed. Where extra knowledge is required for a command, we will refer to the relevant section(s) of the book. However, when describing the commands, we assume that the reader has read Chapter 2 of this book in which general rules for preparing syntax are described, before reading (sections from) Chapters 3 or 4. In the following sections, we will provide some general information about how to use this book.

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<sup>1</sup>SPSS is now IBM SPSS. SPSS was acquired by IBM in October 2009.

## △ 1.2 Structure of the Book

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To help the reader learn SPSS syntax, we have included a variety of examples from research in the social sciences. These examples are stored in SPSS data files (we use the “sav” format) and are freely available online (see <http://www.ru.nl/mt/syntax/home>). When downloading these files, it is recommended to store them in a directory named DATA. You may alter this destination directory, but the syntax used in this book refers to the directory DATA. It is assumed that this directory is created on the c-drive when using a Windows computer (*notation*: c:\data). This eventually means that you have to alter this reference in the syntax accordingly when you use a directory other than c:\data. We further programmed the results to be stored in c:\data as well, but again, you may adapt this to your own needs. In case the reader has a Macintosh computer, all notations in this book referring to computer files are without c:, so only \data.

The syntax used throughout this book is placed in a “box” to separate it from normal text so that it can be easily located. The syntax is then summarized again at the end of each chapter. The reader is invited to type the syntax from the book into syntax files to maximize the benefits of learning by doing. As a final reference for the reader, we have also included the relevant outcomes of analyses.

In SPSS, it is also possible to copy the commands from the menus into syntax files (this is called “pasting”) and adapt them to one’s needs. This is particularly useful for statistical analyses. In Chapter 4, we will elaborate this approach of creating syntax files.

From Chapter 3 onward, the book consists of more or less independent sections. In each section, one common SPSS command is explained by naming its function and the exact structure, followed by one or more examples and the most relevant results that originate from that particular command.

## △ 1.3 What Is SPSS Syntax?

---

Up until the 1990s, SPSS did not have any menus or windows. To modify and analyze data, one would write a “job”—a series of commands—and then have SPSS execute these commands. Over the years, software has become more accessible, and SPSS added a graphical user interface with (usually) clear menus. The program, however, is still constructed in the same way. So behind all menus still lie the commands that originally had to be typed manually. These commands become visible again when pushing the “paste” button in the menus. These SPSS commands are nothing but text in which the name of the command is entered, followed by the options. Furthermore, in most commands, you will find one or more variables to which the

command refers. These commands exist for almost all functions of SPSS, and all data modifications and analyses are made up of a series of commands. Managing SPSS using syntax is still a very viable way of working. The reasons for this are explained in the next section.

## 1.4 The Usefulness of SPSS Syntax

---

Saving all actions in a syntax file has its advantages when modifying and analyzing data. In such a file, you can check exactly which commands have been executed and repair any mistakes if something went wrong. For example, when you have recoded a variable and made a mistake, it is possible that all the executed analyses since are also incorrect. Repairing the error and executing all actions again is relatively easy in a syntax file. This, of course, is much more efficient than starting again from scratch. Another advantage is that commands from a syntax file can be copied directly into a new syntax file. By changing only the variable names in the syntax, you can avoid having to find out how the modifications and analyses are done in SPSS again and again. Last, working with syntax files has the advantage that even others can read and know exactly what has been done with respect to data modifications and statistical analyses. The advantages are so great that not only experienced SPSS users but also beginners (e.g., students who are working on a paper or thesis) often work with syntax. As mentioned earlier, SPSS syntax can be created by the “paste” button in almost all SPSS menus. As this book will prove, however, you can, besides being flexible, work faster and more efficiently when typing the syntax directly into a syntax file. Additionally, not all of the features within SPSS are included in the menus.

## 1.5 Syntax Window

---

Besides the data and output windows, SPSS also has a syntax window to type the syntax lines. The largest part of this window contains space for writing text (commands). The window also has a lot of the menus that are present in the other windows. An empty syntax window is opened by choosing File → New → Syntax. To open an existing syntax file, choose File → Open → Syntax. An important menu in the syntax window is Run, which is used to execute the commands in the syntax window. To run selected commands fast, use the *Ctrl-r* shortcut (press the control button and “r” at the same time). If nothing is selected in the window, SPSS will execute the part of the syntax where the cursor is positioned. There are different ways to select syntax: If you want to execute a selection of all the commands, you can select the commands you want by “dragging” the mouse (holding the left

mouse button and moving the mouse) or by holding the shift button and moving the cursor with the arrow keys. Selecting all commands can be done using the *Ctrl-a* shortcut.

As explained earlier, you can also use the “paste” button in the SPSS menus. This will paste the selected commands in the menu into the syntax window that is active. This command can then be executed using the *Ctrl-r* shortcut or by the *Run* option in the menu.

Finally, we want to point out that SPSS does not have an option to automatically save syntax, so if the computer crashes, you will lose the syntax! However, it is possible to recover your syntax if it was saved in the session journal. To check this, go to the menu and select Edit → Options (SPSS Version 15 and earlier) or Edit → Options → File Locations, and then check “Record syntax in Journal” and “Append,” and click on ok. We recommend saving the syntax files regularly, especially before (blocks of) commands are executed. You can save quickly by using the *Ctrl-s* shortcut.

## Δ 1.6 SPSS Syntax Files: An Example

Open the SPSS program to begin your session. Do not open any data yet—it does not matter if the data window is empty. Open a new syntax window with File → New → Syntax. In most cases, a data file must be opened first. To do this, type the following command into the syntax file (please note that the period (.) at the end of the command is part of the syntax):

```
GET FILE "c:/data/chapter1.sav".
```

\* *Macintosh computers use:* GET FILE "/data/chapter1.sav".

In this command, it is assumed that the file “chapter1.sav” is located in c:/data/. If necessary, replace this with the directory where you have saved it on your own computer. Instead of the double straight quotation marks before and after the file name in SPSS syntax, one may also use straight single quotes, *but* back quotes (`) are not allowed. Furthermore, please note the period (.) after the command. If everything seems in order, execute the command by placing the cursor on the command line and pushing *Ctrl-r* or choosing Run → Current from the menu. If you did not make any mistakes, the data window should now show the data from the example file. If this is not the case, there will be an error message in the output window indicating the error made in the syntax command. After loading the data into SPSS, you may retrieve specific information from it. To obtain



information about the variables, please type the following command after the GET FILE command and execute the command:

DISPLAY DICTIONARY.

A description of all variables will appear in the output window after executing this command (Table 1.1):

**Table 1.1** The Results of Display Dictionary

Variable Information					
Variable	Label	Measurement Level	Column Width	Alignment	Print Format
respnr	Respondent identification number	Nominal	8	Right	F5
SEX	<None>	Nominal	8	Right	F1
EDUC	Highest completed educational level	Ordinal	8	Right	F1
YBIRTH	Year respondent was born	Scale	8	Right	F4

*Note:* Variables in the working file.

Variable Values		
Value		Label
SEX	1	Male
	2	Female
EDUC	1	Elementary school
	2	Middle school
	3	Junior high school
	4	Senior high school
	5	Vocational school
	6	College
	7	Bachelor degrees
	8	Master degrees