

SPSS TEXTBOOKS: A REVIEW FOR TEACHERS

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SUMMARY

Many teachers and researchers use the Statistical Product and Service Solutions (SPSS) software for instructional and/ or research purposes. Because of the comprehensive nature and features of this program, there are various textbooks available that may offer teachers and practitioners a more concise way to analyze and discuss many of the topics that are typically taught in statistics courses. These textbooks differ on many different features, such as level of the audience, complexity of statistical procedures discussed, degree of interpretation of statistics/output, amount of detail discussed on the basic mechanics, accessibility of data files, and student exercises. This paper is written to offer teachers and researchers a review of some of the most popular SPSS textbooks that are available today by utilizing evaluation criteria previously discussed in the literature. This review can provide a starting point for teachers to explore features of the various SPSS textbooks as well as to consider what book is most appropriate based on their own teaching style. Comments from teachers who use the software, limitations of the review, and a table of other ancillary textbook data conclude the paper.

Keywords: SPSS textbooks; evaluation criteria; teaching; statistics

1. INTRODUCTION

Over the past few years, there appears to have been a shift on how to teach statistics in a variety of different fields. In 1992, the American Statistical Association (ASA) and the Mathematical Association of America (MAA) formed a joint committee to study the teaching of introductory statistics. The main recommendations were to emphasize statistical thinking, incorporate data and emphasize concepts using less theory and fewer ‘recipes’, and to foster active learning (Cobb, 1992). According to Moore (1997), the most effective learning takes place when content, pedagogy, and technology reinforce each other. In particular, students should be active participants assigned with structured activities that focus on statistical concepts and ideas that are nonmathematical in nature.

In response to these and the many other recommendations regarding the teaching of statistics, a plethora of statistics textbooks designed to communicate and foster this style of teaching is very visible and widely available to teachers of statistics (Kendrick, 2000; Lomax, 2001; Moore, 2000; Weinberg & Abramowitz, 2002). Instead of focusing heavily on formulas and mathematical and statistical theory, these textbooks report to promote conceptual learning and understanding of statistics concepts and thus, a fundamental understanding of basic mathematics for the introductory student is adequate.

Another possible way to achieve the goal of conceptual learning for students is to perhaps use some type of software program to perform the calculations. Using the computer in this way may not only allow students to focus more on concepts by freeing them of computational tasks, but it may also help students to become active in their own learning, another important recommendation. Moore (1997) suggests that the use of technology helps to automate many routine operations which in turn facilitate the learning process. Many researchers and teachers agree (Garfield, 1997; Hoerl, Hahn, & Doganaksoy, 1997; Scheaffer, 1997) and others have reported that their students benefit academically

when they have included assignments, in conjunction with instruction, that have involved utilizing data analysis procedures (Giesbrecht, 1996; Goodman, 1986; Gratz, Volpe, & Kind, 1993; Velleman & Moore, 1996; Weinberg & Abramowitz, 2002).

Because of the integration of the computer into statistics instruction, there have been many software programs to consider (SPSS, SAS, S-Plus, Minitab, Excel, Systat). In education and the behavioral and social sciences, the Statistical Product and Service Solutions (SPSS, formerly known as the Statistical Package for the Social Sciences) is a popular choice. SPSS is a fairly user-friendly statistics software program that is windows-driven, and offers users a point-and-click way to generate output. The program offers a base feature that provides the most basic statistical procedures and it also offers some advanced features, which allow the user to tackle more sophisticated statistical techniques. Users may also choose to utilize the syntax editor to write 'code' to target specific analyses as opposed to the point-and-click method of generating the output.

Almost as important as selecting an appropriate primary textbook for a statistics course is the now challenging task of selecting a suitable software textbook. A software 'textbook', in this case, refers to any book or manual that is designed to teach any aspects of the software program as well as any book that also emphasizes other objectives, such as teaching concepts. Considering only the books designed to help students learn and apply SPSS, there may be numerous. Many offer students a basic understanding of the mechanics of SPSS, emphasizing data entry and generation of the output for basic descriptive and inferential statistics. Others may offer some theory behind the methods discussed and the authors may recommend their book as an alternative to the traditional introductory statistics textbook. Still others may focus less on mechanics and theory, but more on utilizing 'real' data sets from their own substantive area while at the same time emphasizing interpretation, writing, and reporting results.

Because the textbooks vary on many different factors, it may be useful to review and summarize some of the most popular textbooks. Factors such as level of the audience, complexity of statistical procedures discussed, degree of interpretation of statistics/output, amount of detail discussed on the basic mechanics, accessibility of data files, and student exercises are important considerations. The purpose of this paper is to offer teachers and researchers a brief review of some of the most popular SPSS textbooks that are available today by utilizing evaluation criteria previously discussed in the literature. This review can provide a starting point to explore features of the various SPSS textbooks as well as to consider what book is most appropriate based on their own teaching style. At the same time, this paper continues the tradition in *SERJ* and *SERN* by also providing selected bibliographies for specific topics available to statistics educators (see Holmes, 2002).

2. METHOD

2.1. CRITERIA FOR EVALUATION

The criteria selected for evaluation was developed based on criteria previously selected in the statistics education literature. Huberty and Barton (1990) used coverage, how-to-do, readability, and exercises to evaluate the quality of multivariate statistics text while Cobb (1987) included technical level and exposition, topics covered, and quality of exercises to evaluate 16 introductory statistics textbooks. Harwell, Herrick, Curtis, Mundfrom, and Gold (1996) used variables such as text math and reading level, reading ease, emphasis on theory and computations, writing style, text resource versus learning resource, breath, depth, and overall description of statistical inference, and problem solving. These criteria were utilized to construct and pilot instruments that would provide objective and fair evaluations among students, instructors, and expert evaluators.

Considering the previous research, the criteria used for evaluation of the SPSS textbooks were defined in three major categories: mechanics, content, and classroom/student activities. The mechanics category describes how the books address the 'how to' in terms of SPSS processes (input and output) by providing a summary about how concepts, procedures, and input and output are discussed (i.e., basic details about how to generate output, detailed explanation of interpretation of output). Content includes more discussion about the concepts and procedures, coverage, pedagogy if

appropriate, information helpful to determine the appropriate level of audience, and any other useful information. Classroom/student activities include information about the exercises, examples, appendices, and data files that may accompany the text. Other notable information about the textbooks is included in a table in Appendix 1.

2.2. SURVEY TO TEACHERS

Thirty-five teachers and researchers who were members of either the Measurement and Research Methodology Division or the Educational Statistician Special Interest Group of the American Educational Research Association responded to a brief survey about their teaching practices involving the software and software textbook used in their quantitative courses (see Appendix 2 for the questionnaire used in the survey). Two college teachers who did not belong to either group also responded, for a total of n=37 respondents. Approximately 81% reported using SPSS, with others reporting using SAS, Systat, Excel, Statview, LISREL, EQS, AMOS, or no software. Because this paper's primary focus is on the use of SPSS, results reported by teachers who only use SPSS in their teaching will be presented and discussed later.

2.3. SPSS BOOKS REVIEWED

An attempt was made to review the most popular SPSS software textbooks. All but one of the books used by the teachers in this study was reviewed. In addition, other books were selected based on contact made with major publishers for their most popular-selling SPSS books. A total of 17 books were considered.

Table 1. Sample Textbooks and Abbreviations

Textbook	Abbreviation
Carver, R. H., & Nash, J. G. (2000). <i>Doing data analysis with SPSS 10.0</i> . Pacific Grove, CA: Duxbury/Thomson Learning.	C&N(2000)
Cronk, B. C. (2002). <i>How to use SPSS: A step-by-step guide to analysis and interpretation</i> . (2nd ed.). Los Angeles, CA: Pyrczak.	C(2002)
George, D., & Mallery, P. (2003). <i>SPSS for windows step by step: A simple guide and reference 11.0 update</i> . (4th ed.). Boston, MA: Allyn and Bacon.	G&M(2003)
Green, S. B., & Salkind, N. J. (2003). <i>Using SPSS for windows and macintosh: Analyzing and understanding data</i> . (3rd ed.). Upper Saddle River, NJ: Prentice Hall.	G&S(2003)
Kendrick, J. R. (2000). <i>Social statistics: An introduction using SPSS for windows</i> . Mountain View, CA: Mayfield.	K(2000)
Kirkpatrick, L. A., & Feeney, B. C. (2003). <i>A simple guide to SPSS for windows for versions 8.0, 9.0, 10.0, & 11.0</i> (Rev. ed.). Belmont, CA: Wadsworth/Thomson Learning.	K&F(2003)
Norusis, M. J. (2002). <i>SPSS 11.0 guide to data analysis</i> . Upper Saddle River, NJ: Prentice Hall.	N(2002)
Pavkov, T. W., & Pierce, K. A. (2003). <i>Ready, set, go! A student guide to SPSS 11.0 for windows</i> . New York, NY: McGraw-Hill.	P&P(2003)
Shannon, D. M., & Davenport, M. A. (2001). <i>Using SPSS to solve statistical problems: A self-instruction guide</i> . Upper Saddle River, NJ: Prentice-Hall.	S&D(2001)
Sweet, S. A., & Grace-Martin, K. (2003). <i>Data analysis with SPSS : A first course in applied statistics</i> (2nd ed.). Boston, MA: Allyn and Bacon.	S&G-M(2003)
Weinberg, S. L., & Abramowitz, S. K. (2002). <i>Data analysis for the behavioral sciences using SPSS</i> . New York, NY: Cambridge.	W&A(2002)

As versions 8.0-11.5 are functionally identical, older versions of SPSS (prior to 8.0) were not reviewed. In addition, only the latest edition of a book for the same author or authors was reviewed. Six of the 17 books were excluded due to the previous two reasons; therefore, 11 books were included in the final review. The books and their corresponding abbreviations are presented in Table 1.

All of the books reviewed were alike in many ways. The authors appeared to support and follow the recommendations of the ASA/MAA (Cobb, 1992) by fostering a framework of learning that emphasized conceptual understanding of statistics using SPSS. The majority of the books provided step-by-step illustrations with data editor, screen, and output screen excerpts. The topics typically taught in introductory statistics courses were discussed and contextual examples were followed through from inputting data and defining variable names to generating the output and discussing and interpreting the statistics. In most cases, there were few to very few formulas presented and student exercises and practice data files accompanied the chapters.

A review is presented below by considering the evaluation criteria described earlier. In order to facilitate the reader, the books have been ‘clustered’ based on their similarities, and distinctions are made within each cluster across each category. For example, K&F(2003), P&P(2003), and C(2002) all appear to offer the very basics in terms of how-to and interpretation therefore, these books were clustered together. Therefore, the following books were clustered: Cluster 1 is K&F(2003), P&P(2003), and C(2002); Cluster 2 is S&G-M(2003) and W&A(2002), Cluster 3 is C&N(2000), K(2000), N(2002), and S&D(2001); and Cluster 4 is G&M(2003) and G&S(2003).

3. RESULTS AND DISCUSSION

3.1. MECHANICS

Cluster 1

For an SPSS manual that teaches the very basics in terms of SPSS mechanics and explanations of output and statistics concepts, K&F(2003) or P&P(2003) could be considered. Both books provide just enough information in order to explain the procedures. K&F(2003) also discuss syntax; however these sections can easily be omitted. The book by C(2002) also provides very basic details of SPSS mechanics but the discussion and explanation of the statistical procedures and concepts are slightly more detailed (i.e., definitions of concepts, assumptions are also discussed).

Cluster 2

The S&G-M(2003) and W&A(2002) books were alike in that they both offered the basics in terms of mechanics or ‘how-to’ but both authors provide more detailed explanation of the procedures, output, and concepts. Neither book focused on the ‘how-to’ but more on teaching concepts and interpreting output. According to W&A(2002), their book could perform as a primary statistics textbook. Their book is comprehensive in terms of teaching statistics concepts whereas the S&G-M(2003) book provides more of a balance of teaching and data analysis by briefly discussing definitions of concepts and targeting specific analyses used by social scientists.

Cluster 3

The C&N(2000) book provides straightforward and somewhat detailed discussions of statistical procedures, explanations and discussion of concepts, mechanics, and interpretation of output. Also comprehensive in SPSS mechanics are K(2000), N(2002), and S&D(2001). K(2000) is also comprehensive in the teaching of statistics concepts and procedures as it is recommended to be used as a primary statistics textbook. S&D(2001) offer very detailed explanations of concepts and interpretation of output and the authors contend their book should be used as a supplement. The N(2002) book focuses on SPSS and data analysis, as reported by the author and could be used as a supplement or primary text for an introductory course in data analysis. An introduction to statistics

concepts and topics are succinctly discussed with heavy emphasis on generating, discussing and interpreting output.

Cluster 4

Finally, G&M(2003) and G&S(2003) offer the most advanced and comprehensive books in terms of both mechanics and statistical procedures discussed. G &M(2003) provides brief to moderate details of definitions and explanations of statistics concepts and the output is briefly discussed. The same is true of G&S(2003) but more emphasis is given to the interpretation of the output and writing results in APA format.

3.2. CONTENT

Cluster 1

All of the authors reported that their books were appropriate for students studying at the introductory level, or higher. None of the books in cluster 1 would be adequate as a stand-alone statistics textbook; students using these books would need to have some understanding of statistics. For each chapter in K&F(2003), one example taken from a psychology perspective begins the chapter, a discussion on how to generate the output using both the point-and-click and syntax methods are described, and a discussion of the output and a very brief interpretation is provided. The authors do not adequately address important assumptions (i.e., homogeneity of variance for independent samples t-test), indicating that certain tests are “probably not of interest to most readers” (2003, p. 34).

C(2002) chapters begin with a brief description of the topic and assumptions, followed by a discussion of variables, an illustration of how to generate the output, and a section on how to read and interpret the output. Although C(2002) includes a separate section on assumptions, they are not exhaustive. For example, the assumption of equal variances in the population is not mentioned for the one-way ANOVA design (2002, p. 63) and is also not addressed in the output. Nonparametric methods, reliability analyses, and MANOVA are additional topics that are discussed in C(2002).

Finally, the authors P&P(2003) meet their objectives by publishing a supplemental book that includes brief explanation of statistics concepts yet also accurately addresses important assumptions using SPSS. For each chapter in P&P(2003), the research questions and the design are first discussed, the statistical procedure is chosen, and the results are briefly interpreted and summarized. As far as more advanced topics, the repeated measures ANOVA design is also discussed.

Cluster 2

For cluster 2, the W&A(2002) book is adequate as a stand-alone statistics textbook. In addition to providing detailed discussions for concepts and procedures, the book is written to facilitate student pedagogical objectives by reintroducing concepts for reinforcement. For example, although the authors introduce and discuss descriptive statistics early on, they continue to incorporate many of these concepts and the use and misuse of graphical displays in other topics throughout their textbook. In addition to the topics normally covered at the beginning level, data transformations, nonparametric methods, and effect size indicators are also discussed. This book contains more formulas and uses short examples within the chapters to illustrate the formulas immediately followed by SPSS commands and outputs to confirm the hand calculations.

S&G-M(2003) provides accurate but brief discussions of concepts and procedures. Although details of some assumptions are discussed, they are also not exhaustive and not addressed with the SPSS output (see pp. 119-123). Chapters discussing how to write a research report and potential research projects that may be considered using the data sets on disk are included. Logistic regression and multivariate logistic regression are two of the more advanced topics discussed.

Cluster 3

C&N(2000) presents some detailed discussions of concepts and procedures including discussions of assumptions. Although there are presentations devoted to topics such as nonlinear models,

forecasting techniques, nonparametric tests, and quality control procedures, some explanations of other important concepts, such as investigating interaction effects were limited (i.e., using descriptive charts see pp. 154-159). Exercises for simulation activities are accessible for probability, normal distribution, sampling distributions, confidence intervals, and the one-sample t-test.

S&D(2001) provide a more detailed explanation of concepts, procedures and assumptions, however the authors provide a similar discussion of interaction effects as C&N(2000) (see pp. 246-247). Reliability analyses and regression with categorical predictors are additional topics that are discussed.

K(2000) presents accurate discussions of concepts and statistical procedures in the manner in which a primary statistics textbook would. In terms of pedagogy, there are skill practices within the chapters where students can evaluate their understanding in a formative manner. The book is very comprehensive in both statistics and providing SPSS information, which may explain why only introductory material (up through one-way ANOVA) for a one-semester course is presented.

Finally, N(2002) begins each chapter with a list of questions, provides a concise but somewhat detailed introduction to statistics concepts, procedures, and assumptions (through multiple regression), and concludes with detailed steps on how to generate and interpret the output. A limited discussion of interaction effects is also provided using a plot of the means (see pp. 330-334). There are chapters devoted to plotting data, nonparametric tests, analyzing residuals, and multiple regression diagnostics.

Cluster 4

G&M(2003) authors report that 95% of the analyses that are conducted in the sciences or business can be accomplished using their book. The first 16 chapters cover introductory statistics topics while the last twelve chapters utilize the most advanced modules of SPSS. Some of these topics include 3-way ANOVA, reliability analyses, multidimensional scaling, factor analysis, cluster analysis, discriminant analysis, repeated measures MANOVA, logistic regression, hierarchical loglinear models, and general loglinear models. Because many topics are discussed, there is brief to moderately detailed explanations of concepts and procedures. For example, specific reports about assumptions are not discussed in the introduction of a chapter but important assumptions tested by SPSS are addressed when referring to the output (see p.140).

G&S(2003) is similar to G&M(2003) in their explanation of concepts and coverage of advanced topics such as factor analysis, discriminant analysis, and reliability analyses. However a more well-rounded presentation of the topics is provided, including discussions of assumptions, definitions of research questions, a description of the research design, measures of effect sizes, discussion of results in APA format as well as alternative ways to analyze the data. Macintosh users for version 10.0 can also utilize the book, for the most part because any features that are not available on Macintosh are pointed out by the authors.

3.3. CLASSROOM/STUDENT ACTIVITIES

Cluster 1

Both C(2002) and P&P(2003) have practice or student exercises but neither provides a list of references. The exercises for C(2002) allow students to manually enter their own data using short data sets provided in the chapters or they can refer to the appendix for longer data sets, which also have to be manually entered. In one case, students were referred to a data set in the SPSS directory program files (CARS.SAV) which was not found in SPSS version 11.5 for Windows (see p. 18). There is an instructor's key for all exercises and an appendix which includes a glossary of terms as well as a decision tree to help students learn how to select the appropriate inferential statistical test.

P&P(2003) use the GSS93 data file (General Social Survey) provided in the SPSS program directory to illustrate their statistical procedures. They also utilize 'general' exercises, (i.e., State your research question based on two variables you or your instructor chooses) that should encourage students to undertake independent computer assignments, according to the authors. The appendix

includes how to enter data using files and programs other than SPSS (i.e., text editor, spreadsheet) and four additional data sets are available for students to use for practice and must be entered manually.

Finally, K&F(2003) do not have exercises or references; however the appendices describe other features of the program not discussed in detail in the book such as saving and retrieving data, output, and syntax files, and data transformations (creating and computing new variables, recoding existing variables, selecting cases).

Cluster 2

S&G-M(2003) have no student exercises but provide a data disk that includes 2 data sets, the General Social Survey (1998) as well as a data set that contains variables about the social behavior in the United States. The appendix includes a description of the data sets at the end of each chapter, a summary, key terms, and a list of references.

W&A(2002) includes ample student exercises and a disk accompanies the book that consists of several real data sets. There is one student exercise that uses an SPSS macro syntax file to generate a sampling distribution of means that was not included on the disk (SAMPDIS.sps) provided for this reviewer (All of the other SPSS data files were available). The appendix provides a description of the data sets, statistical tables (i.e., z, t), references, and solutions to all exercises.

Cluster 3

C&N(2000) report that they use mostly real data sets for illustration of procedures and exercises. The files are expected to be in the SPSS program file directory or need to be downloaded from the World Wide Web (WWW). In some cases, either the data was not in the directory or the data was not available on the Web (see p. 274 for AIRLINE.SAV – ‘page not found’). Also, in one case, the data to be downloaded is in ‘html’ format (LONDON1.SAV), a file type that was not addressed in the appendix for use in SPSS in their book. There could be differences in versions in terms of SPSS program files; C&N(2000) considers version 10.0 (this reviewer is using version 11.5). The appendix includes a detailed description of SPSS files, a discussion of how SPSS handles and supports other data files, and an introduction to users working with SPSS 9.0.

K(2000) also reports using version 9.0 and the text is accompanied by an instructor’s manual and a data disk (These were not received with this text for the reviewer). The author reports that the disk contains the General Social Survey (1996) data and an instructor’s manual that contains solutions to the even-numbered problems. The appendix lists tables, advanced features of SPSS, answers to odd-numbered problems, references, and a glossary.

S&D(2001) uses real data sets provided on a disk collected from students enrolled in an introductory statistics course related to student admission and computer and statistics attitudes. The student exercises utilize these data and all solutions are appended. The appendix also includes a description of the data sets and information about how to use syntax commands.

Finally, N(2002) includes a data disk of real data from the General Social Survey, Impact of the Internet on Library Use study, Stanford Institute for the Quantitative Study of Society, Chicago marathon, opinions of the criminal justice system, and an ABC survey of manners. All of the files are used in the chapters for exercises and extra data analysis problems at the end of each chapter. The appendix includes information on how to obtain high resolution charts, data transformations and case selections, statistical tables, description of the data files, answers to selected exercises, and a list of references. In addition, an instructor’s guide accompanies the book which includes teaching hints for each chapter as well as answers to all of the student exercises.

Cluster 4

Data files used to explain procedures in the chapters and student exercises have to be downloaded for G&M(2003). At this site, the files can be downloaded one at a time or in zip format. Also, solutions to selected exercises using the adobe acrobat reader can also be obtained. Information about the instructor’s manual is also available and is password protected. Information on the data files, a glossary, and a listing of references is also included with the book.

G&S(2003) provides a disk for illustrating procedures and student exercises. The appendix includes descriptions of data files, solutions to selected exercises, references, and a discussion of the different methods used to control Type I errors for multiple testing.

3.4. COLLECTIVE VIEWPOINT

A survey was used to gather data about the extent to which teachers use SPSS and SPSS software books in their teaching. These teachers reported using SPSS from their introductory courses in research methods, statistics, sampling and survey design to advanced quantitative courses such as multivariate statistics. Also, teachers reported using between 1-50% of their classroom time (some courses used labs devoted exclusively to the teaching of SPSS) related to SPSS.

Of the 81% who reported using SPSS, about half (40%) used software books and all but one reported using these books as a supplementary resource (this one response was missing). The other half reported using their own SPSS handouts. The most popular book was Green & Salkind (2003) with 40% reporting using this book while 13% each indicated using Kirkpatrick & Feeney (2003) and Norusis (2002). One teacher each (6%) reported using George & Mallery (2003) and Pavkov & Pierce (2003) while 13% of the teachers reported using some other book or various books from semester to semester.

There were many reasons why teachers reported selecting their particular book. Cost, readability, detailed description and explanation of analyses and concepts, emphasis on calculation, use, and interpretation of effect sizes, good use of visuals, user-friendly, availability and correctness of concepts, a focus on primary statistical procedures, statistical theory is presented, use of the book as a good reference, easy to understand, clarity, annotated output with sample reports, facilitates conceptual understanding, examples are taken from the behavioral sciences, real data, many examples, ease of use by both teacher and student, minimal formulas, APA format of results, and not too theoretical were the answers provided. In fact, 40% of the teachers indicated that they use their book to help reinforce statistics concepts, 13% reported using their manual to teach concepts, and 40% indicated that they do not rely on their book to teach or reinforce. Also, the majority of the teachers reported using their book to teach mechanics (53%), 33% said they did not use their book to teach mechanics, and two teachers (13%) reported using their books as references only. Finally, the teachers reported using the data files, exercises at the end of the chapters, syntax, and APA formatting either in class or that these features are used by their students.

3.5. COMPLEMENTARY INFORMATION

The table in Appendix 1 provides some summary data as well as other information teachers might find useful. The intended audience level (introductory, intermediate, and advanced), syntax (whether syntax language is discussed), whether a disk is included with the book, information about exercises and solutions, number of pages, and the versions of SPSS needed for the books are reported.

4. FINAL THOUGHTS

Interestingly enough, half of the teachers who reported using SPSS did not require or recommend a software book. There was no question to address why these teachers preferred not to use a book however some researchers provided reasons. One researcher stated that there are often more misconceptions and errors in software books than a primary textbook. Two other researchers commented that their primary textbooks provided enough SPSS information for their purposes. Most other researchers stated that they used their own handouts; one researcher reported that all SPSS (and SAS) documentations were online at his/her university. There could be other reasons why half of the teachers use their own handouts, two of which might be that teachers may not value or have the time to fully utilize SPSS and quick handouts will suffice, or there could be other courses that teach data analysis procedures (i.e., Computer Use in Educational Research) available to their students.

5. LIMITATIONS

The following limitations should be mentioned for this research study and review. First, neither the teachers nor the books were randomly sampled. Even though the books were not randomly selected, I do believe they are in fact representative of books used in many methods courses. Secondly, the sample was not only convenient but also small. Consequently, generalizations to all teachers who use SPSS are quite limited. Most importantly, the books were evaluated by one researcher who is a teacher and a researcher in quantitative methods. Because of the subjective nature of the review, attempts were made to lower bias by using evaluation criteria selected from the statistical education literature, including ideas from other teachers and researchers, and reporting page numbers in cases where more subjective comments were included. However, the review does consist of comments from a single reviewer; therefore, readers should not over-generalize or draw very simple conclusions. Instead, this information is presented to make readers aware of the SPSS software books available today; my hope is that teachers will choose several books that seem appealing and ultimately make their own assessments. Any oversight related to any of the features or criteria of the software books was unintentional.

Finally, the evaluation of statistics textbooks has important consequences. An evaluation of a textbook should provide objective information to readers and may often help one decide whether it is 'suitable' for their purposes. Although this review focused on evaluation criteria selected from the statistics education literature, there was little guidance as to how objective evaluations should be conducted. Subjective evaluations undoubtedly have merit however there appears to be a lack of research in the literature that suggests what criteria to consider and how to use it. Harwell et. al (1996) stated "This lack of guidance may be at least partly responsible for the fact that published evaluations of statistics texts almost invariably employ evaluation criteria that lack any theory-based rationale" (p. 4). Future research might focus on the continued development of empirically-based criteria for the evaluation of statistics textbooks as well as suggestions on how to (best) objectively utilize the criteria. Including input from teachers, researchers, and students from all levels of education both nationally and internationally are also invaluable and can provide an important perspective in the development of this criteria. As the teaching of statistics continues to become more popular across disciplines and age levels, the selection of a statistics textbook will require thoughtful consideration. For this reason, evaluations of this sort will continue to be both valuable and useful to those of us involved in the wonderful world of teaching.

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APPENDIX 1: LIMITED SUMMARY AND ANCILLARY INFORMATION

Author(s)	Audience	Syn tax	Disk	Number of pages including appendix	Version(s) *	Exercises/Solutions
Carver & Nash	Introductory Intermediate Advanced	No	No, download or use SPSS program files	326	10.0 Intro to 9.0 in appendix	Selected exercise solutions only available to instructor
Cronk	Introductory Intermediate	No	No, manual input or SPSS program files	114	10.0 11.0	All exercise solutions only available to instructor
George & Mallery	Introductory Intermediate Advanced	No	No, download data files	386, no appendix	11.0	Selected exercise solutions must be downloaded
Green & Salkind	Introductory Intermediate Advanced	Yes	Yes	420	11.0 for Windows; 10.0 for Macintosh	Selected exercise solutions in appendix
Kendrick	Introductory Intermediate?	No	?, Author reports disk is included	630	9.0	All solutions within chapters; Selected in appendix --All available to instructor
Kirkpatrick & Feeney	Introductory Intermediate	Yes	No	118	8.0, 9.0, 10.0 & 11.0	No exercises
Norusis	Introductory Intermediate?	No	Yes	625	11.0	Selected exercise solutions in appendix – all available to instructor. No solutions for data analysis exercises
Pavkov & Pierce	Introductory	No	No, use SPSS program files	89	11.0	No solutions to exercises
Shannon & Davenport	Introductory Intermediate	Yes	Yes	369	9.0	All exercise solutions are appended
Sweet & Grace-Martin	Introductory Intermediate	Yes	Yes	231	11.0	No solutions to exercises
Weinberg & Abramowitz	Introductory Intermediate	No	Yes	590	10.0	All exercise solutions are provided

*Many authors have books for earlier versions. Please see the publisher for more information.

APPENDIX 2: SURVEY QUESTIONNAIRE

Dear Colleague,

I am interested in gathering some information about your teaching practices in your statistics, research, or other related methods course. Please take a few moments to answer the 10 questions below about the software textbook that you are currently using either as a supplement or primary textbook for your course. In this case, 'software textbook' refers to any book or manual that is designed to teach any aspects of the software program as well as any book that also emphasizes other objectives, such as teaching concepts.

1. What software program do you use for your course? (i.e., SPSS, SAS, Minitab, etc.)
2. For what course do you recommend or require an accompanying textbook for the software? (i.e., Statistics, Research Methods, Survey Methods, etc.)
3. What is the name of this software textbook that you recommend or require?
4. Why did you choose this particular software textbook? (i.e., cost, detailed explanation of concepts, etc.). Please explain.
5. Do you use this software textbook as a supplement to a traditional textbook for your course or is it used exclusively as a primary textbook? Please explain.
6. Do you rely on your software textbook to teach or reinforce statistics concepts that you teach in class? Please explain.
7. Do you rely on your software textbook to teach students the mechanics of the program? (i.e., how to input, print, save data and output). Please explain.
8. How much classroom time (0-100%) do you devote to teaching the software? Please explain.
9. What are some of the features of your software textbook that your students use or that you use in class that you like most? (i.e., data files on accompanying disk, exercises at end of chapter, syntax provided, data on internet, etc). Please explain.
10. Given your comments above, what level of student (undergraduate and/or graduate) and class (introductory, intermediate, and/or advanced) do you teach?