

Making Tables and Figures

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Tables and figures are used in most fields of study to provide a visual presentation of important information to the reader. They are used to organize the statistical results of a study, to list important tabulated information, and to allow the reader a visual method of comparing related items. Tables offer a way to detail information that would be difficult to describe in the text.

A figure is a graphic or pictorial representation, such as a chart, graph, photograph, or line drawing. These figures may include pie charts, line charts, bar charts, organizational charts, flow charts, diagrams, blueprints, or maps. Limit figures to situations in which a visual helps the reader understand the methodology or results. Use a table to provide specific numbers and summary text, and use figures for visual presentations.

The meaning and major focus of the table or figure should be evident to the readers without their having to make a thorough study of it. A glance should be all it takes for the idea of what the table or figure represents to be conveyed to the reader. By reading only the text itself, the reader may have difficulty understanding the data; by constructing tables and figures that are well presented, readers will be able to understand the study results more easily.

The purpose of this appendix is to provide guidelines that will enhance the presentation of research findings and other information by using tables and figures. It will highlight the important aspects of constructing tables and figures using the *Publication Manual of the American Psychological Association, Sixth Edition* (2010) as the guide for formatting.

General Considerations Concerning Tables

Be selective as to how many tables are included in the total document. Determine how much data the reader needs to comprehend the material, and then decide if the information would be better presented in the text or as a table. A table containing only a few numbers is unnecessary, whereas a table containing too much information may not be understandable. Tables should be easy to read and interpret. If at all possible, combine tables that repeat data, so that results are presented only once.

Keep a consistency to all of your tables throughout your document. All tables and figures in your document should use a similar format, with the results organized in a comparable fashion. Use the same name and scale in all tables, figures, and the text that use the same variable.

In a final manuscript such as a thesis or dissertation, adjust the column headings or spacing between columns so the width of the table fits appropriately between the margins. Fit all of one table on one page. Reduce the data, change the type size, or decrease line spacing to make it fit. A short table may be on a page with text as long as it follows the first mention of it. Each long table is on a separate page immediately after it is mentioned in the text. If the fit and appearance would be improved, turn the table sideways (landscape orientation, with the top of table toward the spine) on the page.

Each table and figure must be discussed in the text. An informative table will supplement but will not duplicate the text. In the text, discuss only the most important parts of the table. Make sure the table can be understood by itself without the accompanying text; however, it is never independent of the text. There must be a reference in the text to the table.

Construction of the Table

Table 1.1 is an example of an APA table for displaying simple descriptive data collected in a study. It also appears in correct relation to the text of the document; that is, it is inserted below the place that the table is first mentioned either on the same page, if it will fit, or the next page. (Fig. 1.1 shows the same table with the table parts identified.) The major parts of a table are the number, the title, the headings, the body, and the notes.

Table 1.1. *An Example of a Table in APA Format for Displaying Simple Descriptive Data*

Table 1

Means and Standard Deviations on the Measure of Self-Direction in Learning as a Function of Age in Adult Students

Age group	<i>n</i>	Self-directed learning inventory score	
		<i>M</i>	<i>SD</i>
20–34	15	65	3.5
35–40	22	88	6.3
50–64	14	79	5.6
65–79	7	56	7.1
80+	-- ^a	--	--

Note. The maximum score is 100.

^a No participants were found for the over 80 group.

Table Numbering

Arabic numerals are used to number tables in the order in which they appear in the text. Do NOT write in the text “the table on page 17” or “the table above or below.” The correct method would be to refer to the table number like this: (see Table 1) or “Table 1 shows...” Left-justify the table number (see Table 1.1). In an article, each table should be numbered sequentially in the order of appearance. Do not use suffix letters or numbers with the table numbers in articles. However, in a book, tables may be numbered within chapters; for example, Table 7.1. If the table appears in an appendix, identify it with the letter of the appendix capitalized, followed by the table number; for instance, Table 1.3 is the third table in Appendix C.

Table Titles

Include the variables, the groups on whom the data were collected, the subgroups, and the nature of the statistic reported. The table title and headings should concisely describe what is contained

in the table. Abbreviations that appear in the body of the table can sometimes be explained in the title; however, it may be more appropriate to use a general note (see also comments on *Table Headings*). The title must be italicized. Standard APA format for journal submission requires double spacing throughout. However, tables in student papers may be partially single spaced for better presentation.

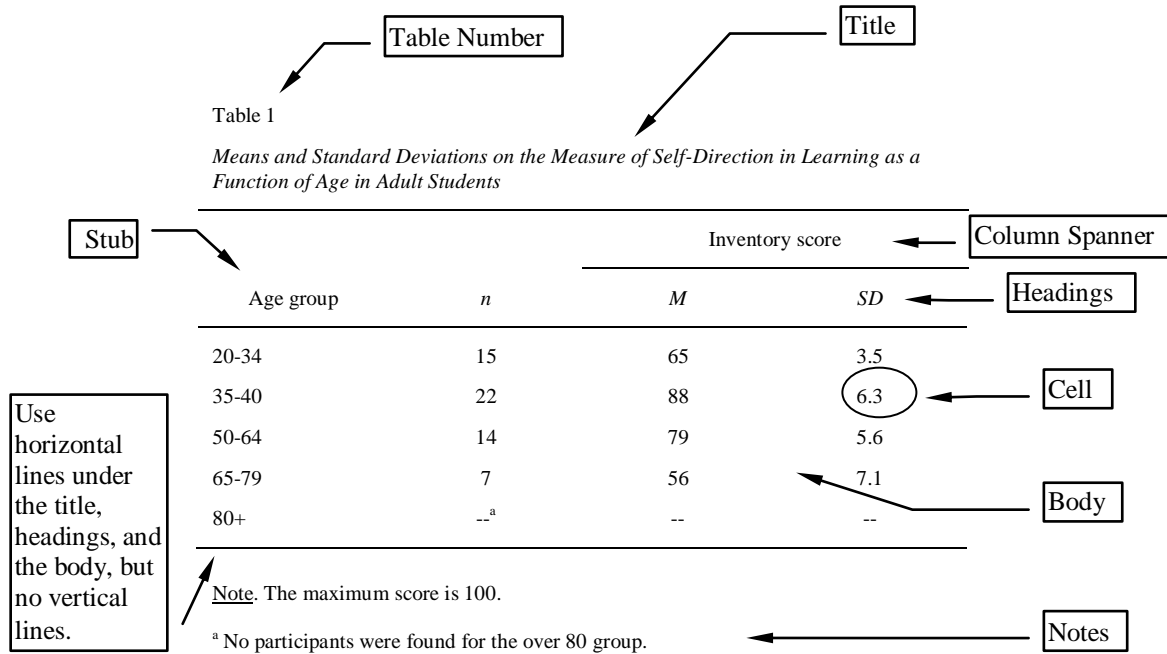


Fig. 1.1. The major parts of an APA table.

Table Headings

Headings are used to explain the organization of the table. You may use abbreviations in the headings; however, include a note as to their meaning if you use mnemonics, variable names, and scale acronyms. Standard abbreviations and symbols for nontechnical terms can be used without explanation (e.g., *no.* for *number* or *%* for *percent*). Have precise title, column headings, and row labels that are accurate and brief. Each column must have a heading, including the *stub column*, or leftmost column. Its heading is referred to as the *stubhead*. The stub column usually lists the significant independent variables or the levels of the variable, as in Table 1.1.

The *column heads* cover one column, and the *column spanners* cover two or more columns—each with its own column head (see Table 1.1 and Fig. 1.1). Headings stacked in this manner are called *decked heads*. This is a good way to eliminate repetition in column headings but try to avoid using more than two levels of decked heads. **Column heads, column spanners, and stubheads** should all be singular, unless referring to a group (e.g., children). Table spanners, which cover the entire table, may be plural. Use sentence capitalization in all headings.

Notice that there are no vertical lines in an APA style table. The horizontal lines can be added by using a “draw” feature or a “borders” feature for tables in the computer word processor, or they

could be drawn in by hand if typed. If translating from an SPSS table or box, the vertical lines must be removed.

The Body of the Table

The body contains the actual data being displayed. Round numbers improve the readability and clarity more than precise numbers with several decimal places. A good guideline is to report two digits more than the raw data. A reader can compare numbers down a column more easily than across a row. Column and row averages can provide a visual focus that allows the reader to inspect the data easily without cluttering the table. If a cell cannot be filled because the information is not applicable, then leave it blank. If it cannot be filled because the information could not be obtained, or was not reported, then insert a dash and explain the dash with a note to the table.

Notes to a Table

Notes are often used with tables. There are three different forms of notes used with tables: (a) to eliminate repetition in the body of the table, (b) to elaborate on the information contained in a particular cell, or (c) to indicate statistical significance:

- A **general note** provides information relating to the table as a whole, including explanations of abbreviations used:

Note. This could be used to indicate if the table came from another source.

- A **specific note** makes a reference to a specific row, column, or cell of the table and is given a superscript lowercase letter, beginning with the letter “a”:

^a*n* = 50. Specific notes are identified in the body with a superscript.

- A **probability note** is to be included when one or more inferential statistics have been computed and there isn’t a column showing the probability, *p*. Asterisk(s) indicate the statistical significance of findings presented within the table. Try to be consistent across all tables in a paper. The important thing is to use the fewest asterisks for the largest *p* value. It is common to use one asterisk for .05 and two for .01. For example:

p* < .05. *p* < .01.

Notes should be listed with general notes first, then specific notes, and concluded with probability notes, without indentation. They may be single spaced for better presentation. Explain all uses of dashes and parentheses. Abbreviations for technical terms, group names, and those of a similar nature must be explained in a note to the table.

Constructing a Table in Microsoft Word 2007

For this step-by-step example, results from an ANOVA analysis were chosen from previous examples in the book. See Fig. 1.2. The data are transferred from the standard SPSS output to an APA table.

ANOVA

grades in h.s.

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	18.143	2	9.071	4.091	.021
Within Groups	155.227	70	2.218		
Total	173.370	72			

Fig. 1.2. An example of the type of default table generated from an SPSS ANOVA output.

The finished table should look like Table 1.2. This explanation is accomplished using MS Word 2007. In earlier versions the functionality will generally be the same but with 2007 Microsoft greatly changed the look and feel so the screens will differ (how you find the right command). Also, you will need to adjust the number of columns and rows for the type and amount of data that you need to present.

Table 1.2. An Example of an ANOVA Table in APA Format

Table 2 ← The **Title** is in italics but the **Table Number** is not. Also note the space between the title and the top of the table.

One-Way Analysis of Variance of Grades in High School by Father's Education

Source	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>
Between groups	2	18.14	9.07	4.09	.02
Within groups	70	155.23	2.22		
Total	72	173.37			

Step One: Insert the Table

The **Headings** and **Body** of the table are actually built using Word's table function. Type your **Table Number** and **Title**. Then on the next line after the title, insert a 6 × 4 table:

- **Insert** → **Table...** (see Fig. 1.3).
- For our example of the ANOVA, click on the 6 × 4 box. You will need to adjust the number of columns and rows for the type and amount of data that you need to present.
- Compare your table to Table 1.3.

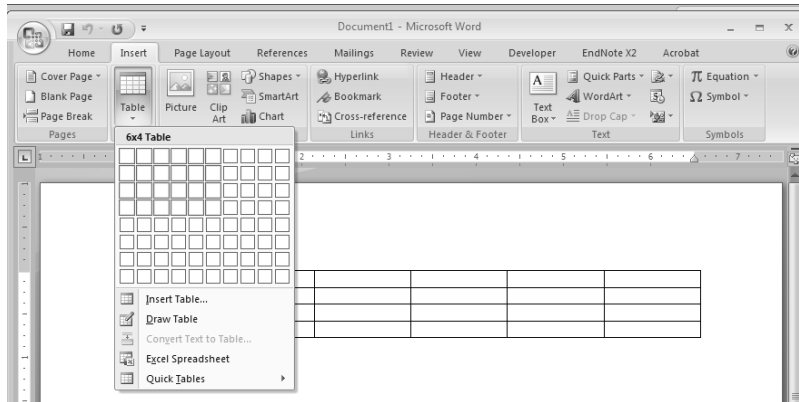


Fig. 1.3. Using MS Word to make a table.

Table 1.3. Step 1

Step Two: Correcting the Grid Lines

APA uses no vertical and just a few horizontal lines, so it is best to remove them all and then put back the ones that are needed. However, you need to first turn on your table gridlines if they aren't on already:

- **Home** → In the Paragraph Box click the arrow next to the **Border** button and select **View Gridlines**. See Fig. 1.4.

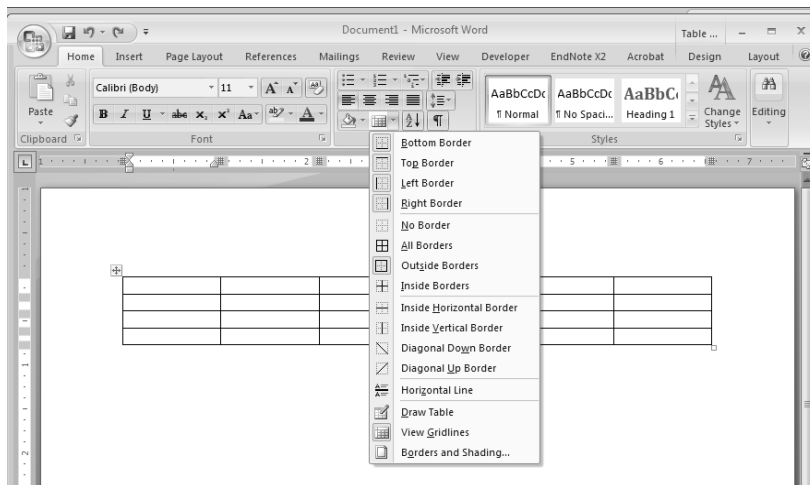


Fig. C.4. Turning the View Gridlines on.

Then remove all the table border lines by:

- Right click anywhere on the table and select: **Borders and Shading...** to get Fig. 1.5.

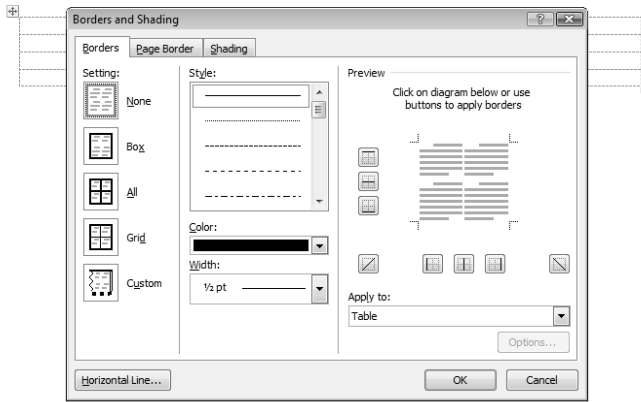
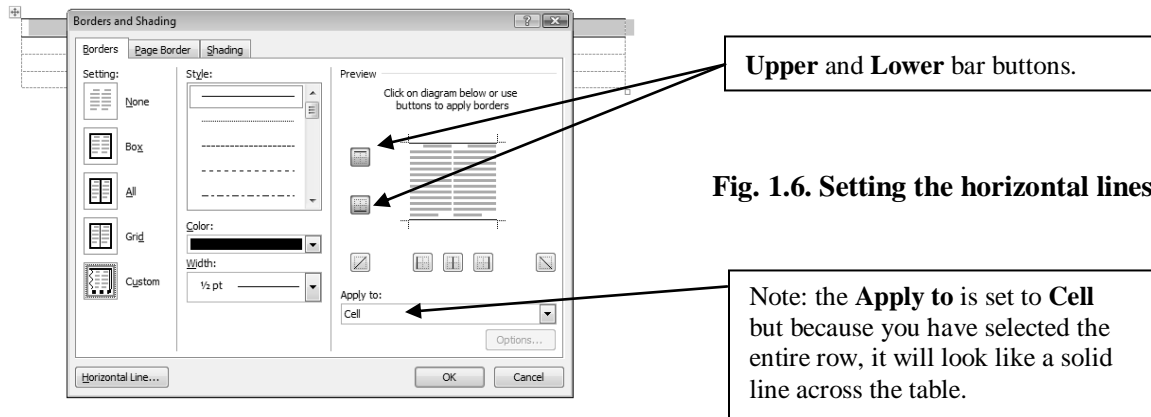


Fig. 1.5. Clearing the borders.

- Select the **Borders** tab, if it's not already selected.
- Under **Settings** click the box to the left of **None** to remove them. Make sure under **Apply to:** it says **Table**.
- Click **OK**.

To add the correct lines for the APA table in our example:

- Left click to the left of the top row to select the top row.
- Right click anywhere on the top row and select: **Borders and Shading...** to get Fig. 1.6.
- Make sure the solid line **Style** is selected and the **Width** is **1/2 pt**.
- In the **Preview** picture click the **Upper** and **Lower** bar buttons. This inserts the top two lines in the table.
- Click **OK**.
- Select the last row in your table.
- Click the **Lower** bar button only. This inserts the bottom line in the table.
- Click **OK**.



Upper and Lower bar buttons.

Fig. 1.6. Setting the horizontal lines.

Note: the Apply to is set to Cell but because you have selected the entire row, it will look like a solid line across the table.


Compare your table to Table 1.4.

Table 1.4. Step 2

Note: If you can't see the gridlines, turn them on to better see where the rows and cells are. They won't show when printed. See Fig C.5 above.

Step 3: Adding the Text and Data

The text in the body of an APA table is an equal distance between the top and bottom of the cell:

- Select the table by pointing at the table and clicking the target that appears in the upper left corner .
- Click the **Home** tab and the **Paragraph** dialog box button (see Fig. 1.7).
- Set **Line spacing** to **Single** (see note on Fig. 1.7).
- Set **Spacing Before** and **After** to **6pt** (see Fig. 1.7).
- Click **OK**.

Paragraph dialogue box button.

Note: With normal SPSS tables with numerical data and short heads, **Single** and the **6pt** before and after sets the text equidistant in the cell. Wrapped text will come out single spaced, which is a better presentation for student papers and dissertations. However, if you have text that wraps and the journal requires that all text be double spaced, then you will need to **Double** space only those cells that wrap.

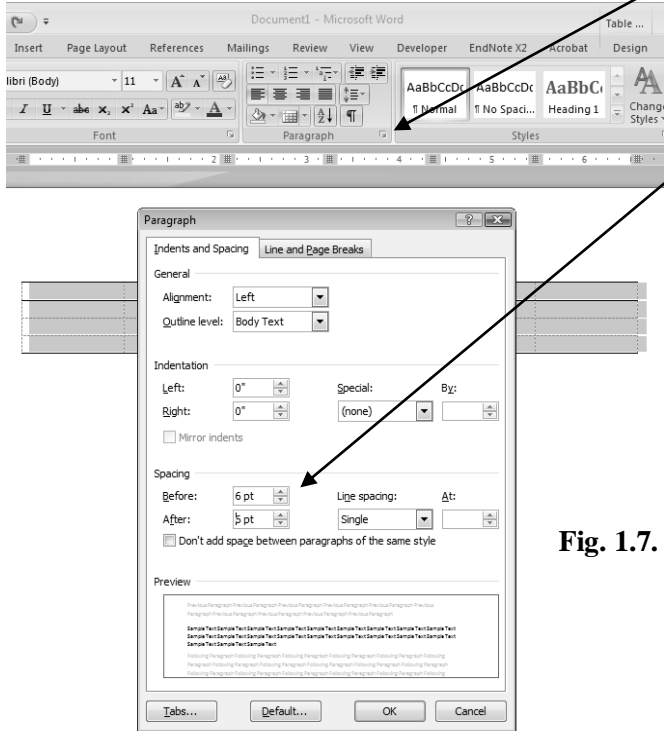


Fig. 1.7. Setting line spacing within the cell.

Enter the headings and data into each cell; the SPSS printout will have all of the information to accomplish this. Don't worry about wrapping and aligning at this time. That is easier to do after the data are entered.

Compare your table to Table 1.5.

Table 1.5. Step 3

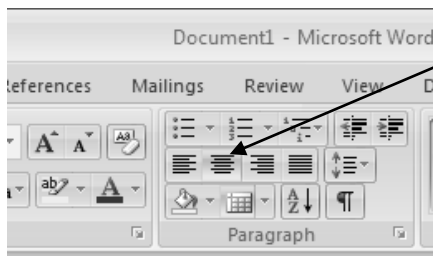
Source	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>
Between groups	2	18.14	9.07	4.09	.02
Within groups	70	155.23	2.22		
Total	72	173.37			

Step 4: Adjusting the Column Widths

In an APA table, the **Heads** should be center aligned in the cell and the **Stubs** are left aligned. The numbers in the **Cell** are decimal aligned and centered under the **Heads**. Notice also that “Between groups” wrapped. Let’s first align the **Heads** and **Stubs**, then fix that wrap and finally align the data under the **Heads**.

To center align the **Heads**:

- Select the **Header Row** of your table by clicking to the left of the top row.
- Click the **Center** align button in the Formatting Toolbar (see Fig. 1.8).
- The stub column should already be left aligned; if not, select the cells and click the **Align Left** button.



Note: If the **Align Buttons** aren’t showing on the **Paragraph Toolbar**, you can select the proper alignment from the menu: **Paragraph** dialogue box.

Fig. 1.8. Center aligning the heads.

When MS Word creates a table it will generally make all of the columns the same width. To fix the wrap on the “Between groups” cell, that column will need to be widened slightly and then to keep the table within the margins the data columns will need to be decreased slightly. This may be a trial and error process to get the right spacing for your text.

- Right click anywhere on the **Stubs** column and select **Table Properties...** to get Fig. 1.9.
- Click the **Column** Tab.
- Set the **Preferred width** to 1.4”.
- Click the **Next Column** button and set it to 1.0”.
- Repeat for all of the columns, setting them to 1.0”.
- Click **OK**.

Note: This can also be accomplished by dragging the vertical column separator lines until the “Between groups” is not wrapped and then dragging the other column separator lines so that they are within the margins. However, this produces uneven column spaces. We recommend the method outlined.

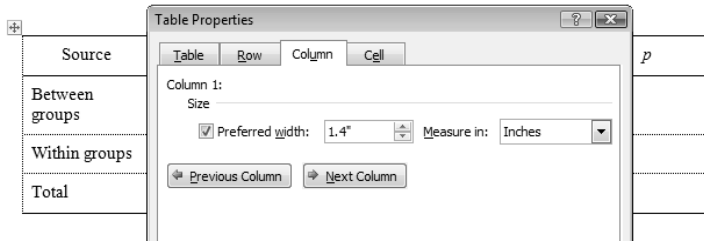


Fig. 1.9. Adjusting the column widths.

Compare your table to Table 1.6.

Table 1.6. Step 4

Source	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>
Between groups	2	18.14	9.07	4.09	.02
Within groups	70	155.23	2.22		
Total	72	173.37			

Step 5: Centering the Data Cells

To set the **Cell** columns so that they are all centered under their **Heads**, you will need to set the **Tabs** for each column of data cells to a **Decimal Tab**. We recommend this method of setting all columns the same and then adjusting them separately so they look right, because it requires less individual column adjustment:

- Select just the data cells by clicking in the upper left one, holding the shift key down, and then clicking in the lower right cell.
- Click the **Paragraph** dialog box button and then the **Tabs** button to get Fig. 1.10.
- Clear all of the Tabs in the selected cells first by clicking the **Clear All** button.
- Click **Alignment Decimal**.
- Type **.35"** in the **Tab stop position** box.
- Click the **Set** button.
- Click **OK**.

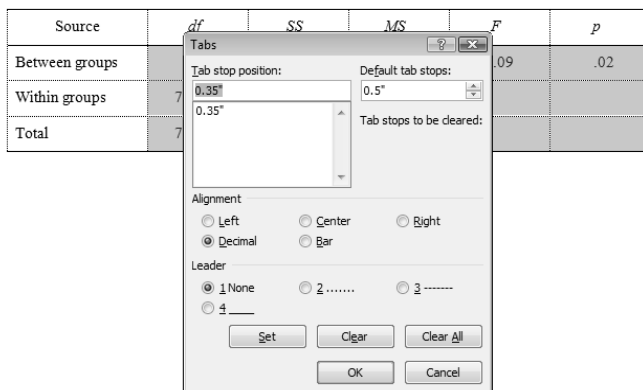


Fig. 1.10. Setting the decimal tabs.

Compare your table to Table 1.7.

Table 1.7. Step 5

Source	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>
Between groups	2	18.14	9.07	4.09	.02
Within groups	70	155.23	2.22		
Total	72	173.37			

Step 6: Touch Up the Finished Table

The *df* numbers looks like they could be adjusted slightly to the right and the *p* slightly to the left. We show you this so that you will know how to get a perfect decimal alignment of the data under the column head text. This may be trial and error depending on your data.

- Select the cells of the *df* column by clicking first on the top data cell, “2,” hold the **Shift key** down, and then click on the bottom data cell, “72.”
- Click the **Paragraph** dialog box button and then the **Tabs** button.
- Clear all of the Tabs in the selected cells first by clicking the **Clear All** button.
- Under **Alignment**, Click **Decimal**.
- Type .45” in the **Tab stop position** box, to set decimal tab .45” from the left edge of the cell.
- Click the **Set** button.
- Click **OK**.
- Repeat for the *p* column but set it to .25” to set decimal tab .25” from the left edge of the cell.

Compare your finished table to Table 1.8.

Table 1.8. Step 6

Table 2

One-Way Analysis of Variance of Grades in High School by Father's Education

Source	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>
Between groups	2	18.14	9.07	4.09	.02
Within groups	70	155.23	2.22		
Total	72	173.37			

Adjusting the SPSS Output to Approximate the APA Format

The preceding example shows how the standard SPSS output can be used to create a table in APA format. However, this does require some knowledge of your word processing program's table creation capabilities in order to accomplish this task. It also requires retyping the data into the table. You can adjust SPSS so that the output will approximate the APA format. We would not recommend submitting this to an APA journal, but it may be acceptable for student papers and some graduate program committees.

Follow these commands before running the SPSS analyses of your data:

- Click **Edit** → **Options**.
- Under the **Pivot Tables** tab select **Academic** (see Fig. 1.11).
- Press **OK**.

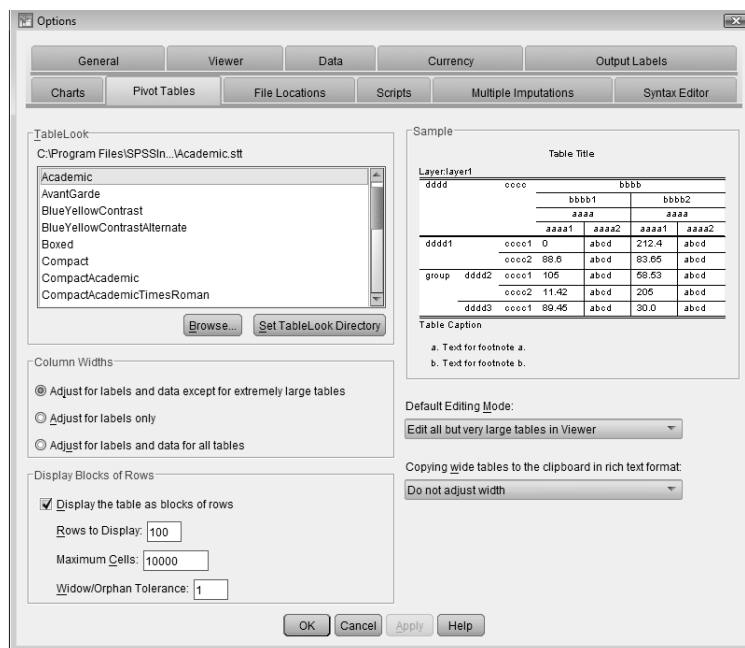


Fig. 1.11. Setting SPSS for an approximate APA format output.

- Run the SPSS statistical analysis.

Your outputs will look similar to Table 1.9, which approximates an APA table.

In order to transfer it to MS Word:

- On the SPSS output, **right click** on the table that you want to transfer.
- Select **Copy** from the short menu presented (see Fig. 1.12).
- Place the cursor in the MS Word file where you want to put the table.
- Select **Paste** in MS Word.

The screenshot shows an SPSS ANOVA table titled "grades in h.s." with columns for Sum of Squares, df, Mean Square, F, and Sig. A context menu is open over the table, showing options like Cut, Copy, Paste After, Create/Edit Autoscript..., Export..., Edit Content, Set Rows to Display..., Display Tables By Rows (checked), and Navigate Rows.

ANOVA					
grades in h.s.					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	29.361			1	.134
Within Groups	144.009				
Total	173.370				

Fig. 1.12. Copying tables from SPSS.

- Place the cursor in the MS Word file where you want to put the table.
- Select **Paste** in MS Word.

You can then move it and format it like any other image in MS Word, but it cannot be edited.

Table 1.9. An Example of the SPSS "Academic" Output

Table 2

One-Way Analysis of Variance of Grades in High School by Father's Education

ANOVA

grades in h.s.					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	18.143	2	9.071	4.091	.021
Within Groups	155.227	70	2.218		
Total	173.370	72			

Using Figures

Generally, the same concepts apply to figures as have been previously stated concerning tables: They should be easy to read and interpret, consistent throughout the document when presenting the same type of figure, kept on one page if possible, and supplement the accompanying text or table. Considering the numerous types of figures, I will not attempt to detail their construction in this document. However, one thing is consistent with all figures. In contrast to table titles, the figure number and caption description are located *below* the figure, but the caption provides enough detail so that the figure can be understood without reading the accompanying text. See Fig. 1.13.

Some cautions in using figures:

1. Make it simple. Complex diagrams that require lengthy explanation should be avoided unless they are an integral part of the research.
2. Use a minimum number of figures for just your important points. If too many figures are used, your important points may be lost.

3. Integrate text and figure. Make sure your figure compliments and enhances the accompanying text.

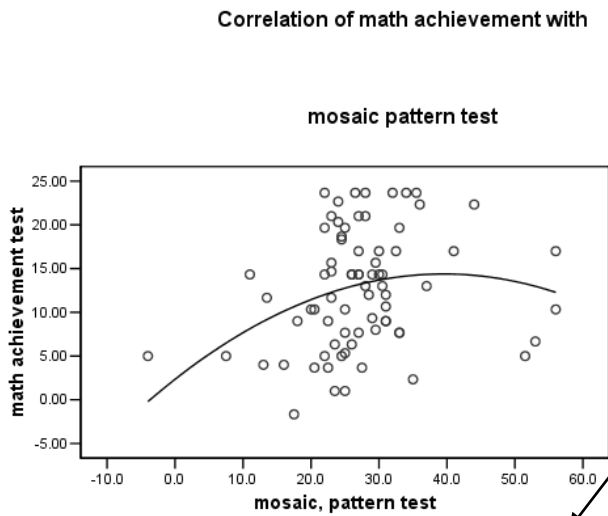


Fig. 1.13. An example of a figure and caption in APA format.

Note: The figure number is italicized but the caption itself is not. Also, the caption text is sentence case (only the first word and proper nouns are capitalized and it ends in a period).

Figure. 1. Scatterplot showing a curvilinear relationship between mathematics achievement and mosaic pattern test score.