2. Depending on how you selected variables in the Bivariate Correlation dialog box, the variable `general` may or may not be listed last. If it is not last, retype the statement so that `general` is last, and put the word `with` before the word `general`. Your syntax should look like this:

```
/VARIABLES=academic common friend intimate with general
```

3. Highlight the appropriate syntax, click `Run`, and then click `Selection`. The output will give the correlations of the first four self-concept variables with general self-concept.

Using SPSS Graphs to Display the Results

Scatterplots are rarely included in results sections of manuscripts, but they should be included more often because they visually represent the relationship between variables. While a correlation coefficient tries to summarize the relationship between two variables with a single value, a scatterplot gives a rich descriptive picture of this relationship. In addition, the scatterplot can show whether a few extreme scores (outliers) overly influence the value of the correlation coefficient or whether nonlinear relationships exist between variables.

To create scatterplots among multiple variables, follow these steps:

1. Click `Graphs`, click `Legacy Dialogs`, and then click `Scatter/Dot`. You’ll see the Scatter/Dot dialog box as shown in Figure 190.

![Figure 190. The Scatterplot dialog box.](image)

2. Click `Matrix Scatter`, then click `Define`. You’ll see the Scatterplot Matrix dialog box as shown in Figure 191.
3. Holding down the Ctrl key, click `intimate`, `friends`, `common`, `academic`, and `general`.
4. Click `▸` to move them to the Matrix Variables box.
5. Click `OK`. The edited graph is shown in Figure 192.

An APA Results Section

Correlation coefficients were computed among the five self-concept scales. Using the Bonferroni approach to control for Type I error across the 10 correlations, a $p$ value of less than .005 ($0.05/10 = .005$) was required for significance. The results of the correlational analyses presented in Table 36 show that 7 out of the 10 correlations were statistically significant and were greater than or equal to .35. The correlations of scholarly knowledge self-concept with the other self-concept measures tended to be lower and not significant. In general, the results suggest that if men say that they are self-confident in one area, they tend to state that they are self-confident in other areas except for scholarly knowledge.
Table 36
Correlations among the Five Self-Concept Scales (N = 80)

<table>
<thead>
<tr>
<th></th>
<th>Scholarly knowledge</th>
<th>Everyday knowledge</th>
<th>Friendships</th>
<th>Intimate relationships</th>
</tr>
</thead>
<tbody>
<tr>
<td>Everyday knowledge</td>
<td>.40*</td>
<td>.46*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Friendships</td>
<td>.24</td>
<td>.35*</td>
<td>.55*</td>
<td></td>
</tr>
<tr>
<td>Intimate relationships</td>
<td>.22</td>
<td>.35*</td>
<td></td>
<td>.39*</td>
</tr>
<tr>
<td>General</td>
<td>.26</td>
<td>.52*</td>
<td>.55*</td>
<td></td>
</tr>
</tbody>
</table>

* p < .005

Figure 191. The Scatterplot Matrix dialog box.

Figure 192. Scatterplot matrix.
Alternative Analyses

We can compute Pearson correlations by other procedures than the Bivariate Correlation procedure, such as the Bivariate Linear Regression procedure. The Bivariate Correlation procedure can also compute a Kendall’s tau-b or Spearman if the measurement scales underlying the variables are ordinal (i.e., the values for the variable indicate their position in relation to each other, but the intervals between scores lack quantitative meaning).

Exercises

The data for Exercises 1 through 4 are in the data file named Lesson 31 Exercise File 1 on the Web at http://www.pearsonhighered.com/greensalkindSPSS and are based on the following research problem.

Betsy is interested in relating quality of teaching to quality of research by college professors. She has access to a sample of 50 social science professors who were teaching at the same university for a 10-year period. Over this 10-year period, the professors were evaluated on a 5-point scale on quality as instructors and on quality of their courses. Betsy has averaged these ratings to obtain an overall quality rating as an instructor (rating_1) and the overall quality of the course (rating_2) for each professor. In addition, Betsy also has the number of articles that each professor published during this time period (num_pubs) and the number of times these articles were cited by other authors (cites).

1. Conduct a correlational analysis to investigate the relationships among these variables. Identify the following on the output:
   a. p value for the correlation between rating_1 and rating_2
   b. Correlation between cites and num_pubs
   c. Correlation between cites and rating_1
2. What is the relationship between the number of articles published and the overall quality of the instructor?
3. Write a Results section based on your analysis of these data.
4. Create a scatterplot matrix to show the relationships among the four variables.

The data for Exercises 5 through 8 are in the data file named Lesson 31 Exercise File 2 on the Web at http://www.pearsonhighered.com/greensalkindSPSS and are based on the following research problem.

Fred believes that there are excellent students, good students, mediocre students, bad students, and extremely bad students. Excellent students tend to do exceptionally well in all subjects; good students tend to do well in all subjects; mediocre students tend to do mediocre on all subjects; and so on. To test this hypothesis, he examines the records of 120 students who have recently graduated from high school. For each student, he determines their high school GPAs in five types of courses: math (mathgpa), English (enggpa), history (histgpa), science (sciengpa), and social sciences (socgpa).

5. Conduct a correlational analysis to investigate the relationships of students’ GPA in math and science with students’ GPA in social sciences and humanities (English and history).
6. What should Fred conclude from the correlations between the two sets of variables?
7. Create two new variables: (1) an average GPA in math and science and (2) an average GPA in social science and humanities. Conduct a correlational analysis on the two averaged scores. What is the resulting correlation?
8. What conclusions would you draw from the correlation between the two averaged scores? Would they be different from the conclusion you would draw from Exercise 6?