Using Process (Hayes) With SPSS

First, locate process.sps on your computer. Double click on the file name. Your computer will boot up SPSS and deposit the syntax in the syntax window. In the syntax window, click Run, All. After the syntax runs, you can delete all of syntax in the syntax window.

Now bring your data into SPSS. Click File, Import Data, Text Data. In Step 2, be sure to indicate correctly whether or not the first row contains the variable names. For assignments I generally provide my students with plain text data files with no variable names in that file.

Here I am using the PMI data provided by Andrew Hayes. Hayes (2018) presents the analysis in section 3.3. The downloaded data were in several formats: text, csv, sav, and sas. The sas is just a plain text file with the code to read in the data. I’ll use the sav data with SPSS. The variables are CONDITION, whether the subjects were told that the newspaper article they were to read was to appear on the front page (1) or an interior page (0). The article was about an economic crisis that might affect the price and supply of sugar. This is our independent (X) variable. Subjects also completed a series of questions regarding to what extent those who read the article would then buy more sugar than usual. This is the PMI variable, Perceived Media Influence, and will be treated as a mediator (M). The outcome variable (Y) is REACTION, us a measure of the extent to which the subject emself would buy sugar, sooner and more, than e otherwise would.
Open a new syntax window and enter this code: `process y=reaction/x=cond/m=pmi/total=1/model=4/seed=14830`. Don't forget the period at the end of the code. Submit the code to SPSS. Here is the annotated output.

Run MATRIX procedure:

```
*************** PROCESS Procedure for SPSS Version 3.1 **********************
   Written by Andrew F. Hayes, Ph.D.       www.afhayes.com

Model : 4
   Y : reaction
   X : cond
   M : pmi

Sample Size: 123

Custom Seed: 14830

************************************************************

OUTCOME VARIABLE:
    pmi

Model Summary
   R  R-sq  MSE  F  df1  df2
   p  .1808  .0327  1.7026  4.0878  1.0000  121.0000  .0454

   Model
   coeff  se  t   p  LLCI  ULCI
   constant  5.3769  .1618  33.2222  .0000  5.0565  5.6973
   cond  .4765  .2357  2.0218  .0454  .0099  .9431

   This is the path coefficient from COND to PMI.

   .4765 is the difference between the two groups' mean PMI (5.8534 and 5.3769). The t value of 2.0218 is exactly what you would get if you used an independent samples t test to compare the two groups on PMI.

************************************************************

OUTCOME VARIABLE:
    reaction

Model Summary
   R  R-sq  MSE  F  df1  df2
   p
```
This is the path coefficient from COND directly to REACTION.

This is the path coefficient from PMI to REACTION.

The correlation between COND and REACTION falls short of significance.

The value of the F here, 3.1897, is exactly what you would get if you did a one-way ANOVA comparing the two groups on REACTION.

The direct effect of COND on REACTION falls short of significance.

The indirect effect of COND on REACTION is significant, as the bootstrapped confidence interval excludes zero. The value, .2413, is the product of the path coefficients .4765 and .5064.
Level of confidence for all confidence intervals in output: 95.0000

Number of bootstrap samples for percentile bootstrap confidence intervals: 5000

----- END MATRIX -----

If you wish to have your coefficients standardized, standardize the continuous variables prior to the mediation analysis.

And then run this code: process y=Zreaction/x=cond/m=Zpmi/total=1/model=4/seed=14830.

Run MATRIX procedure:

*************************** PROCESS Procedure for SPSS Version 3.1 ***************************

Written by Andrew F. Hayes, Ph.D. www.afhayes.com

*******************************************************************************
Model : 4
 Y : Zreaction
X : cond
M : Zpmi

Sample
Size: 123

Custom
Seed: 14830
OUTCOME VARIABLE: Zpmi

Model Summary

<table>
<thead>
<tr>
<th>R</th>
<th>R-sq</th>
<th>MSE</th>
<th>F</th>
<th>df1</th>
<th>df2</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>.1808</td>
<td>.0327</td>
<td>.9753</td>
<td>4.0878</td>
<td>1.0000</td>
<td>121.0000</td>
<td>.0454</td>
</tr>
</tbody>
</table>

Model

<table>
<thead>
<tr>
<th>coeff</th>
<th>se</th>
<th>t</th>
<th>p</th>
<th>LLCI</th>
<th>ULCI</th>
</tr>
</thead>
<tbody>
<tr>
<td>constant</td>
<td>-.1701</td>
<td>.1225</td>
<td>-1.3884</td>
<td>.1676</td>
<td>-.4126</td>
</tr>
<tr>
<td>cond</td>
<td>.3607</td>
<td>.1784</td>
<td>2.0218</td>
<td>.0454</td>
<td>.0075</td>
</tr>
</tbody>
</table>

OUTCOME VARIABLE: Zreactio

Model Summary

<table>
<thead>
<tr>
<th>R</th>
<th>R-sq</th>
<th>MSE</th>
<th>F</th>
<th>df1</th>
<th>df2</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>.4538</td>
<td>.2059</td>
<td>.8073</td>
<td>15.5571</td>
<td>2.0000</td>
<td>120.0000</td>
<td>.0000</td>
</tr>
</tbody>
</table>

Model

<table>
<thead>
<tr>
<th>coeff</th>
<th>se</th>
<th>t</th>
<th>p</th>
<th>LLCI</th>
<th>ULCI</th>
</tr>
</thead>
<tbody>
<tr>
<td>constant</td>
<td>-.0774</td>
<td>.1123</td>
<td>-0.6887</td>
<td>.4923</td>
<td>-.2998</td>
</tr>
<tr>
<td>cond</td>
<td>.1641</td>
<td>.1650</td>
<td>.9943</td>
<td>.3221</td>
<td>-.1627</td>
</tr>
<tr>
<td>Zpmi</td>
<td>.4316</td>
<td>.0827</td>
<td>5.2185</td>
<td>.0000</td>
<td>.2679</td>
</tr>
</tbody>
</table>

TOTAL EFFECT MODEL

OUTCOME VARIABLE: Zreactio

Model Summary

<table>
<thead>
<tr>
<th>R</th>
<th>R-sq</th>
<th>MSE</th>
<th>F</th>
<th>df1</th>
<th>df2</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>.1603</td>
<td>.0257</td>
<td>.9824</td>
<td>3.1897</td>
<td>1.0000</td>
<td>121.0000</td>
<td>.0766</td>
</tr>
</tbody>
</table>

Model

<table>
<thead>
<tr>
<th>coeff</th>
<th>se</th>
<th>t</th>
<th>p</th>
<th>LLCI</th>
<th>ULCI</th>
</tr>
</thead>
<tbody>
<tr>
<td>constant</td>
<td>-.1508</td>
<td>.1229</td>
<td>-1.2264</td>
<td>.2224</td>
<td>-.3942</td>
</tr>
<tr>
<td>cond</td>
<td>.3197</td>
<td>.1790</td>
<td>1.7860</td>
<td>.0766</td>
<td>-.0347</td>
</tr>
</tbody>
</table>

TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y

Total effect of X on Y

<table>
<thead>
<tr>
<th>Effect</th>
<th>se</th>
<th>t</th>
<th>p</th>
<th>LLCI</th>
<th>ULCI</th>
</tr>
</thead>
<tbody>
<tr>
<td>.3197</td>
<td>.1790</td>
<td>1.7860</td>
<td>.0766</td>
<td>-.0347</td>
<td>.6742</td>
</tr>
</tbody>
</table>

Direct effect of X on Y

<table>
<thead>
<tr>
<th>Effect</th>
<th>BootSE</th>
<th>BootLLCI</th>
<th>BootULCI</th>
</tr>
</thead>
<tbody>
<tr>
<td>.1641</td>
<td>.1650</td>
<td>.9943</td>
<td>.3221</td>
</tr>
</tbody>
</table>

Indirect effect(s) of X on Y:

<table>
<thead>
<tr>
<th>Effect</th>
<th>BootSE</th>
<th>BootLLCI</th>
<th>BootULCI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zpmi</td>
<td>.1557</td>
<td>.0848</td>
<td>.0105</td>
</tr>
</tbody>
</table>

ANALYSIS NOTES AND ERRORS

Level of confidence for all confidence intervals in output:
95.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
5000
Reference

Return to my SPSS Lessons Page

Karl L. Wuensch, August, 2019