SPSS to Orthosim File Conversion Utility Helpfile v.1.4

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Part

1 Introduction

SPSS-to-Orthosim converts SPSS 11/12/13/14 factor loading and factor correlation matrices into the fixed-format .vf (simple ASCII text) files required for input into Orthosim.

In reality, it is merely a routine for converting Excel files (formatted as exported from SPSS) into Orthosim .vf flat-ASCII fixed-format text files.

The SPSS tables are required to be exported from the SPSS .spo output file in Excel format. **Alternatively**, you can simply cut-and-paste the SPSS loading and the factor correlation output table in their entirety to a blank Excel spreadsheet and save this. **This latter option (cut and paste)** is the preferred method to extract tables from SPSS as sometimes when exporting Excel tables from SPSS, it puts some strange hidden codes into the Excel file such that if you try and edit the file, it causes Excel to crash (PB: Dec 2019: well, it used back in 2003!)

This help-file takes you through the process step-by-step. I was able to write a Visual Basic macro which runs within STATISTICA itself to achieve the same task, and I suspect the same kind of programmed solution could be achieved in SPSS - but I stopped using SPSS back in 2006. So that's a dead duck!

Thus, I've had to write a Delphi program which reads Excel files (SPSS export results matrices or cut-and-paste constructed) and "does the business" as seamlessly as possible.

The utility contains a number of "double-checks" so it will warn you if problems are encountered. Other than that it's pretty user-friendly and nifty. Still a bit of a pain really as it would be nice to make it as seamless as the STATISTICA routine.

Update: 30-Dec, 2019 - Orthosim v1.4

The original program was written back in early 2003 - and it shows! I've tried to update it where possible, but ultimately this routine needed to be embedded in Orthosim itself, along with new programming to rad Excel files directly, and do all the 'necessary' behind the scenes for the user. Indeed Orthosim itself is old, hamstrung by having to call an external Fortran program that began life in 1998! The ASCII text input file format is so clumsy - but reflects the old days of fixed-format ASCII files used by Fortran 77! Frankly, the whole caboodle needs reprogramming in Delphi, with formatted output using a rich-text document utility coupled with pdf output or .docx output.

However, I just don't have the time to devote to this task, and in reality Orthosim is 'niche' software, only used by those with a very specific need for congruential rotation.

So, I've done my best to make both Orthosim and SPSS-to-Orthosim usable for Windows 7 upwards, especially taking into account the new security permissions/constraints of Windows 10.

The help pages sometimes use images from old versions of Excel .. I've not bothered remaking them with Office 365 Excel - as nothing changes except the Office Excel 'look'.

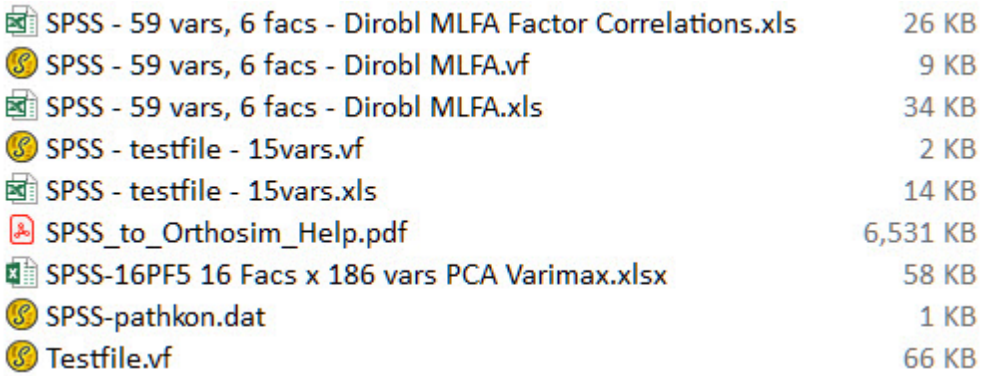
Anyway, SPSS-to-Orthosim is easy to use and does 'the business'. It creates the necessary fixed-format ASCII file required as input for Orthosim.

And it now reads either .xls or .xlsx format Excel files.

1.1 Installation Details

Installation is no longer dependent upon the person installing also being the administrator for their machine (i.e. an IT department administrator can install the software for a user on a network machine/laptop).

The program file and HTML web-page files/images are installed in the Windows Program Files 32-bit subdirectory, with all other example and results files (along with the pdf version of the program-accessed web-help(SPSS-to_Orthosim_Help.pdf) installed initially in a public subdirectory: **C:\Users\Public\Orthosim**

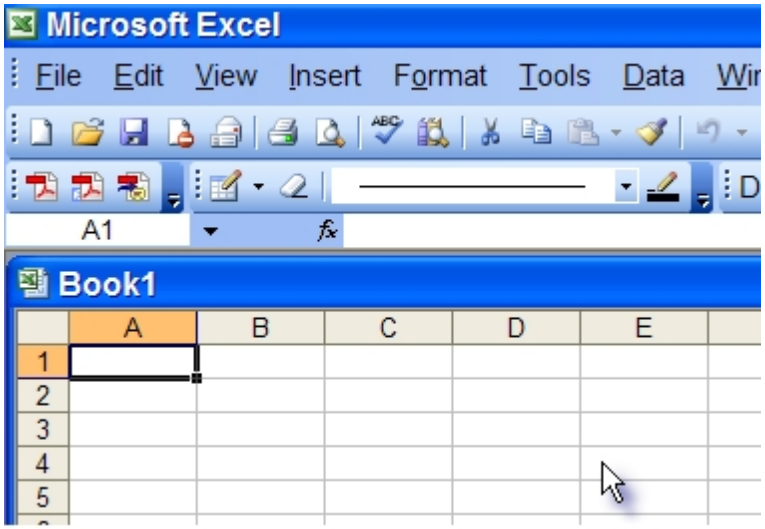


A user can then decide to use their own subdirectories when running the software (it remembers the last subdirectory used)

1.2 Extracting Matrices from SPSS - Cut and Paste

This is the preferred method for extracting SPSS tables into Excel. It is the preferred method to extract tables from SPSS as when exporting Excel tables from SPSS, it sometimes seems to put some strange hidden codes into the Excel file such that if you try and edit the file, it causes Excel to crash!

First, I open Excel - looking at at blank worksheet ...



Then let's transfer an output table of loadings in SPSS ...

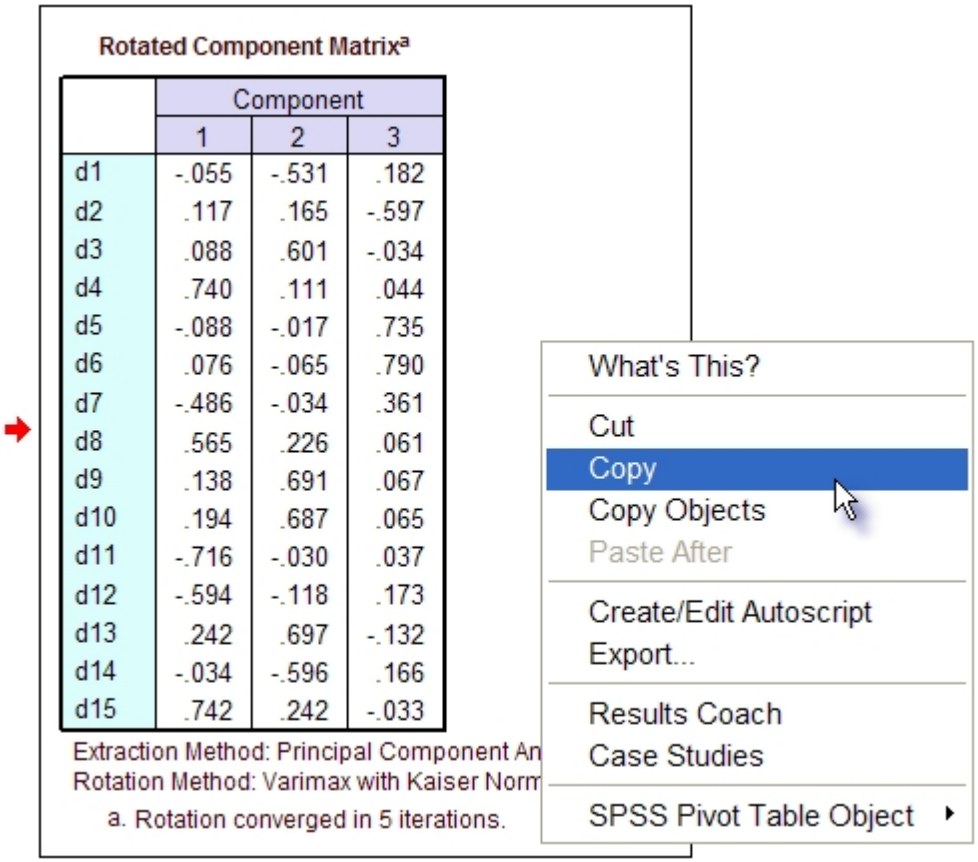
Rotated Component Matrix[a]

	Component		
	1	2	3
d1	-.055	-.531	.182
d2	.117	.165	-.597
d3	.088	.601	-.034
d4	.740	.111	.044
d5	-.088	-.017	.735
d6	.076	-.065	.790
d7	-.486	-.034	.361
d8	.565	.226	.061
d9	.138	.691	.067
d10	.194	.687	.065
d11	-.716	-.030	.037
d12	-.594	-.118	.173
d13	.242	.697	-.132
d14	-.034	-.596	.166
d15	.742	.242	-.033

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 5 iterations.

I select the to be copied by right-clicking the mouse on it ... which produces a "highlighted" object (the table) and opens the Edit menu automatically.



Rotated Component Matrix[a]

	Component		
	1	2	3
d1	-.055	-.531	.182
d2	.117	.165	-.597
d3	.088	.601	-.034
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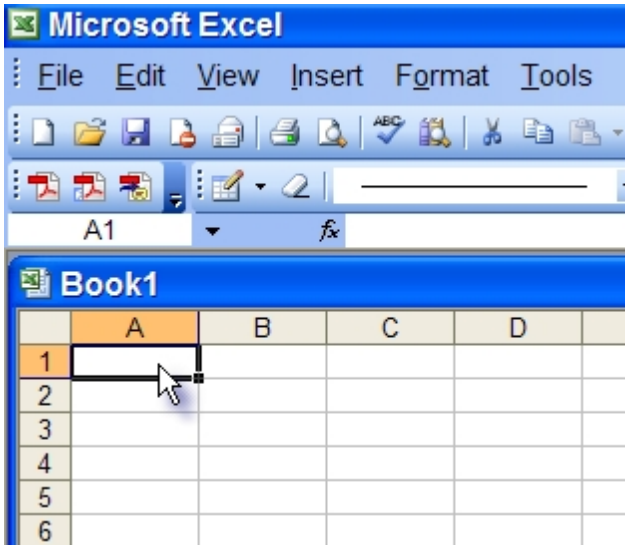
d11	-.716	-.030	.037
d12	-.594	-.118	.173
d13	.242	.697	-.132
d14	-.034	-.596	.166
d15	.742	.242	-.033

Extraction Method: Principal Component An
Rotation Method: Varimax with Kaiser Norm
a. Rotation converged in 5 iterations.

Then, I click on the **Copy** menu item - which copies the table into the clipboard. (**don't** try and use "Copy Objects").

Then I simply open/return to my Excel application and Paste the clipboard at the first cell position ...


Microsoft Excel
File Edit View Insert Format Tools
A1
Book1
A B C D
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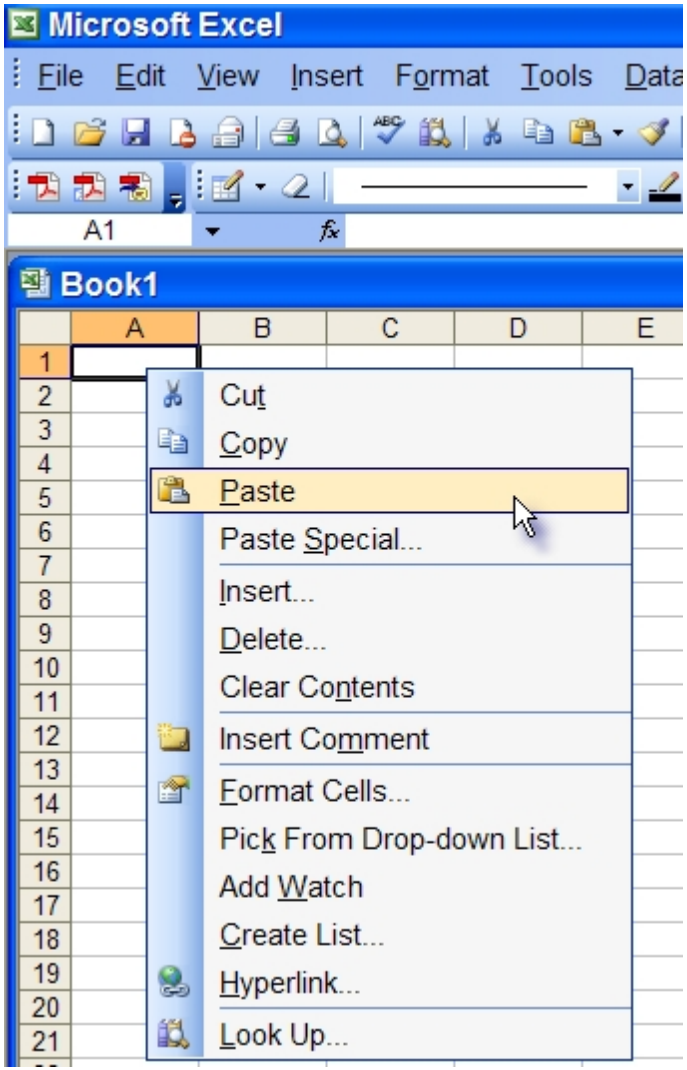
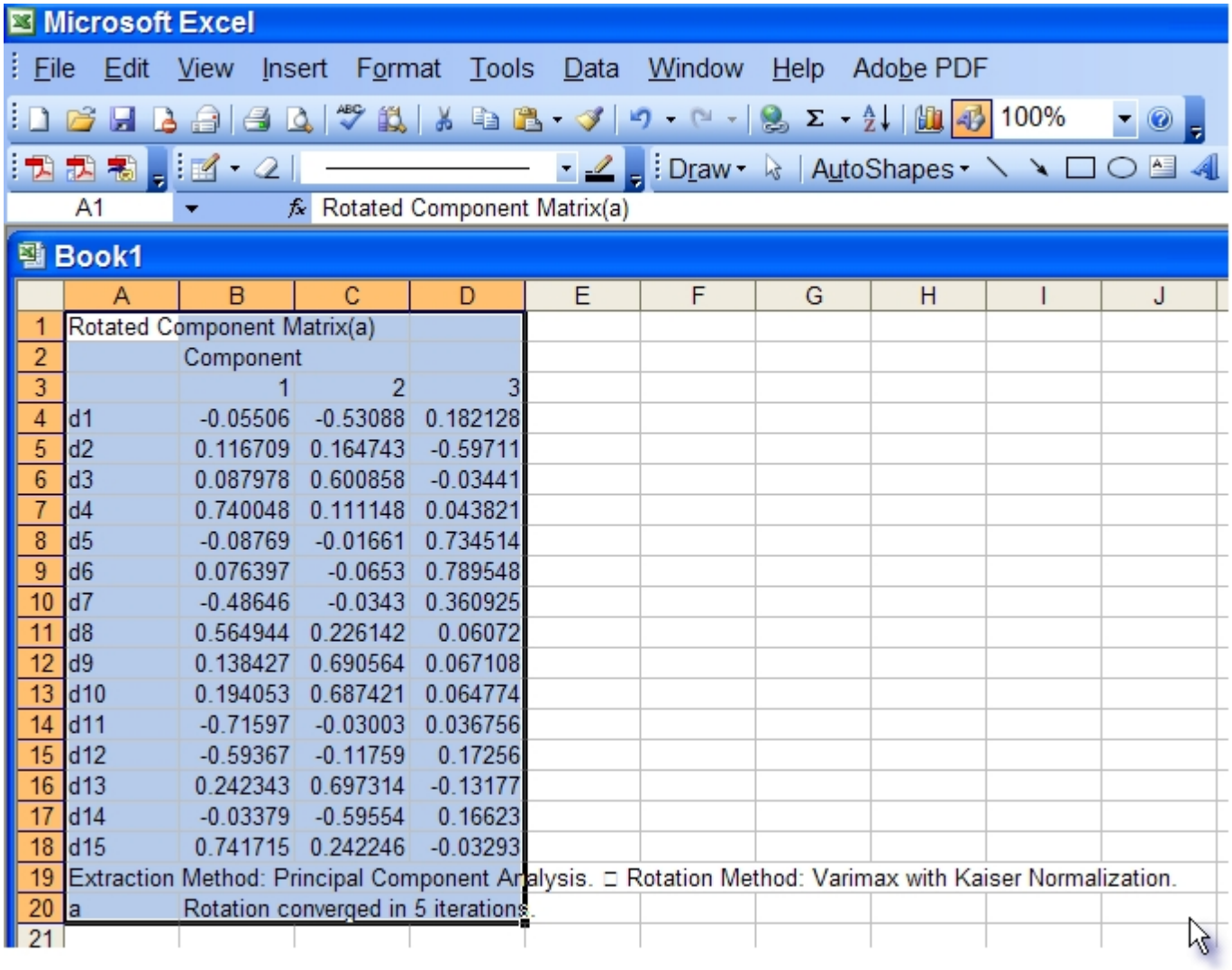
Then ...



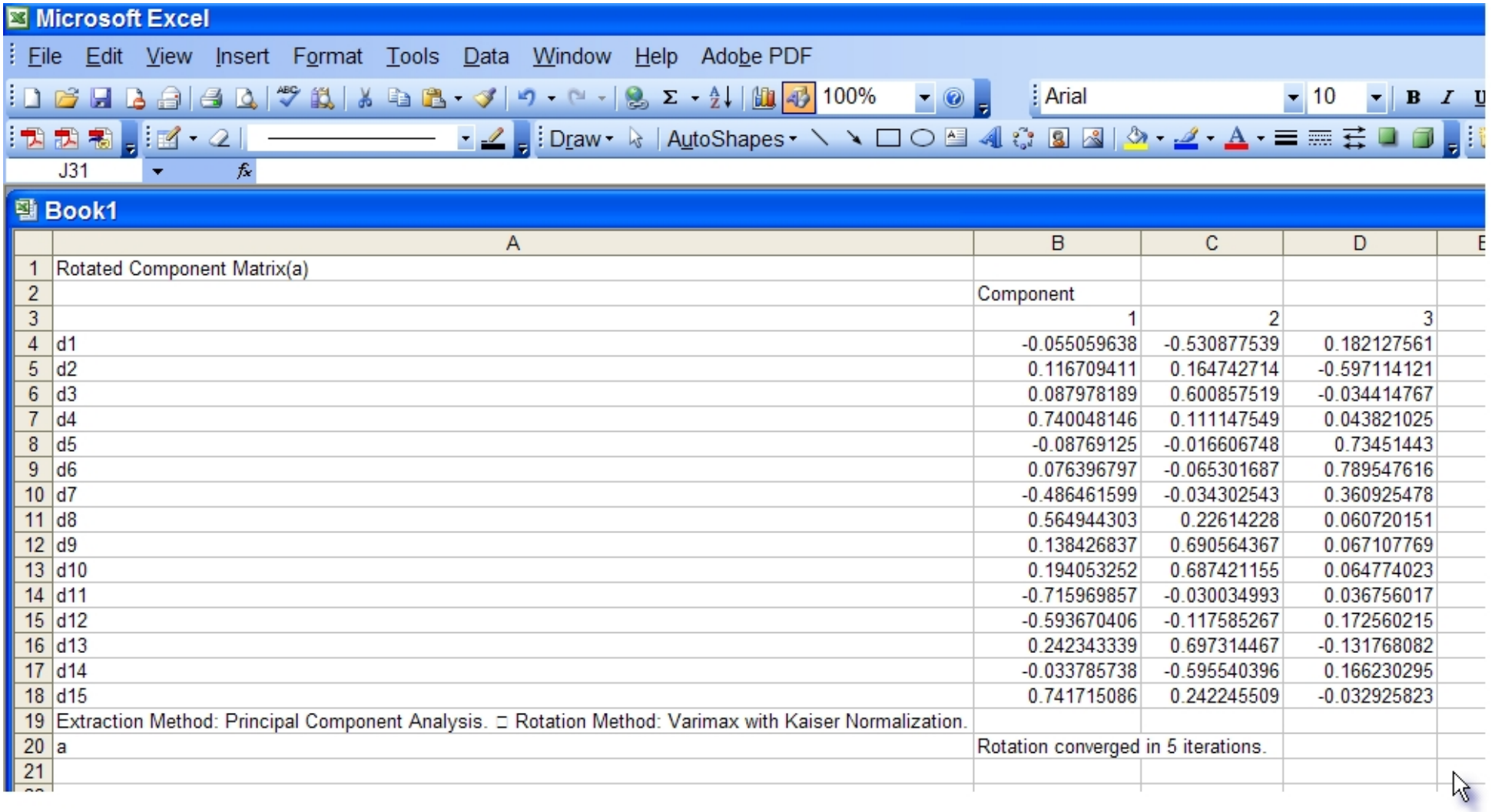
And just paste the contents of the clipboard … using **Paste …**

so that you see ...



	A	B	C	D	E	F	G	H	I	J
1	Rotated Component Matrix(a)									
2		Component								
3		1	2	3						
4	d1	-0.05506	-0.53088	0.182128						
5	d2	0.116709	0.164743	-0.59711						
6	d3	0.087978	0.600858	-0.03441						
7	d4	0.740048	0.111148	0.043821						
8	d5	-0.08769	-0.01661	0.734514						
9	d6	0.076397	-0.0653	0.789548						
10	d7	-0.48646	-0.0343	0.360925						
11	d8	0.564944	0.226142	0.06072						
12	d9	0.138427	0.690564	0.067108						
13	d10	0.194053	0.687421	0.064774						
14	d11	-0.71597	-0.03003	0.036756						
15	d12	-0.59367	-0.11759	0.17256						
16	d13	0.242343	0.697314	-0.13177						
17	d14	-0.03379	-0.59554	0.16623						
18	d15	0.741715	0.242246	-0.03293						
19	Extraction Method: Principal Component Analysis. ⊏ Rotation Method: Varimax with Kaiser Normalization.									
20	a	Rotation converged in 5 iterations.								
21										

and stretching the columns out a bit (which is **not** required) so you can see the format better ...



Microsoft Excel

File Edit View Insert Format Tools Data Window Help Adobe PDF

J31

Book1

	A	B	C	D	E
1	Rotated Component Matrix(a)				
2		Component			
3		1	2	3	
4	d1	-0.055059638	-0.530877539	0.182127561	
5	d2	0.116709411	0.164742714	-0.597114121	
6	d3	0.087978189	0.600857519	-0.034414767	
7	d4	0.740048146	0.111147549	0.043821025	
8	d5	-0.08769125	-0.016606748	0.73451443	
9	d6	0.076396797	-0.065301687	0.789547616	
10	d7	-0.486461599	-0.034302543	0.360925478	
11	d8	0.564944303	0.22614228	0.060720151	
12	d9	0.138426837	0.690564367	0.067107769	
13	d10	0.194053252	0.687421155	0.064774023	
14	d11	-0.715969857	-0.030034993	0.036756017	
15	d12	-0.593670406	-0.117585267	0.172560215	
16	d13	0.242343339	0.697314467	-0.131768082	
17	d14	-0.033785738	-0.595540396	0.166230295	
18	d15	0.741715086	0.242245509	-0.032925823	
19	Extraction Method: Principal Component Analysis. ⊐ Rotation Method: Varimax with Kaiser Normalization.				
20	a	Rotation converged in 5 iterations.			
21					

Now - a far easier way is to just use CTRL-C (copy) and CTRL-V (paste) to achieve the same effect!

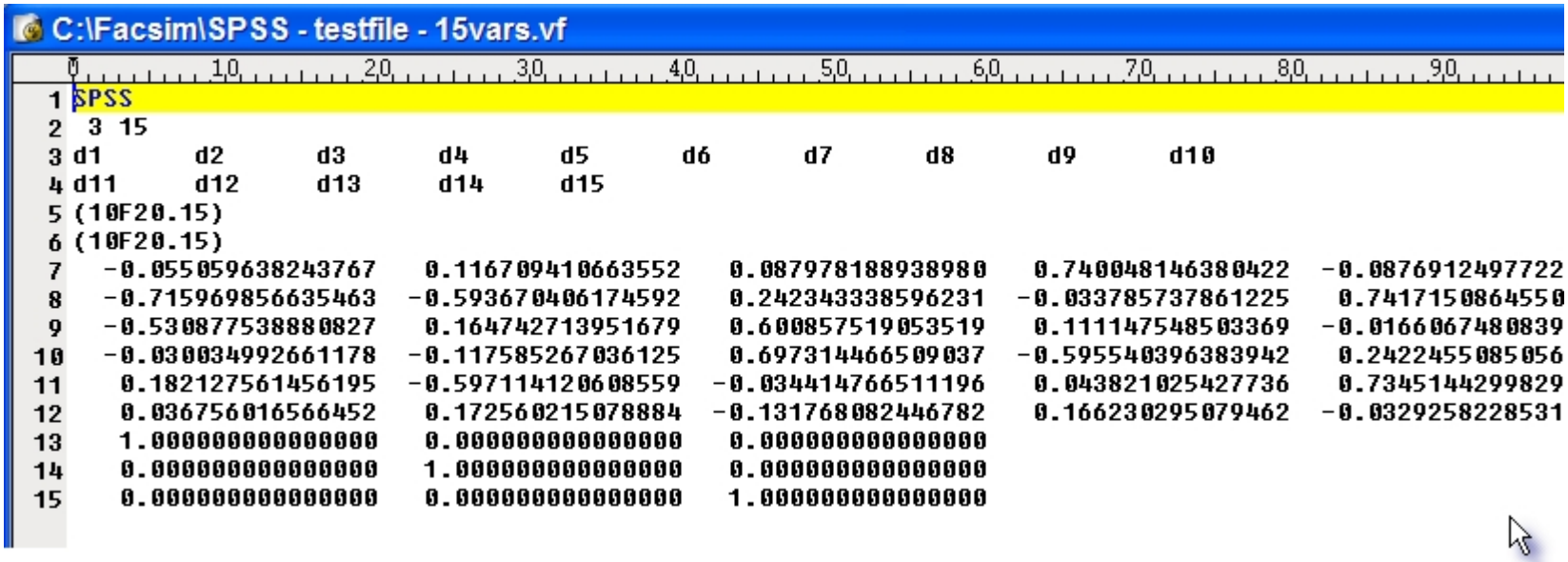
Just save the file to an Excel file ready for input into the conversion routine

***** One thing - note very carefully**

The first 3 lines in the Excel file need to be there. Although the program doesn't read the information in them - they are expected to be there (it's the standard SPSS format output)**.**

Likewise, the last 2 lines (rows 19 to 20 in the above spreadsheet) of any Excel spreadsheet should have something in them so that the correct number of lines are read by my software (it's tailored to SPSS standard table output format)**.**

The converted .vf version of the file (after running the Orthogonal matrix routine) looks like ...



This is just a portion of the file - as there are 10 loadings per line ...

Note the orthogonal factor correlation matrix which has been generated automatically in the last 3 lines of the file.,

1.3 Extracting Matrices from SPSS: Orthogonal Factors - Excel Export

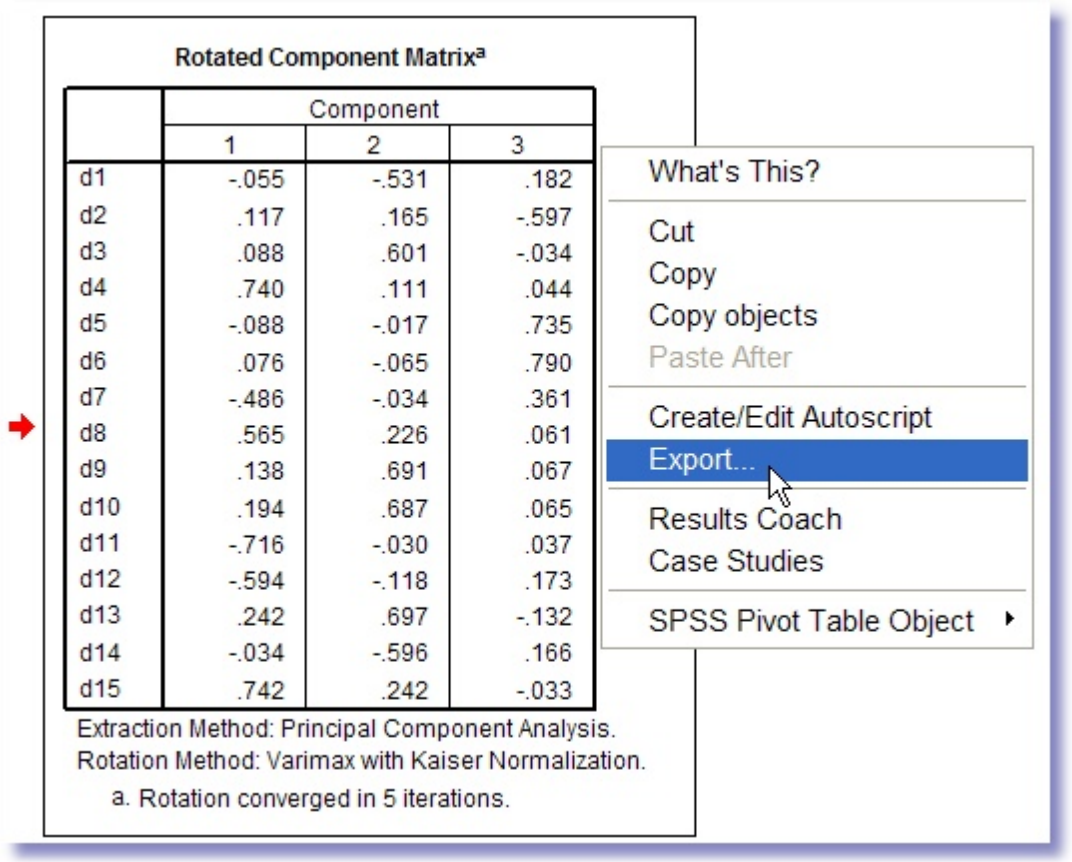
Here, you will extract and create (export) just one excel file - you could export the unrotated or rotated loading matrix. OK - I'll run a Principal Component analysis on 15 variables, with 3 factors extracted and rotated via Varimax. The rotated component matrix is shown below .. **(cut and paste)** is actually the preferred method to extract tables from SPSS, as sometimes when exporting Excel tables from SPSS,something happens to the file such that if you try and edit the Excel file, it causes Excel to crash! Anyway, if you want to use export - here is a walk-through ...

Rotated Component Matrix(a)

	Component		
	1	2	3
d1	-.055	-.531	.182
d2	.117	.165	-.597
d3	.088	.601	-.034
d4	.740	.111	.044
d5	-.088	-.017	.735
d6	.076	-.065	.790
d7	-.486	-.034	.361
d8	.565	.226	.061
d9	.138	.691	.067
d10	.194	.687	.065
d11	-.716	-.030	.037
d12	-.594	-.118	.173
d13	.242	.697	-.132
d14	-.034	-.596	.166
d15	.742	.242	-.033

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.
a Rotation converged in 5 iterations.

and has to be selected from the set of output tables in the output viewer .. you do this by clicking on the table with right-hand mouse button. What you'll see is:



Rotated Component Matrix[a]

	Component		
	1	2	3
d1	-.055	-.531	.182
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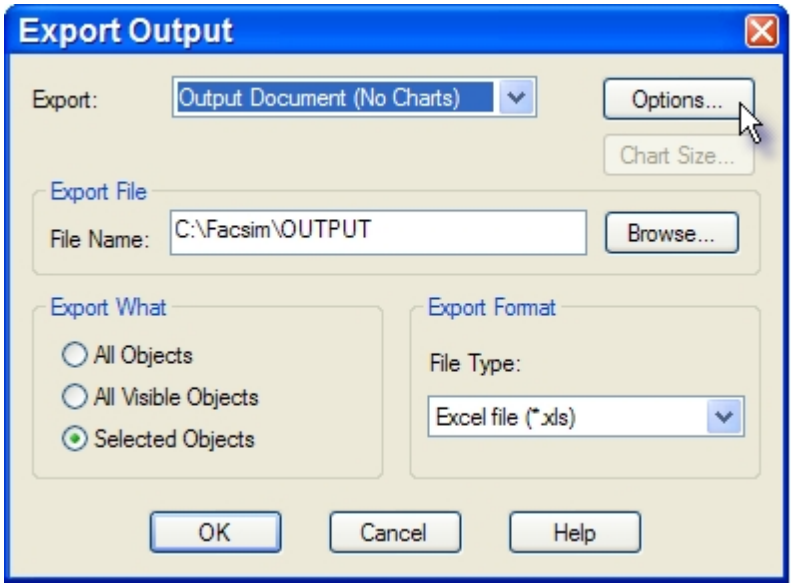
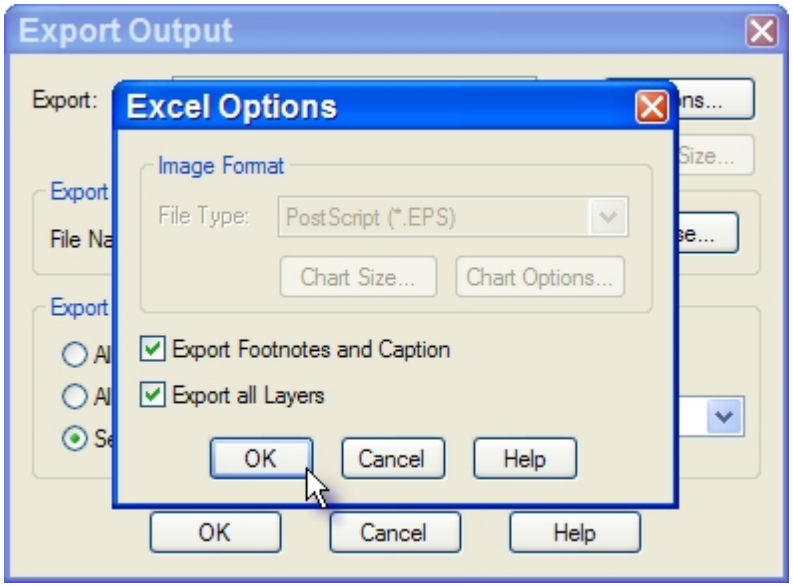
d13	.242	.697	-.132
d14	-.034	-.596	.166
d15	.742	.242	-.033

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 5 iterations.

Now, you click on the Export option shown above ... and see ...

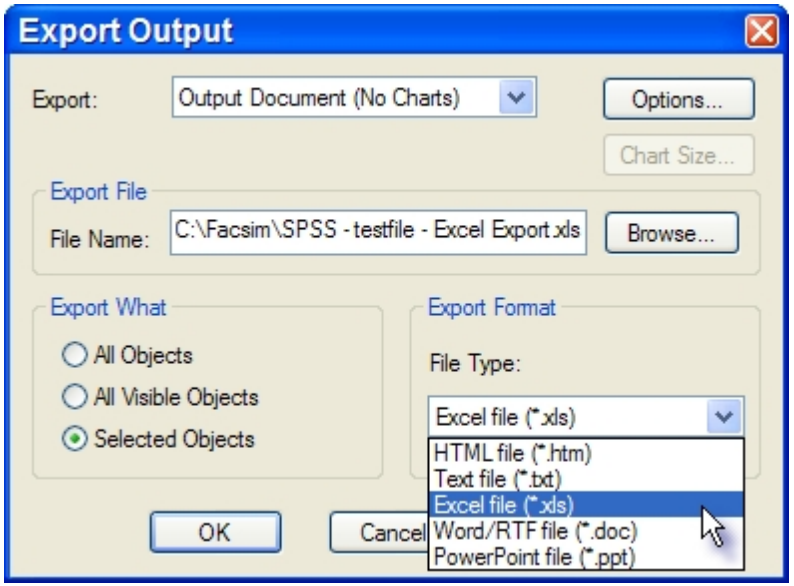


Then, make sure your Options are set to ...

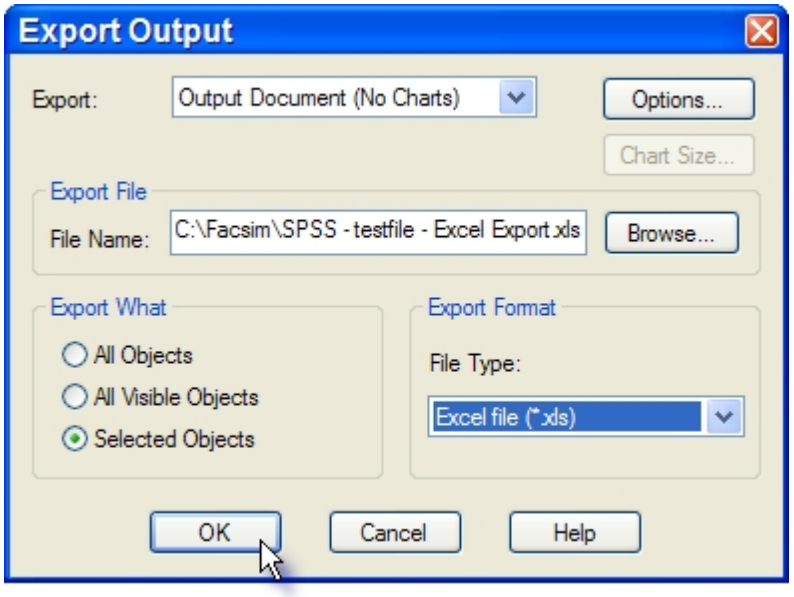


You must export Footnotes and Caption - so as to remain consistent with the Cut and Paste format ... when set, just press Ok ..

Now you need to enter a filename for the table of loadings, and change the File Type to Excel ...



The filename can be anything convenient, and saved anywhere you like. I'm saving this one in C:\Facsim, where the Orthosim software is always installed .



Just press Ok and the Excel file is created ...

and looks like ...

SPSS - testfile - Excel Export.xls

	A	B	C	D	E
1	Rotated Component Matrix(a)				
2		Component			
3		1	2	3	
4	d1	-0.055	-0.531	0.182	
5	d2	0.117	0.165	-0.597	
6	d3	0.088	0.601	-0.034	
7	d4	0.740	0.111	0.044	
8	d5	-0.088	-0.017	0.735	
9	d6	0.076	-0.065	0.790	
10	d7	-0.486	-0.034	0.361	
11	d8	0.565	0.226	0.061	
12	d9	0.138	0.691	0.067	
13	d10	0.194	0.687	0.065	
14	d11	-0.716	-0.030	0.037	
15	d12	-0.594	-0.118	0.173	
16	d13	0.242	0.697	-0.132	
17	d14	-0.034	-0.596	0.166	
18	d15	0.742	0.242	-0.033	
19	Extraction Method: Principal Component Analysis.				
20	a. Rotation converged in 5 iterations.				
21					

Sheet

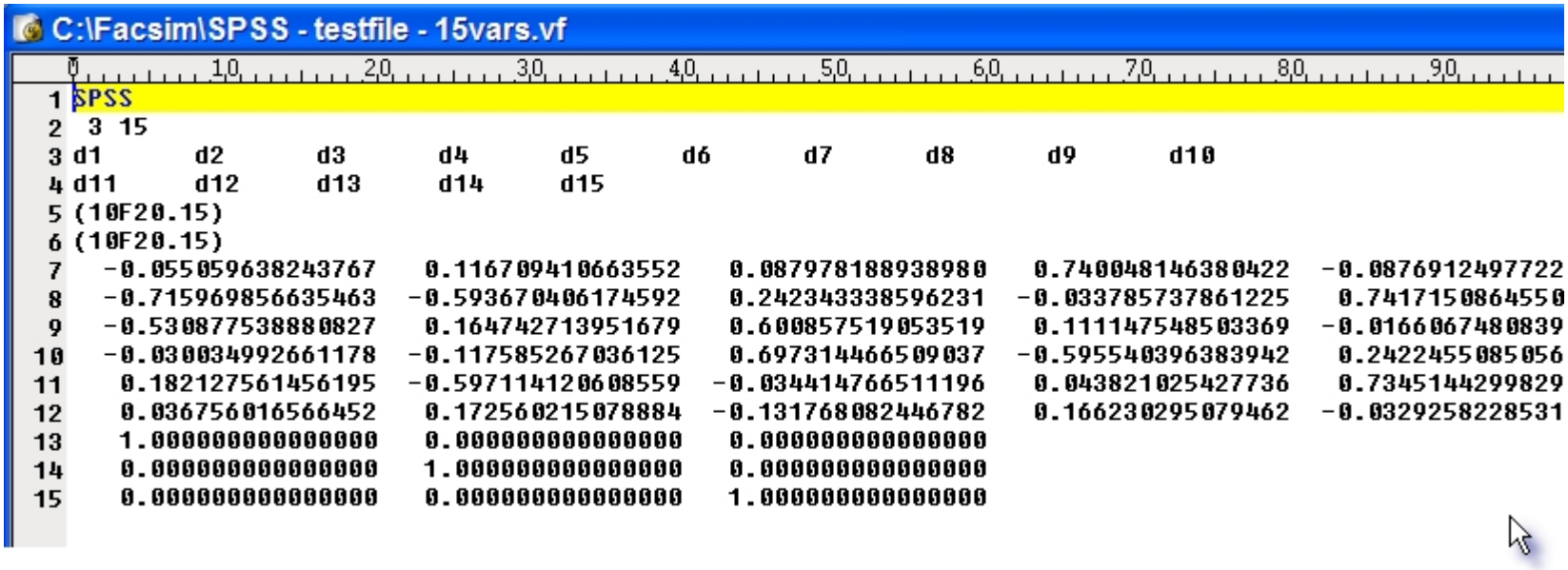
That's all you need to do for an orthogonal matrix. See the section entitled: Creating Orthogonal Factor Orthosim Files. Also, note that although you might be looking at only 3 decimal place precision in the SPSS output, in actual fact the data is stored in 15-decimal place precision. This utility program retains the precision into Orthosim.

***** One thing - note very carefully**

The first 3 lines in the Excel file need to be there. Although the program doesn't read the information in them - they are expected to be there (it's the standard SPSS format output)**.**

Likewise, the last 2 lines (rows 19 to 20 in the above spreadsheet) of any Excel spreadsheet should have something in them so that the correct number of lines are read by my software (it's tailored to SPSS standard table output format)**.**

The converted .vf version of the file (after running the Orthogonal matrix routine) looks like ...



1.4 Extracting Matrices from SPSS: Oblique Factors - Excel Export

Here, you will extract and create (export) two excel files - these are for the rotated factor loading matrix and for the factor correlation matrix respectively.. OK - I'll run a Principal Component analysis on 15 variables, with 3 factors extracted and rotated via Direct Oblimin. The rotated component matrix is shown below .. **(cut and paste)** is actually the preferred method to extract tables from SPSS, as sometimes when exporting

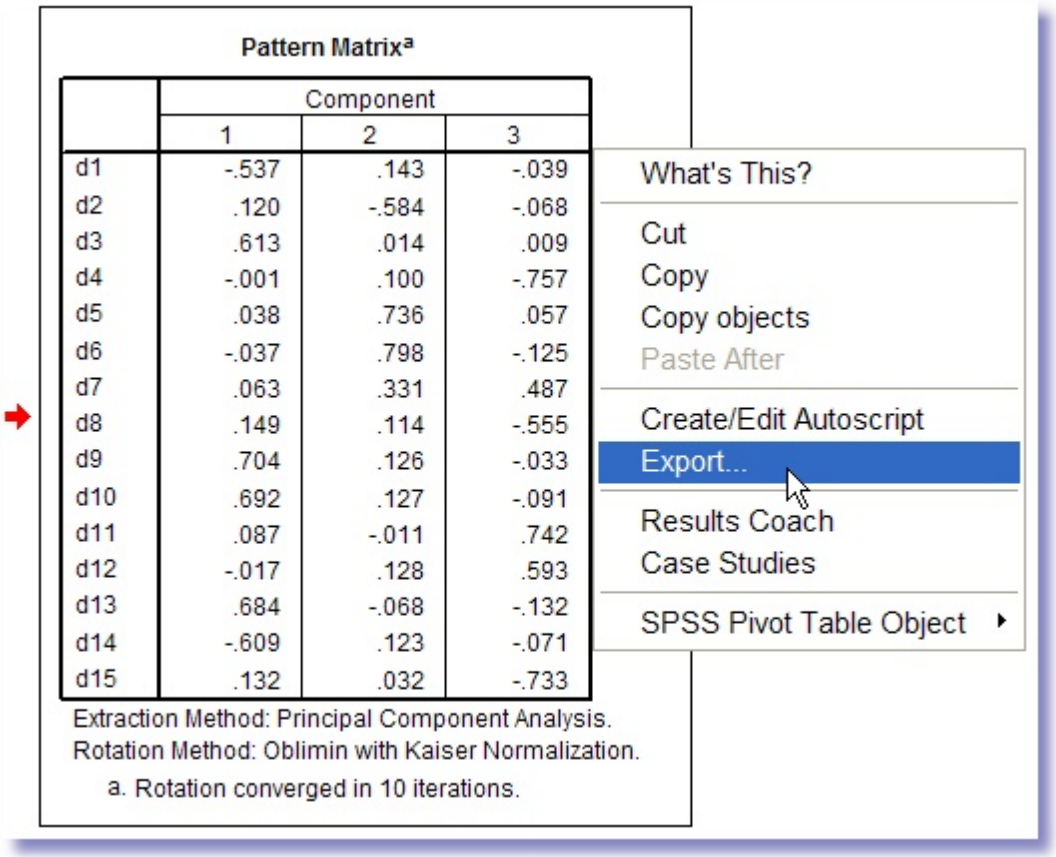
Excel tables from SPSS,something happens to the file such that if you try and edit the Excel file, it causes Excel to crash! Anyway, if you want to use export - here is a walk-through ...

Pattern Matrix(a)

	Component		
	1	2	3
d1	-.537	.143	-.039
d2	.120	-.584	-.068
d3	.613	.014	.009
d4	-.001	.100	-.757
d5	.038	.736	.057
d6	-.037	.798	-.125
d7	.063	.331	.487
d8	.149	.114	-.555
d9	.704	.126	-.033
d10	.692	.127	-.091
d11	.087	-.011	.742
d12	-.017	.128	.593
d13	.684	-.068	-.132
d14	-.609	.123	-.071
d15	.132	.032	-.733

Extraction Method: Principal Component Analysis. Rotation Method: Oblimin with Kaiser Normalization.
a Rotation converged in 10 iterations.

and has to be selected from the set of output tables in the output viewer .. you do this by clicking on the table with right-hand mouse button. What you'll see is:

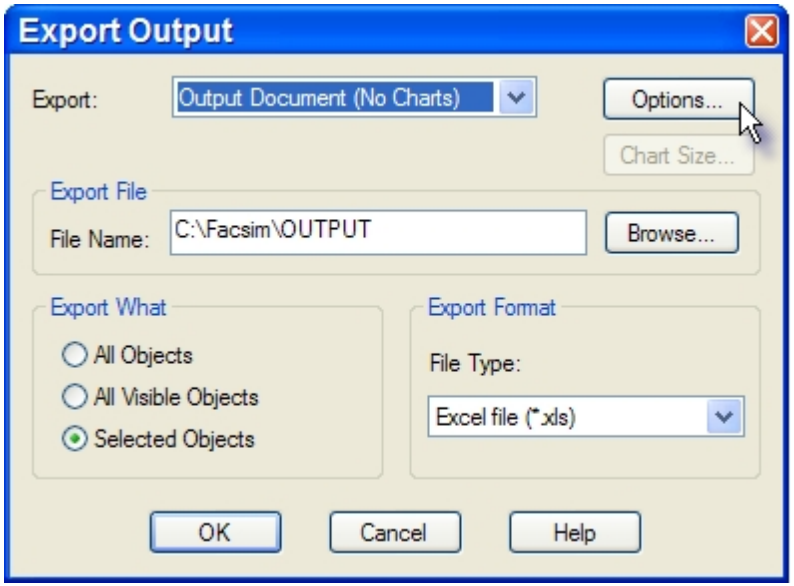


Pattern Matrix[a]

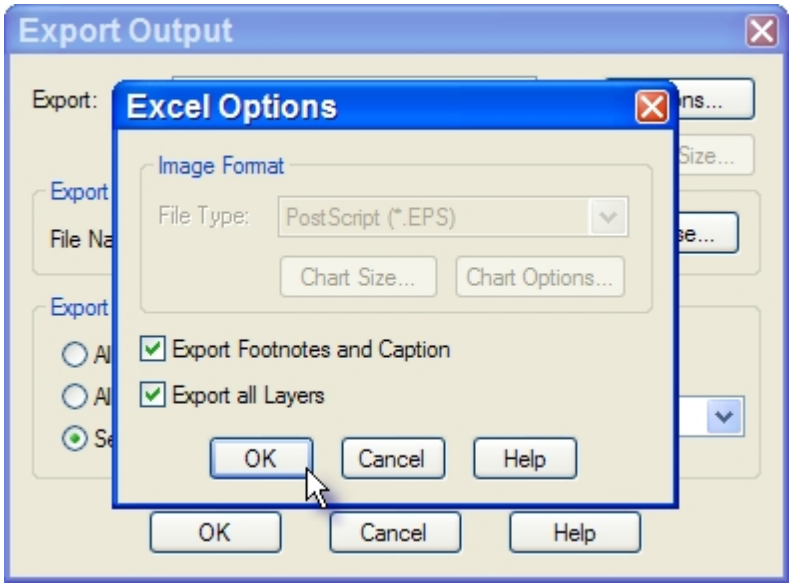
	Component		
	1	2	3
d1	-.537	.143	-.039
d2	.120	-.584	-.068
d3	.613	.014	.009
d4	-.001	.100	-.757
d5	.038	.736	.057
d6	-.037	.798	-.125
d7	.063	.331	.487
d8	.149	.114	-.555
d9	.704	.126	-.033
d10	.692	.127	-.091
d11	.087	-.011	.742
d12	-.017	.128	.593
d13	.684	-.068	-.132
d14	-.609	.123	-.071
d15	.132	.032	-.733

Extraction Method: Principal Component Analysis.
Rotation Method: Oblimin with Kaiser Normalization.
a. Rotation converged in 10 iterations.

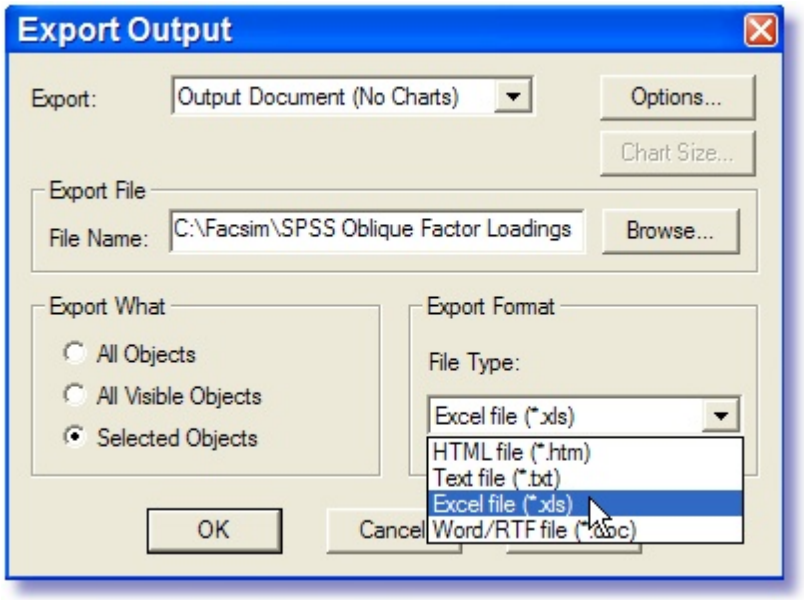
Now, you click on the Export option shown above ... and see ...



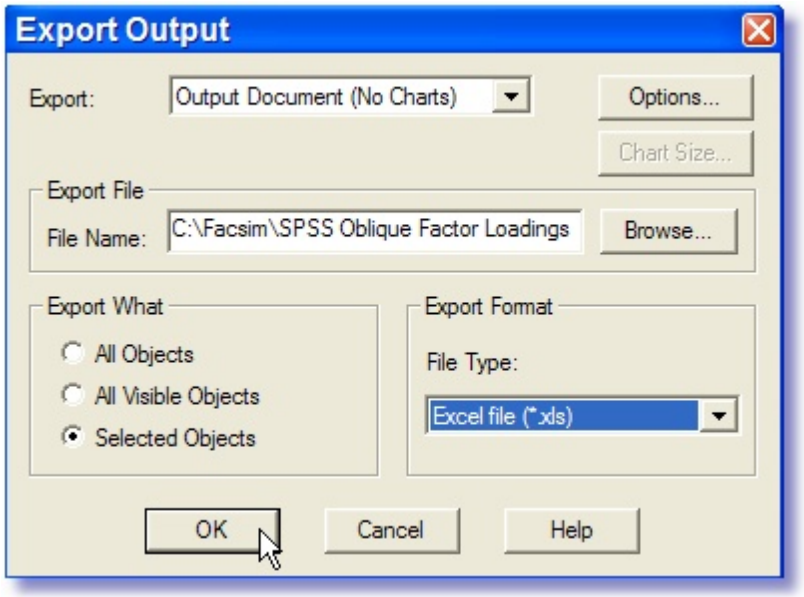
Then, make sure your Options are set to ...



You need to enter a filename for the table of loadings, and change the File Type to Excel ...



The filename can be anything convenient, and saved anywhere you like. I'm saving this one in C;\Facsim, where the Orthosim software is always installed .



Just press Ok and the Excel file is created ...

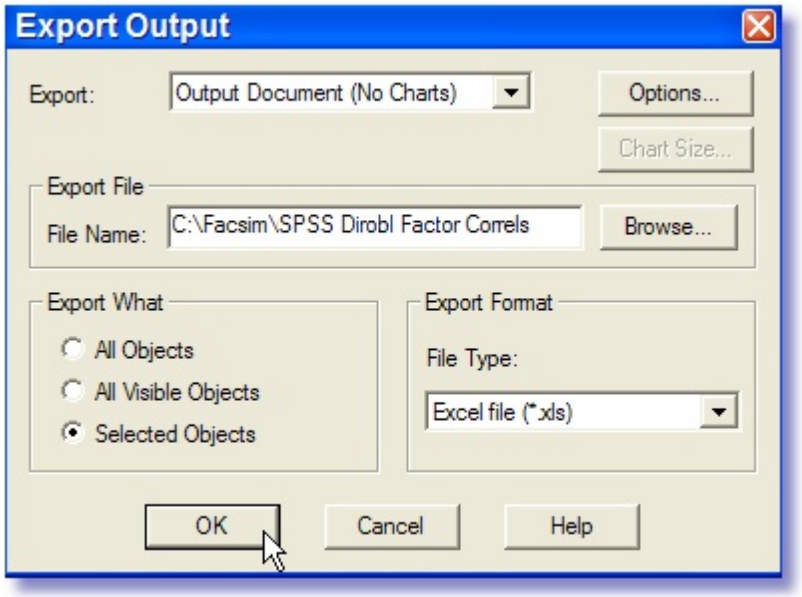
Now you need to export the factor correlation matrix ...it's always found below the factor pattern matrix, beneath the Structure Matrix. It looks like ...

Component Correlation Matrix

Component	1	2	3
1	1.000	-.147	-.317
2	-.147	1.000	.134
3	-.317	.134	1.000

Extraction Method: Principal Component Analysis. Rotation Method: Oblimin with Kaiser Normalization.

Just follow the export steps above :



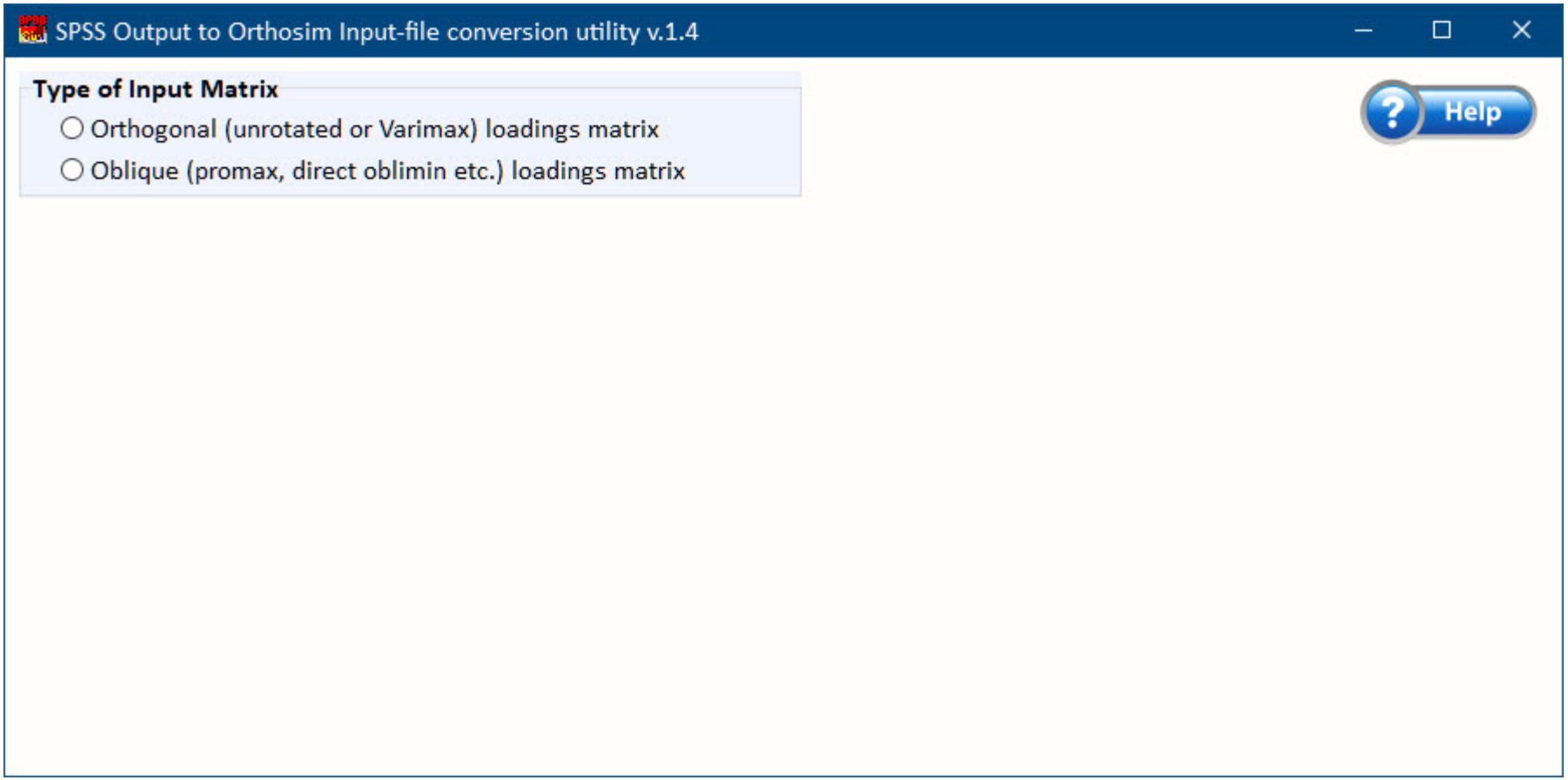
Just press Ok and the Excel file is created ...

That's all you need to do for an oblique matrix - the conversion program takes care of the rest. See the section entitled: Creating Oblique Factor Orthosim Files. Also, note that although you might be looking at only 3 decimal place precision in the SPSS output, in actual fact the data is stored in 15-decimal place precision. This utility program retains that precision into Orthosim.

1.5 Creating Orthogonal Factor Orthosim Files

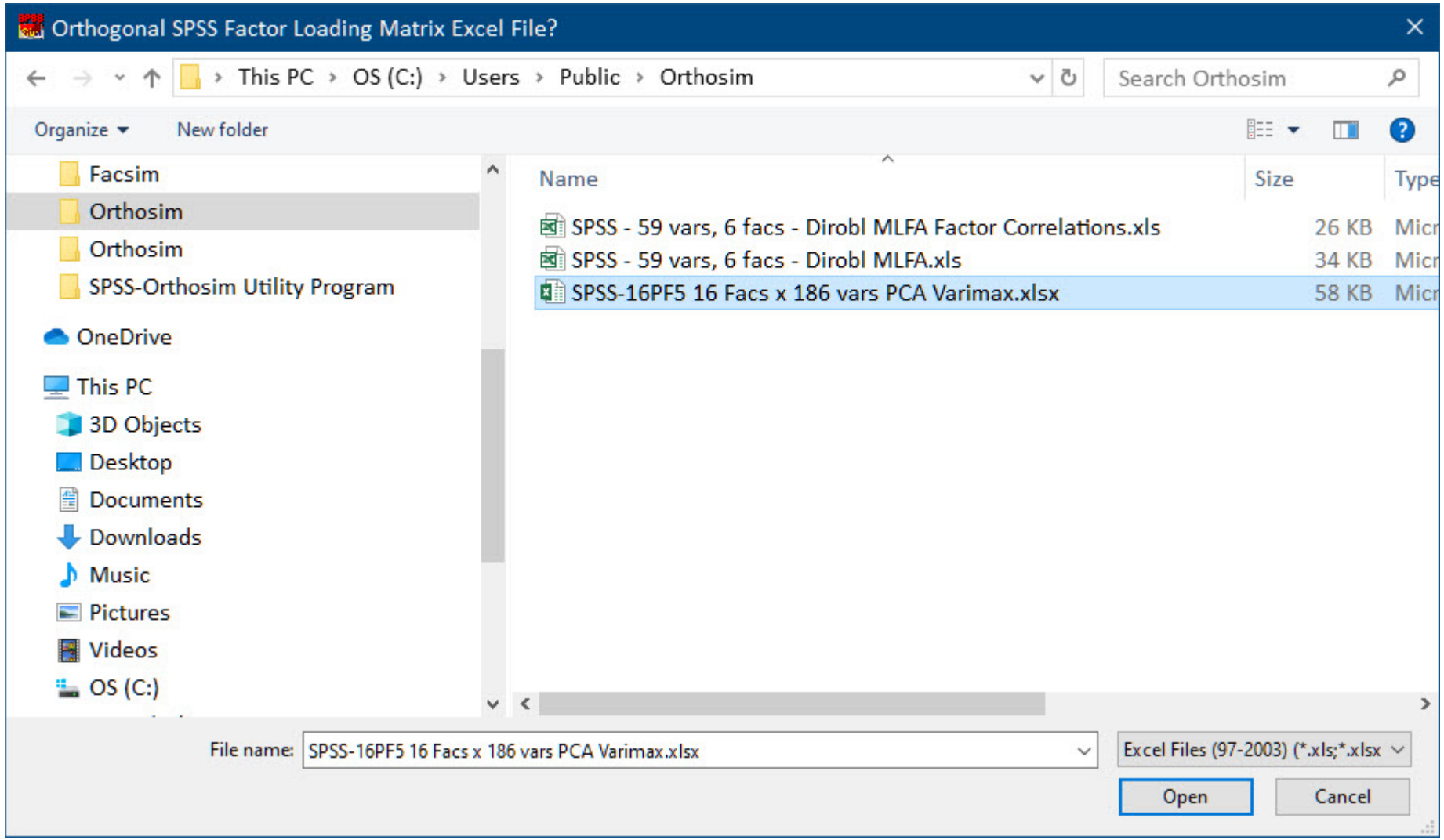
Click on the SPSS to Orthosim icon ...

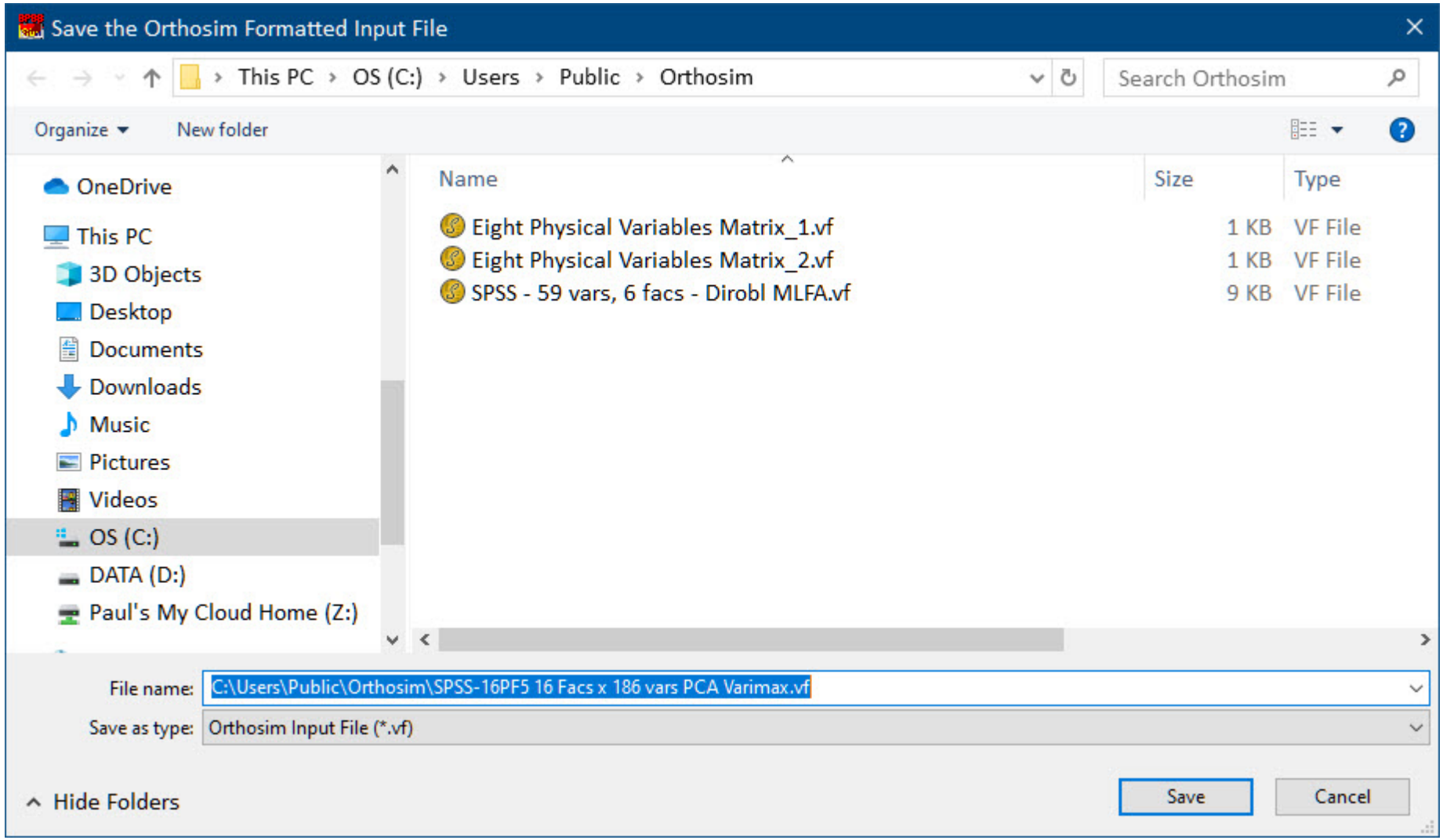
This will open the utility:



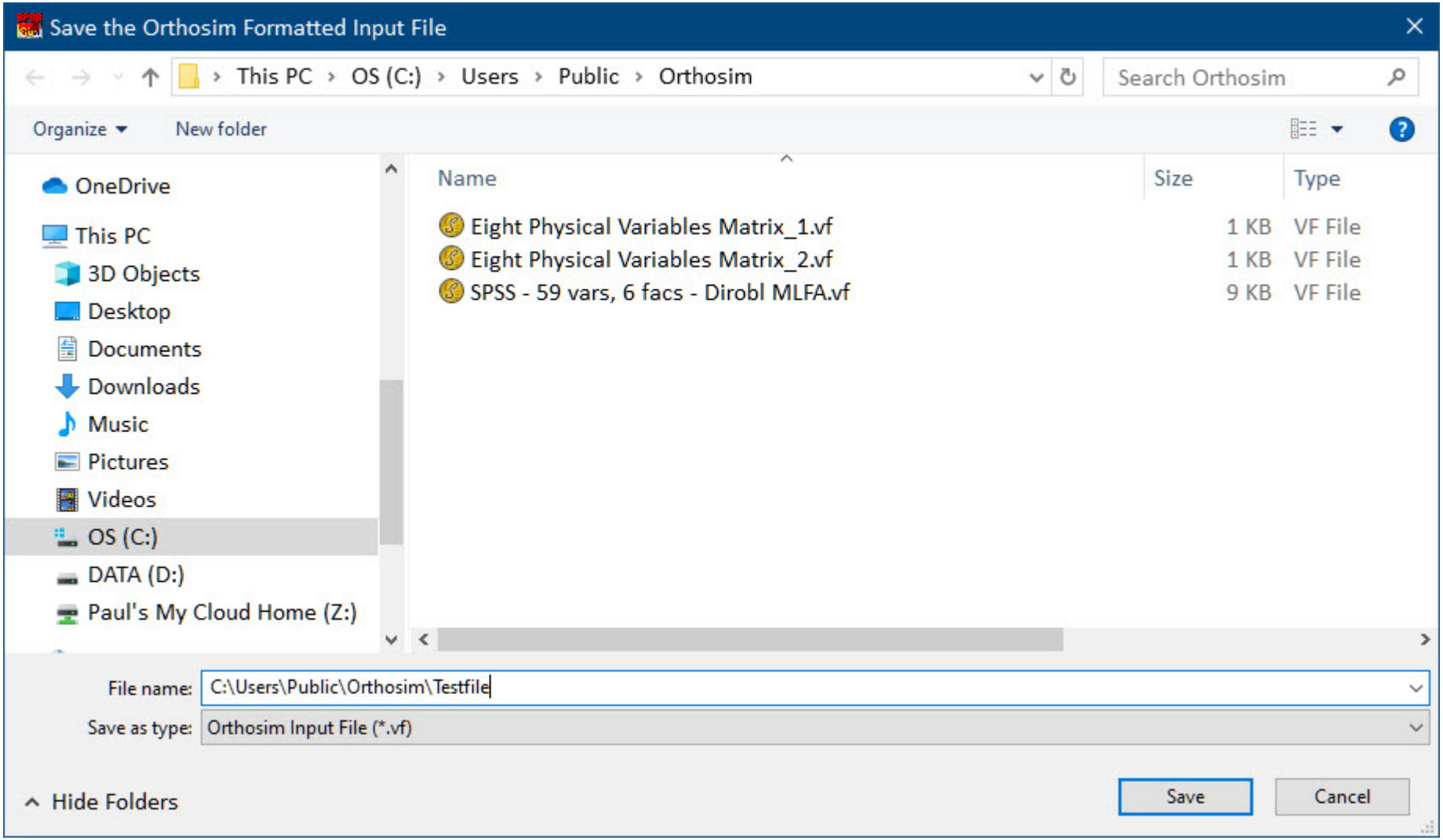
Given we are creating an Orthogonal Matrix for input to Orthosim, you select the appropriate"Orthogonal" radio-button .. As you do this, you'll see some more controls and information appear, along with a dialog screen asking you to select an input Excel file (containing an SPSS export factor loading matrix). After you have selected an appropriate file, another dialog appears to ask you for the name of the Orthosim file which you would like to create. This dialog contains the SPSS-Excel Export filename as the default file to be saved (with the .vf extension instead of .xls or .xlsx). You can of course edit or change this filename, or just press Save if you are happy with the default name and subdirectory. You can also save this file wherever you like -- as long as you remember where for when you run Orthosim! Note: the program automatically filters the files in any subdirectory chosen, showing you only Excel files ending in .xls or .xlsx

For example, here I choose an orthogonal Varimax file - and am happy to retain the default filename as my Orthosim file ...


Orthogonal SPSS Factor Loading Matrix Excel File?
This PC › OS (C:) › Users › Public › Orthosim
Search Orthosim
Organize
New folder
Facsim
Orthosim
Orthosim
SPSS-Orthosim Utility Program
OneDrive
This PC
3D Objects
Desktop
Documents
Downloads
Music
Pictures
Videos
OS (C:)
Name
Size
Type
SPSS - 59 vars, 6 facs - Dirobl MLFA Factor Correlations.xls
26 KB
SPSS - 59 vars, 6 facs - Dirobl MLFA.xls
34 KB
SPSS-16PF5 16 Facs x 186 vars PCA Varimax.xlsx
58 KB
File name:
SPSS-16PF5 16 Facs x 186 vars PCA Varimax.xlsx
Excel Files (97-2003) (*.xls;*.xlsx
Open
Cancel

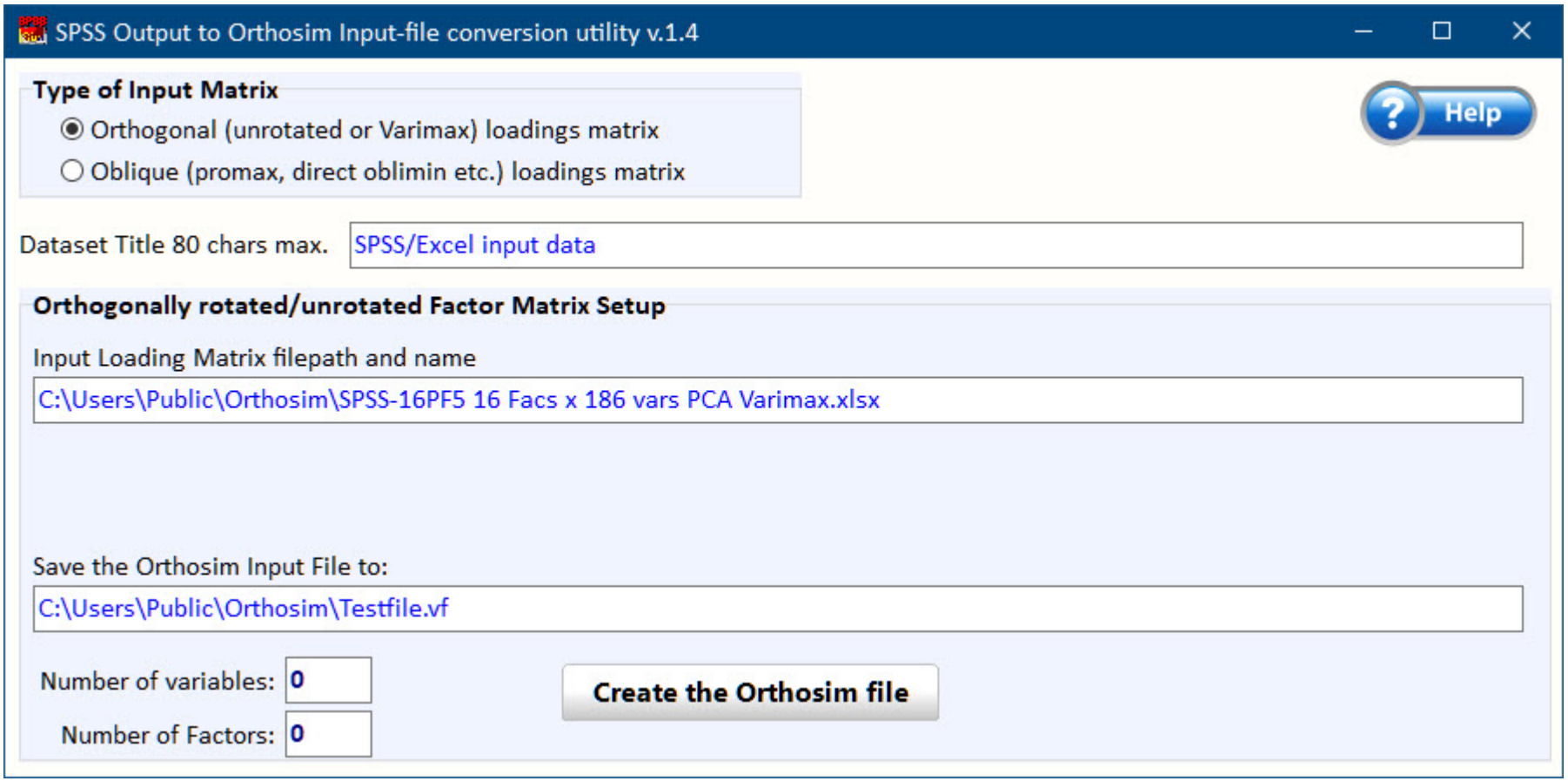


Here, I can change the default Orthosim filename to say "Testfile":

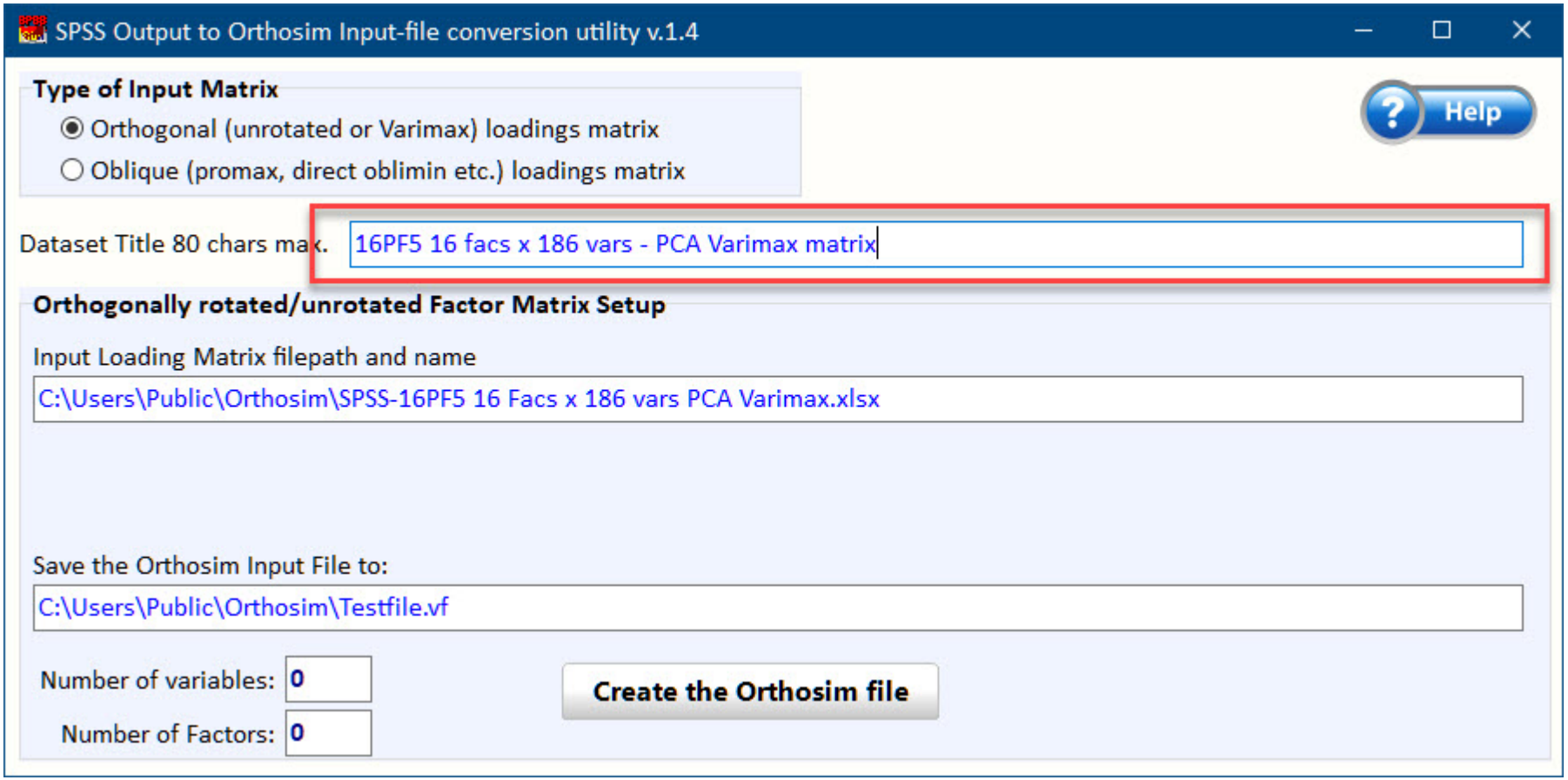

Save the Orthosim Formatted Input File
This PC › OS (C:) › Users › Public › Orthosim
Search Orthosim
Organize
New folder
OneDrive
This PC
3D Objects
Desktop
Documents
Downloads
Music
Pictures
Videos
OS (C:)
DATA (D:)
Paul's My Cloud Home (Z:)
Name
Size
Type
Eight Physical Variables Matrix_1.vf 1 KB VF File
Eight Physical Variables Matrix_2.vf 1 KB VF File
SPSS - 59 vars, 6 facs - Dirobl MLFA.vf 9 KB VF File
File name: C:\Users\Public\Orthosim\Testfile
Save as type: Orthosim Input File (*.vf)
Hide Folders
Save
Cancel

Note that you don't have to put the default Orthosim input file suffix ".vf" after the filename - it is added automatically.

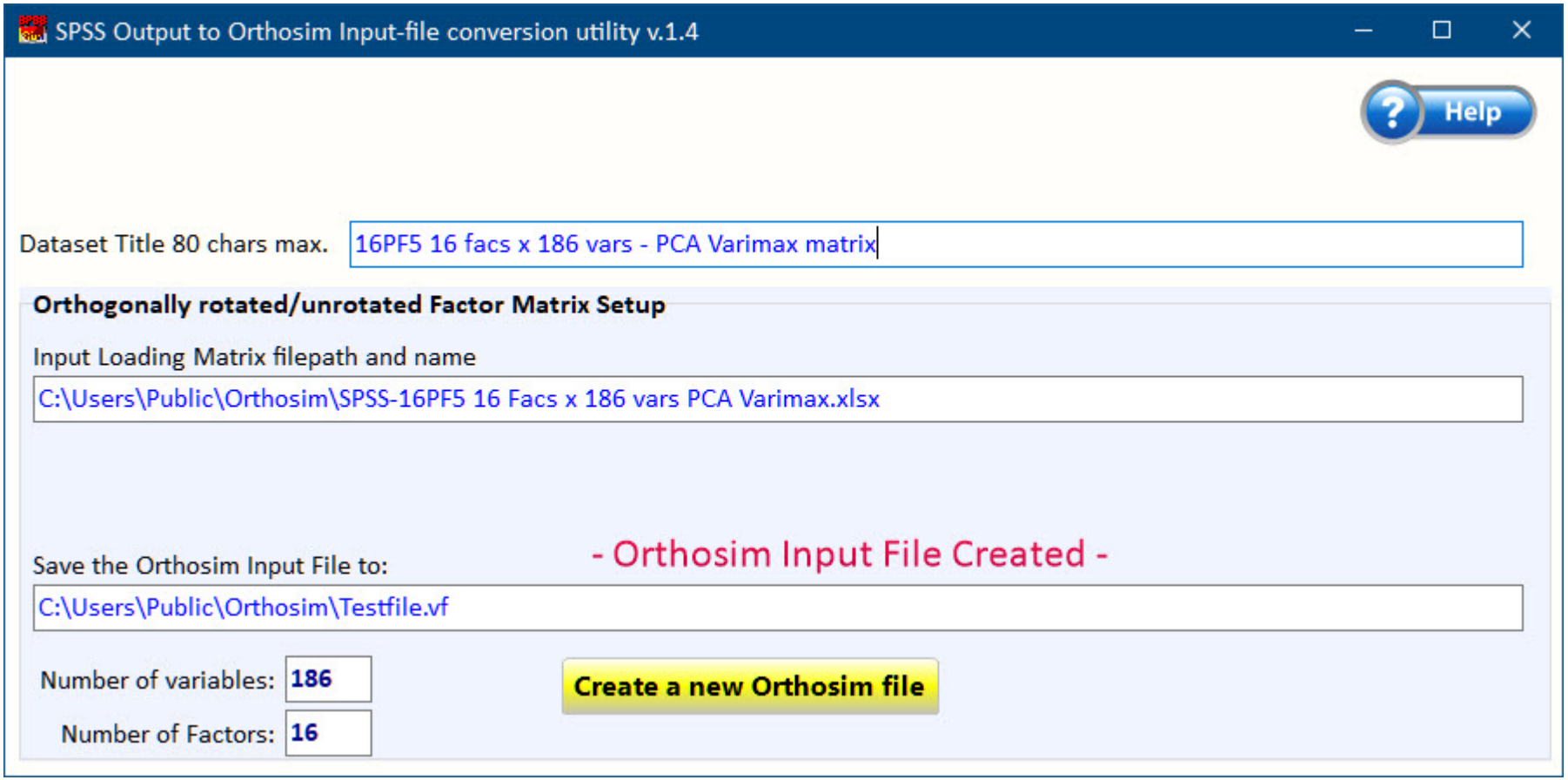
Once you click on "Save" - you'll see ...



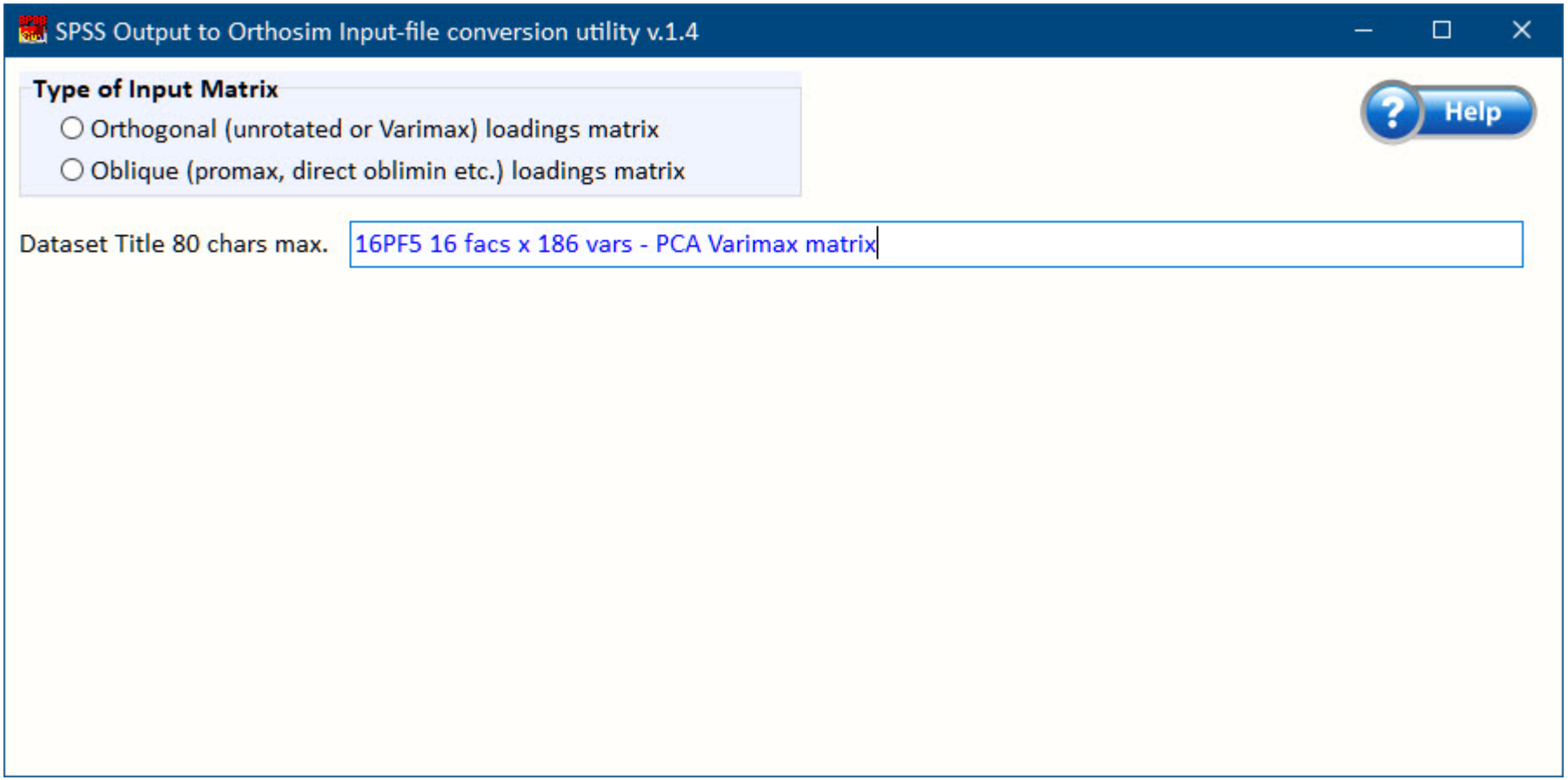
You now type in your preferred title for the dataset ...



and click on the "Create the Orthosim File" button ... this does exactly that - putting up the "Working" tag (seen only on a very slow machine) - and finally the "**Orthosim Input File Created**" message whilst reporting back the number of variables and factors in the file. Note also that once finished, the "Create the Orthosim File" button becomes "Create a new Orthosim file" button. This allows you to create another file without having to leave the program. Handy when you want to create the Target and Comparison matrix one after the other. If you press this button, you'll see the original radio-button choice again (as you can create either an orthogonal or oblique output matrix).



after pressing the "Create a new Orthosim file" button ...



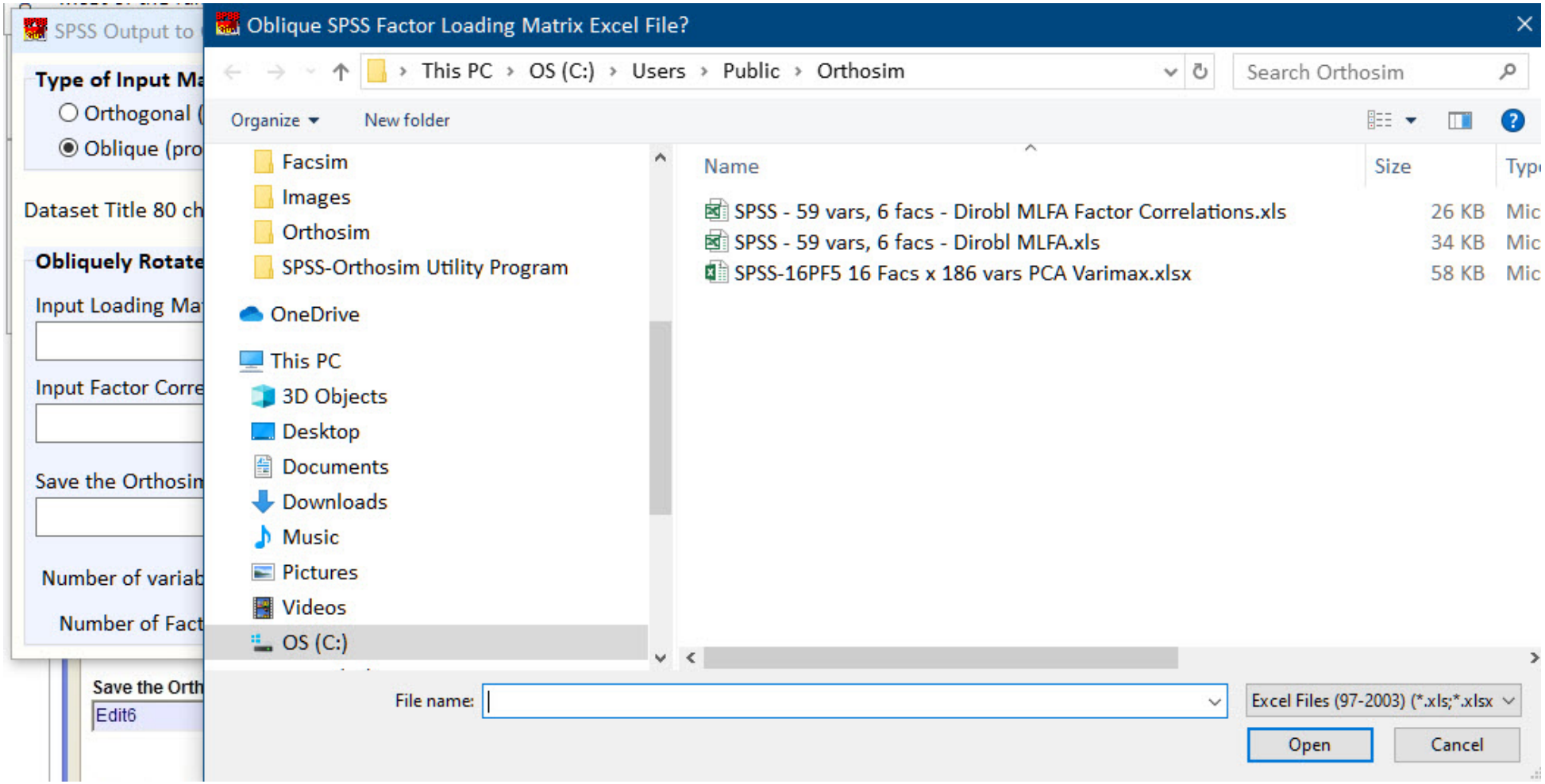
I leave the title line "uncleared" because sometimes you might just want to change portions of it rather than the whole thing - so it's easier to edit rather then retype in these circumstances.

Basically, that's it ... just create your files from the SPSS exported output factor loadings files and then run Orthosim - using these files.

1.6 Creating Oblique Factor Orthosim Files

Most of the functionality of the utility program is as described in detail for the orthogonal matrix comparisons. However, with the oblique case, you have two matrices to read in in order to create a single Orthosim output file - the factor loadiings/pattern matrix and the factor correlation matrix - as both are required in Orthosim. The Orthogonal file only requires the loadings matrix, as I can create the diagonal (1's) correlation matrix in the program.

Here, when you click on the Oblique radiobutton, you'll be asked for an SPSS-export Excel factor loading matrix, a factor correlation matrix, and then the Orthosim filename which you want created ... (as explained in the Creating Orthogonal Factor Orthosim Files page, the Save filename is automatically defaulted as the filename of the SPSS-export Excel filename, replacing the.xls or .xlsx extension with the Orthosim .vf one. You can of course edit or change this filename, or just press Save if you are happy with the default name and subdirectory. You can also save this file wherever you like -- as long as you remember where for when you run Orthosim!). Note: the program automatically filters the files in any subdirectory chosen, showing you only Excel files ending in .xls or .xlsx.


SPSS Output to
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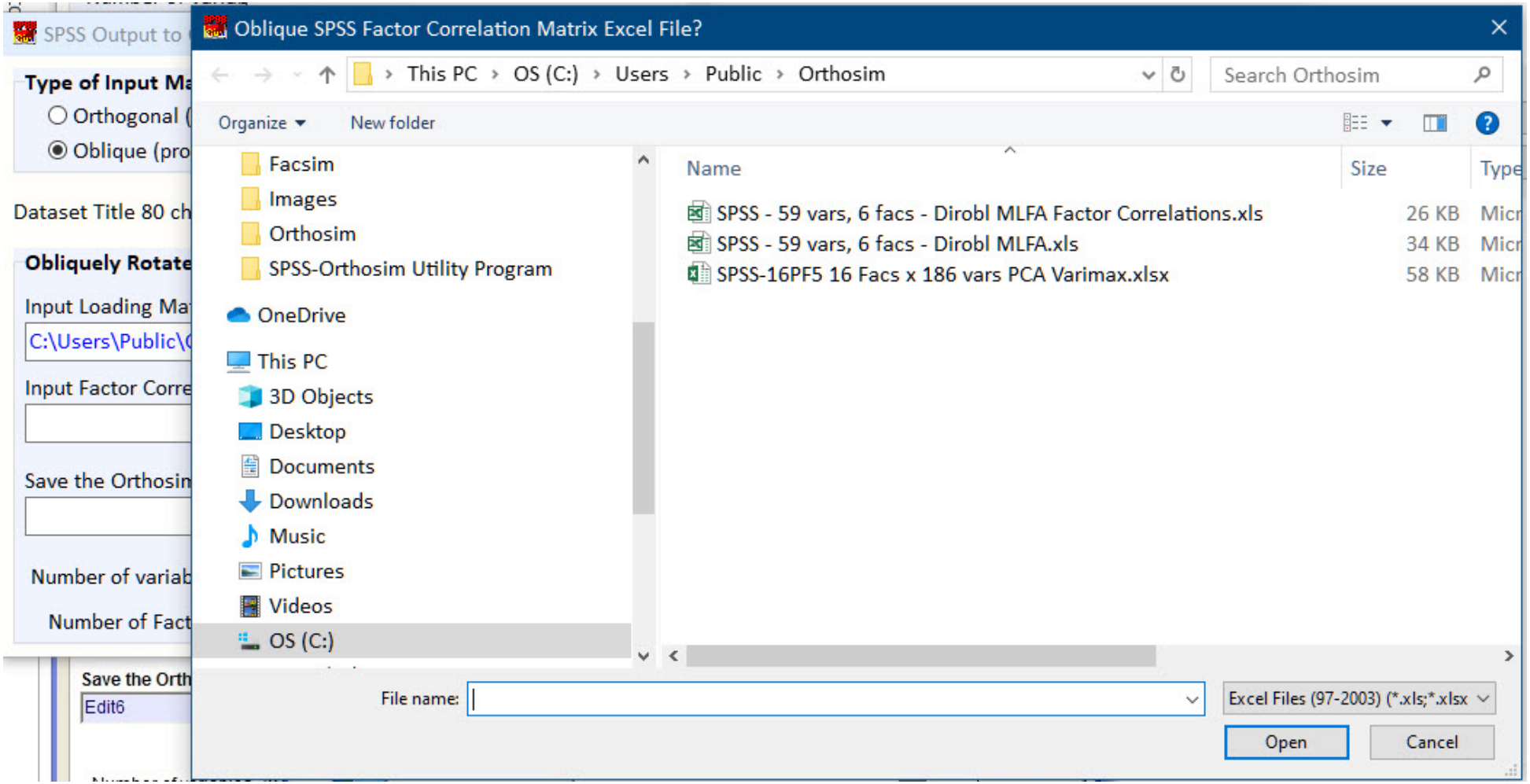
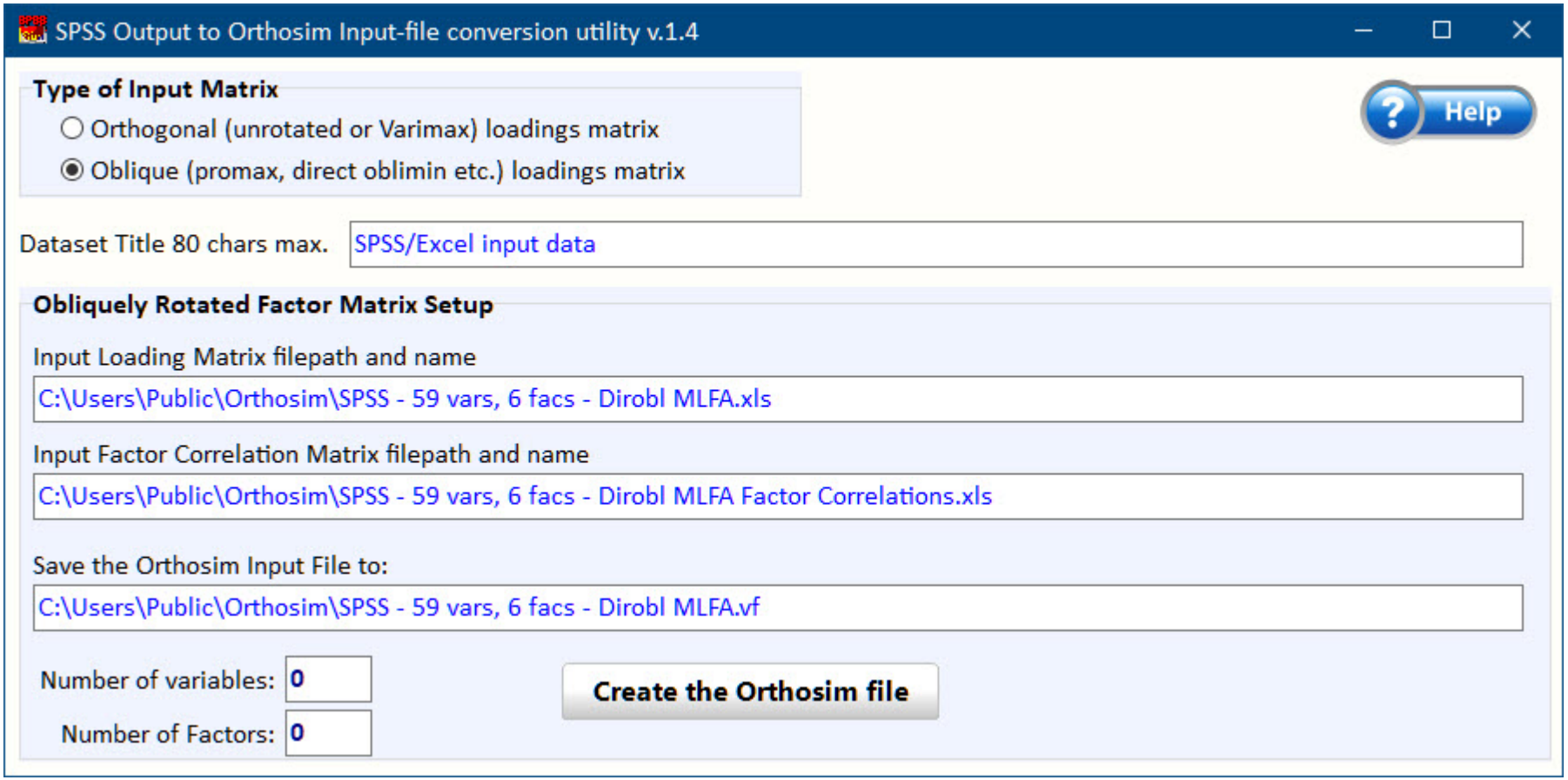
Organize
New folder
Facsim
Images
Orthosim
SPSS-Orthosim Utility Program
OneDrive
This PC
3D Objects
Desktop
Documents
Downloads
Music
Pictures
Videos
OS (C:)
Name
Size
SPSS - 59 vars, 6 facs - Dirobl MLFA Factor Correlations.xls 26 KB
SPSS - 59 vars, 6 facs - Dirobl MLFA.xls 34 KB
SPSS-16PF5 16 Facs x 186 vars PCA Varimax.xlsx 58 KB
File name:
Excel Files (97-2003) (*.xls;*.xlsx
Open
Cancel



then, after inputting the Orthosim Input filename...



As for the orthogonal case, simply click on the "Create the Orthosim file" button to create the file.