

Using the Omega1 Macro

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The Omega1 macro is designed to facilitate the calculation of coefficient omega, a reliability index for tests and surveys, as described [here](#). It was initially developed to work with the Windows version of Lertap 5, and has recently been incorporated in the Macintosh version too (as a working prototype).

A fundamental task for this macro is to set up a file called "[Omega1-IScores.csv](#)". This is the file that serves as input to the "psych" and "TAM" packages in R; having a properly-formatted csv file is vital to the operation of the R packages.

However, it turns out that the process of creating this csv file, and ensuring that it is indeed "properly-formatted", is not exactly straightforward, be one working under Windows or Mac. The main problem is getting Excel to save a csv file, and then making sure that the data it contains are in the format expected by the available R code modules.

The modules operational as of the date above include "Omega-IScoresProg.R", "Omega-From-IScores.Rmd", and "Rasch-Analysis-TAM.Rmd". The first two may be downloaded from links at the bottom of [this page](#), while a link to the third module is found at the bottom of [this page](#). A paper outlining how to use R with the "psych" package is [here](#) (it also mentions the use of the TAM package).

Creating the csv file using Windows Excel

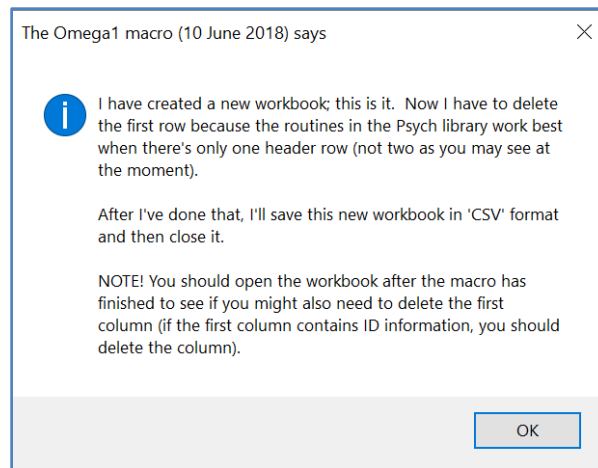
I'll use the [MathsQuiz](#) dataset for this demonstration. I have Excel 2016 and Lertap 5 running on a Windows 10 computer, and have opened the MathsQuiz.xlsx workbook.

I go through the standard Lertap 5 process to create initial results, using the "Interpret" option, followed by "Elmillion" (as exemplified [here](#)).

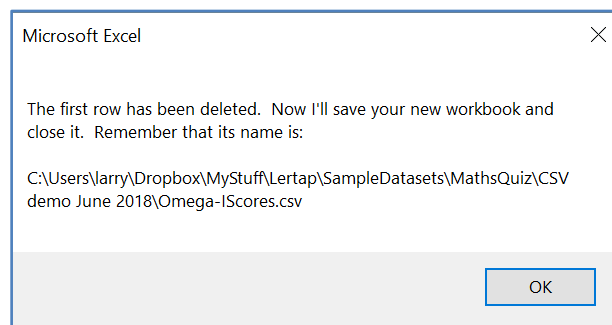
My main objective in this paper is to demonstrate how to create the Omega1-IScores.csv file. I know that the Omega1 macro is the tool to use, the program that is supposed to create the csv file. I also know that I need to use Lertap's "[Item scores and correlations](#)" option before activating the [Omega1 macro](#). It creates the "IStats" worksheet.

The Omega1 macro is found and activated by working through the Move+ menu, as mentioned in [this topic](#). In the Windows version of Lertap 5, the macro creates a new Excel workbook initially called "BookX.xlsx", where X will always be a number, typically from 2 to 10. The following message will appear when the macro starts to run:

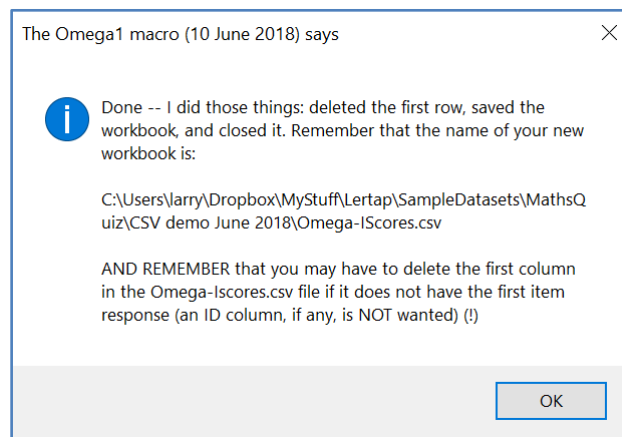
¹ Comments / questions may be sent to l.nelson@curtin.edu.au



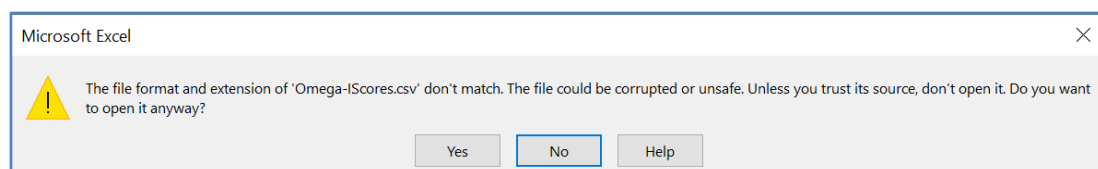
This is followed by another message:



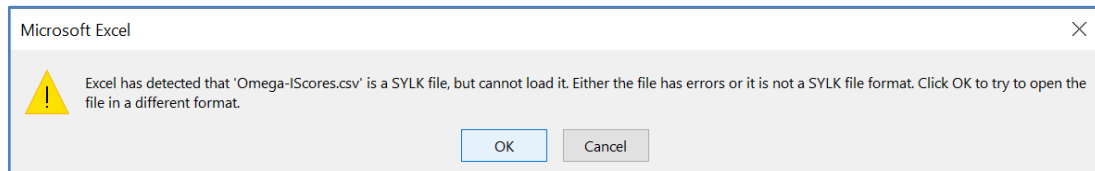
A third message is then produced:



This is all well enough – however, the last paragraph in the last message is something that must be heeded. It is typical for the first column to have an ID field. I ask Excel to open my new Omega-1Scores.csv file so that I can check, and this message appears:



I click Yes.



I click OK, and Excel lets me look at the workbook. I see this:

Omega-IScores.csv - Excel

Larry Nelson

File

Lertap

Home

Insert

Draw

Page Layout

Formulas

Data

Review

View

Developer

Add-ins

Help

Tell me

Delete

Sort

Blank

Interpret

Histograms

Move+

Version

Headers

Elmillion

Scatterplot

License

Spread

Copy

More

Res. charts

Help

Basic options

New menu

Run menu

Graphics trio

Other menus

AutoSave

Gridlines

Formula Bar

Headings

1

2

3

4

5

6

7

8

9

10

11

ID

I1

I2

I3

I4

I5

I6

I7

I8

I9

I10

Student 1

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Student 2

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Student 3

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Student 4

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Student 5

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Student 6

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Student 7

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Student 8

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Student 9

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Student 10

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Student 11

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1

1

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Omega-IScores

Ready

100%

Sure enough, the first column has an ID field. I select the column, delete it, and then ask Excel to save the workbook. It does, and things seem quite fine.

Next I use Excel's File menu and take the Close option. Then I open the workbook again, just to make sure that the first row has item numbers, and that the first column does not have ID data. All looks okay; I now have a file called Omega-IScores.csv and can use the R modules mentioned at the start of this document.

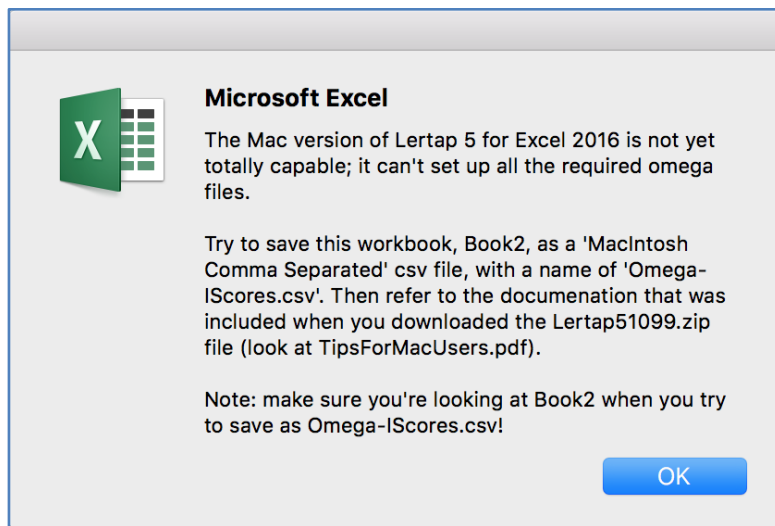
Creating the csv file using Macintosh Excel

I'll again use the [MathsQuiz](#) dataset for a demonstration. Now I'm running on a MacBook Pro and have Excel 2016 going.

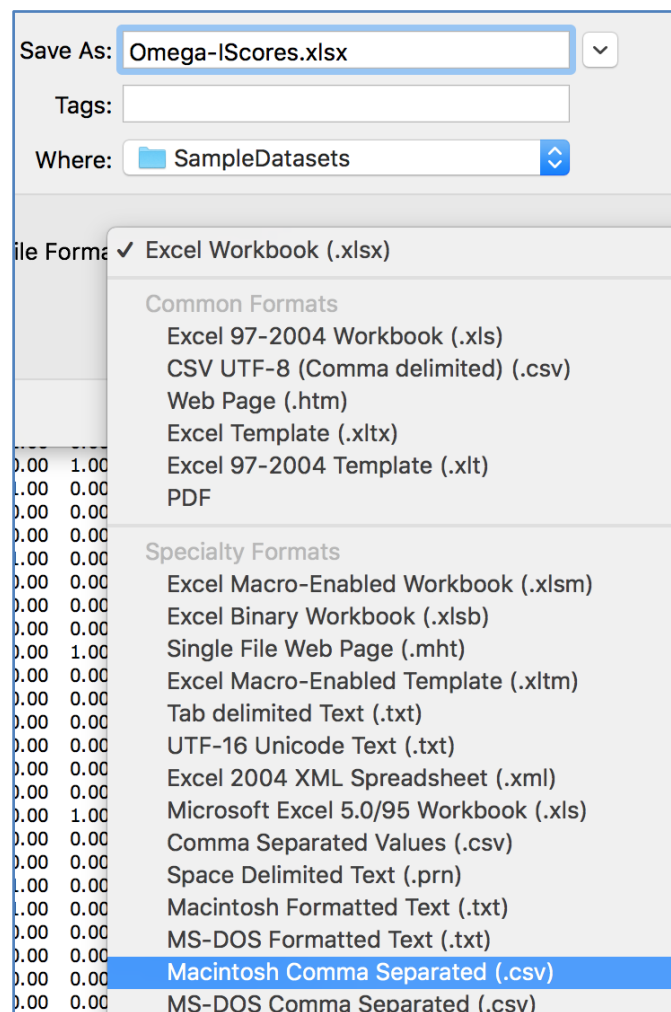
I go through the standard Lertap 5 process to create initial results, using the "Interpret" option, followed by "Elmillon" (as exemplified [here](#)). Then, as described above when running the Windows version, I used the "[Item scores and correlations](#)" option in order to have the "IStats" worksheet needed by the Omega1 macro.

The Omega1 macro is found and activated by working through the Move+ menu, as mentioned in [this topic](#).

The present Mac version of the macro is not as comprehensive as the Windows version. It makes a new workbook called "BookX.xlsx", where X is typically a number between 2 and 10, and then says:

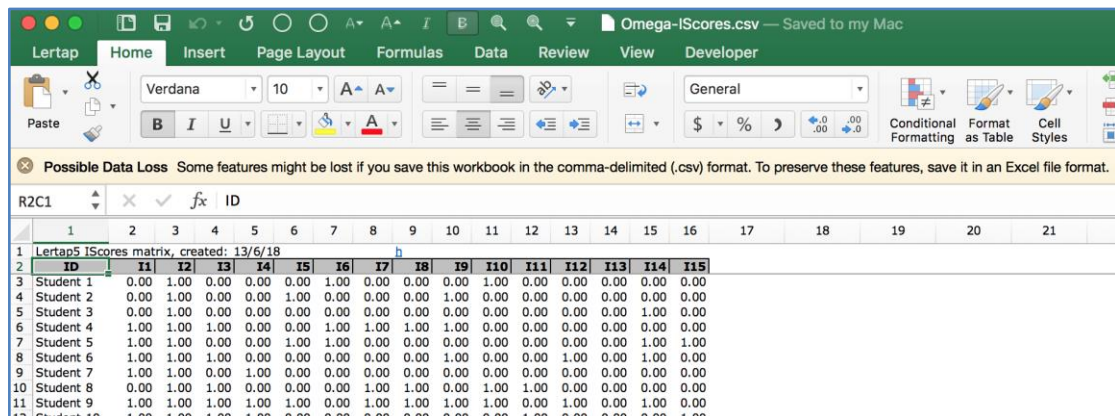


In this case, the name of the new workbook was Book2.xlsx. Following the instructions in the message box above, I attempt to save it as "Omega-IScores.csv".



In the screen snapshot above, I typed "Omega-IScores" in the "Save as" field (leaving the xlsx part), then selected "Macintosh Comma Separated (.csv)" from the options list. I also made note of the contents of the "Where" field (SampleDatasets).

Excel saved the workbook, and displayed a “Possible Data Loss” warning, as seen in the snapshot below:



I clicked on the small x seen just to the left of “Possible Data Loss”.

Then I deleted the first row, and the first column, because I know that the information in that row, and that column, would not be wanted when the R code modules are asked to do their job.

At this stage my workbook looked like this:

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	I1	I2	I3	I4	I5	I6	I7	I8	I9	I10	I11	I12	I13	I14	I15		
2	0.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	1.00	1.00	1.00	0.00	0.00	0.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	1.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	0.00
7	1.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00	0.00	1.00	0.00
8	1.00	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00
10	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00	0.00
11	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00
12	0.00	1.00	0.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
13	1.00	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	1.00	1.00	1.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00
15	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	1.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	1.00	0.00
18	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00	0.00
19	1.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00

I used Excel’s File menu to save the workbook.

Possible Data Loss Some features might be lost if you save this workbook in the comma-delimited (.csv) format. To

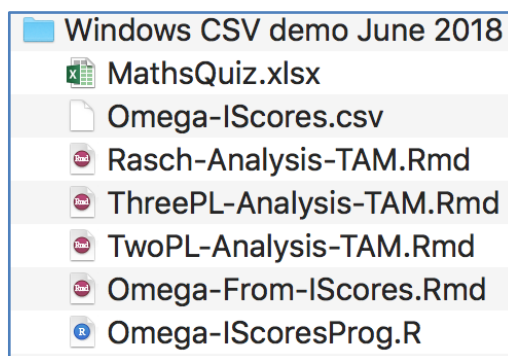
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	I1	I2	I3	I4	I5	I6	I7	I8	I9	I10	I11	I12	I13	I14	I15		
2	0.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	1.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
5	1.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	1.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	0.00
7	1.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00
8	1.00	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00
10	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00
11	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00
12	0.00	1.00	0.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00
13	1.00	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00
14	1.00	1.00	1.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00
15	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	1.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00
18	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00

Ready

Note that I got another “Possible Data Loss” warning. I ignored it by clicking on the little x, and all was well; the “Omega-IScores.csv” file was ready for use with the R code modules mentioned above, at the start of this document.

Using the csv file with the R code modules (Windows and Mac)

Have a look at this screen snapshot of a folder on my computer:



MathsQuiz.xlsx is where I started off. Omega-IScores.csv is the file made by following the steps I’ve gone through above.

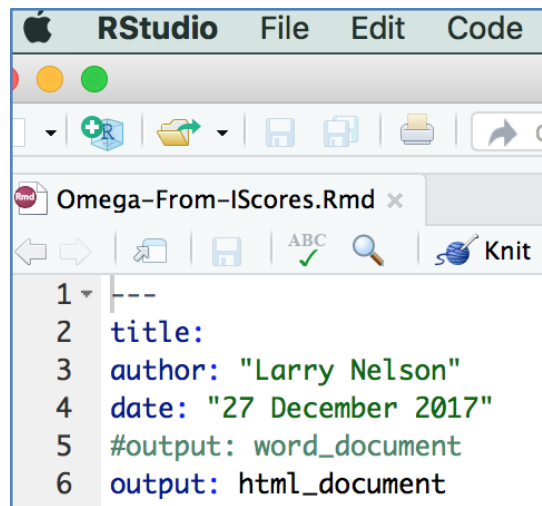
The Rasch-Analysis-TAM.Rmd file may be downloaded from [here](#)².

The Omega-From-IScores.Rmd file and the Omega-IScoresProg.R file may be downloaded [here](#)³.

If R and RStudio and have been installed, as described in [this document](#), then it will be possible to double-click on, say, “Omega-From-IScores.Rmd” and see RStudio load up and be ready to roll, waiting for a click on the **Knit** button seen next to the ball of blue wool:

² This file might be automatically downloaded when using Windows.

³ These files might be downloaded when the Windows version of the macro is run; the ThreePL- and TwoPL- files might also appear as downloads, but they are not yet recommended for use.



The snapshot above shows RStudio running on a Mac. It looks pretty much the same when used under Windows.

An example of the output produced by the R psych package may be seen by paying a visit to [this webpage](#), a page which displays the output when using the Omega-IScoresProg.R script. The output is more comprehensive, and better formatted, when the Omega-From-IScores.Rmd script is used: [this paper](#) mentions the differences in these two scripts, and is strongly recommended.

Help?

Write to lertap5@gmail.com