

Chapter 9

Lertap, Excel, SPSS and Other Systems

Revised 4 September 2019

Applying Lertap, revisited

We begin with a return to the “**MLSQ**”, the Motivated Strategies of Learning Questionnaire from the University of Michigan ([Pintrich, et al, 1991](#)). The MLSQ has been mentioned in previous chapters: in [Chapter 3](#) under “A large-scale survey”, and then again in [Chapter 8](#) under “Processing a major survey”.

[Curtin University](#) researchers have used a modified version of the MLSQ having 55 items and ten scales, or, as Lertap likes to call them, ten “subtests”.

All of the items, or questions, asked students to indicate their feelings on a 7-point scale, such as this one from the “Test Anxiety” scale:

		Not at all true of me							Very true of me
Q14	I have an uneasy, upset feeling when I take an exam.	1	2	3	4	5	6	7	

Another of the MLSQ scales was “Self Regulation” with twelve items; a student could get a minimum “SelfReg” scale score of 12 should s/he answer “Not all true of me” on all twelve questions, or a maximum scale score of 84 should s/he answer “Very true of me” on all twelve items.

The MLSQ was given to 139 students in Curtin’s Faculty of Education, with 41 of them being in “E”, the Early Childhood Education stream, 66 in “P”, Primary Education, and 32 in “S”, Secondary Education. Responses were entered into an Excel workbook, and Lertap5 used to answer a variety of research questions.

One of the research questions had to do with looking to see if students in the three streams may have differed in their SelfReg scores¹.

As with all Lertap analyses, two steps are involved in getting results: the “[Interpret](#)” option is taken, followed by the “[Elmillion](#)” option². Of course, before these options are taken, users will have entered student data and responses in a Lertap “Data” worksheet, and “control cards” in a Lertap “CCs” worksheet. For the MLSQ, [Chapter 3](#) has examples (page 10).

These two steps result in several worksheets being added to the Excel workbook. One of them will be the “[Scores](#)” worksheet – it is this worksheet, or “report”, that will house the “SelfReg” scores for the students.

¹ Lertap is quite capable of answering this question; see “Breaking out groups, 2” in [Chapter 8](#).

² One step is all that’s required if “[Production Mode](#)” is on.

Now, with this background, we can get to one of the main objectives of this chapter: mentioning how the powerful, popular [SPSS](#) data analysis system can import results from a Lertap workbook.

From Lertap to SPSS

Okay. Let's say we've got the MSLQ Excel workbook ready. Interpret and Elmillon have been run. We want to now use SPSS to investigate the relationship between a student's major stream and their score on "SelfReg", the self-regulation scale, one of the ten scales in the MSLQ.

For each student, her or his major stream has been coded as a single character, E, P, or S, in column 4 of the [Data](#) worksheet.

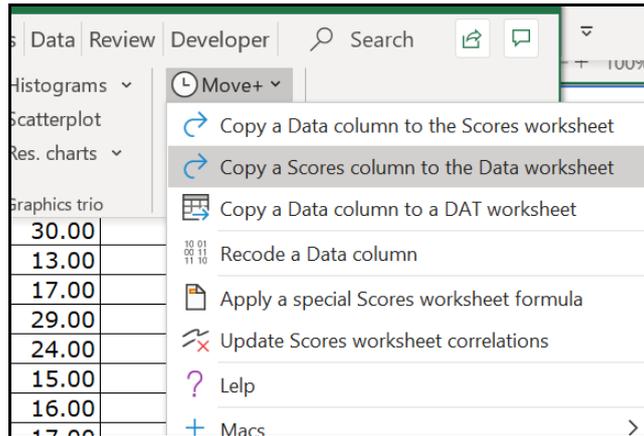
Where is the SelfReg score? When Elmillon did its stuff, it computed and recorded ten scale scores for each student. SelfReg scores were placed in column 3 of the [Scores](#) worksheet by Elmillon.

	1	2	3	4	5	6	7
1	Lertap5 Scores worksheet, last updated on: 2/9/19.						h
2	ID_code	Orgnztn	SelfReg	TestAnx	PeerLrng	Envrnt	EffrtRe
3	1S	14.00	49.00	17.00	5.00	24.00	13.00
4	2S	23.00	56.00	33.00	8.00	45.00	25.00
5	3S	11.00	41.00	30.00	5.00	27.00	22.00
6	4S	18.00	44.00	13.00	18.00	36.00	16.00
7	5S	20.00	43.00	17.00	10.00	38.00	17.00
8	6S	17.00	37.00	29.00	10.00	22.00	9.00
9	7S	10.00	42.00	24.00	8.00	39.00	14.00
10	8S	21.00	58.00	15.00	8.00	37.00	25.00
11	9S	15.00	45.00	16.00	11.00	38.00	14.00
12	10S	20.00	50.00	17.00	12.00	42.00	13.00

SPSS will easily import any *single* worksheet from a workbook. This will present a problem in this case because we have data in two worksheets: SelfReg is in the Scores worksheet, while student major stream information is in the Data worksheet.

We'll copy SelfReg from Scores over to the Data worksheet in order to have everything in just one worksheet, Data.

We do so by making use of a Lertap option on the "[Move+](#)" menu:

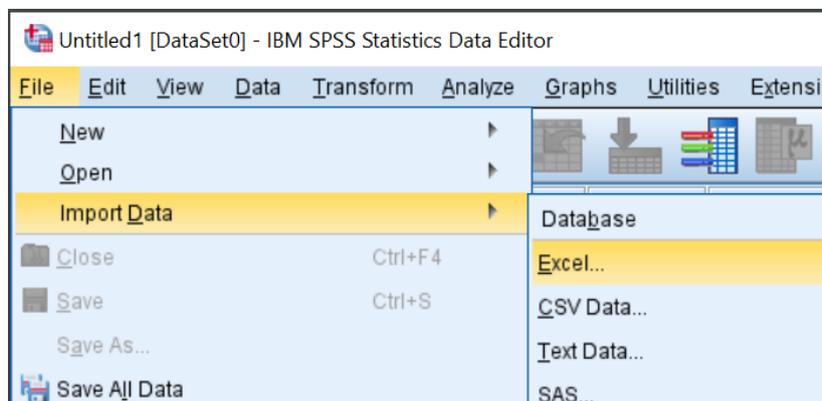


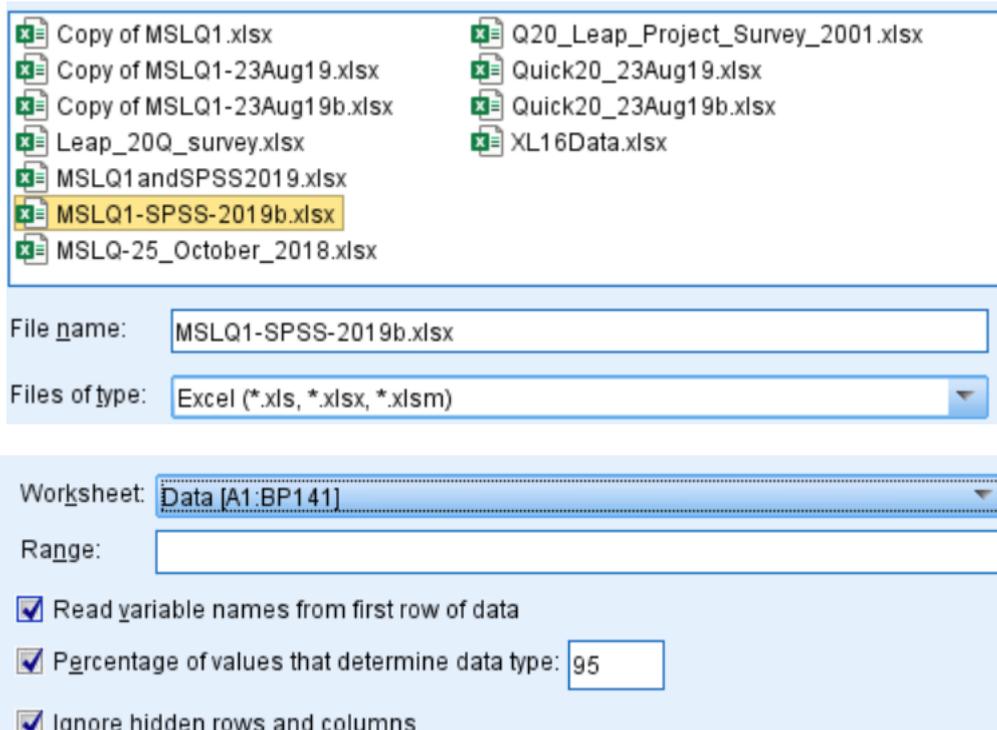
We use the option to copy SelfReg over to the Data worksheet; it gets added as the first empty column, 68 in this case:

A screenshot of an Excel spreadsheet. The columns are labeled 64, 65, 66, 67, 68, and 69. The rows are labeled 1 through 8. Column 68 is highlighted in cyan and labeled 'SelfReg'. The data in the spreadsheet is as follows:

	64	65	66	67	68	69
1						
2	Q52	Q53	Q54	Q55	SelfReg	
3		5	2	5	5	49
4		5	2	1	5	56
5		1	2	4	6	41
6		3	2	1	1	44
7		3	4	2	4	43
8		2	2	7	6	37

So. Ready? Let's fire up SPSS and get it to thinking that we'll be importing data from an Excel workbook:





Notice “Data [A1:BP141]” in the Worksheet box immediately above? SPSS is indicating that it will import data from column A over to column BP, row 1 down to row 141 of the Data worksheet.

To understand this it helps to know that Excel has two referencing styles. In the **R1C1** style, the one Lertap much prefers and tries to set automatically, the worksheet cell found at the very top left of a worksheet is called R1C1, for row 1, column 1.

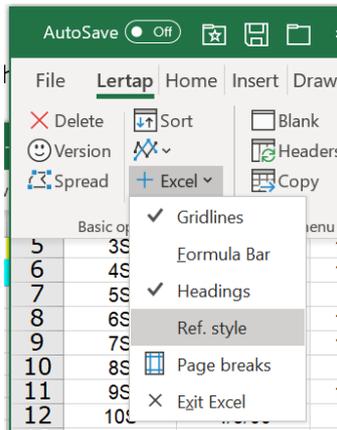
In the **A1** referencing style, the cell found at the very top left is known cell A1, for column A, row 1.

In the Data worksheet of the MSLQ workbook, there are 141 rows and, after SelfReg has been added, 68 columns. In R1C1 notation, the very last cell, in the bottom row and the last column, would be R141C68. In A1 notation, it would be BP141, for column BP and row 141.

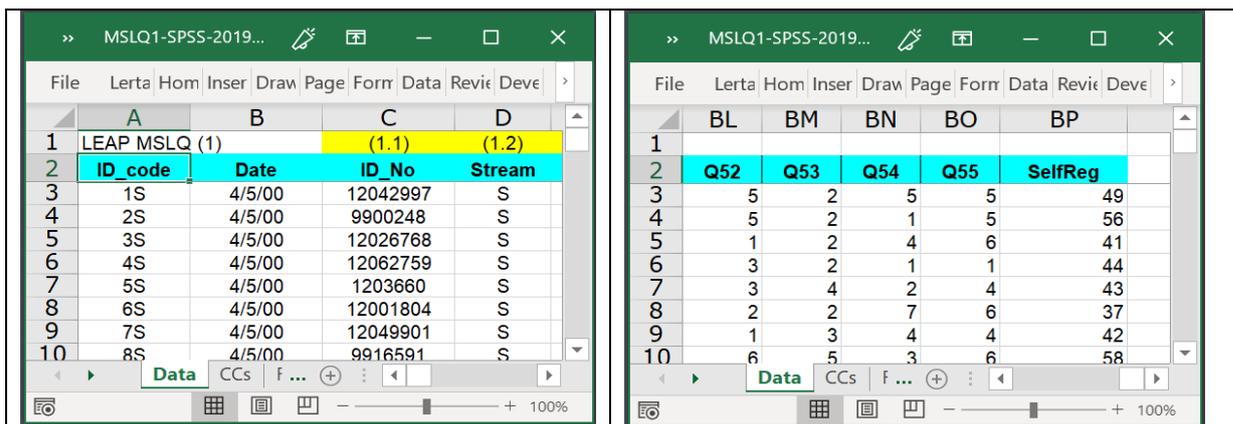
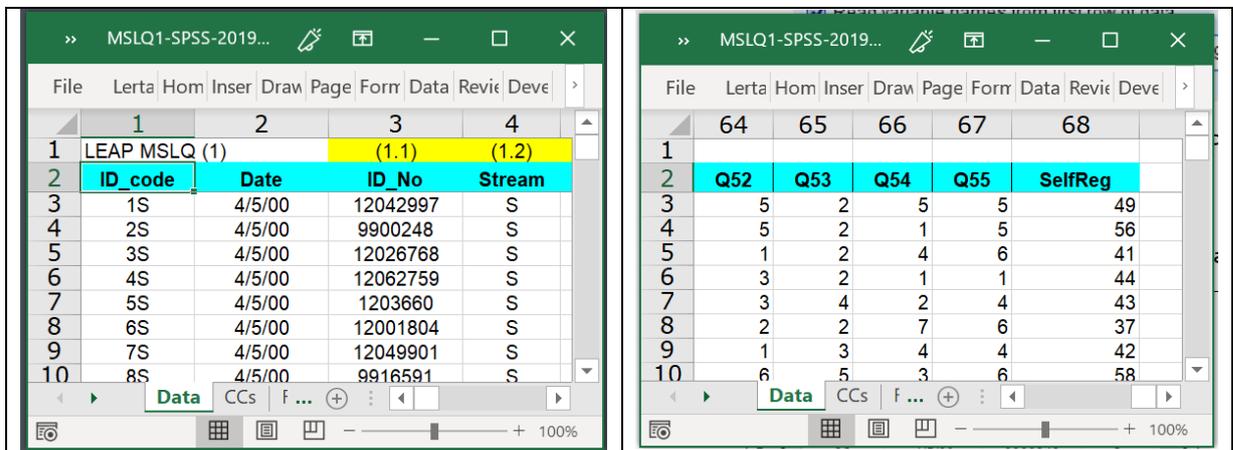
So, when SPSS says “Data [A1:BP141]”, it is indicating that it will start importing data from cell A1 over to column BP and down to row 141 of the Data worksheet.

It turns out that this is not right in this case. We don’t want SPSS to do that. Many of the worksheets used in Lertap will have some sort of title in the first row, and we will want SPSS to ignore that row.

Now, at any time it is possible to have Excel switch its referencing style. Lertap has an option to help do it:



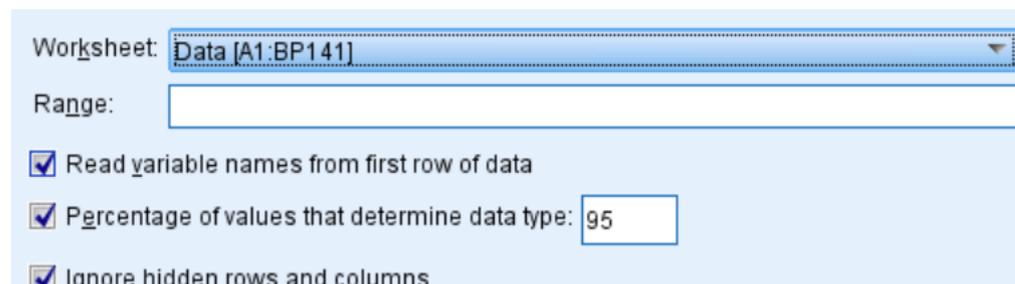
Here are two views of the left and right sides of the Data worksheet. In the two panels in the top row, R1C1 has been used, while A1 has been used in the second row's panels. We can see that the last column is labelled as either column 68 or column BP, depending on the referencing style in use.



When SPSS thinks of Excel worksheets, it does so using the A1 referencing style³.

³ Most software systems do this. A1 referencing is more common than R1C1.

Look again at what SPSS has suggested:

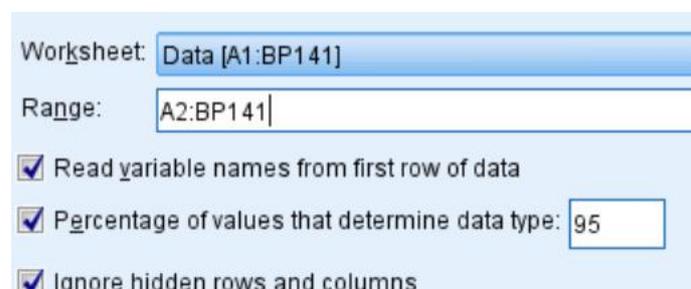


Worksheet: Data [A1:BP141]
Range:
 Read variable names from first row of data
 Percentage of values that determine data type: 95
 Ignore hidden rows and columns

SPSS is saying that it will start importing data from the first column (A) and the first row (1), going over to the last column (BP), and down to the last row (141).

This isn't right. The first row does not have "variable names". The second row does. The first row has a descriptive title, "LEAP MSLQ (1)".

We ask SPSS to ignore the first row by using the Range box as shown here:



Worksheet: Data [A1:BP141]
Range: A2:BP141
 Read variable names from first row of data
 Percentage of values that determine data type: 95
 Ignore hidden rows and columns

Now we're telling SPSS to start taking information from column A, row 2, to column BP, row 141. Row 2 is to be seen as the "first row of data".

OK! With this change, using the Range box, SPSS correctly imported the data from Lertap's Data worksheet.

Without too much effort, we got SPSS to create the [boxplot](#) shown in Figure 1. Figure 2 displays a boxplot made by Lertap for the same data, while Figure 3 has a numerical summary of the boxplot data as made by Lertap and Excel (SPSS will of course make similar summary tables).

More comments about linking Lertap and SPSS are found in [this topic](#).

From Lertap to SAS

The Statistical Analysis System, [SAS](#), is as powerful as SPSS, perhaps more so. There is a free version of SAS for students and teachers – see this [web site](#).

Lertap has a special macro to help port data over to SAS, especially useful to those interested in IRT, item response theory. Read about it [here](#).

Nelson has comments and an example related to the use of the University Edition of SAS – refer to [this document](#).

From Lertap to other programs

Please refer to these topics for examples of linking Lertap workbooks to other programs: [Omega reliability](#); [IRT routines](#); [PearsonVUE](#).

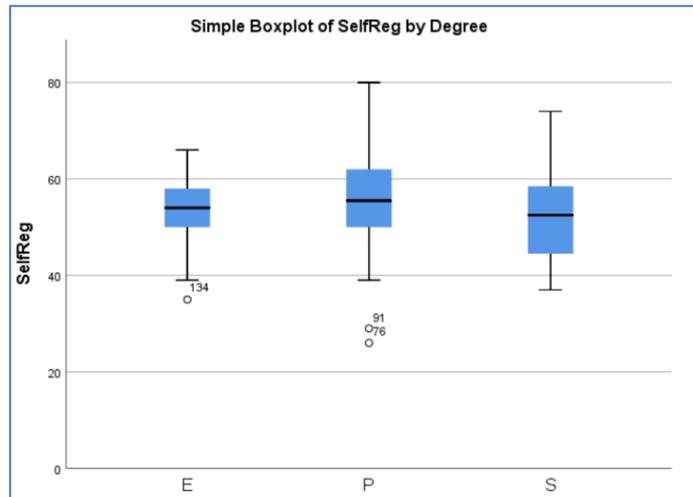


Figure 1

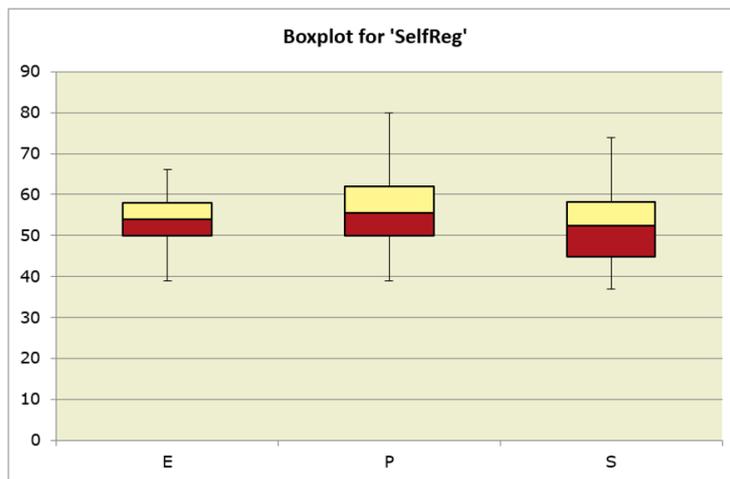


Figure 2

SelfReg	E	P	S
n	41	66	32
Mean	53.51	55.14	52.53
s.d.	7.22	9.63	9.07
Median	54.00	55.50	52.50
Q1	50.00	50.00	44.75
Q3	58.00	62.00	58.25
Minimum	35.00	26.00	37.00
Maximum	66.00	80.00	74.00
25th Pct	50.00	50.00	44.75
50th Pct	4.00	5.50	7.75
75th Pct	4.00	6.50	5.75
Bottom whisker	11.00	11.00	7.75
Top whisker	8.00	18.00	15.75
Lowliers	1	2	0
Highliers	0	0	0

Figure 3