Survey Analysis Workshop   **© Copyright 2012   John F Hall**

Block 3: Analysing two variables   3.3 Multiple response

3.3.3 Analysing multiple response   [**Draft only**: 28 Feb 2012]

Exercise 3.3.3.1: Single question: separate field allocated for each code

Previous tutorial: [3.3.3 Multiple response questions in the 1986 British Social Attitudes survey](#)

Exemplar: British Social Attitudes survey (1986 wave)

Raw data set: [bsa86.txt](#) (3.2 mb)

Question: **Educational qualifications obtained** [Q. 117 (version B)]

Task 1:   Read in raw data for educational and other qualifications [Q.117a, Q.117b] and list the values of all variables for the first 10 cases.

Task 2:   Produce simple frequency counts for all variables

Task 3:   Add variable and value labels

Task 4:   Define a multiple response group for the range of valid codes 01 – 15 in Q.117b and produce a frequency count for the group variable.

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Task 1:   Read in raw data for educational and other qualifications [Q.117a, Q.117b] and list the values of all variables for the first 10 cases.

Q.117a: Have you passed exams or got any other qualifications?
     [Filter question] coded **1** = Yes or **2** = No in column **65** of record **15**

Q.117b: [If YES]
     Which ones? Any others?   [precoded with showcard **CC**]

     There are 16 possible codes of which 15 are valid (**01** to **15**) each in fixed location, one two-column field per code (cols 66-67, 68-69 ... 78-79 of record 15 and columns 08-09,10-11 . . . 22-23 of record 16) plus missing code **97** in cols 24-25 of record 16. This coding scheme takes up 16 x 2-column fields = 32 columns.

**[Extract of 3 cases from raw data: records 15 and 16]**

```
10192150312601163111362                        222012
1019216            1    999021117998999  99999  933              07

1020315 0142801                               2  032
1020316               999021117998999  99999  933

100801505123191371 1022 1032 2102             2220210102
1008016          1  1  045040805318302  0005101132222222        05
```

The first two cases have no qualifications (code **2** in col 65): the third case (code **1** in col 65) has two qualifications (code **01** in columns 66-67 and **02** in columns 68-69).

As usual it helps to have a table:

Question	Value(s)	Record	Column(s)	Varname
Q.117a: Any qualifications?	1, 2	15	65	v1565
Showcard items: use for labels				
Q.117b: CSE 2-5	1	15	66-67	v1566
Q.117b: CSE 1, O level,etc	2	15	68-69	v1568
Q.117b: A level, etc	3	15	70-71	v1570
Q.117b: O-seas leavng exam	4	15	72-73	v1572
Q.117b: Trade apprenticeshp	5	15	74-75	v1574
Q.117b: RSA,similar clerical	6	15	76-77	v1576
Q.117b: C & Guilds Craft,etc	7	15	78-79	v1578
Q.117b: C & Guilds Advanced,etc	8	16	08-09	v1608
Q.117b: C & Guilds full tech	9	16	10-11	v1610
Q.117b: BEC Ordnary,ONC,OND	10	16	12-13	v1612
Q.117b: BEC Higher,HNC,HND	11	16	14-15	v1614
Q.117b: Teacher training	12	16	16-17	v1616
Q.117b: nursing qual	13	16	18-19	v1618
Q.117b: Other tech,business	14	16	20-21	v1620
Q.117b: Univ,CNAA degree,diploma	15	16	22-23	v1622
Q.117b: Other qual or DK,NA	97	16	24-25	v1624

Step 1: Open folder **mybsa** in your desktop:
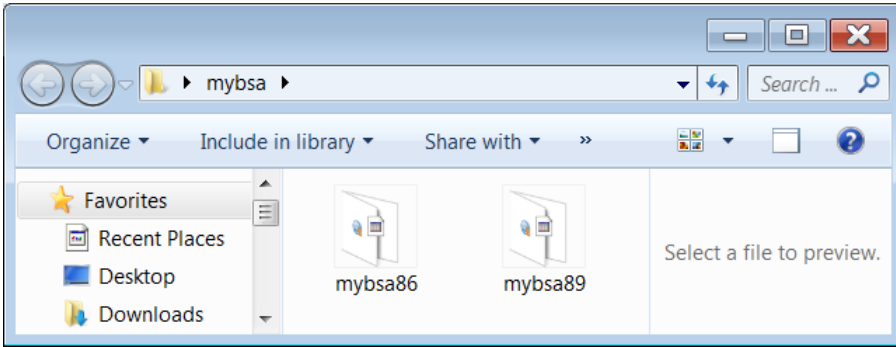
. . . and then open folder **mybsa86**:

If you don't already have the raw data file **bsa86.txt** (top left corner below) in your folder **mybsa86** you will need to copy the raw data file bsa86.txt into it from this site before you start.
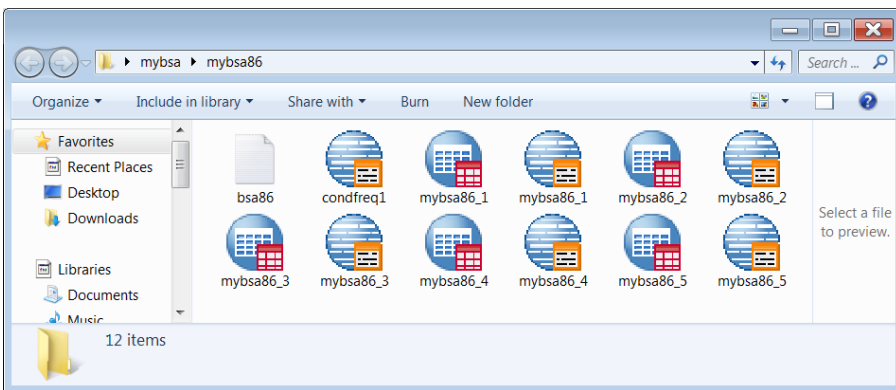
This set of exercises will generate several new files: to keep things manageable it's best to open a new sub-folder **bsa86mult** to hold your work on multiple response for this survey.
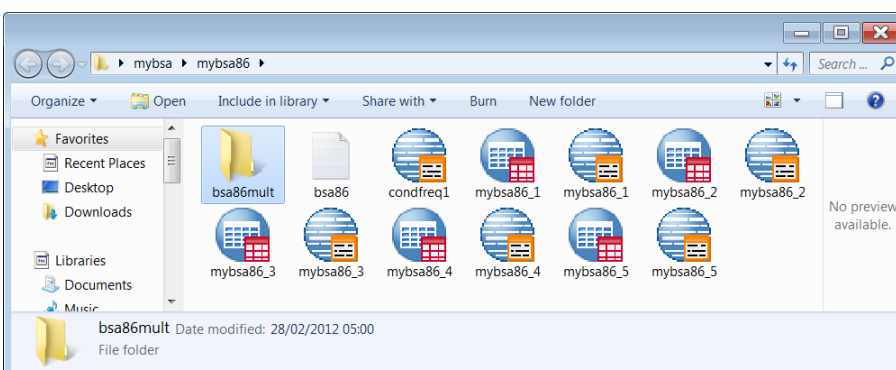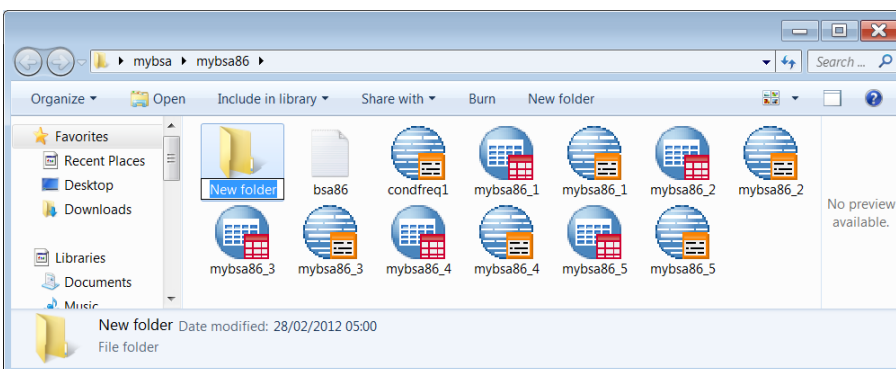
Step 2: Open SPSS
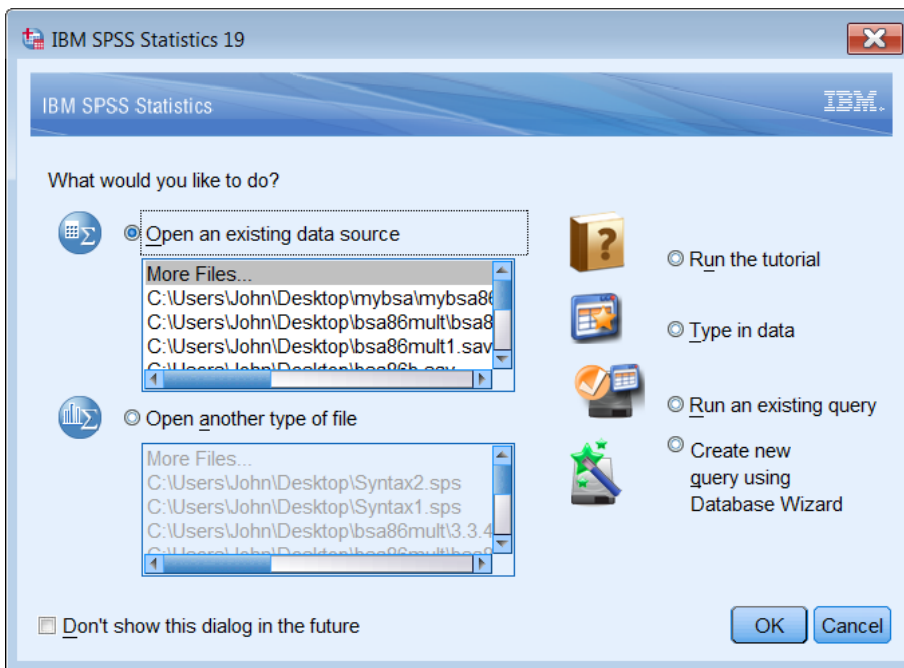
Click on [Cancel] and (if you don't already have one open with your default SPSS settings)
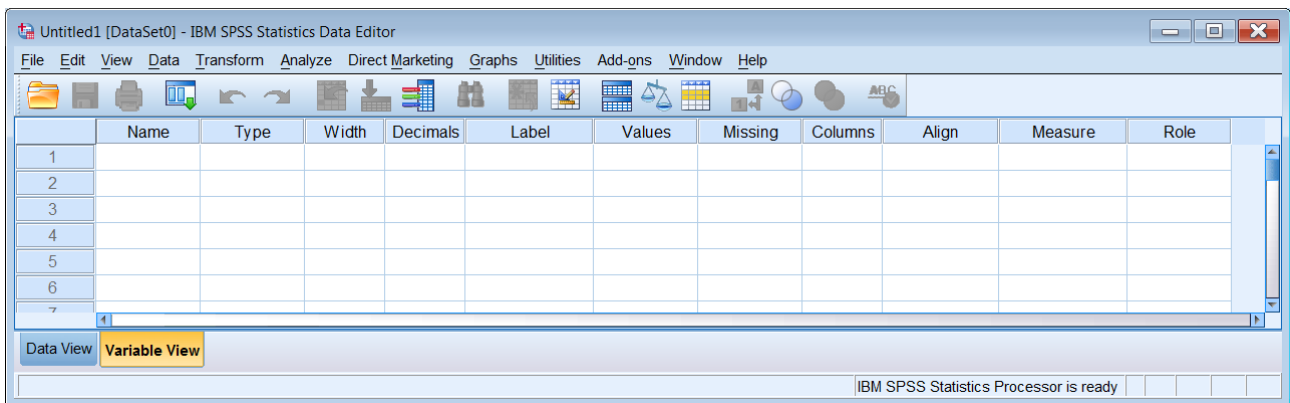
File > New > Syntax
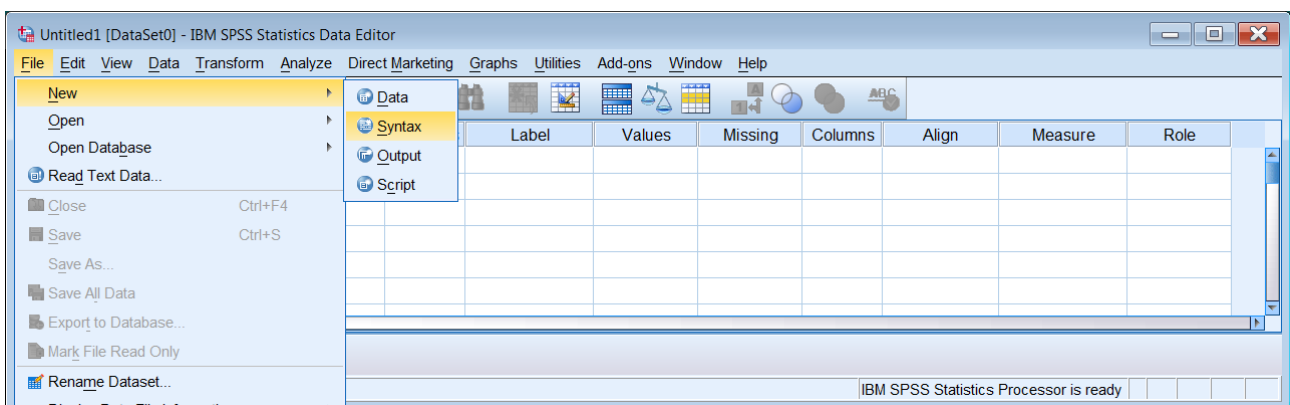
to open a new syntax file:
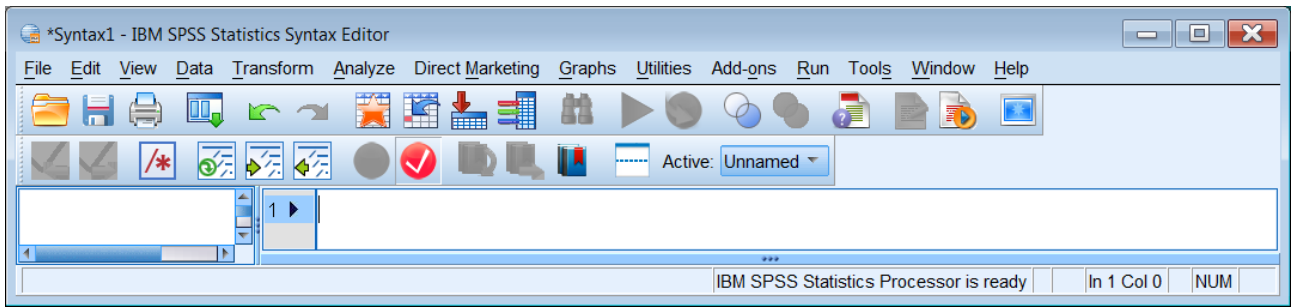
Step 3: Read in the raw data

Give your job a title (Don't forget the primes or the full stop.)

title 'Exercise 3.3.3.1 BSA 1986: Q.117 Educational qualifications' .
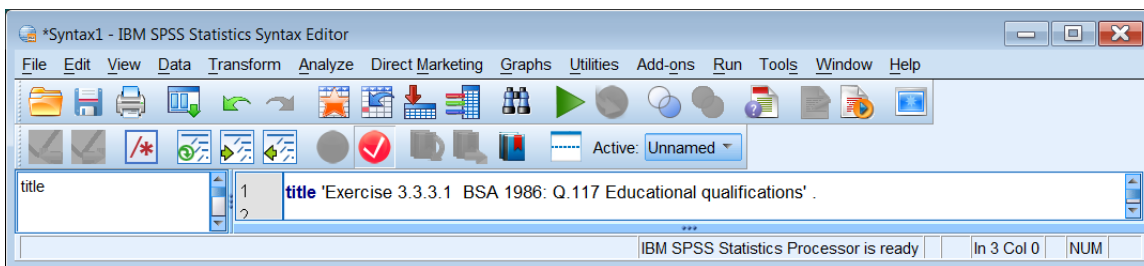
Write out the first part of your **DATA LIST** command (inset subsequent lines by at least one space)

data list
      file 'C:\Users\John\Desktop\mybsa\mybsa86\bsa86.txt'
      records 23
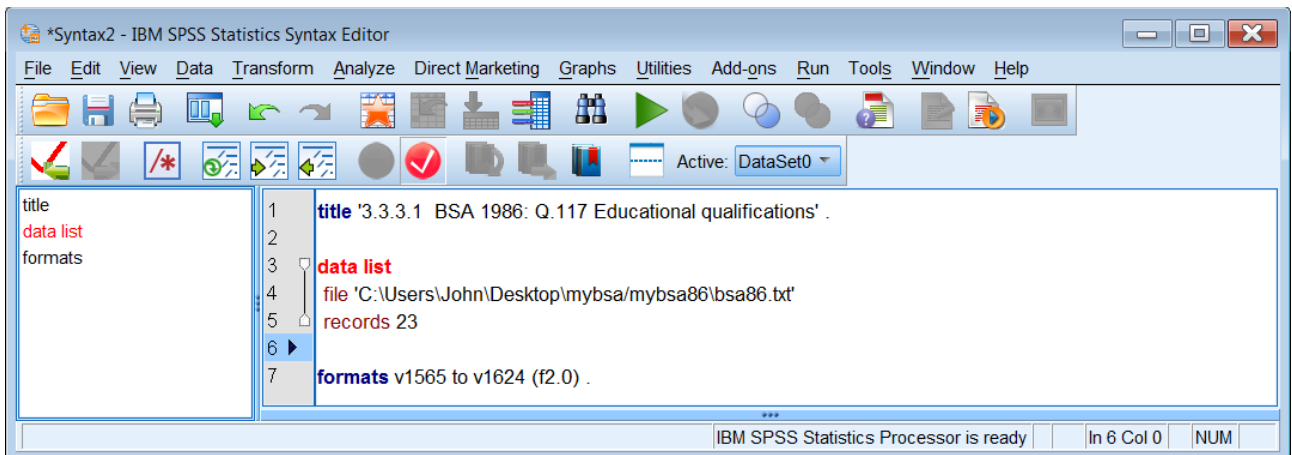
The **data list** command is still **red** because the command is not yet complete. Referring to the table above, carefully write out the rest of the data layout needed:

        /15   **v1565 65 v1566 v1568 v1570 v1572 v1574 v1576 v1578 66-79**
        /16   **v1608 v1610 v1612 v1614 v1616 v1618 v1620 v1622 v1624 8-25 .**

. . and add a **format** command to define the variables as numeric integers (no decimal places).

  formats v1565 to v1624 (f2.0) .

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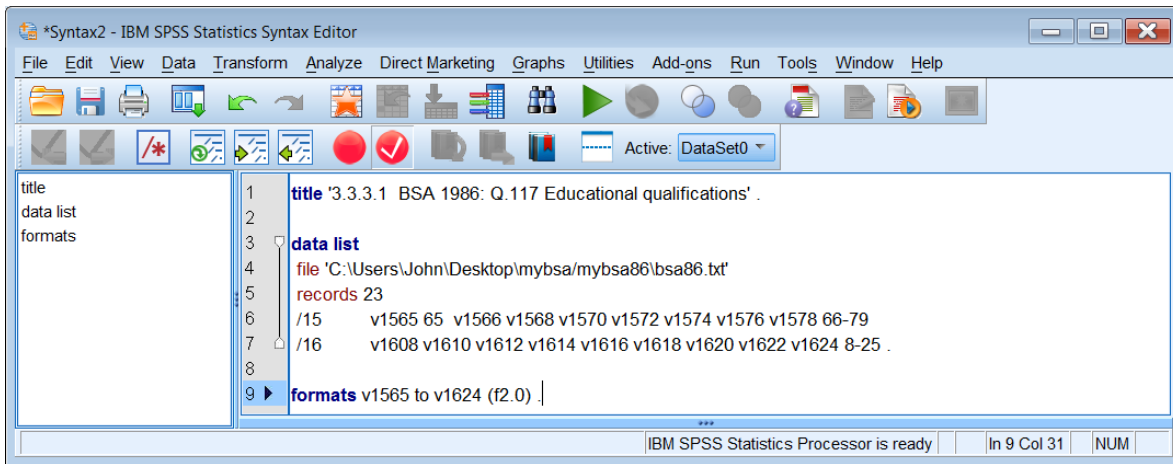
Click on Run > All

The following will appear in the viewer:

```
data list
  file 'C:\Users\John\Desktop\mybsa\bsa86.txt'
  records 23
 /15          v1565 65  v1566 v1568 v1570 v1572 v1574 v1576 v1578 66-79
 /16          v1608 v1610 v1612 v1614 v1616 v1618 v1620 v1622 v1624 8-25 .

Data List will read 23 records from C:\Users\John\Desktop\mybsa\bsa86.txt

Variable          Rec    Start     End   Format
v1565              15       65      65   F1.0
v1566              15       66      67   F2.0
v1568              15       68      69   F2.0
v1570              15       70      71   F2.0
v1572              15       72      73   F2.0
v1574              15       74      75   F2.0
v1576              15       76      77   F2.0
v1578              15       78      79   F2.0
v1608              16        8       9   F2.0
v1610              16       10      11   F2.0
v1612              16       12      13   F2.0
v1614              16       14      15   F2.0
v1616              16       16      17   F2.0
v1618              16       18      19   F2.0
v1620              16       20      21   F2.0
v1622              16       22      23   F2.0
v1624              16       24      25   F2.0

formats v1565 to v1624 (f2.0) .
```

. . . from which you can check that the data for each variable have been read from the correct record(s) and column(s). This is a major advantage of using positional variable names when reading data from files in ASCII format.

The data editor in Variable View fills up:

	Name	Type	Width	Decimals	Label	Values	Missing	Columns	Align	Measure	Role
1	v1565	Numeric	2	0		None	None	7	Right	Unknown	Input
2	v1566	Numeric	2	0		None	None	7	Right	Unknown	Input
3	v1568	Numeric	2	0		None	None	7	Right	Unknown	Input
4	v1570	Numeric	2	0		None	None	7	Right	Unknown	Input
5	v1572	Numeric	2	0		None	None	7	Right	Unknown	Input
6	v1574	Numeric	2	0		None	None	7	Right	Unknown	Input
7	v1576	Numeric	2	0		None	None	7	Right	Unknown	Input
8	v1578	Numeric	2	0		None	None	7	Right	Unknown	Input
9	v1608	Numeric	2	0		None	None	7	Right	Unknown	Input
10	v1610	Numeric	2	0		None	None	7	Right	Unknown	Input
11	v1612	Numeric	2	0		None	None	7	Right	Unknown	Input
12	v1614	Numeric	2	0		None	None	7	Right	Unknown	Input
13	v1616	Numeric	2	0		None	None	7	Right	Unknown	Input
14	v1618	Numeric	2	0		None	None	7	Right	Unknown	Input
15	v1620	Numeric	2	0		None	None	7	Right	Unknown	Input
16	v1622	Numeric	2	0		None	None	7	Right	Unknown	Input
17	v1624	Numeric	2	0		None	None	7	Right	Unknown	Input
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. . but is empty in Data View as SPSS has not yet made a pass through the data.
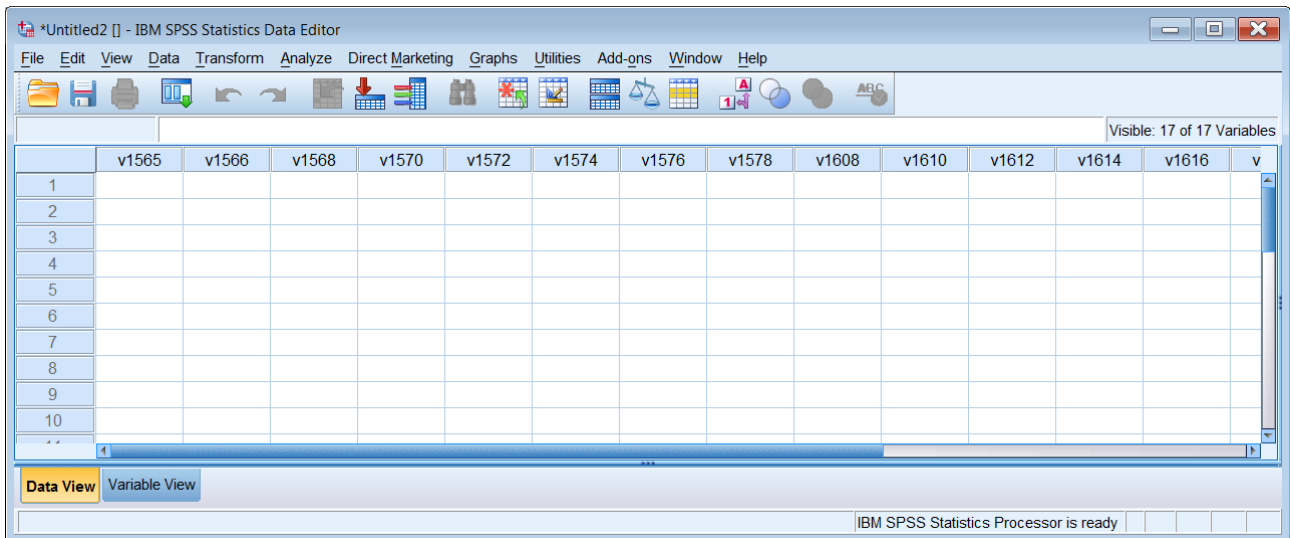
Step 2: Check your data

As a first check, list the contents of the first 10 cases. [Command not available from menus]

list v1565 to v1624 /cases 10 .

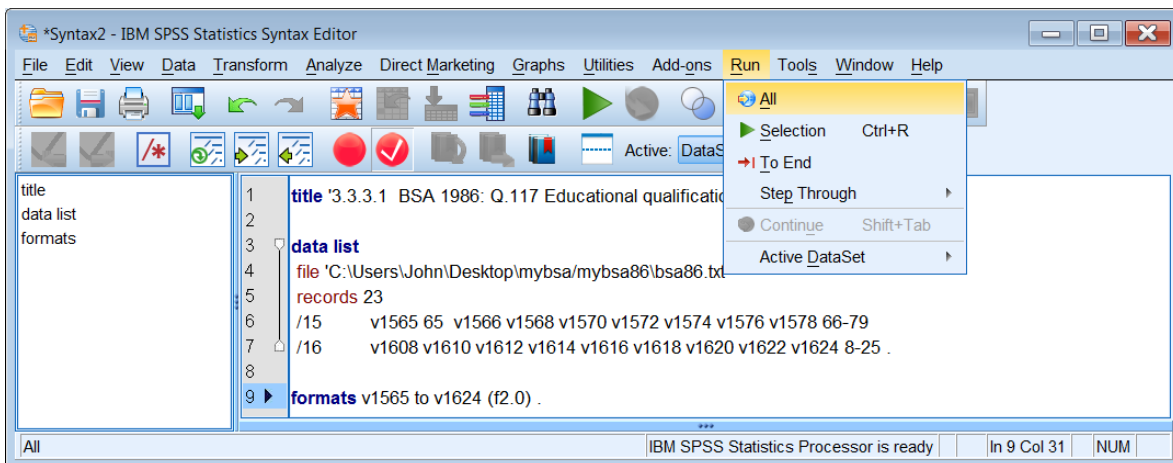Click on ▶ to get a listing of the contents of the first 10 cases:

```
v1565 v1566 v1568 v1570 v1572 v1574 v1576 v1578 v1608 v1610 v1612 v1614 v1616 v1618 v1620 v1622 v1624

   2     .     .     .     .     .     .     .     .     .     .     .     .     .     .     .     .
   2     .     .     .     .     .     .     .     .     .     .     .     .     .     .     .     .
   1     .     .     .     .     .     .     .     .     .     .     .     .     .     .     .    97
   1     1     2     .     .     .     .     .     .     .     .     .     .     .     .     .     .
   1     1     .     .     .     .     .     .     .     .     .     .     .     .     .     .     .
   2     .     .     .     .     .     .     .     .     .     .     .     .     .     .     .     .
   1     1     .     .     .     .     .     .     .     .     .     .     .     .     .     .     .
   1     .     2     3     .     .     .     .     .     .     .     .    12     .     .     .     .
   1     .     .     .     .     .     6     .     .     .     .     .     .     .     .     .     .
   2     .     .     .     .     .     .     .     .     .     .     .     .     .     .     .     .

Number of cases read:  10    Number of cases listed:  10
```
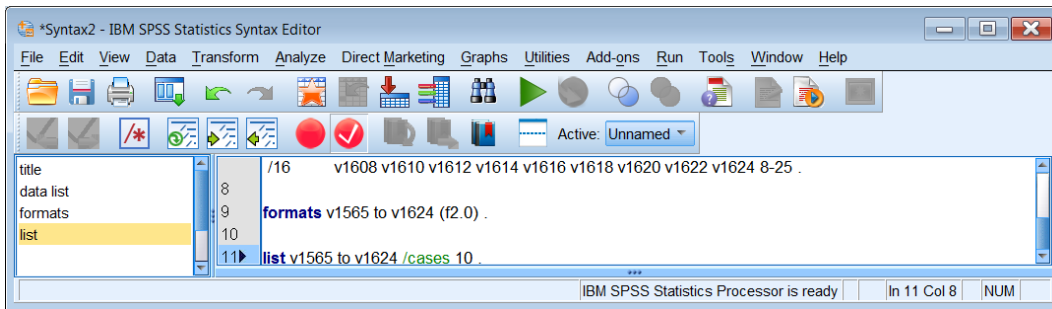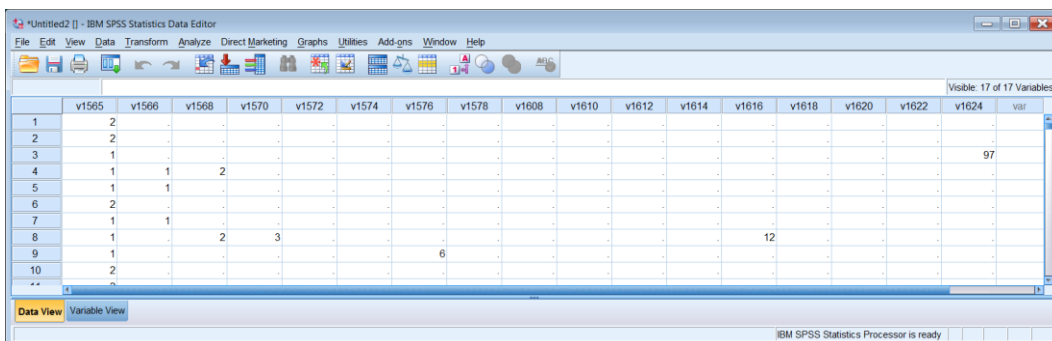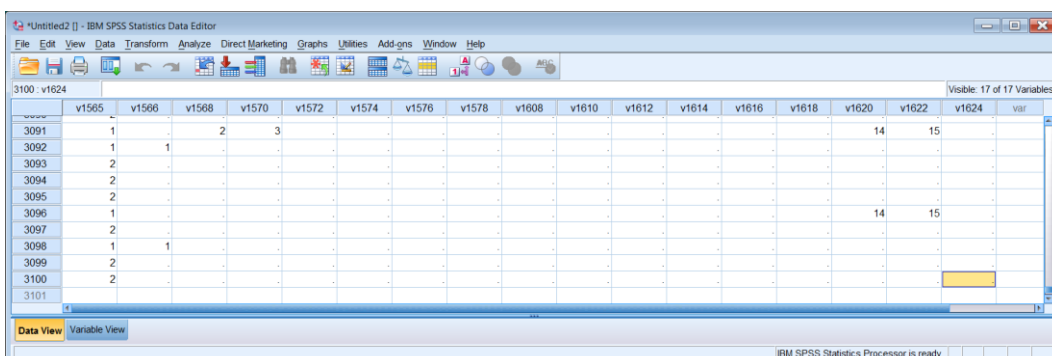
This command forces a pass through the data. The data editor has now filled up in Data View .

If you scroll up and down the file you can make a visual check that data for **v1656** onwards only appear where **v1665** has value 1 .
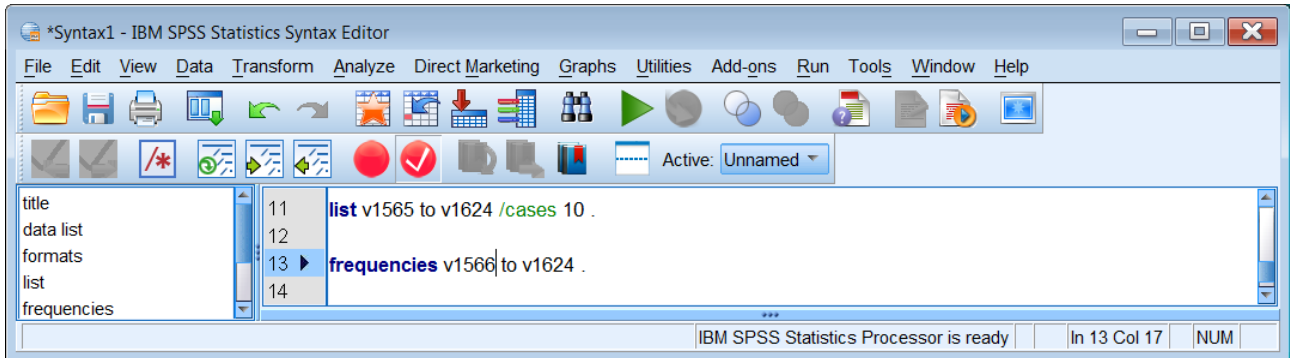

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Step 3: Check your data again.

As a second check, run a frequency count on the qualifications (if any) held by the respondent:

frequencies v1566 to v1624 .

Click on ▶ to get:

		v1566	v1568	v1570	v1572	v1574	v1576	v1578
N	Valid	374	1073	426	26	192	257	204
	Missing	2726	2027	2674	3074	2908	2843	2896

v1608	v1610	v1612	v1614	v1616	v1618	v1620	v1622	v1624
101	47	76	69	95	98	185	207	56
2999	3053	3024	3031	3005	3002	2915	2893	3044

v1566

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	374	12.1	100.0	100.0
Missing	System	2726	87.9		
Total		3100	100.0		

v1574

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	5	192	6.2	100.0	100.0
Missing	System	2908	93.8		
Total		3100	100.0		

v1568

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	1073	34.6	100.0	100.0
Missing	System	2027	65.4		
Total		3100	100.0		

v1576

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	6	257	8.3	100.0	100.0
Missing	System	2843	91.7		
Total		3100	100.0		

v1570

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3	426	13.7	100.0	100.0
Missing	System	2674	86.3		
Total		3100	100.0		

v1578

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	7	204	6.6	100.0	100.0
Missing	System	2896	93.4		
Total		3100	100.0		

v1572

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	4	26	.8	100.0	100.0
Missing	System	3074	99.2		
Total		3100	100.0		

v1608

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	8	101	3.3	100.0	100.0
Missing	System	2999	96.7		
Total		3100	100.0		

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v1610

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	9	47	1.5	100.0	100.0
Missing	System	3053	98.5		
Total		3100	100.0		

v1618

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	13	98	3.2	100.0	100.0
Missing	System	3002	96.8		
Total		3100	100.0		

v1612

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	10	76	2.5	100.0	100.0
Missing	System	3024	97.5		
Total		3100	100.0		

v1620

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	14	185	6.0	100.0	100.0
Missing	System	2915	94.0		
Total		3100	100.0		

v1614

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	11	69	2.2	100.0	100.0
Missing	System	3031	97.8		
Total		3100	100.0		

v1622

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	15	207	6.7	100.0	100.0
Missing	System	2893	93.3		
Total		3100	100.0		

v1616

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	12	95	3.1	100.0	100.0
Missing	System	3005	96.9		
Total		3100	100.0		

v1624

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	97	56	1.8	100.0	100.0
Missing	System	3044	98.2		
Total		3100	100.0		

The tables above show that there is only a single value for each variable, so we can now proceed to set up a multiple response group variable to include all the qualifications in a single table.

Step 4: Define a **group variable** for Q.117b

As we saw in tutorial 3.3.1 Analysing multiple response with SPSS - an introduction SPSS has a procedure, **MULT RESPONSE**, which effectively makes up separate tables (one for each variable in the list) and then adds them all up into a single table. To do this it creates a temporary **group variable** which **cannot be saved**, but has to be re-created each time you want to use it in an SPSS run. It can only work in "**integer mode**"[1], and so any variables to be included in the groups have to be in numeric format.

To define a group variable we need to give it a name and tell SPSS which variables and which values to scan. A label for the group variable is optional.

The general format of the multiple response "group" specification is:

      MULT RESPONSE   GROUPS =
                            \<group variable\> [**'** \<label\> **'**]
                                  (\<variable list\> **(** \<min\> **,** \<max\> **))**
   \<group variable\> ....

in which items in \<chevrons\> are user supplied, items in [square brackets] are optional and items in **bold** are compulsory. Thus, for our purposes:

mult response groups =
      Q.117b 'Qualifications'
      (v1566 to v1622 (1,15))

We don't need **v1624** as it was used for other uncodable and missing values: we're only interested in values **1** to **15** spread out across **v1656** to **v1622**.

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[1] No longer used in later versions of SPSS: all numeric values except missing are now automatically included.

Go back to your syntax file and type in the above syntax:
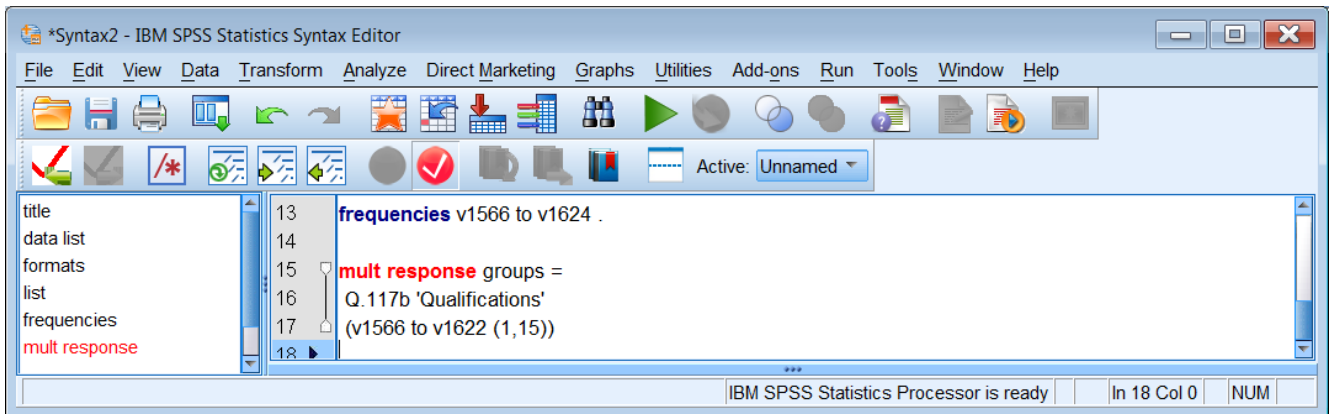
mult response is still in **red** because the command is not yet complete. To obtain the grouped frequency count we have to provide a sub-command, preceded by a forward slash ' **/** ', specifying the analysis required followed by the group variable name to be tabulated

> **/ frequencies q.117b .**

It doesn't matter that q.117b is in lower case: SPSS will print back whatever you have written inside the label, but you do need to make sure that the group name is the same as the one specified earlier in the command!
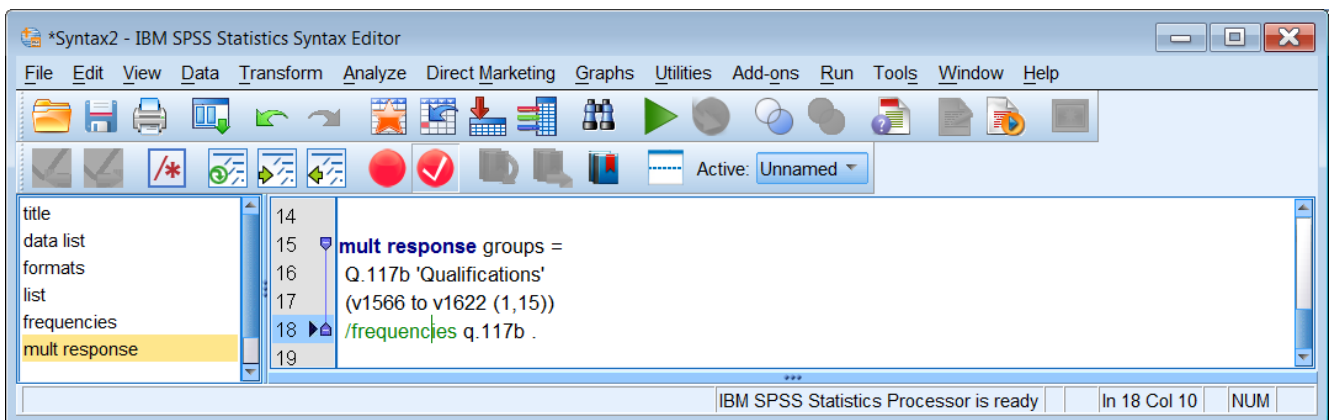
The command is now complete, so click on to get:

Case Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Q.117b[a]	1688	54.5%	1412	45.5%	3100	100.0%

a. Group

This table shows that Q.117b is a group variable and that there are 1688 respondents with valid values in the range previously specified (1 – 15)

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SPSS then produces the following table of grouped frequencies for the group variable Q.117b:

Q.117b Frequencies

		Responses		Percent of Cases
		N	Percent	
Qualifications[a]	1	374	10.9%	22.2%
	2	1073	31.3%	63.6%
	3	426	12.4%	25.2%
	4	26	.8%	1.5%
	5	192	5.6%	11.4%
	6	257	7.5%	15.2%
	7	204	5.9%	12.1%
	8	101	2.9%	6.0%
	9	47	1.4%	2.8%
	10	76	2.2%	4.5%
	11	69	2.0%	4.1%
	12	95	2.8%	5.6%
	13	98	2.9%	5.8%
	14	185	5.4%	11.0%
	15	207	6.0%	12.3%
Total		3430	100.0%	203.2%

a. Group

. . . which is useful as a check, but not much use unless you know what each value signifies.

Step 5: Add variable labels and value labels

The tedious way to do this is to type in this very long list, always prone to error.

```
variable labels
    v1565   'Q.117a: Any qualifications?'
 /  v1566   'Q.117b: CSE 2-5'
 /  v1568   'Q.117b: CSE 1, O level,etc'
 /  v1570   'Q.117b: A level, etc'
 /  v1572   'Q.117b: Overseas leavng exam'
 /  v1574   'Q.117b: Trade apprenticeship'
 /  v1576   'Q.117b: RSA, similar clerical'
 /  v1578   'Q.117b: City & Guilds Craft, etc'
 /  v1608   'Q.117b: City & Guilds Advanced, etc'
 /  v1610   'Q.117b: City & Guilds full tech'
 /  v1612   'Q.117b: BEC Ordnary, ONC, OND'
 /  v1614   'Q.117b: BEC Higher, HNC, HND'
 /  v1616   'Q.117b: Teacher training'
 /  v1618   'Q.117b: Nursing qual'
 /  v1620   'Q.117b: Other tech, business'
 /  v1622   'Q.117b: Univ, CNAA degree, diploma'
 /  v1624   'Q.117b: Other qual or DK, NA' .
```

No, you don't have to type in this list of fifteen variable labels – you can cheat! You can just copy and paste the list direct into your syntax file!

Because of the way **MULT RESPONSE** works, we also need value labels. However SPSS only reads these from the first variable in the list defining the group, so they're actually superfluous for **v1568** to **v1624**. Again, you don't have to type out the whole list, just copy and paste from here direct to your syntax file (which by now is getting quite long!).

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```
value labels
   v1565
       1 'Yes' 2 'No'
  / v1566 to v1624
       1 'CSE 2-5'
       2 'CSE 1, O level,etc'
       3 'A level, etc'
       4 'Overseas leavng exam'
       5 'Trade apprenticeship'
       6 'RSA, similar clerical'
       7 'City & Guilds Craft, etc'
       8 'City & Guilds Advanced, etc'
       9 'City & Guilds full tech'
       10 'BEC Ordnary, ONC, OND'
       11 'BEC Higher, HNC, HND'
       12 'Teacher training'
       13 'Nursing qual'
       14 'Other tech, business'
       15 'Univ, CNAA degree, diploma'
       97 'Other qual or DK, NA' .
```

Finally, copy and paste the **MULT RESPONSE** command from earlier in the syntax file:
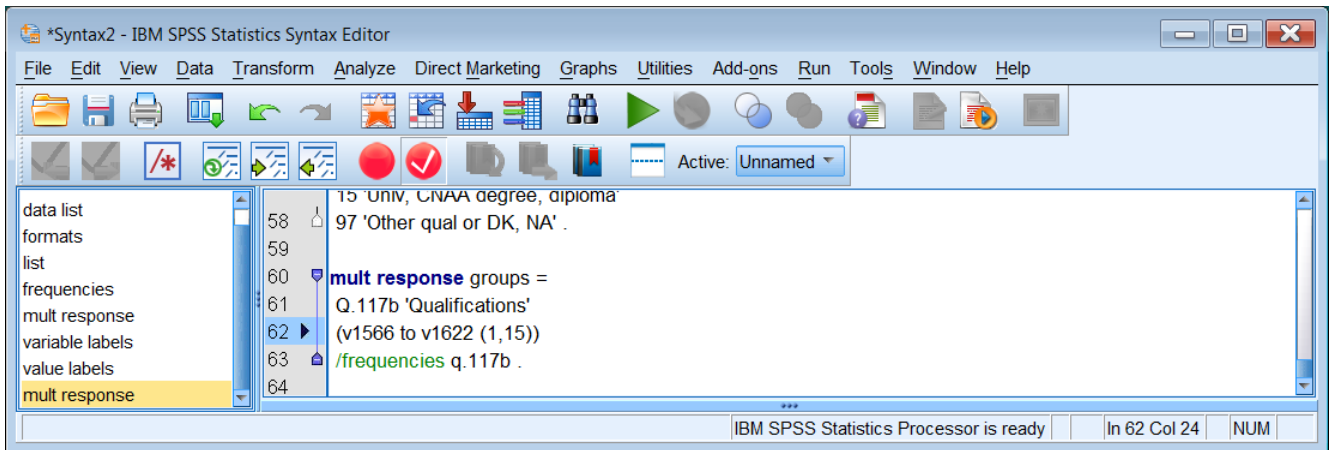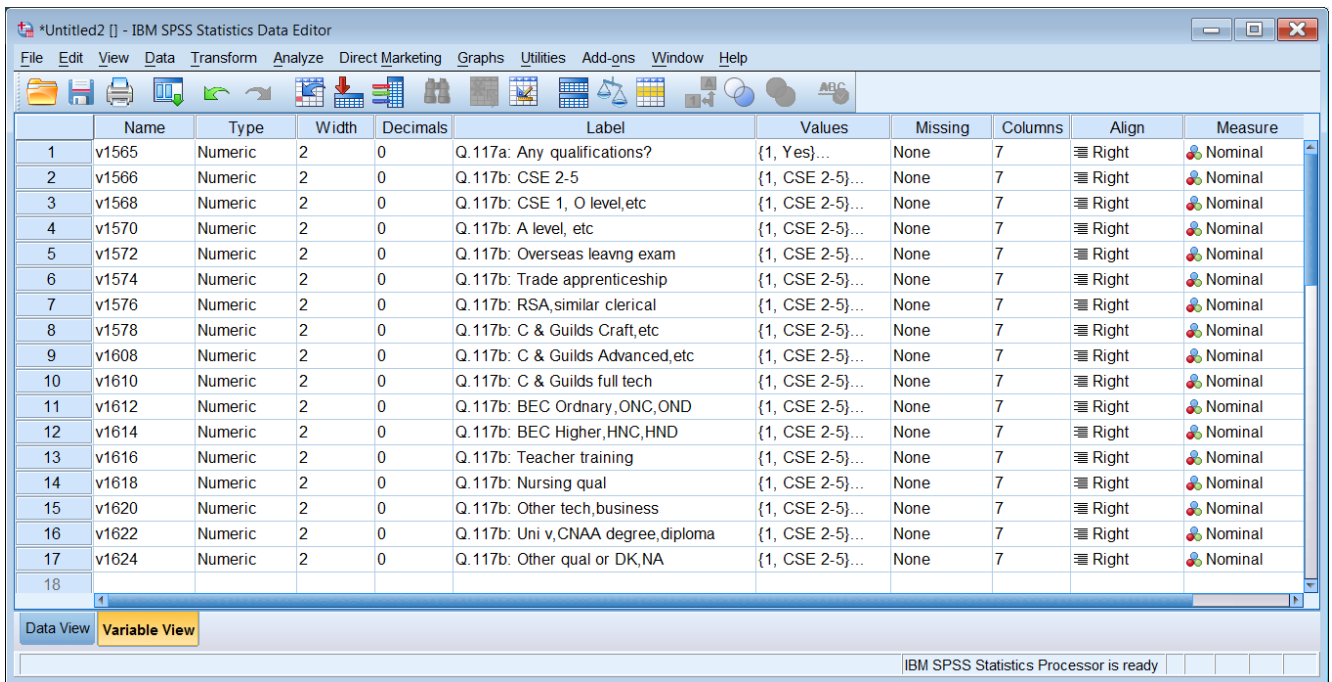

. . . and run the variable labels, value labels and mult response commands one at a time or by highlighting all three and running them at the same time.

The grouped frequency table is now easier to understand:

Q.117b Frequencies

|		Responses		Percent of Cases
		N	Percent	
Qualifications[a]	Q.117b: CSE 2-5	374	10.9%	22.2%
	Q.117b: CSE 1, O level,etc	1073	31.3%	63.6%
	Q.117b: A level, etc	426	12.4%	25.2%
	Q.117b: Overseas leavng exam	26	.8%	1.5%
	Q.117b: Trade apprenticeship	192	5.6%	11.4%
	Q.117b: RSA, similar clerical	257	7.5%	15.2%
	Q.117b: City & Guilds Craft, etc	204	5.9%	12.1%
	Q.117b: City & Guilds Advanced, etc	101	2.9%	6.0%
	Q.117b: City & Guilds full tech	47	1.4%	2.8%
	Q.117b: BEC Ordnary, ONC, OND	76	2.2%	4.5%
	Q.117b: BEC Higher, HNC, HND	69	2.0%	4.1%
	Q.117b: Teacher training	95	2.8%	5.6%
	Q.117b: Nursing qual	98	2.9%	5.8%
	Q.117b: Other tech, business	185	5.4%	11.0%
	Q.117b: Univ, CNAA degree, diploma	207	6.0%	12.3%
Total		3430	100.0%	203.2%

a. Group

. . . and the data editor has now filled up with variable and value labels:

	Name	Type	Width	Decimals	Label	Values	Missing	Columns	Align	Measure
1	v1565	Numeric	2	0	Q.117a: Any qualifications?	{1, Yes}...	None	7	≡ Right	♣ Nominal
2	v1566	Numeric	2	0	Q.117b: CSE 2-5	{1, CSE 2-5}...	None	7	≡ Right	♣ Nominal
3	v1568	Numeric	2	0	Q.117b: CSE 1, O level,etc	{1, CSE 2-5}...	None	7	≡ Right	♣ Nominal
4	v1570	Numeric	2	0	Q.117b: A level, etc	{1, CSE 2-5}...	None	7	≡ Right	♣ Nominal
5	v1572	Numeric	2	0	Q.117b: Overseas leavng exam	{1, CSE 2-5}...	None	7	≡ Right	♣ Nominal
6	v1574	Numeric	2	0	Q.117b: Trade apprenticeship	{1, CSE 2-5}...	None	7	≡ Right	♣ Nominal
7	v1576	Numeric	2	0	Q.117b: RSA,similar clerical	{1, CSE 2-5}...	None	7	≡ Right	♣ Nominal
8	v1578	Numeric	2	0	Q.117b: C & Guilds Craft,etc	{1, CSE 2-5}...	None	7	≡ Right	♣ Nominal
9	v1608	Numeric	2	0	Q.117b: C & Guilds Advanced,etc	{1, CSE 2-5}...	None	7	≡ Right	♣ Nominal
10	v1610	Numeric	2	0	Q.117b: C & Guilds full tech	{1, CSE 2-5}...	None	7	≡ Right	♣ Nominal
11	v1612	Numeric	2	0	Q.117b: BEC Ordnary,ONC,OND	{1, CSE 2-5}...	None	7	≡ Right	♣ Nominal
12	v1614	Numeric	2	0	Q.117b: BEC Higher,HNC,HND	{1, CSE 2-5}...	None	7	≡ Right	♣ Nominal
13	v1616	Numeric	2	0	Q.117b: Teacher training	{1, CSE 2-5}...	None	7	≡ Right	♣ Nominal
14	v1618	Numeric	2	0	Q.117b: Nursing qual	{1, CSE 2-5}...	None	7	≡ Right	♣ Nominal
15	v1620	Numeric	2	0	Q.117b: Other tech,business	{1, CSE 2-5}...	None	7	≡ Right	♣ Nominal
16	v1622	Numeric	2	0	Q.117b: Uni v,CNAA degree,diploma	{1, CSE 2-5}...	None	7	≡ Right	♣ Nominal
17	v1624	Numeric	2	0	Q.117b: Other qual or DK,NA	{1, CSE 2-5}...	None	7	≡ Right	♣ Nominal
18										

At this point you should **save your data editor** and also your **syntax editor** (accidents can often happen to make you lose your work!).

Save both files in folder **bsa86mult**. Save the data editor as **bsa86mult1.sav** and the syntax editor as **bsamult1.sps**.
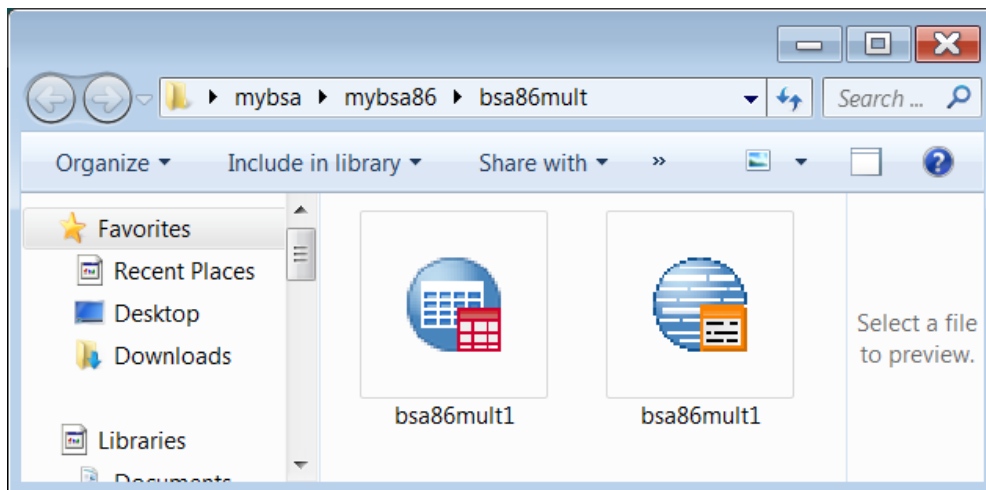
End of tutorial

Next tutorial   3.3.3.2 More values than fields

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