Using Wilson's SPSS Macro to Compute Mean ES

David Wilson has provided SPSS Macros (and other goodies) at: http://mason.gmu.edu/~dwilsonb/ma.html

What's a macro and what do you do with it? A macro is just a pre-written bit of SPSS syntax that you use much like you use other SPSS commands and programs. There is an extra step or two, but compared to having to program the material yourself….

Step 1: Save the macro file (and remember where!).

I like to keep macros "nearby" the main SPSS program files. So…

1. Download the "spss_macros.zip" file from the Wilson webpage
2. Unzip the files – you want the one called "MetaES.sps"
3. On your computer go to the folder: "C:\Program Files\IBM\SPSS\"
4. Add a folder called "MACROS"
5. Open that folder and copy in the downloaded, unzipped file "MetaES.sps"
6. The reference/path to the macro file is "C:\Program Files\IBM\SPSS\MACROS\MeanES.sps"

Step 2: Initialize the macro

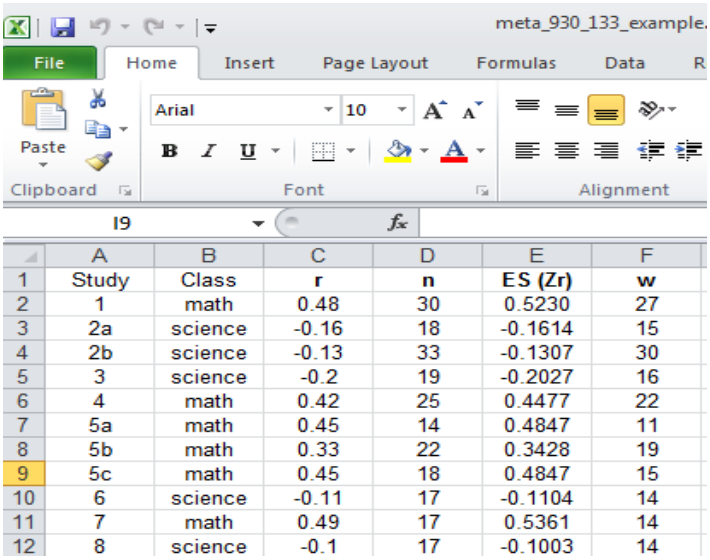
1. Open SPSS
2. Open a Syntax file
3. Type in an "include" statement to tell SPSS where the macro file is. With the placement of the macro file above, that command would be: include 'C:\Program Files\IBM\SPSS\MACROS\MetaES.sps' .

Step 3: Run the macro

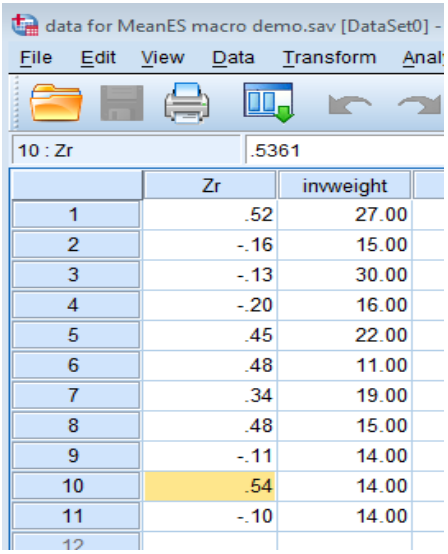
You'll need a data set. I copied columns from the Excel file we used to demonstrate computing the various fixed effect values to an SPSS data file.

The ES values: Be sure to use the final ready-to-analyze ES values – with whatever transformations, adjustments, outlier analysis, etc that you intend. The macro uses these exact ES values.

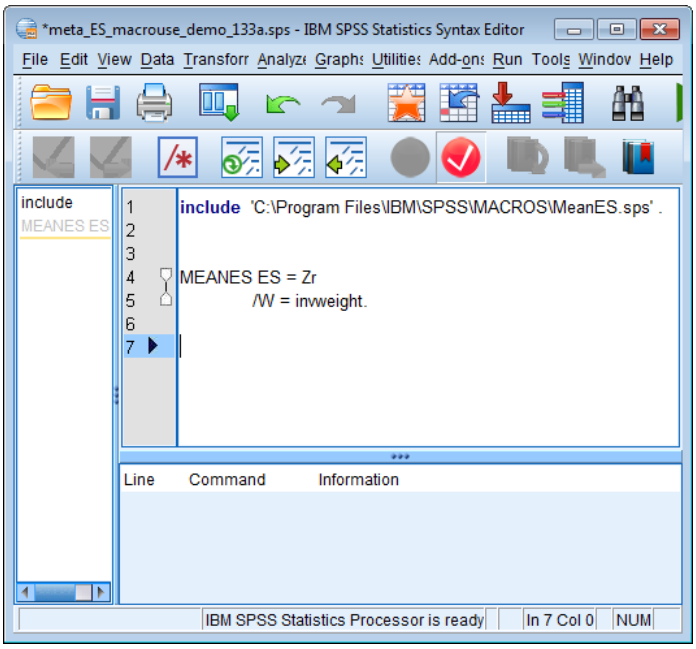
The inverse weighting values: These should be the weights for a fixed effects model. The macro will use these for computing the fixed effect model and the macro will modify these for use in the random effect model.



	A	B	C	D	E	F
1	Study	Class	r	n	ES (Zr)	w
2	1	math	0.48	30	0.5230	27
3	2a	science	-0.16	18	-0.1614	15
4	2b	science	-0.13	33	-0.1307	30
5	3	science	-0.2	19	-0.2027	16
6	4	math	0.42	25	0.4477	22
7	5a	math	0.45	14	0.4847	11
8	5b	math	0.33	22	0.3428	19
9	5c	math	0.45	18	0.4847	15
10	6	science	-0.11	17	-0.1104	14
11	7	math	0.49	17	0.5361	14
12	8	science	-0.1	17	-0.1003	14



	Zr	invweight
1	.52	27.00
2	-.16	15.00
3	-.13	30.00
4	-.20	16.00
5	.45	22.00
6	.48	11.00
7	.34	19.00
8	.48	15.00
9	-.11	14.00
10	.54	14.00
11	-.10	14.00



← the include statement described above

← the name of the macro is MEANES

- ➔ ES command tells the variable holding ES
- ➔ W command tells the variable holding the inverse weighting value

Highlight and run the MEANES command.

Remember that these analyses are with the ES values you computed. You will want to "re-convert" these back to the original effect size estimates that are appropriate for the types of data and designs you are meta-analyzing (d, r, OR, etc.).

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Run MATRIX procedure:

Version 2005.05.23

*****  Meta-Analytic Results  *****

------- Distribution Description ---------------------------------
           N       Min ES       Max ES     Wghtd SD
      11.000        -.203         .536         .308

------- Fixed & Random Effects Model ----------------------------
         Mean ES     -95%CI     +95%CI         SE          Z          P
Fixed      .1932      .0535      .3328      .0712     2.7114      .0067
Random     .1926     -.0009      .3862      .0988     1.9507      .0511

------- Random Effects Variance Component ------------------------
v    =    .048968

------- Homogeneity Analysis -------------------------------------
           Q          df           p
     18.6800     10.0000       .0445

Random effects v estimated via noniterative method of moments.

------ END MATRIX -----
```

← basic info – be sure all your studies were included!

← **fixed** effect model results – notice same values as from Excel analysis!

← **random** effect model results

As expected:

- ➔ ES from the random model a bit smaller
- ➔ SE from the random model a bit larger
- ➔ p-value for the Z-test is somewhat larger (enough so that the statistical conclusion from the 2 models is different)

Homogeneity Analysis results reveal that there is more variation among the ES values than would be expected by chance. Exactly how to interpret this result varies across sources. Some suggestions include:

- ➔ more variation than fits a fixed model, indicating the random model is a better estimate
- ➔ there is systematic variation among the ES values, suggesting the value of identifying study attributes related to that variation
- ➔ mean ES value has limited utility, and may be misleading, because there subpopulations of studies represented that have different ES values

Be sure you know which approaches/interpretations are "standard" for your research area & audience!