

## SPSS for 2-factor Nested ANOVA

### I. Data File Format

- need three columns for 2-factor design; one for Factor A treatment group designation, one for Factor B treatment group designation, and one for data. For more nested factors, simply add more columns for each factor describing the distribution of observations among levels in that factor. Below is an example data file for a 2 x 4 design with 2 replicates, where: column 1 = factor A; column 2 = factor B, which is nested within factor A; column 3 = data.

1	1	7.00	
1	1	5.30	
1	2	4.90	
1	2	8.80	
1	3	9.90	
1	3	5.70	
1	4	7.60	
1	4	8.90	
2	5	8.50	
2	5	4.70	
2	6	5.50	
2	6	8.10	etc....

### II. Analysis

- the ANOVA is the same for a pure model II or a mixed-model design, but follow-up tests differ.
- (1) From the pull-down menu:  
*Analyze* → *General Linear Models* → *Univariate* <click on this>
- (2) Specify the appropriate variables:  
 - for this example: “DATA” is the dependent variable, “FACTOR A” is fixed, “FACTOR B” is random.
- (3) Specify the appropriate ANOVA model:  
 - click on the “Model” button, then click on “Custom”, then add to the model list: “FACTOR A”.
- (4) Add whatever options you wish to the ANOVA analysis  
 - add to the analysis anything you might do in an ANOVA; for example, you might want to specify a multiple comparison procedure for factor A, power, check assumptions, etc.
- (5) Alter the command language to get the correct text for the nested factor:  
 - click on the “Paste” button and a syntax window will appear with the program code in it. On the “DESIGN” subcommand line in the code, specify the *nested* effect by inserting after the fixed effect (i.e., FACTOR A) the following: FACTOR B(FACTOR A)  
 - to run the program, click on the “Run Current” tool on the toolbar at the top of this syntax window.

#### Tests of Between-Subjects Effects

Dependent Variable: DATA

Source		Type III Sum of Squares	df	Mean Square	F	Sig.
Intercept	Hypothesis	791.016	1	791.016	257.607	.000
	Error	18.424	6	3.071 <sup>a</sup>		
FACTORA	Hypothesis	.856	1	.856	.279	.617
	Error	18.424	6	3.071 <sup>a</sup>		
FACTORB(FACTORA)	Hypothesis	18.424	6	3.071	.827	.580
	Error	29.715	8	3.714 <sup>b</sup>		

a. MS(FACTORB(FACTORA))

b. MS(Error)