

Confirmatory Factor Analysis Using AMOS

① First we need to download the data from the web onto the PC we are working on

① Click on Internet Stuff folder and open Netscape or Explorer

② Go to

<http://www.biostat.umn.edu/~melanie/PH5482/DATA/index.html>

You will find the schoolsubject data saved in 'schoolsubjects.xls' - Excel

WE WILL USE THE .xls file in AMOS

③ Click on schoolsubjects.xls

④ Go to File → Save As...

Save the file somewhere convenient on the PC. Make a mental note of where you saved it.

Once you've saved the file, Close Netscape
OR Explorer

II Open up AMOS

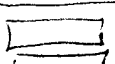
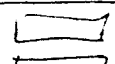

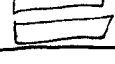
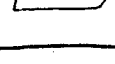
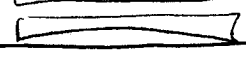



- ① Double click on Class Program Folder
- ② Double click on AMOS Graphics

A Window appears: one part where you will draw the model and one part containing tools to draw the model (as well as other tools)

III Read in schoolsubjects data into AMOS

- ① Click on File → Data Files (A window will open titled "Data Files")
- ② Click on File Name (Another window will open representing the harddrive of your PC)
- ③ Go to the place on the hard drive where you saved the schoolsubjects.xls file.
- ④ Highlight (click-on) the schoolsubjects.xls and then click OPEN

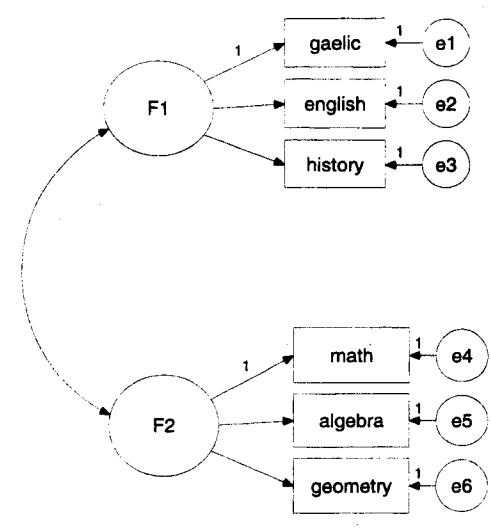
Now you should see the AMOS DATAFILES window looking something like

Group Name	File	Variable Value	N
Group Number 1	schoolsubject		220/220
			
			
			



If it shows 220/220 you have correctly loaded the data. Now click OK.

IV Drawing the Model - Goal is to Create this...



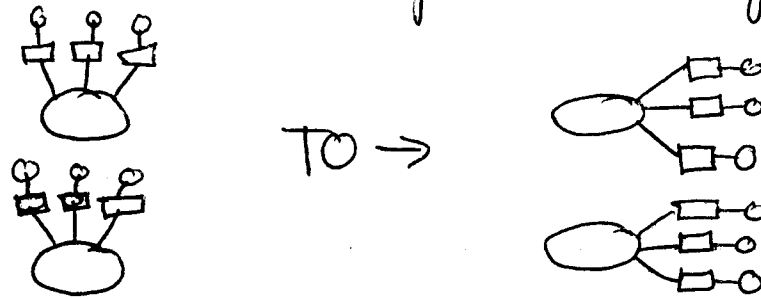
- 1 Click on the tool that looks like
- 2 Take your mouse over to the drawing area
- 3 Hold down the left mouse button and drag until you have created an oval
- 4 Now click on the oval 3 times and you'll see arrows and boxes and error terms appear w/ every click
- 5 Repeat steps 3 and 4 to create another oval like


A NOTE ABOUT EDITING

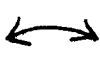
- Undo -
 - Erase -
 - Move -
- Click it and the last thing you did is undone
 When this is depressed, anything you ~~touch~~ click in the drawing window will be deleted
 When this button is depressed you can drag objects

(IV) Continued

(6) We want to change the drawing from



Depress the tool . Click on the ovals until the indicators are in the correct direction

(7) Now draw the double headed arrow representing correlation between 2 factors. Depress the tool , then click on one oval and drag the arrow to the other

(V) PUT the Variable Names into the Model

(1) Click on the symbol  variables in dataset the white one (not green)

A window will appear listing the variable names

(2) Click on a variable name and drag it over to one of the rectangles. Put them so that the 3 math variables and the 3 reading variables are indicators of separate factors

⑤ Continued

- ③ Naming the unobserved variables: f_1, f_2, e_1, e_2
 Click on Tools \rightarrow Macros \rightarrow Name Unobserved Variables
 This should automatically label the remaining variables.

⑥ Putting A title on the Model

Not necessary

- ① Click on the Title button

- ② Click in the drawing space at a location where you would like to put a Title

- ③ A window will appear saying Figure Caption in the Caption Box Type

Caption

Visread Data
 Chi-Square test = χ^2_{min}
 d.f. = χ^2_{df} and p-value = χ^2_p

When you are done typing Click OK

⑦ Specify what output we want

- ① Click View/Set \rightarrow Analysis Properties (A window appears w/ many Tabs)

- ② Click on Output and then put a check next to standardized estimates. Then close window by hitting at top right


VIII Save the Model


Note if you forget to save, AMOS will prompt you to save once you ask it to RUN

- ① Click on File → Save As and give it a name (e.g. schoolwork) and click OK

Note: AMOS creates several files so it is convenient to specify (make a new) folder to save things in.

IX Running the Model


- ① Click on the abacus  This runs the model (i.e. estimates the parameters and Chi-Square test)

- ② To look at results Click on 

- ③ To see the standardized estimates toggle from Unstandardize to standardized.

- ④ You can print this model output
Click File → Print...

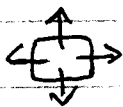
In the window that appears, click on OK: Default model rather than Model spec (input). Then press Print.


OR you can copy paste from the AMOS window into a WORD document. Use the hand buttons  to select items or deselect.

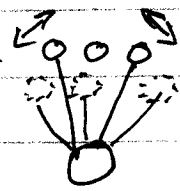
(X) Troubleshooting and making the model more aesthetic

If the model looks correct but when you click on the output you don't get any numbers, your model probably didn't run.

Try clicking on Diagram → Zoom Out to see if any wandering symbols are present that need to be deleted. This can happen when you had to redraw picture many times to start.

Resize -  - Click it and you can shrink or stretch objects

Touch up -  - touch up by clicking on the latent factor it will organize other arrows

preserve symmetry -  - when this button is clicked on and then you make some change to picture, it will make items (objects) move or resize in a symmetric way.

You have to play with AMOS for a little while
But most people find it quite nice once they get the hang of it!!