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Lining things up

Amos Draw provides several tricks for making your path diagrams look good. Among these, the "align" operations require explanation. For the "align" operations to work, you must previously selected some objects. As an example, take the 

button, or the align|height menu item. After choosing this function, click on a rectangle or an ellipse. This single rectangle or ellipse will be taken as a prototype, and the height of every currently selected rectangle and ellipse will be adjusted to match the prototype. All of the "align" functions work similarly, propagating some characteristic of a single object to all currently selected objects.

Aligning objects horizontally

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Toolboxes and menus

Amos Draw's capabilities can be accessed through its menus or by pressing buttons that are grouped into "toolboxes". Every function is available from both the menus and the toolboxes
.

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About Amos

Known bugs

Scrolling does not work correctly when the Microsoft clock is above the path diagram.

Drawing observed variables

This choice allows you to draw rectangles to represent observed variables. Place the mouse pointer at the center of the desired rectangle. Press the left mouse button and hold it down while moving the mouse pointer to adjust the size of the new rectangle. Release the button when you are satisfied with the appearance of the rectangle. After you have drawn a rectangle, you can move it or change its size and shape.

Menu: **Edit|Create|Observed**

See also

Drawing circles and squares

Using golden section to draw rectangles and ellipses

Naming variables

Drawing unobserved variables

This choice allows you to draw ellipses to represent unobserved variables. Place the mouse pointer at the center if the desired ellipse. Press the left mouse button and hold it down while moving the mouse pointer to adjust the size of the new ellipse. Release the button when you are satisfied with the appearance of the ellipse. After you have drawn an ellipse, you can move it or change its size and shape.

Menu: **Edit|Create|Unobserved**

See also

 Drawing circles and squares

 Using golden section to draw rectangles and ellipses

 Naming variables

Drawing paths

This choice allows you to draw single-headed arrows from one variable to another. Point to one variable and press the left mouse button. While continuing to hold the mouse button down, point to a second variable. Then release the button. This will cause an arrow to be drawn from the first variable to the second.

Menu: **Edit|Create|Path**

Drawing covariances

This choice allows you to draw double-headed arrows. Point to one variable and press the left mouse button. While continuing to hold the mouse button down, point to a second variable. Then release the button. This will cause the two variables to be connected by a double-headed arrow. The arrow will be curved, with the direction of curvature determined by which variable was pointed to first. After you have drawn a double-headed arrow, you can change its shape

Menu: **Edit|Create|Covariance**

Erasing objects

After pressing this button, you can erase objects by clicking on them one at a time.

Menu: **Edit|Erase**

See also

Correcting mistakes

Adding figure captions

After pressing this button, you can create figure captions. To create a single caption, click on the spot (called the "insertion point" here) where you want the caption to appear. A dialog box will allow you to choose the horizontal position of the caption relative to the insertion point.:

Center align: The caption will be centered at the insertion point.
Left align: The caption will start at the insertion point.
Right align: The caption will end at the insertion point.
Center on page: The caption will be centered horizontally on the page.

The dialog box will also allow you to choose the font size for the caption, and to decide whether the caption will appear in bold or italic. Different captions can have different font characteristics, but they all share the same typeface.

Menu: **Edit|Create|Caption**

See also

 Naming variables

Running Amos

()This button will run Amos. Amos will fit the model specified by your path diagram(s) to the data that you supplied using  . Amos's text output will appear in a separate window. The graphics output can be viewed by pressing  , and printed by pressing  .

Menu: **Amos**|**Run Amos**

See also

Amos related features

Zooming in on a selected area

This choice allows you to fill the screen with a selected portion of a path diagram. Move the mouse pointer to the center of the area that you want to focus on. Then press the left mouse button. Move the mouse (while continuing to hold the left button down) to select a rectangular region of the path diagram. When you release the mouse button, the selected region will be enlarged to fill the screen.

Your view of the path diagram can become microscopic. If you lose track of where you are, press 

Menu: **Screen|View|Zoom**

See also

Changing the view of the path diagram

Moving objects

This choice allows you to move one or more variables around the page. Point to a variable with the mouse and press the left mouse button. While holding the left mouse button down, move the variable to its new position. Then release the mouse button.

If the mouse pointer is not pointing to *any* variable when you press the left button, any previously selected variables will move as a group.

Hold the shift key down while moving, and movement will be either vertical or horizontal.

Menu: **Edit**|**Reposition**|**Move**

See also

Rearranging objects
Lining things up

Copying objects

This choice allows you to copy one or more boxes and ellipses. To make a copy of a single object, point to it with the mouse and press the left mouse button. While holding the left mouse button down, move the mouse pointer to the desired location of the new object. Then release the mouse button.

If you copy a selected variable, all selected variables will be copied as a group.

Hold the shift key down while copying, and the copy (or copies) will be displaced horizontally or vertically from the original(s).

Menu: **Edit|Reposition|Copy**

See also

Rearranging objects
Lining things up

Naming variables

This choice allows you to assign names to the variables in the path diagram. To name a variable, click on its rectangle or ellipse. A dialog box will prompt you for the variable name. Multi-line names are allowed. In Amos's text output and output, where multiline names are not allowed, the underscore character is used in place of a line separator. For instance, if you give a variable the two-line name

ANOMIA
1967

then the same name will appear in Amos's text output in the form ANOMIA_1967. If the variable is observed, you would also have to refer to it by the name ANOMIA_1967 when you list it following Amos's $inputvariables command.

The dialog box will also allow you to pick a font size for the variable name, and to decide whether the name will appear in bold or italic. Different variable names can have different font characteristics, but all variable names share the same typeface.

Menu: **Edit|Create|Variable name**

See also

 Adding figure captions

Constraining parameter estimates

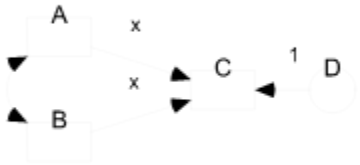
The  button allows you to label each object in the path diagram with a character string. This label is in addition to the variable name that is associated with each rectangle and ellipse. Variable names appear inside of rectangles and ellipses. Labels are placed just outside.

After pressing  , click on a rectangle, ellipse or arrow, and a dialog box will ask you to enter its label. The dialog box will also ask you to choose a font size, and to decide whether the label will appear in bold or italic. Different labels can have different font characteristics, but all labels share the same typeface.

You can use  to modify a label that already exists.

For Amos users, labels are associated with model parameters, and can be used to place constraints on parameter estimates. For instance, labeling a single-headed arrow with a number has the effect of fixing the associated regression weight to a constant value. Labeling a double-headed arrow with a number fixes the corresponding covariance to a constant value. Similarly, labeling an exogenous variable with a number fixes its variance to a constant value.

Associating a parameter with a non-numeric label has no effect on its estimate unless another parameter is associated with the same label. Two parameters with the same label will be constrained to have the same estimate. In the following path diagram, the label 'x' is used to require two regression weights to be equal. One regression weight is fixed at a constant value of 1. The variances of the three exogenous variables, *A*, *B* and *C* are unconstrained, and so is the covariance between *A* and *B*.



You are allowed to label a rectangle or ellipse that represents an endogenous variable, but such a label does not correspond to any model parameter.

Menu: **Amos|Parameter constraints**

See also

Amos related features

Entering Amos commands

This button creates a text window in which you can type any of the "dollar sign" commands described in the Amos User's Guide. For instance, if you want Amos to provide standardized estimates, you would enter a line containing the Amos command $standardized.

Don't use the Amos command $structure. The $structure command is used in the text-based version of Amos to specify a model. When you are using Amos Draw, the model specification is given, instead, by the path diagram(s). Also, do not use the Amos command $nextgroup. The $nextgroup command is used in the text-based version of Amos to separate portions of a single input file that are associated with distinct samples. In Amos Draw, there will be a separate text window for each sample, so that the $nextgroup command is not required.

The Amos "--include" command can be used in an Amos Draw text window.

Menu: **Amos|Amos commands**

See also

Amos related features

Selecting objects to be operated on together

This button allows you to select several objects to be operated on as a group. For example, if you move an object that has been previously selected, all of the other selected objects will move along with it. As another example, if you change the size or shape of a previously selected rectangle, any other selected rectangles will take on the same size.

To select some objects, first press 

. Then click on each object that you want to select. Another method is to hold the left mouse button down continuously and use the mouse pointer to touch every object that you want to select. Selecting an object that has already been selected has the effect of de-selecting it.

The following Amos Draw operations can be modified by selecting some objects in advance.

Moving objects

Copying objects

Adjusting curvature of arrows

Adjusting parameter position

Adjusting size of objects

The following operations are only meaningful after selecting some objects in advance.

Spacing objects horizontally

Spacing objects vertically

Aligning objects horizontally

Aligning objects vertically

Aligning height

Aligning width

Aligning height and width

Aligning the width of lines

Aligning font attributes

Aligning font attributes of parameters

Aligning parameter position

Aligning curvature of double headed arrows

Menu: **Edit|Select**

Aligning objects horizontally

In order to align objects horizontally, you first need to select some variables. Then press 

and click on a single rectangle or ellipse. All of the previously selected objects will line up in a horizontal row to the left and right of the designated object.

Menu: **Align**|**Horizontal**

See also

Lining things up
Rearranging objects

Aligning objects vertically

In order to align objects vertically, you first need to select some variables. Then press 

and click on a single rectangle or ellipse. All of the previously selected objects will line up in a vertical column above and below the designated object.

Menu: **Align|Vertical**

See also

Lining things up
Rearranging objects

Aligning height

You can cause several rectangles and ellipses to have the same height. First select the rectangles and ellipses. Then press 

and click on any rectangle or ellipses that already has the desired height.

Menu: **Align**|**Height**

See also

Lining things up

Aligning width

You can cause several rectangles and ellipses to have the same width. First select the rectangles and ellipses. Then press 

and click on any rectangle or ellipses that already has the desired height.

Menu: **Align**|**Width**

See also

Lining things up

Aligning height and width

You can cause several rectangles and ellipses to have the same height and width. First select the rectangles and ellipses. Then press 

and click on any rectangle or ellipses that already has the desired height.

Menu: **Align|Size**

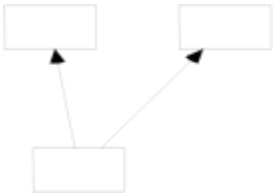
See also

Lining things up

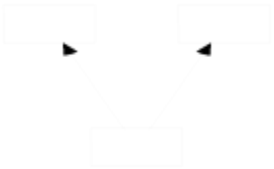
Spacing objects horizontally

To arrange objects so that they are equally spaced horizontally, select them and press 

. The objects don't have to be in lined up in a horizontal row to begin with For example, you can make the following portion of a path diagram



look like this



by selecting all three rectangles and pressing  .

Menu: **Edit|Reposition|Space horizontally**

See also

Rearranging objects
Lining things up

Spacing objects vertically

To arrange objects so that they are equally spaced vertically, select them and press  . The objects don't have to be in lined up in a vertical column to begin with. For example, you can make the following portion of a path diagram

look like this

by selecting all three rectangles and pressing  .

Menu: **Edit|Reposition|Space vertically**

See also

Rearranging objects
Lining things up

Adjusting curvature of arrows

To change the shape of a double headed arrow, press  . Then point to the double headed arrow that you want to change. Press the left mouse button and move the mouse to change the arrow's shape.

If you change the shape of a selected double headed arrow, the shapes of other selected double headed arrows will change too.

Menu: **Edit|Curvature**

See also

Changing the appearance of objects

Adjusting parameter position

To move a parameters around, press  . Then point to an object that has a parameter that you want to move. For example, point to a single headed arrow if you want to move the regression weight that is associated with it. Press the left mouse button and move the mouse.

If you move a parameter associated with a selected object, parameters associated with other selected objects of the same kind will move too. For example, if you move a selected regression weight, any other selected regression weights will move in tandem.

Menu: **Edit**|**Reposition**|**Parameter position**

See also

Changing the appearance of objects

Adjusting size of objects

To change the size and shape of a rectangle or ellipse, press  and point to a rectangle or ellipse. Press the left mouse button and move the mouse.

If you change the size and shape of a selected object, the size and shape of other selected objects will also change.

Menu: **Edit|Size**

See also

Changing the appearance of objects

Aligning the width of lines

You can in one step change the line thickness with which several objects are drawn. First select the objects. Then press  and click on any object that has already been drawn with the desired line thickness.

Menu: **Align**|**Pen width**

See also

 Changing the width of lines
Lining things up

Aligning font attributes

You can in one step change the font size of several variable names and figure captions, and also determine whether they will be displayed in bold or italic. First select the variables and captions. Then press  and click on a single variable name or caption that already has the desired font attributes.

Menu: **Align**|**Font attributes**

See also

 Changing typefaces
Lining things up

Aligning font attributes of parameters

You can in one step change the font size of several parameters , and also determine whether they will be displayed in bold or italic. First select the parameters whose appearance you want to modify. Actually, you will select the objects (rectangles, ellipses or arrows) associated with those parameters. Then press  and click on a single object whose parameter is already displayed with the desired font attributes.

Menu: **Align|Parameter font attributes**

See also

 Constraining parameter estimates
Lining things up

Aligning parameter position

You can in one step change the position of several parameters. First select the objects whose parameters you want to move. Then press  and click on any object (rectangle, ellipse or arrow) whose parameter is already in the desired position.

Menu: **Align|Parameter position**

See also

 Adjusting parameter position
Lining things up

Aligning curvature of double headed arrows

You can give several double headed arrows the same curvature. First select the double headed arrows. Then press  and click on any double headed arrow that already has the desired curvature.

Menu: **Align|Curvature**

See also

 Adjusting curvature of arrows

Lining things up

Scrolling

If you have enlarged the path diagram by pressing  or
 you may not be able to see the whole path diagram at once. To see a different portion of the path diagram press
 . Then press the mouse button and move the mouse.

Menu: **Screen|View|Scroll**

See also

Changing the view of the path diagram

Zooming in

The  button magnifies the screen image of the path diagram. It does not affect the printed size of the path diagram.

Menu: **Screen|View|Zoom in**

See also

Changing the view of the path diagram

Zooming out

The  button reduces the size of the path diagram in the Amos Draw window. It does not affect the printed size of the path diagram.

Menu: **Screen|View|Zoom out**

See also

Changing the view of the path diagram

Zooming to view a full page

This button adjusts the magnification of the path diagram so that one printed page just fits in the Amos Draw window.

Menu: **Screen|View|Zoom page**

See also

Changing the view of the path diagram

Changing the page layout

This button allows you to specify page size and margins for the printed path diagram. You can also specify whether a frame (*i.e.*, a border) should be placed around the path diagram.

If you specify a page height of zero the printer page height will be used. If you specify a page width of zero, the printer page width will be used.

Menu: **Edit|Page layout**

See also

 Adjusting the diagram to fit on a page

Providing a description for an analysis

This button will allow you to enter text to be inserted on the title page of Amos's text output

Menu: **Amos|Analysis description**

See also

Amos related features

Changing screen colors

This button allows you to choose the colors used to display the path diagram on the screen. It does not affect the appearance of printed output.

Menu: **Screen|Colors**

Adjusting the diagram to fit on a page

This button will resize the path diagram so that it just fits on a page.

Menu: **Edit|Fit to page**

See also

 Changing the page layout

Starting a new path diagram

This button allows you to start a new path diagram. If you are currently working on a path diagram, you will be asked if you want to save it before starting on a new one.

Menu: **File|New**

See also

Saving and retrieving path diagrams

Reading an old path diagram from disk

This button allows you to retrieve a path diagram that you saved on some previous occasion.

Menu: **File|Old...**

See also

Saving and retrieving path diagrams

Saving a path diagram on disk

This button allows you to save a path diagram on disk. The first time you save a path diagram, you will be asked to give it a name. If you subsequently make changes to the path diagram and press  again, the new version will replace the disk copy of the original version.

If you want to save a path diagram without destroying a previous version, press 

Menu: **File|Save**

See also

Saving and retrieving path diagrams

Saving a path diagram with a new name

To save a path diagram without destroying an early version, you need to save the new version under a new name. To do so, press  .

Menu: **File|Save as...**

See also

Saving and retrieving path diagrams

Viewing Amos's text output

Every time you do an Amos analysis (by pressing ) the Amos text output will appear in a window. You may wish to see the text output again after closing its window, or to look at the text output from earlier Amos analyses. Just press
 .

Menu: **Amos**|**View output file**

See also

Amos related features

Editing an included text file

The "--include" command described in the Amos User's Guide is used to refer to text files that contain data or other Amos commands. You can view or edit such text files by pressing  .

Menu: **Amos|Edit include file**

See also

Amos related features

Printing a path diagram

This button produces a dialog box. Persons who are not using Amos to do their analyses will only need to use the command buttons in the dialog box. The "Print" command button will print the path diagram. The "Printer setup" command button has the same function as  . The "Close" button will close the dialog box without printing.

Amos users can use the "Groups" list box to choose one or groups for printing. Before an Amos analysis, the "Models" list box will contain only the entry "Input", and that entry will be selected automatically. After an Amos analysis, the "Models" list box will contain the "Input" entry along with an additional entry for each analysis that Amos carried out.

You can make multiple selections from each list box. If you pick, say, three entries from the "Groups" list box and four entries from the "Models" list box, twelve path diagrams will be printed. If you check both the "Unstandardized estimates" and the "Standardized estimates" check boxes, both sets of estimates will be printed (separately).

If the **Models** list box does not contain an "OK: Output" item, this means that parameter estimates aren't available. This could be because an error occurred while Amos was running. Of course it could also mean that you just forgot to run Amos by clicking on the  button. You have to re-run Amos after every change to the model or the data in order to keep the parameter estimates up to date.

The list boxes displayed by  are identical to those displayed by  .

Menu: **File|Print**

See also

 Changing printer settings

Changing printer settings

This button lets you choose portrait or landscape mode for printing, and to make other changes in your printer setup.

Menu: **File|Printer setup**

See also

 Printing a path diagram

Exiting from Amos Draw

Press 

to exit from Amos Draw.

Menu: **File|Exit**

Snapping to a grid

This button helps to line things up visually by superimposing a grid on the path diagram. Rectangles and ellipses are then centered on grid points. Their left and right boundaries are at grid points, and so are their top and bottom boundaries. When objects are moved and resized, their appearance and location change in a jumpy way.

You can choose the spacing of the grid, and whether the grid is visible. It is possible to use one spacing for the visible grid, and another spacing for the grid that is actually used for positioning objects. For example, you could use a grid that has points spaced every eighth of an inch, but display a grid that has points spaced every quarter of an inch.

Menu: **Edit|Snap**

See also

Lining things up

Changing typefaces

This button lets you specify typefaces and font attributes. You can choose one typeface for variable names, another typeface for parameter values, and a third for captions.

To change the font attributes of an individual press  ,
 , or
 .

Menu: **Appearance|Fonts**

See also

Changing the appearance of objects

Changing the width of lines

This button lets you choose the width of lines that will be used to draw objects. You can use as many as four different line widths in a single path diagram. You do not have any control over how the four widths appear on the screen. The thinnest line will be one pixel (one dot) wide, for example, and the thickest line will be four pixels wide. However, you can control how the four line thicknesses will appear when they are printed. You can specify for example, that the thinnest line will be three pixels across when printed, that the next thicker line will be 7 pixels across, and so on.

After pressing  you have to make two choices: which of the four line thicknesses will be used for drawing objects in the future, and how thick should those lines be when they are printed.

Menu: **Appearance|Pen width**

See also

Changing the appearance of objects

Selecting a group and a model

(**File|Groups and models)** Amos is capable of fitting data from multiple samples (groups) in a single analysis. This button will present a dialog box from which you can select a single group. The  button will produce a dialog box that will contain two list boxes. The list box on the left will contain a list of groups. When you first start Amos Draw, or use the

 button, there will be only one group on the list, called "Group number 1". You can rename a group by pressing the "Rename group" button in the dialog box, or add additional groups one at a time by repeatedly pressing the "Add group" button.

To view the path diagram for a single group, pick the group's name from the "Groups" list box and press "Close".

After you have used  to do an Amos analysis, you will want to view the results. Press

 and look at the list box on the right hand side of the dialog box. After a simple Amos analysis, the "Models" list box will contain two entries labeled "Input" and "OK: Output". The "Input" entry is always present, and by selecting it you can review the path diagram that you entered. The "OK: Output" entry indicates that there was a successful Amos analysis. By selecting this entry you can see the resulting parameter estimates superimposed on the path diagram. If you have requested standardized estimates (using the Amos command $standardized}, or squared multiple correlations {$smc}, you can view them by checking the "Standardized estimates" check box.

If you used Amos's $model command to do several analyses there will a separate entry in the "Models" list box for each analysis. For example, if you used the Amos commands "$model = Model_A" and "$model = Model_B", the "Models" list box would contain the following three entries after an analysis:

Input
OK: Model_A
OK: Model_B

If the "Models" list box looks like this:

Input
OK: Model_A
XX: Model_B

then the first analysis was successful, but an error occurred during the second analysis.

If the **Models** list box contains only the entry "Input", this means that parameter estimates aren't available. This could be because an error was discovered during the analysis. Of course it could also mean that you just forgot to run Amos by clicking on the  button. You have to re-run Amos after every change to the model in order to keep the parameter estimates up to date.

The list boxes displayed by  are identical to those displayed by

 .

Menu: **File|Groups and models**

See also

 Allowing different path diagrams for different groups

Undoing the previous change

If you make a mistake, press  . You can undo the four most recent changes. Some operations make it impossible to undo any previous changes:

 Running Amos

 Starting a new path diagram

 Reading an old path diagram from disk

 Saving a path diagram on disk

 Saving a path diagram with a new name

 Printing a path diagram

 Changing printer settings

 Exiting from Amos Draw

 Selecting a group and a model

Menu: **Edit**|**Undo**

See also

Correcting mistakes

Undoing the previous undo

You can cancel the effect of the  button by immediately pressing

.

Menu: **Edit|Redo**

See also

Correcting mistakes

Copying a diagram to the clipboard

This button copies the path diagram in the Amos Draw window to the clipboard. You can then insert the path diagram in another application such as a word processor, a spreadsheet or a general purpose drawing program.

Menu: **Edit|Copy (to clipboard)**

Drawing circles and squares

Press  , and any rectangles you draw after that will be square. Any ellipses will be circular. The  button will turn rectangles into squares and ellipses into circles.

If you have pressed  once, and want to go back to drawing general rectangles and ellipses, press  again.

Menu: **Appearance|Square**

See also

Changing the appearance of objects

Using golden section to draw rectangles and ellipses

Press  , and any rectangles you draw after that will be a golden section. The bounding rectangle of any ellipses will also be golden sections. The
 button will give rectangles the proportions of a golden section.

If you have pressed  once, and want to go back to drawing general rectangles and ellipses, press
 again.

Menu: **Appearance**|**Golden**

See also

Changing the appearance of objects

Arranging tools and toolboxes

When you first run Amos Draw, only two of the toolboxes will be visible. If you would like to see all of the toolboxes, press  , or choose **Screen**|**Move tools** from the menu. You will then see three more (empty) toolboxes and a large "tool bin". You can move the toolboxes and the tool bin around the screen and resize them just as you would do with any windows. You can use the mouse to drag buttons from one toolbox to another . After you have completed any rearranging of the toolboxes that you want to do, press a key on the keyboard, or use the mouse to click on any point of the Amos Draw window. The tool bin will become invisible, and so will any toolboxes that remain empty.

 and
 have the same effect, except that
 puts the toolboxes initially in the upper left corner of the path diagram. The
 button leaves them alone.

Menu: **Screen**|**Move tools**

See also

Toolboxes and menus

Using the help button

This button produces a table of contents of Amos Draw's help system.

Menu: **Help|Contents**

See also

Getting help for a single button or menu item

One handed help

Getting version information

To find out the version number of this copy of Amos Draw, press  .

Menu: **Help|About**

Getting help for a single button or menu item

To get a one-line explanation of what a button does, place the mouse pointer over the button. A description of its function will appear in the title bar of the Amos Draw window. For a fuller explanation, press the <F1> function key.

To get an explanation of a menu item, point to the menu item. *Hold down* the left mouse button (don't release it) and press the <F1> key. This is a two handed operation. There is an alternative, one-handed, method.

See also

 Using the help button

Displaying or hiding the menu

When  is in the unpressed position, pressing it will cause the menu to appear.When  is in the depressed position, pressing it will make the menu disappear.

Double-clicking anywhere on the path diagram will cause the menu to appear.

Menu: **Screen|Show menu**

See also

Toolboxes and menus

Displaying or hiding the toolboxes

Pressing  will cause all visible toolboxes to disappear. Subsequent operations will then have to be carried out using the menu. Choosing **Screen|Show tools** from the menu will cause the toolboxes to reappear.

If the toolboxes and the menus have both been removed from the window, double click anywhere on the path diagram. The menu will then reappear.

Menu: **Screen|Show tools**

See also

Toolboxes and menus

Finding the toolboxes

This button will arrange all of the toolboxes in the upper left corner of the path diagram. You will then be able to move the toolboxes and the tool bin around the screen and resize them just as you would do with any windows. You can use the mouse to drag buttons from one toolbox to another . After you have completed any rearranging of the toolboxes that you want to do, press a key on the keyboard, or use the mouse to click on any point of the Amos Draw window. The tool bin will become invisible, and so will any toolboxes that remain empty.

 and
 have the same effect, except that
 puts the toolboxes initially in the upper left corner of the path diagram. The
 button leaves them alone.

Menu: **Screen|Find tools**

See also

Toolboxes and menus

Allowing different path diagrams for different groups

In an analysis of multiple groups, Amos Draw assumes that you want to use the same path diagram for every group, possibly with different parameter constraints for each group. If you want each group to have a different path diagram, press  .

Hint: If the path diagrams for different groups will differ only in small ways, first draw the features that all path diagrams have in common, then press  and proceed to add the features that distinguish one path diagram from another.

Menu: **Amos|Distinct**

See also

 Selecting a group and a model

Specifying decimal places for parameter estimates

Press this button to specify the number of decimal places to be used in displaying parameter estimates. This choice affects only Amos's graphical output -- not its text output.

Menu: **Amos|Decimal places**

See also

Amos related features

Introduction

Amos Draw can be used to draw path diagrams of presentation quality. It is used much like a general purpose drawing or drafting program, but has an assortment of features that simplify the job of drawing path diagrams.

Although Amos Draw can be used by itself, it was designed as the graphical interface to Amos for Windows. A path diagram drawn with Amos Draw can be used as an Amos model specification.. Amos will fit the model described by the path diagram, and will display the resulting parameter estimates on another path diagram (also of presentation quality).

Examples

When you install Amos Draw, some examples from the Amos User's Guide will be installed in the EXAMPLES subdirectory of the directory you choose for the Amos program files. To modify one of these examples, press  or choose the menu item **File|Old.**

One handed help

To find out what a particular button or menu item does, press  . Then press the button or select the menu item for which you want an explanation.

Menu: Help|What is...

About Amos

Amos (Analysis of MOment Structures) implements the general approach to data analysis known as analysis of covariance structures, analysis of linear structural relations, structural equation modeling, or causal modeling.

Amos will analyze data from **several populations** at once. It will estimate **means** for exogenous variables, and it will estimate **intercepts** in regression equations. The program will also compute full information maximum likelihood estimates in the presence of **missing data**. Any parameter (that is, any regression weight, intercept, variance, covariance or mean) can be fixed at a known value in advance, and any parameter can be constrained to be equal to any other parameter. Amos offers a choice of four estimation criteria discussed by Browne (1982): (1) **maximum likelihood**, (2) **unweighted least squares**, (3) **generalized least squares**, and (4) Browne's **asymptotically distribution-free** criterion. The program employs a new rapid algorithm that has proved to be especially reliable, even in the case of models that fit poorly. It is almost never necessary to provide initial parameter estimates.

Amos estimates the following quantities: (1) the model parameters; (2) standardized regression weights; (3) a squared multiple correlation for each endogenous variable in the model, indicating the proportion of the variance of that variable that is accounted for by the remaining variables in the model; (4) total effects; (5) regression weights for regressing the unobserved variables on the observed variables (factor score weights); (6) means, variances, covariances and correlations for all variables in the model.

Bootstrapped standard errors and confidence intervals are available for all estimates, as well as for sample means, variances, covariances and correlations. Percentile intervals and bias-corrected percentile intervals (Stine, 1989) are implemented. Bollen and Stine's (1992) bootstrap approach to model testing is also provided.

In the case of maximum likelihood, generalized least squares and asymptotically distribution-free estimation, Amos produces **the following additional output**: (1) A chi-square statistic for a large sample test of the hypothesis that the specified model is correct; (2) Approximate standard errors for the parameter estimates; (3) A critical ratio for each parameter, providing a large sample test of the hypothesis that the parameter is zero in the population; (4) A large sample approximation to the variance-covariance matrix of the parameter estimates; (5) A large sample approximation to the correlation matrix of the parameter estimates; (6) An approximate standard error for the difference between each pair of parameters; (7) A critical ratio for each pair of parameters, providing a large sample test of the hypothesis that those two parameters are equal in the population.

An assortment of **measures of model fit** are computed, including Bentler-Bonett (1980) normed and nonnormed fit indices, the Bollen (1986, 1989) indices, root mean square residual, goodness of fit and adjusted goodness of fit indices (Joreskog and Sorbom, 1989; Tanaka and Huba, 1985) and Hoelter's (1983) critical N. Several composite measures of fit and parsimony are computed, including those due to Akaike (1987), Schwarz (1978), Bozdogan (1987), and Brown and Cudeck (1989).

Multiple models can be fit in a single analysis. Amos examines every pair of models in which one model can be obtained by placing restriction on the parameters of the other. The program reports several statistics appropriate for comparing such models.

A test of **univariate normality** is provided for each observed variable, as well as a test of **multivariate normality**. An attempt is made to detect **outliers**.

Amos was originally designed to be a teaching tool. Its purpose is, in part, to make analysis of moment structures available to students and nontechnical users who understand the method at a conceptual level. The User's Guide contains an extensive tutorial.

Amos is available in three versions.

The **standard MSDOS version** requires a hard disk and 640K of memory. It is limited to models with no

more than 50 variables and no more than 126 parameters. For asymptotically distribution-free estimation, the number of variables is limited to 15. Under some circumstances, a problem that is within these limits may still not run, for instance if the data consist of more than one sample, or if a lot of memory is occupied by memory-resident programs.

The **extended MSDOS version** of Amos requires an 80386 system with a math coprocessor or an 80486 system. In the extended version the number of variables and the number of parameters are limited only by the amount of installed memory.

The **Windows version** requires Windows version 3.0 or later.It has the same limitations on problem size as the standard MSDOS version. When used with the companion program Amos Draw, the Windows version accepts a path diagram as a model specification, and displays its parameter estimates graphically on a path diagram. The path diagrams used for model specification, as well as those that display parameter estimates are of presentation quality.

Information about Amos's availability can be obtained from:

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