

8 Charting Data

Meta-Stat offers a variety of powerful charting features to help you explore—and present—your data.

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Before You Begin

Read the section "Common Functions" at the beginning of Chapter 7. That section describes common *Meta-Stat* functions that apply to statistical analyses, which are covered in Chapter 7, as well as to charts, which are the subject of this chapter. In particular, you should know how to:

- ! Select variables to be analyzed and charted
- ! Deselect variables that are already selected
- ! Weight data using a weighting variable
- ! Select data with SELECT IF statements

Setting Chart Options

Before creating charts, you can change the *Meta-Stat* chart options.

Video Mode

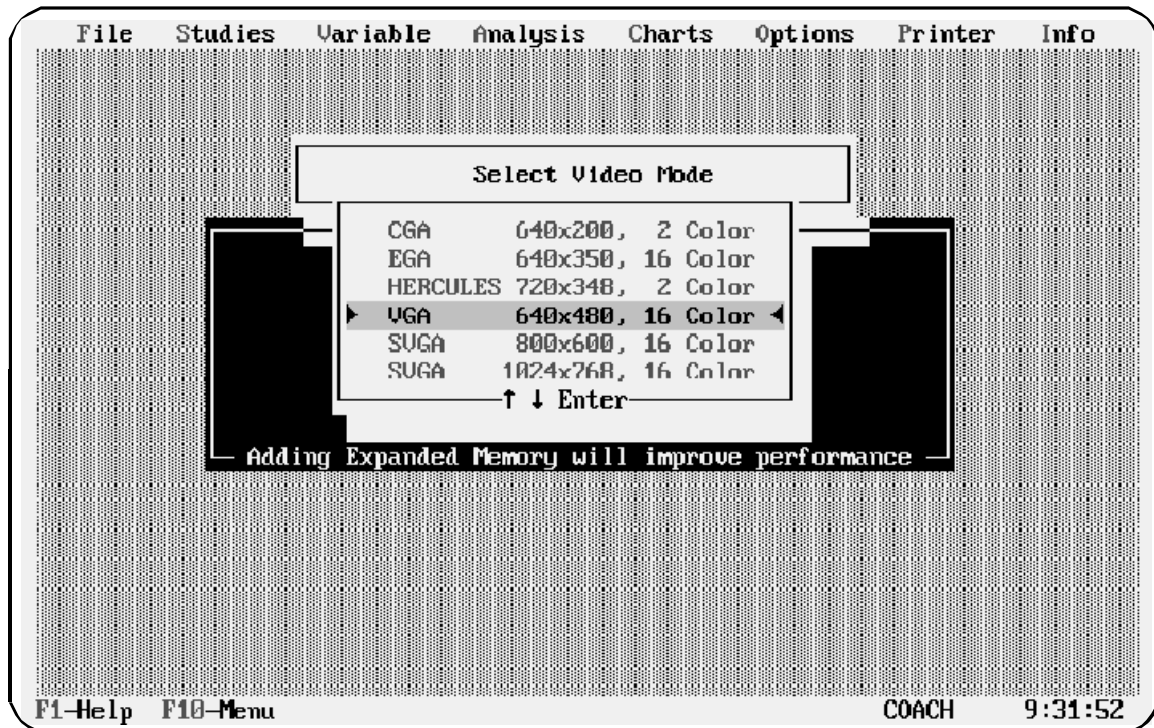
Meta-Stat can display charts in a variety of video modes. Select a mode that is compatible with your display adapter.

Note: When you save a chart by pressing Ctrl-S, *Meta-Stat* saves the chart in VGA resolution (640 x 480), regardless of the video mode you are currently using.

Follow these steps to set the video mode:

1. Select Charts/video Modes

Meta-Stat displays a list of modes you can use:



2. Highlight the mode you want to use, then press Enter.

PCX Colors and Size

When you save a chart by pressing Ctrl-S, *Meta-Stat* saves the chart as a PCX-formatted file. You can then import this file into other applications, or view it later from within *Meta-Stat*. *Meta-Stat* can save the chart in color or in black and white. Typically, you would use color if you wanted to produce color slides, and black and white if you wanted to reproduce charts for a published article.

You can also specify the size of your charts on printed output.

Follow these steps:

1. Select Charts/PCX Colors
2. Highlight Black & White or Color, then press Enter.
3. Select Charts/Graph Size

4. Specify the height and width you want to use, then press Enter.

Point and Shoot Resolution

When you create a scatterplot, you can display the study data for a particular data point. You do this by using your mouse to "point and shoot" at the data point.

You can set the point and shoot resolution so that your mouse points at different-sized areas. By setting a wide resolution, for example, you can select many data points at once—even data points that are not directly below the mouse pointer. With a narrow resolution, you must move the mouse pointer directly to a data point before you can select it.

Note: *Meta-Stat* displays a mouse pointer only if you create the scatter chart when in CGA, VGA, or Hercules video mode. You do not see the pointer when you use either of the two Super VGA (SVGA) modes.

Follow these steps to select the point and shoot resolution:

1. Select Charts/P&S Resolution
2. On the screen that *Meta-Stat* displays, type a number from 1 to 10, then press Enter.

Larger numbers provide wider resolution. Smaller numbers provide more narrow resolution.

Saving Charts

After you create and display a chart, you can save it by pressing Ctrl-S. *Meta-Stat* saves the chart in a PCX-formatted file. You can then import this file into another application, or you can view it later with *Meta-Stat*.

Meta-Stat saves the PCX file in the *Meta-Stat* directory. It selects the filename for you:

- ! The filename extension is PCX.

- ! The beginning of the name identifies the type of chart—BAR for a Bar chart, BOOT for a Bootstrap chart, LINE for a Line plot, and so on.
- ! A number identifies the file uniquely. For example, BAR0.PCX is the first Bar chart you created, BAR1.PCX is the second, and so on. *Meta-Stat* selects this number for you, based on the charts you have already saved.

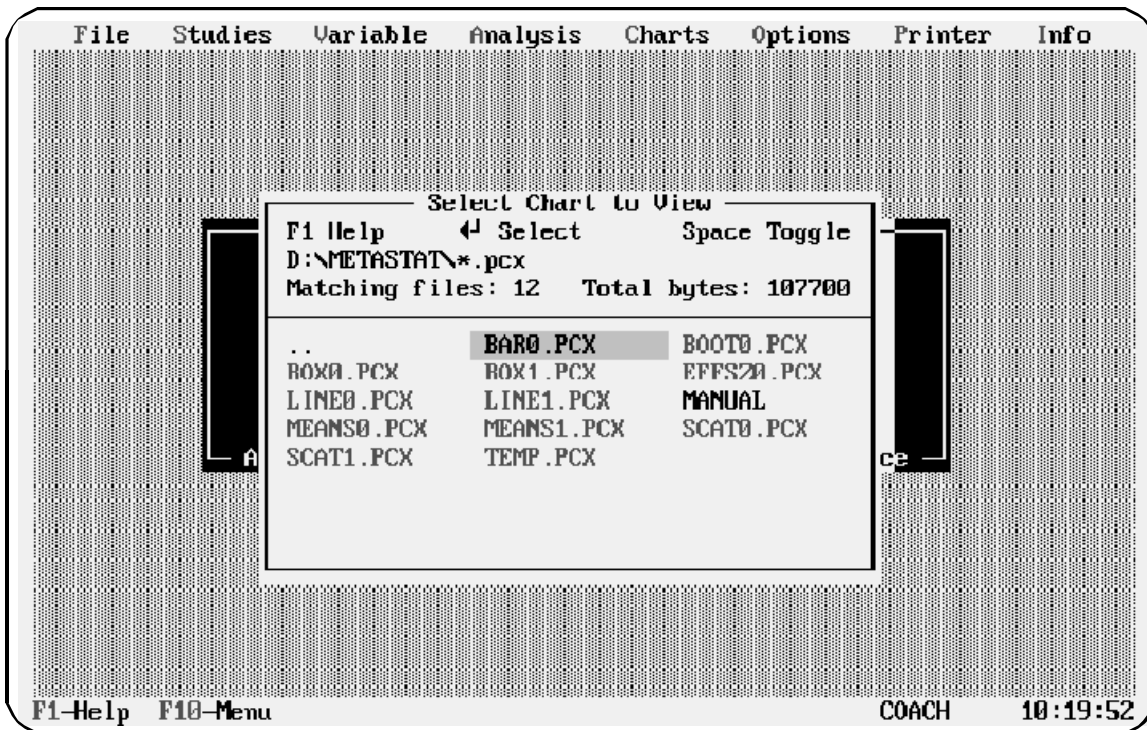
Viewing and Deleting Charts

After you save charts, you can view them from within *Meta-Stat*. You can also delete them if you no longer need them.

Viewing a Saved Chart

1. Select Charts/View Saved Chart

Meta-Stat displays a list of charts that you have saved:



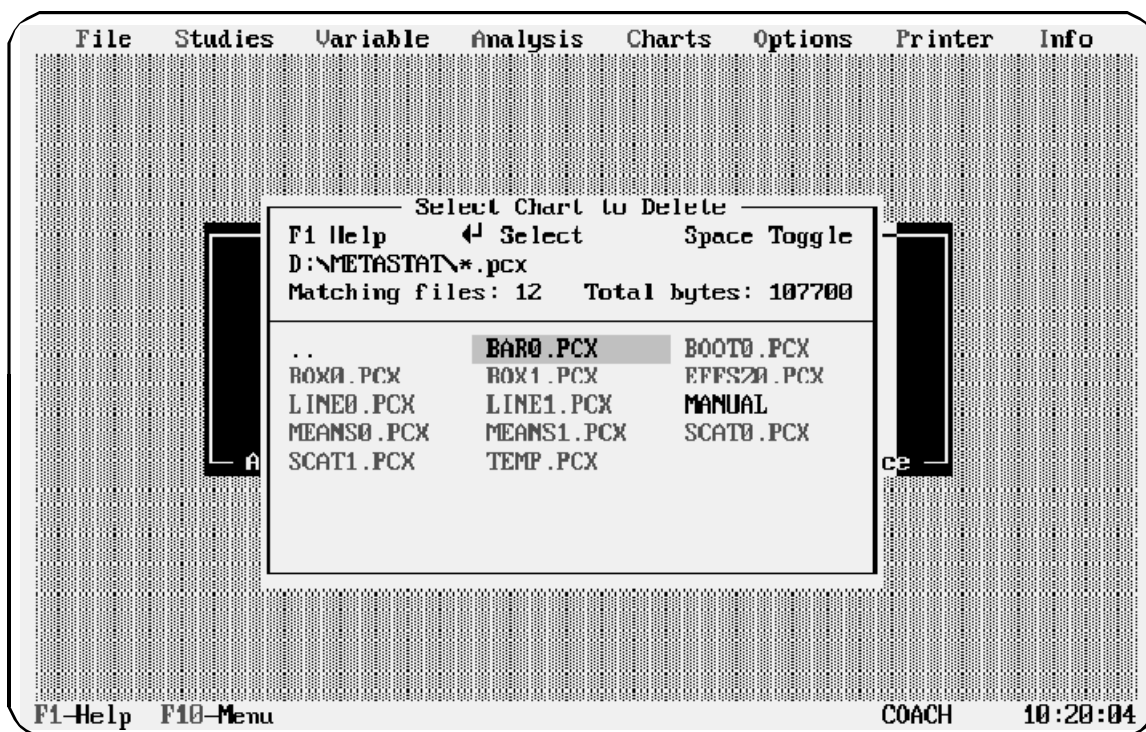
2. Highlight the name of the PCX file that you want to view, then press Enter.

Note: *Meta-Stat* saves charts in VGA resolution (640 x 480). For best results, switch to VGA resolution before viewing a chart. If you view a saved chart while using a different resolution, the chart will be either smaller or larger than your screen.

Deleting a Saved Chart

1. Select Charts/Delete Saved Chart

Meta-Stat displays a list of charts that you have saved:



2. Highlight the name of the PCX file that you want to delete, then press Enter.
3. *Meta-Stat* asks you to confirm (Y or N).

Creating a Bar Chart (Frequency Analysis)

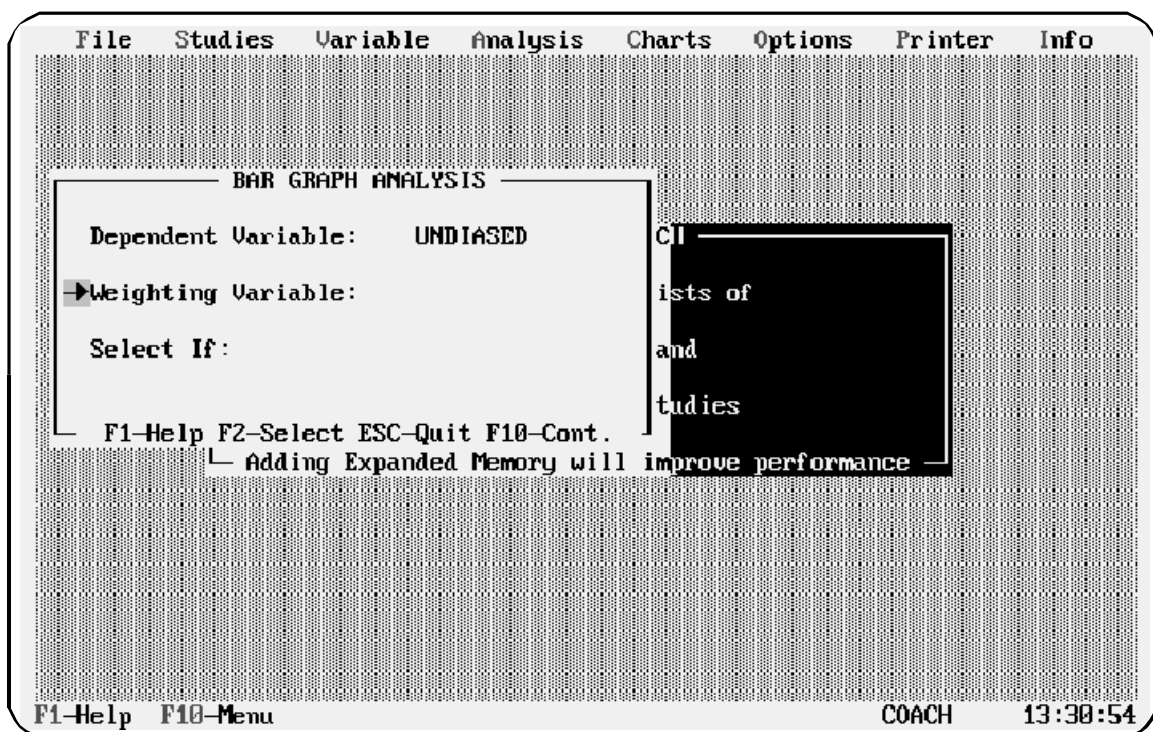
Meta-Stat's Bar chart can display the frequency with which values occur for a variable. Follow these steps to create a Bar chart:

1. Select Charts/Bar (freq)

Meta-Stat displays a screen where you select the variable you want to chart.

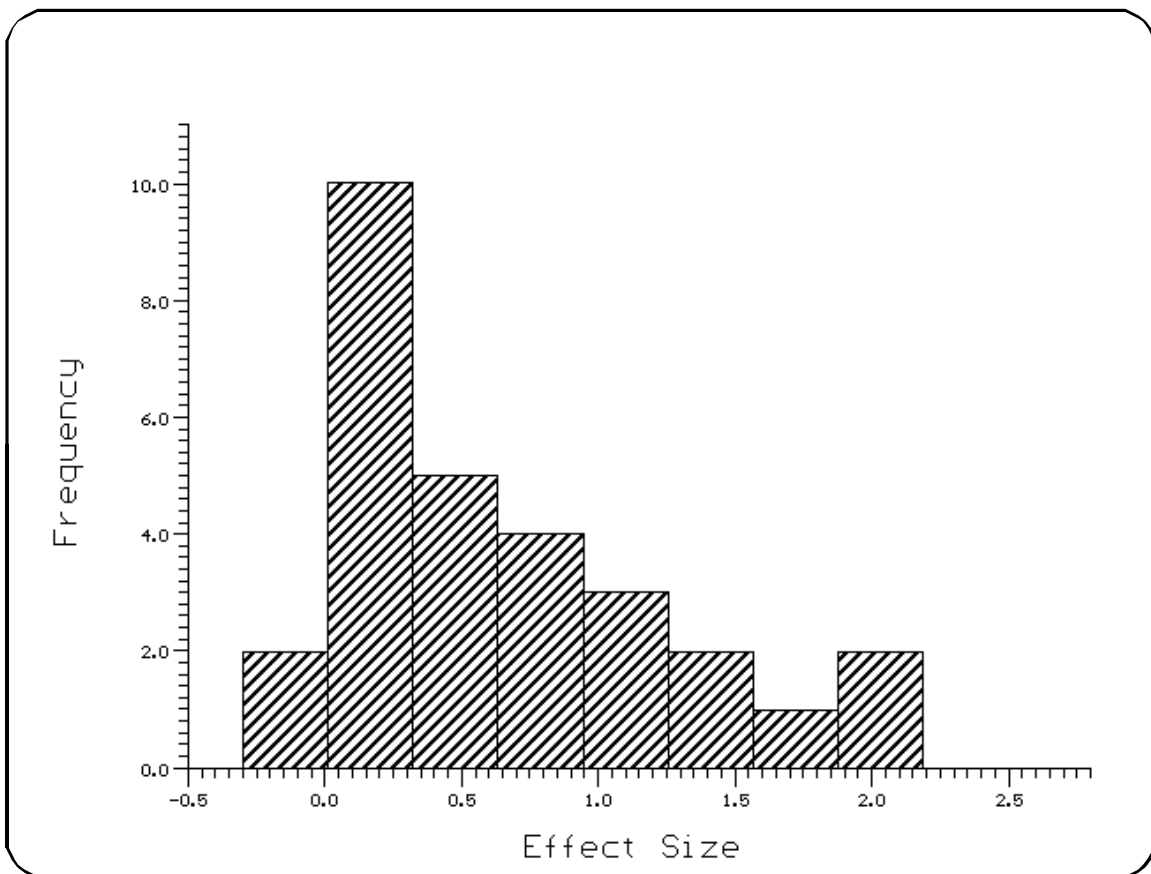
2. Use Criterion Variable to identify the variable you want to chart.
3. If necessary, identify a weighting variable and construct a SELECT IF statement. For more information, see "Common Functions" at the beginning of Chapter 7.

In the following example, *Meta-Stat* will chart the Unbiased Effect Size:



4. Press F10 to display the results.

Notice that *Meta-Stat* aggregates the values of the variable and selects an appropriate scale for the X axis:



5. Press **9** to select and chart a new variable.

Creating a Bootstrap Chart

To create the Bootstrap chart, *Meta-Stat* uses a brute-force resampling technique to calculate expected effect sizes for the population of studies in your meta-analysis. For up to 1,000 iterations, *Meta-Stat* randomly selects an effect size from your population of studies, then records the frequency at which each effect size is picked.

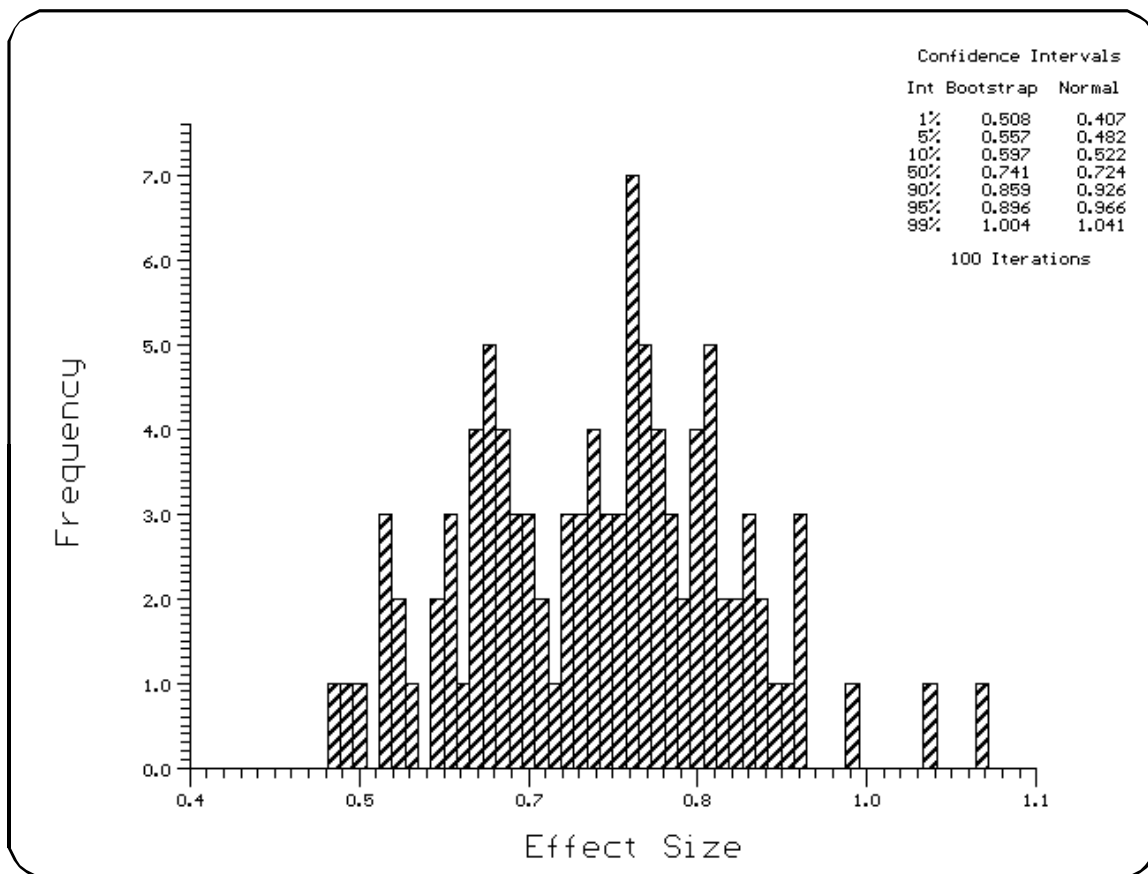
Follow these steps to create the chart:

1. Select Charts/bootstrap

Meta-Stat displays a screen where you select the variable you want to chart.

2. Use Criterion variable to identify the Effect Size variable.
3. If necessary, identify a weighting variable and construct a SELECT IF statement. For more information, see "Common Functions" at the beginning of Chapter 7.
4. Press F10 to display the chart.

In the following example, 100 iterations were used. Notice the tallest bar on the chart. This bar indicates that, of the 100 picks, the effect size 0.75 was picked 7 times.



Note: The bootstrap procedure assumes the data were randomly selected.

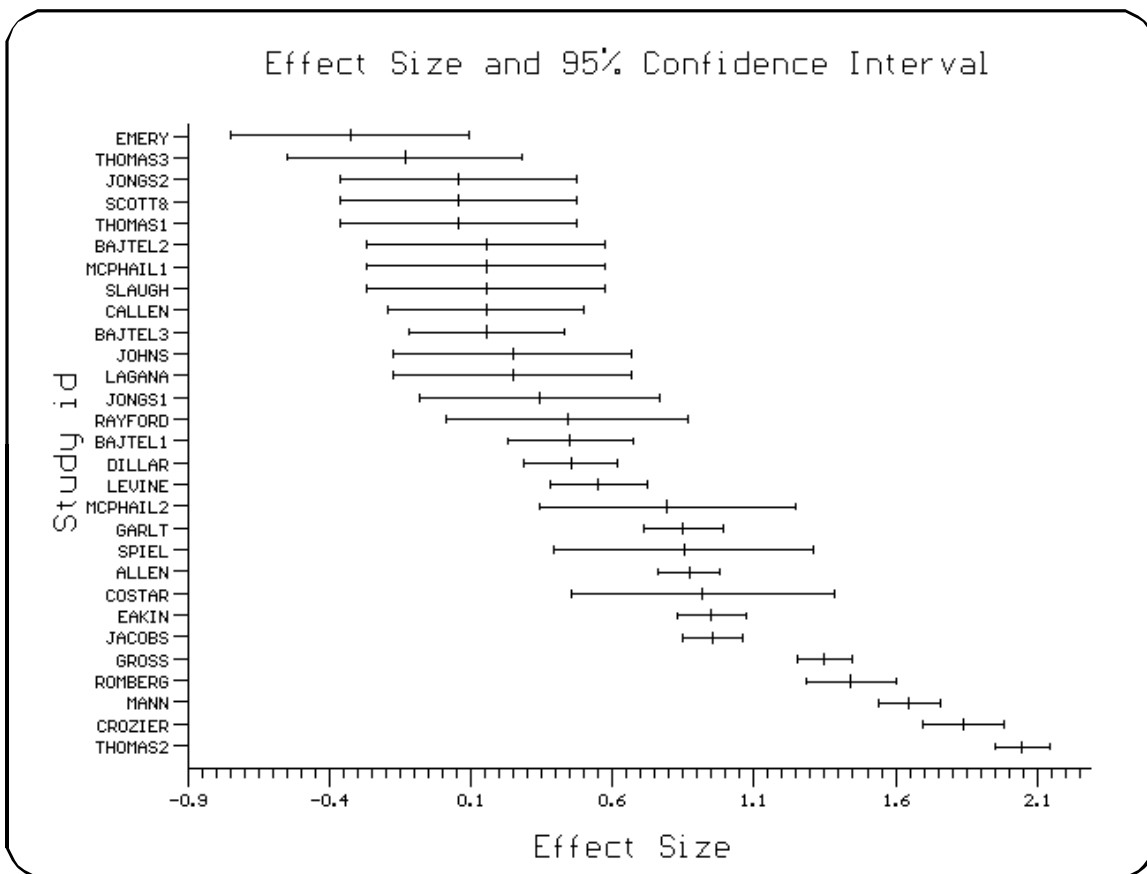
Charting Effect Sizes by Study

Use the Effect Size by Study chart to plot the effect size and 95% confidence intervals for the mean of the studies in your meta-analysis. Follow these steps:

1. Select Charts/Effect Size by Study
2. Use the Sort Data field to specify a sorting sequence for the chart.

You cannot specify a different criterion variable. The Effect Size variable is always used.

3. Press F10 to display the results. In the following example, effect sizes are sorted by value, in descending order:



Showing Relationships on a Line Graph

Use a Line graph to show the relationship between an predictor variable and the criterion variable, effect size. You can use discrete and blocking variables to group data into separate plots on the same chart.

1. Select Charts/LineGraph

Meta-Stat displays a screen where you identify the variables and other information for the chart.

2. Use the Criterion (y) Variable field to specify the variable you want to plot on the Y axis of the chart. Typically, this is the effect size.

Use Transform y to apply various transformations to this variable. You can also smooth the results with Smooth y.

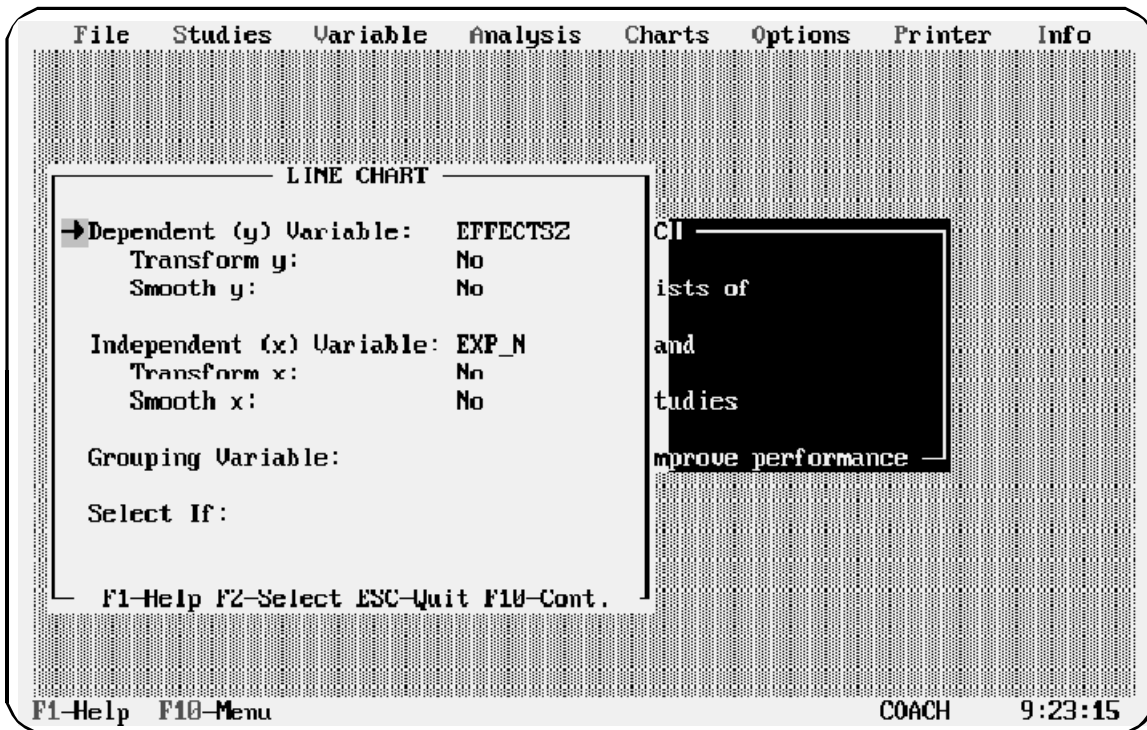
3. Use the Predictor (x) Variable field to specify the variable you want to plot on the X axis of the chart.

Use Transform x and Smooth x to transform and smooth the variable.

4. Optionally, use the Grouping Variable field to identify a discrete or blocking variable. *Meta-Stat* will separately plot each category within the variable.

5. If necessary, use SELECT IF to select data for the chart.

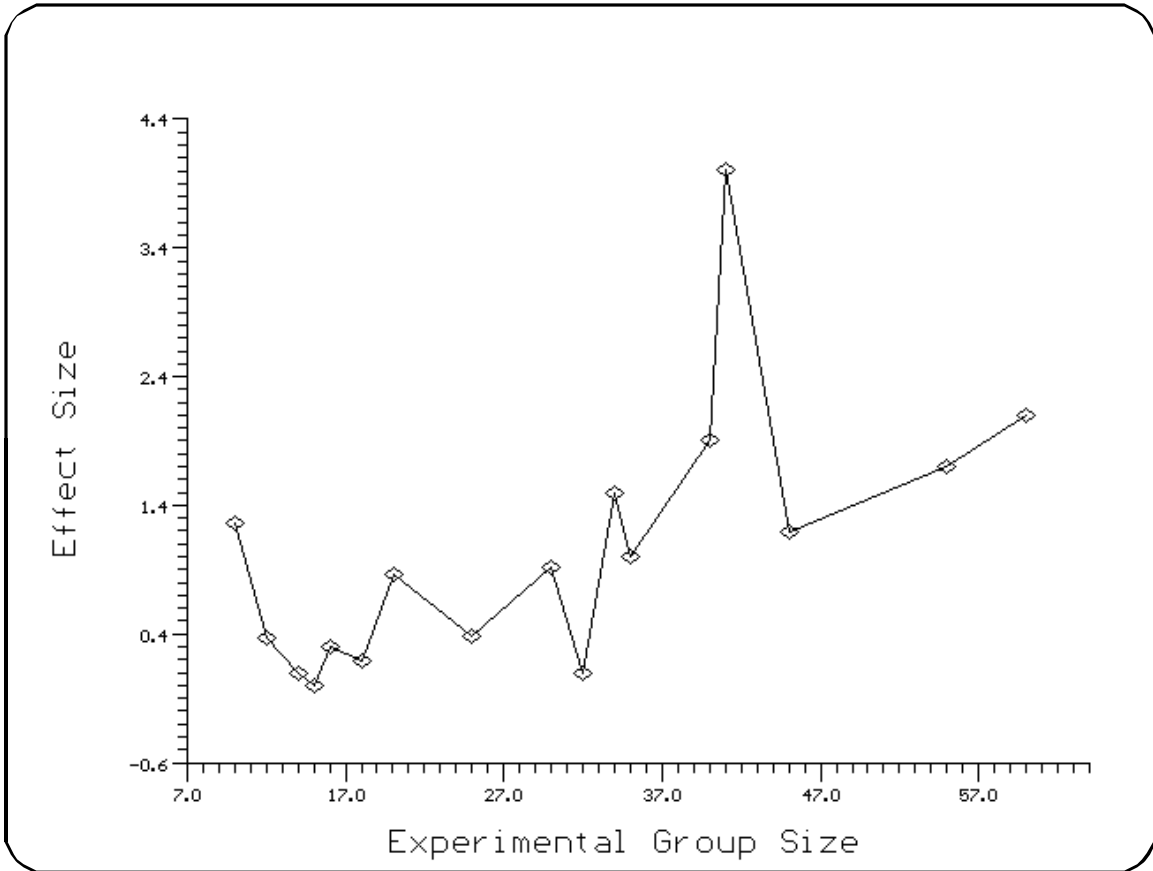
In the following example, *Meta-Stat* will chart the relationship between EFFECTSZ (effect size) and EXP_N (the size of the experimental group):



6. Press F10 to display the results.

Results for X and Y Variables

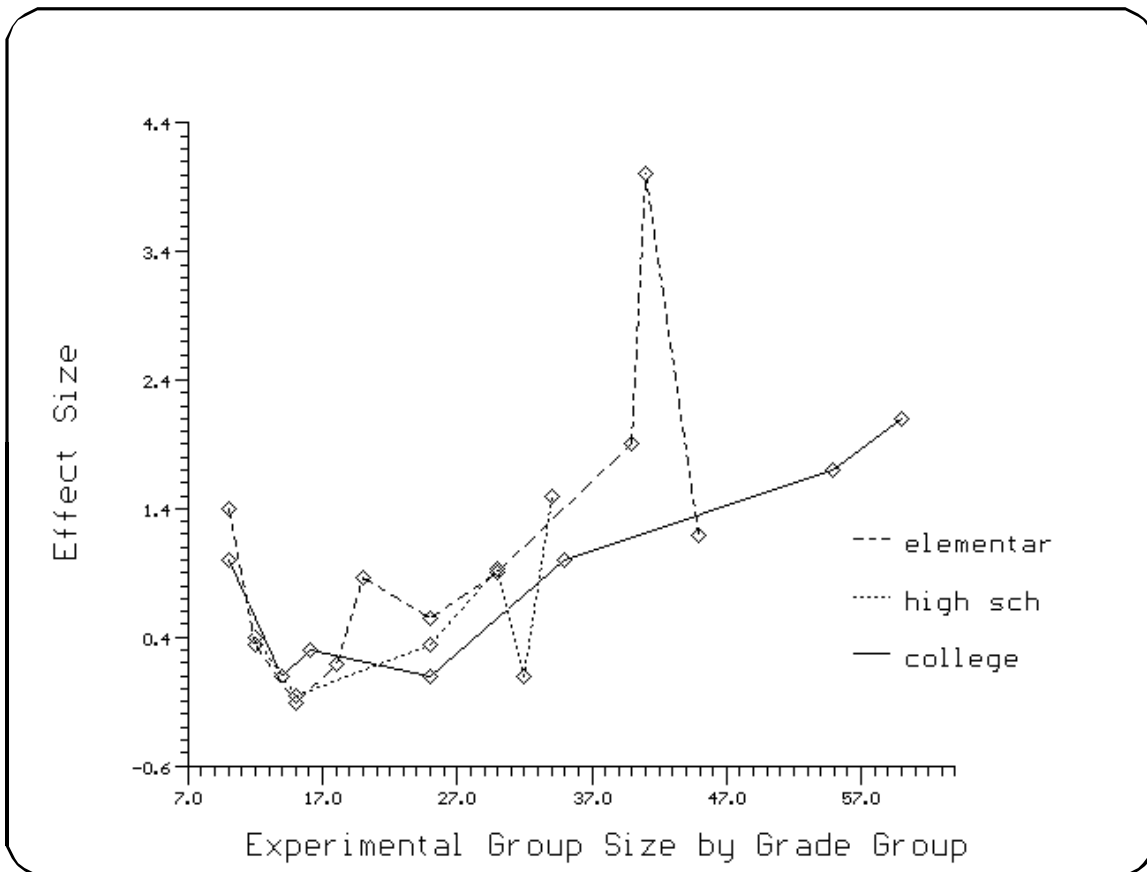
If you specified only an X and Y variable, *Meta-Stat* shows a single plot:



Results with a Grouping Variable

If you specified a grouping variable in addition to X and Y variables, *Meta-Stat* shows one plot for each category identified by the grouping variable. For the following example, a

blocking variable called Grade Group was specified. This variable identifies three groups of subjects: elementary, high school, and college subjects.



Selecting Other Variables

Once you have displayed the chart, you can quickly select other variables for the chart:

Press this key	To select a new ...
8 or 9	Criterion (Y) variable
6 or 7	Predictor (X) variable
space or backspace	Grouping variable

Note: To look up the data behind a data point, plot the same variables on a scatterplot. Then "point and shoot" with your mouse on the data point.

When multiple values of the criterion variable have the same value on the predictor variable, **Meta-Stat** plots their average. It is good practice to examine the Scatterplot of the same data.

Plotting Data Points on a Scatter Plot

Use a Scatter plot to plot individual data points that show the relationship between a predictor variable and the criterion variable, typically effect size. After you display the chart, you can use your mouse to display study data by "pointing and shooting" at a data point.

1. Select Charts/Scatter Plot

Meta-Stat displays a screen where you identify the variables and other information for the chart.

2. Use the Criterion (y) Variable field to specify the variable you want to plot on the Y axis of the chart. Typically, this is the effect size.

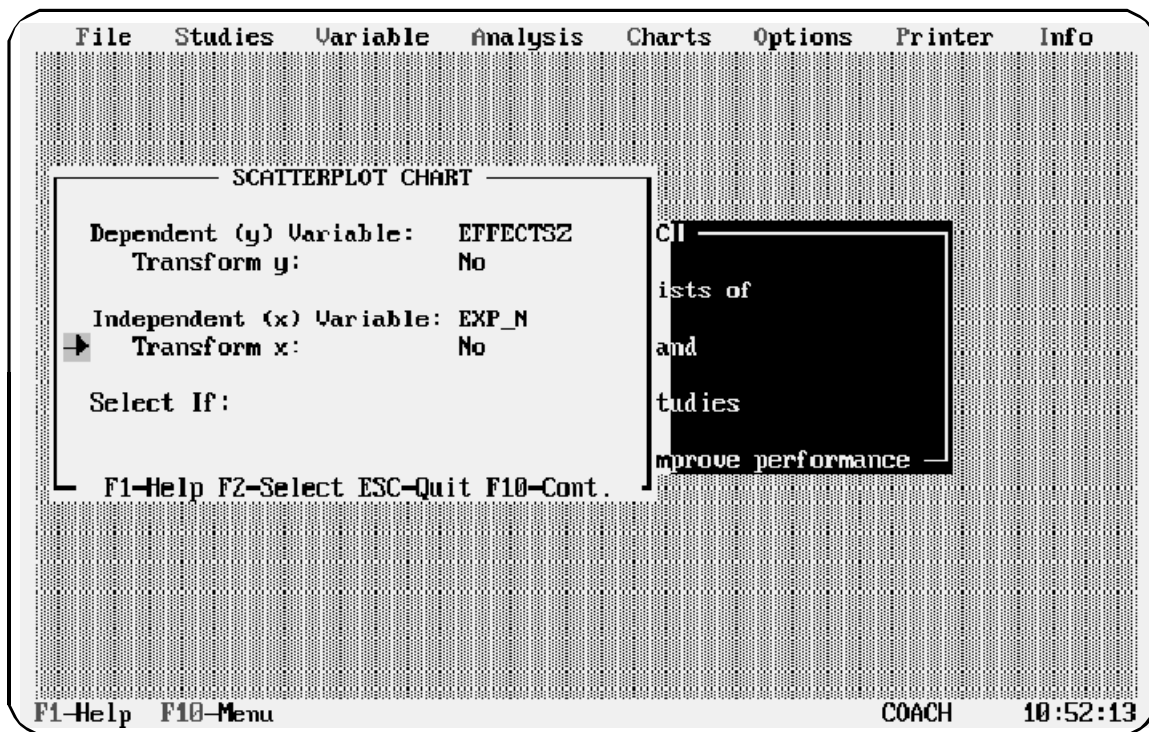
Use Transform y to apply various transformations to this variable.

3. Use the Predictor (x) Variable field to specify the variable you want to plot on the X axis of the chart.

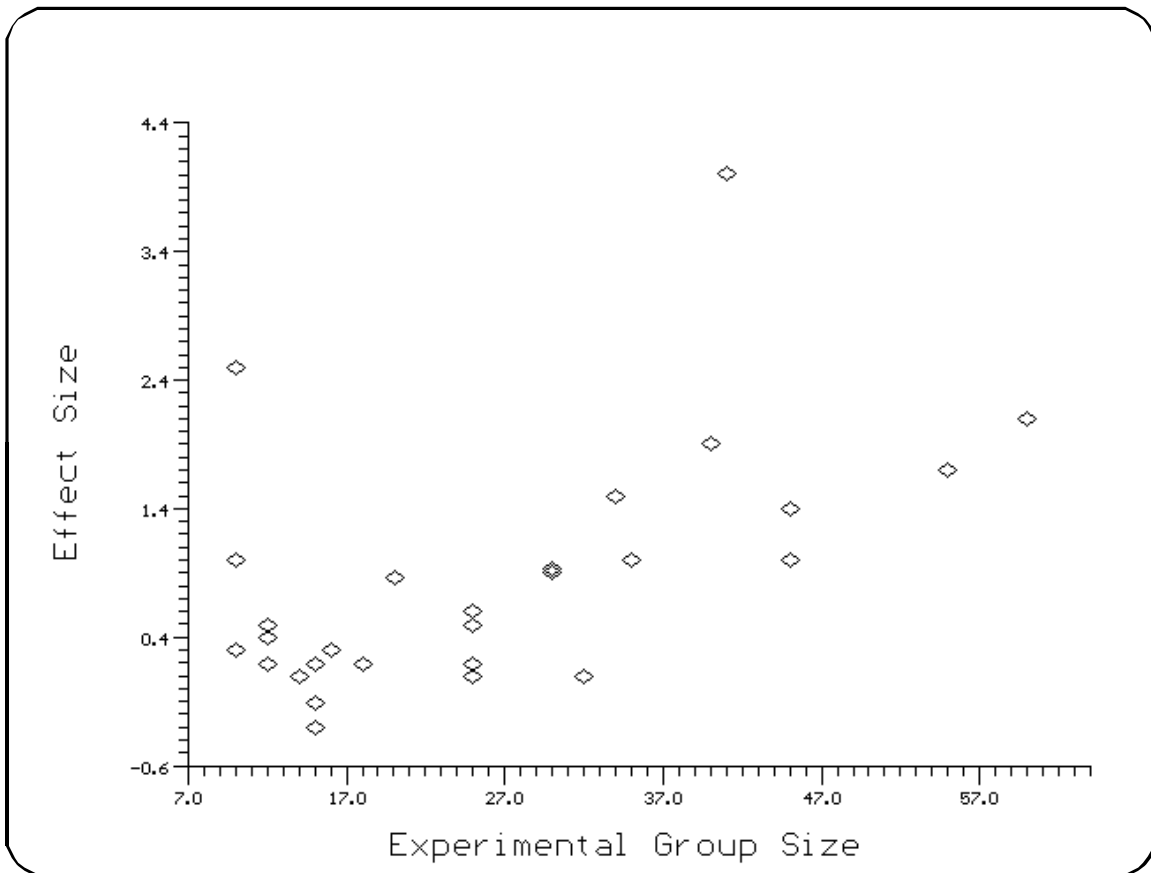
Use Transform x to transform the variable.

4. If necessary, use SELECT IF to select data for the chart.

In the following example, *Meta-Stat* will create a scatter plot showing the relationship between EFFECTSZ (effect size) and EXP_N (the size of the experimental group):



5. Press F10 to display the results:



Selecting Other Variables

Once you have displayed the chart, you can quickly select other variables for the chart by pressing **8 9 6** or **7**.

Pointing and Shooting at Data Points

If you create a Scatterplot while in CGA, VGA, or Hercules video mode, you can move the pointer—shown as a magnifying glass—to a data point and left-click. *Meta-Stat* displays the study (or studies) represented by the data point.

If the magnifying glass was pointing at more than one data point, **Meta-Stat** displays the study for the first data point. Press F8 to display additional studies.

Showing the Median, Range, and Quartiles with Box & Whiskers

Use the Box & Whiskers chart to display the median, range of values, and percentiles for a variable. You can also use discrete and blocking variables to group data into separate Box & Whiskers on the same chart.

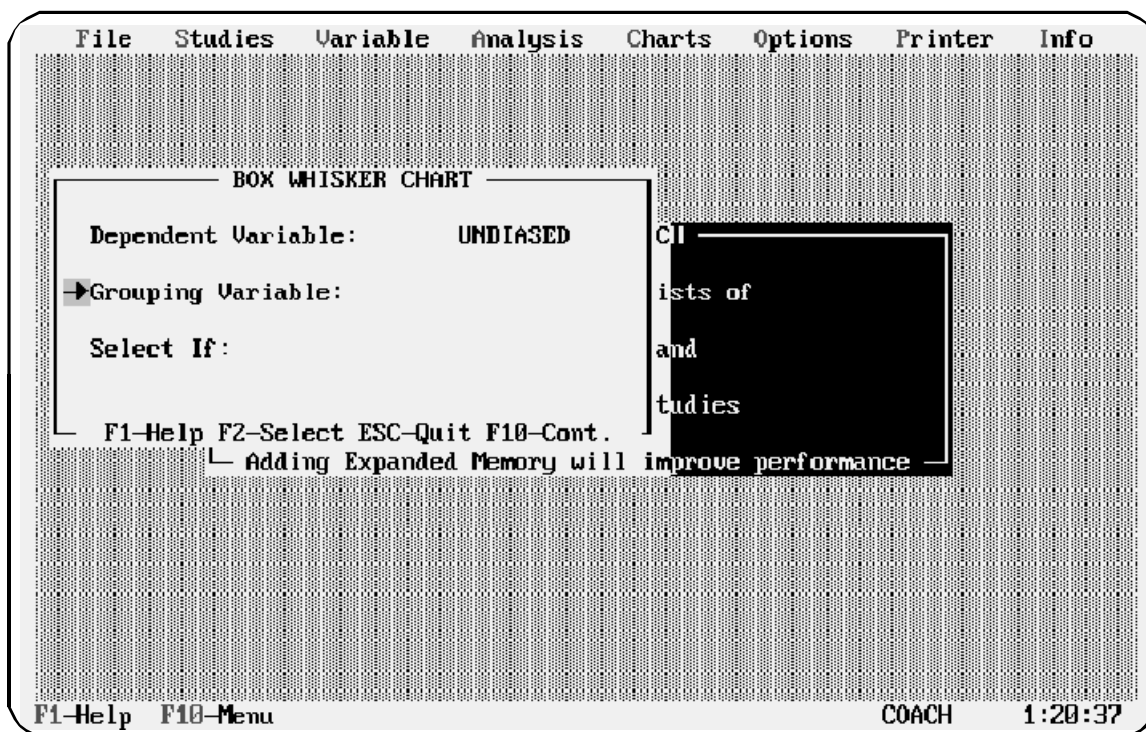
To create the Box & Whiskers chart, follow these steps:

1. Select Charts/box & Whiskers

Meta-Stat displays a screen where you identify the variables and other information for the chart.

2. Use the Criterion Variable field to specify the variable you want to measure.
3. Optionally, use the Grouping Variable field to identify a discrete or blocking variable. *Meta-Stat* will create a separate graphic for each category within the variable.
4. If necessary, use Select If to select data for the chart.

In the following example, *Meta-Stat* will measure the unbiased effect size:

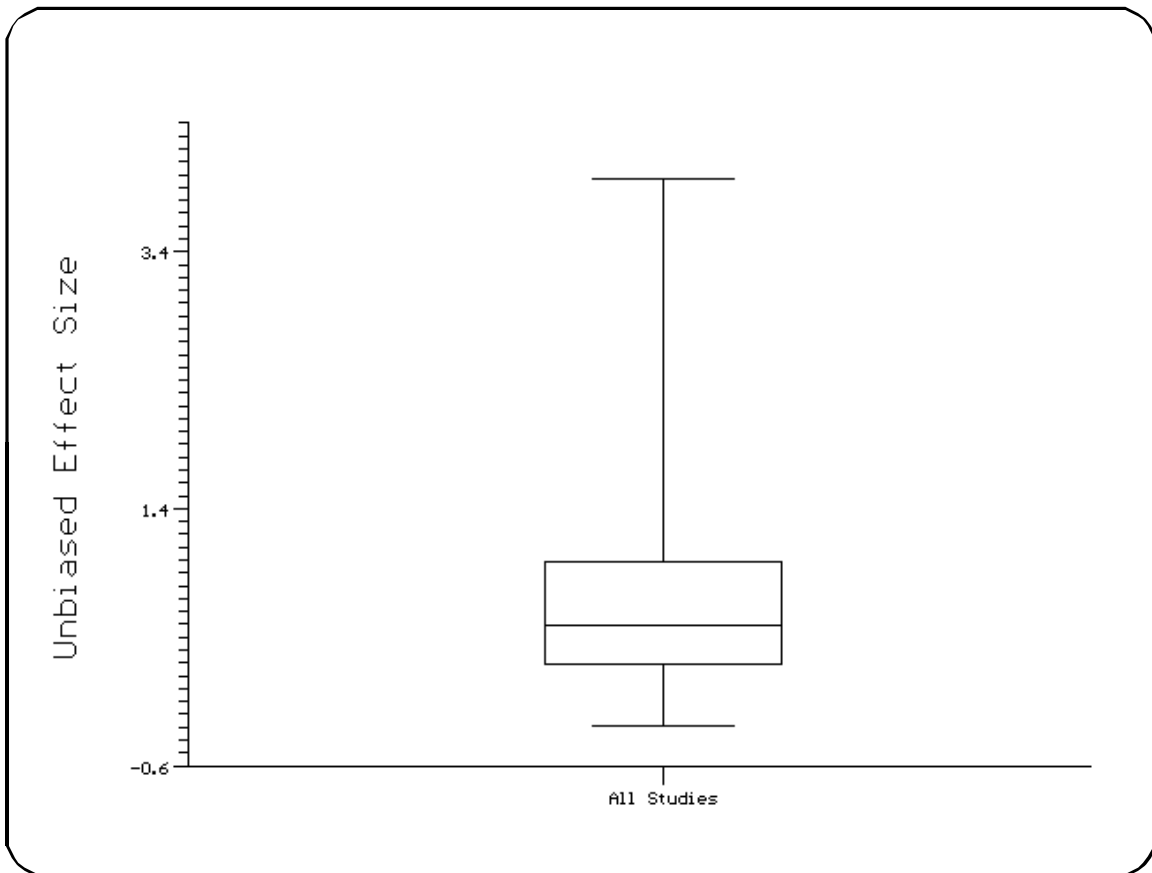


5. Press F10 to display the results. The results are displayed as follows:

Graphic Feature	Description
Top of Whisker	The maximum value
Bottom of Whisker	The minimum value
Top of Box	The 75th percentile, the third quartile
Bottom of Box	The 25th percentile, the first quartile
Line inside the Box	The 50th percentile, the median

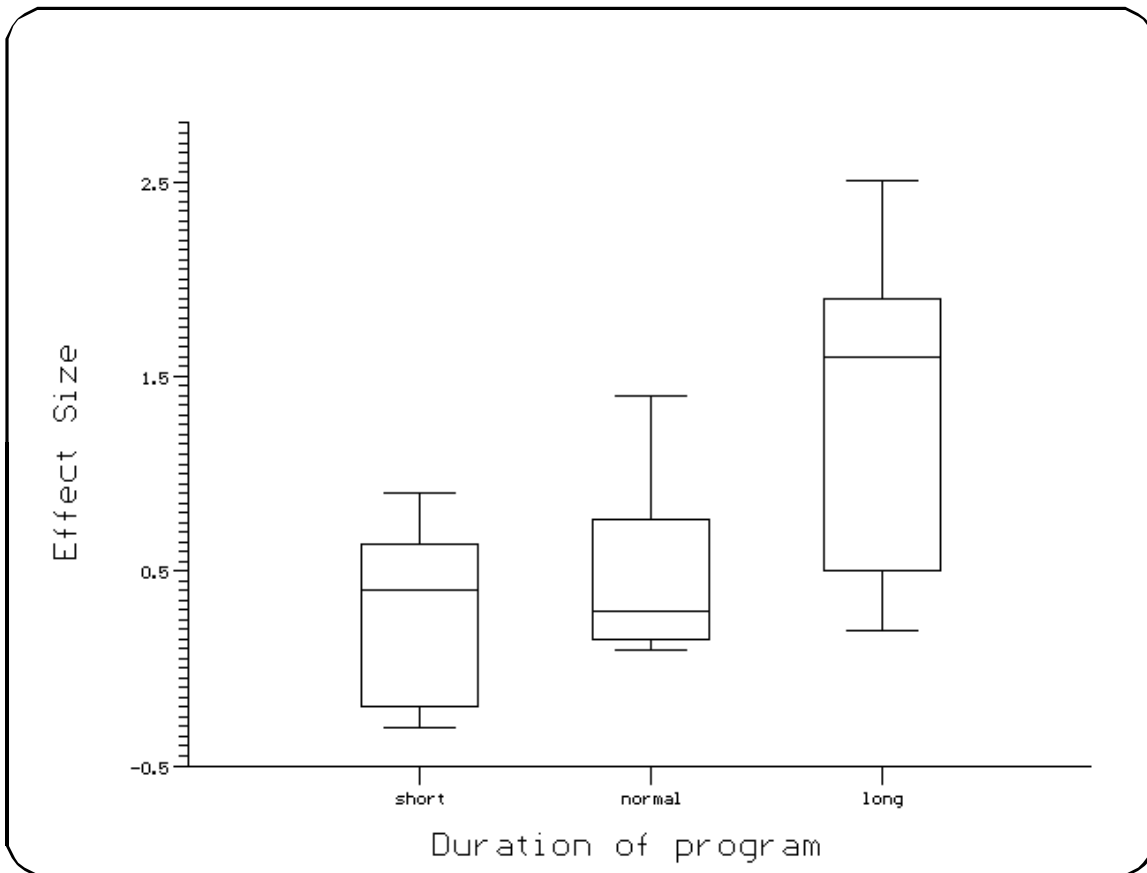
Results for a Criterion variable

If you specified only a criterion variable, *Meta-Stat* shows a single Box & Whiskers:



Results with a Grouping Variable

If you specified a grouping variable in addition to the criterion variable, *Meta-Stat* shows a separate graphic for each category identified by the grouping variable. For the following example, a grouping variable called Hour Group was specified. This variable identifies the duration of the intervention program:



Selecting Other Variables

Once you have displayed the chart, you can quickly select other variables for the chart:

Press this key	To select a new ...
8 or 9	Criterion variable
space or backspace	Grouping variable

Displaying the Mean Values for Groups

Use the Means chart to show the mean value for one or more groups, as are represented by discrete or blocking variables. *Meta-Stat* measures the value for each group. The chart also shows the 95% confidence interval.

To create the Means chart, follow these steps:

1. Select Charts/Means

Meta-Stat displays a screen where you identify the variables and other information for the chart.

2. Use the Criterion Variable field to specify the variable you want to measure.

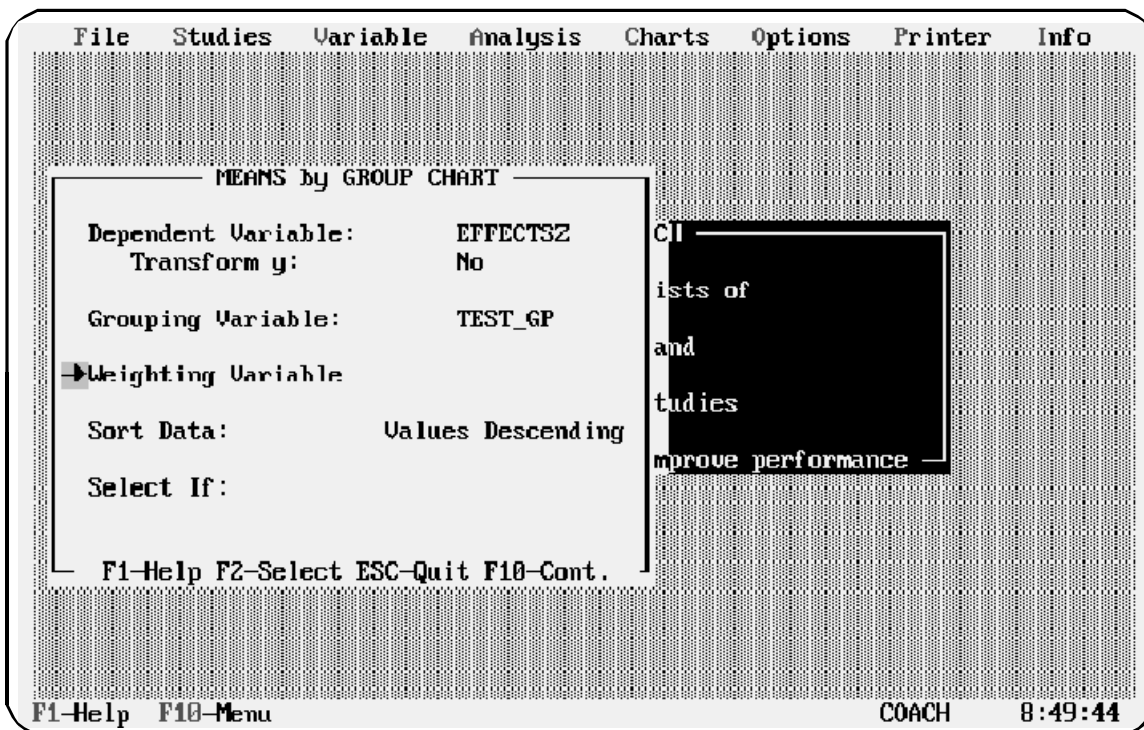
Use Transform y to apply various transformations to this variable.

3. Optionally, use the Grouping Variable field to specify a discrete or blocking variable. *Meta-Stat* will show the means only for the groups identified by this variable.

If you leave this field blank, *Meta-Stat* will show the means for *all* discrete and grouping variables.

4. You can weight, sort, and select data for the chart, if necessary.

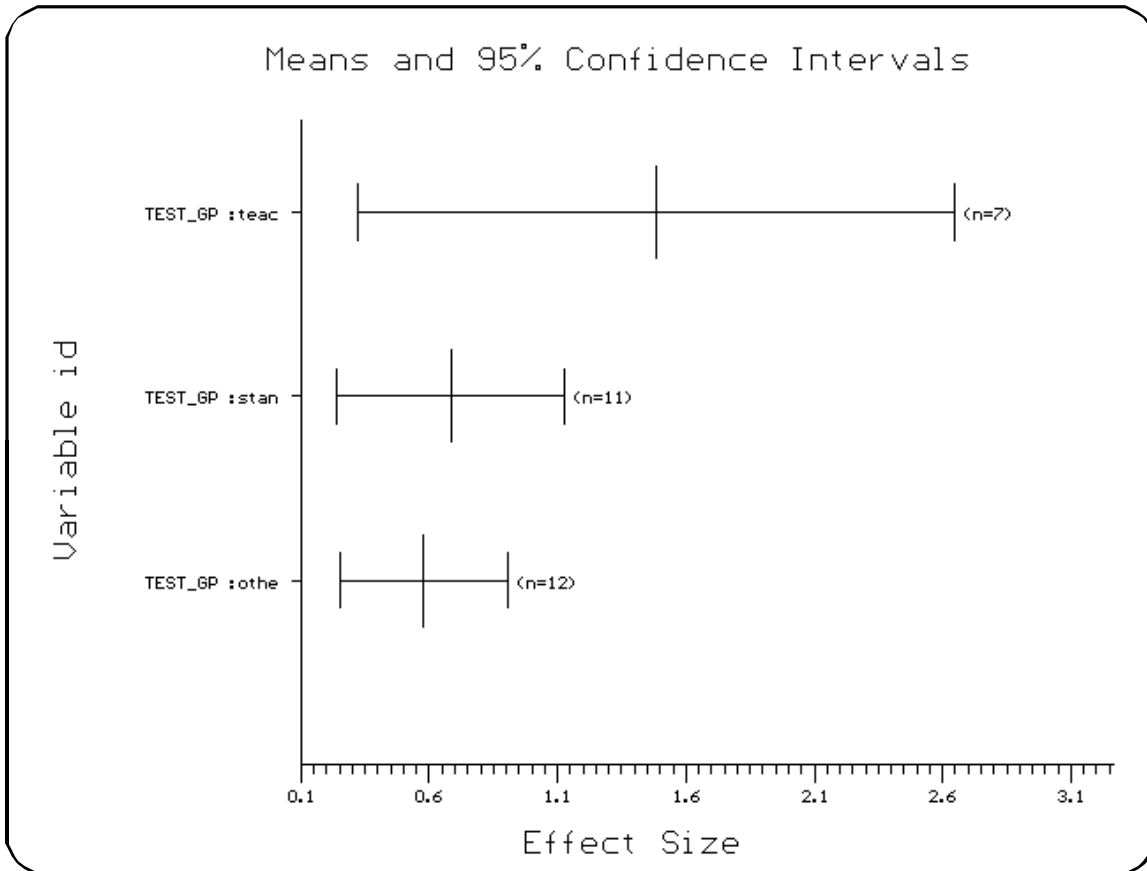
In the following example, *Meta-Stat* will show the mean effect sizes for a variable called TEST_GP:



5. Press F10 to display the result.

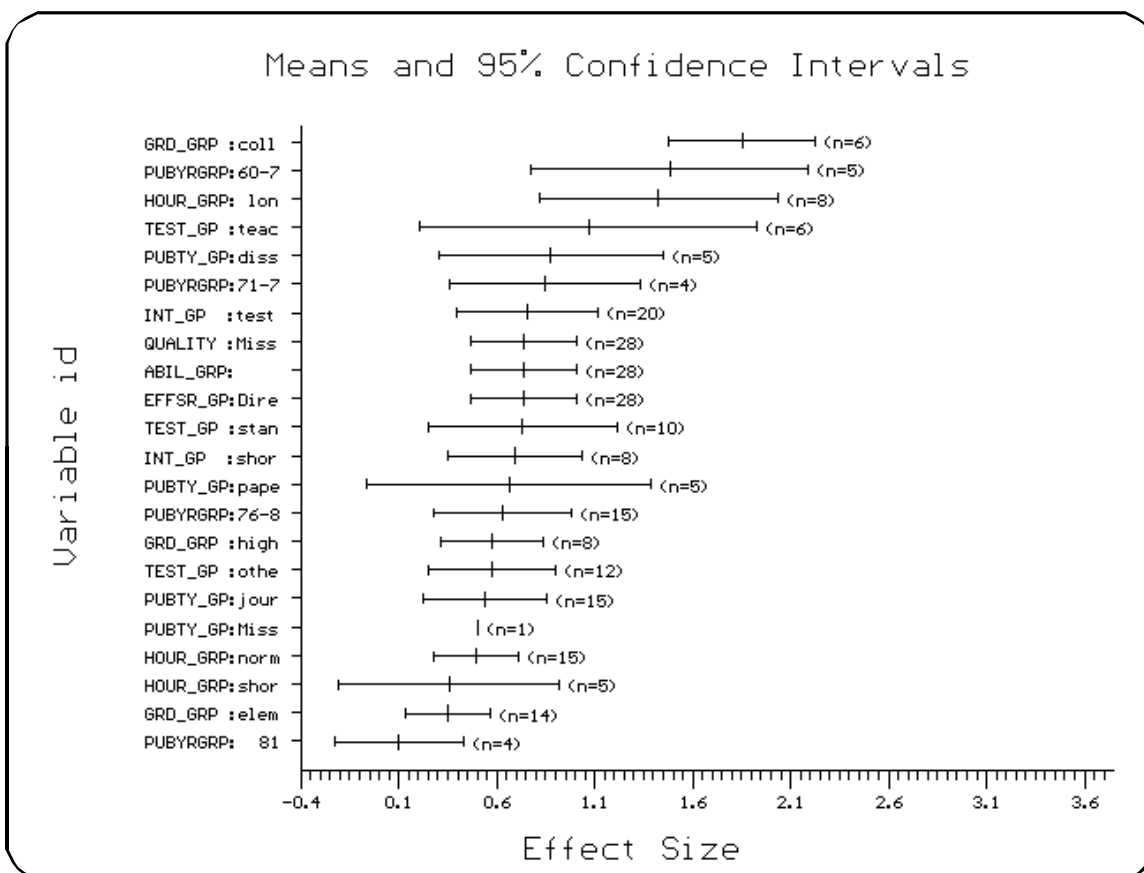
Results for a Single Grouping Variable

If you specified a grouping variable, *Meta-Stat* shows the means for categories within that group:



Results with a Grouping Variable

If you did not specify a grouping variable, *Meta-Stat* shows the means for all categories within all groups. In the following example, the data are sorted by value, in descending order:



Selecting Other Variables

Once you have displayed the chart, you can quickly select other variables for the chart:

Press this key	To select a new ...
8 or 9	Criterion variable
space or backspace	Grouping variable

