# HOW TO SET THE "EFFECT DIRECTION"
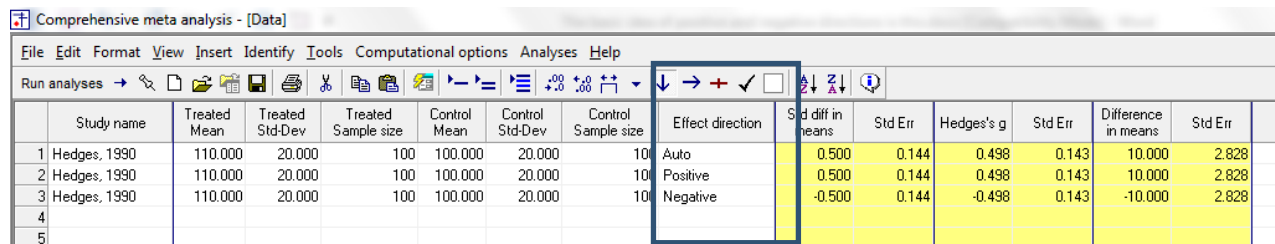
Some formats for data-entry have a column for Effect Direction.
The options are Auto | Positive | Negative.



The basic idea of this column is as follows.

Suppose your studies compared treated vs. control. In the analysis you need to ensure that all studies where Treated did better show up on one side of zero, while all those where Control did better show up on the other side of zero. WHICH side is arbitrary, but you need to be consistent. That is,

All the studies where Treated did better should be positive and all the studies where Control did better should be negative.
Or, all the studies where Treated did better should be negative and all the studies where Control did better should be positive.

By "Did better" we mean any difference greater than zero. A Difference of exactly zero can be marked positive or negative. This is unrelated to statistical significance.

When you are using a simple format, such as the post score in each group, it's typically easier to use auto. The program computes the first mean minus the second. If all the studies used the same outcome (or at least an outcome where a high score is always good) then you can (and probably should) use auto. (See the first line in the figure)

Similarly, if all studies compare pre with post, it's usually easier to use Auto, in which case the program will compute Post minus pre.

However, suppose some studies counted the number of correct responses while other counted the number of mistakes. In this case, you would want to use Positive or Negative to ensure that you always gave a positive score to the studies where the treated group "did better". This means that the treated group had a higher score (for number of correct) or a lower score (for number of mistakes).

In this case you can force the effect size to have a positive direction (as in Line 2) or to have a negative direction (as in line 3). Using these options does not reverse the auto sign. Rather, it tells the program to compute the absolute difference and then put a plus or a minus sign in front of it.

For some formats, the program allows you to choose Auto. If you enter post-scores for two independent groups the program will use First minus Second. If you enter pre and post scores the program will use post minus pre.

For some other formats, you must choose Positive or Negative. These formats include the case where you enter a p-value and sample size, since the program has no way of knowing the direction. Also, if you're working with change scores in two groups, you need to see which group had the greater amount of change. This ensures that someone will look at the data and ensure that the direction is correct.

When you run the analysis, it's imperative to check that the effects fall on the correct side of zero.

If the effect is large you may find that most effects line up on one side of zero. If an effect falls on the opposite side of zero, this should be a study where the effect actually was in the reverse direction from the others.