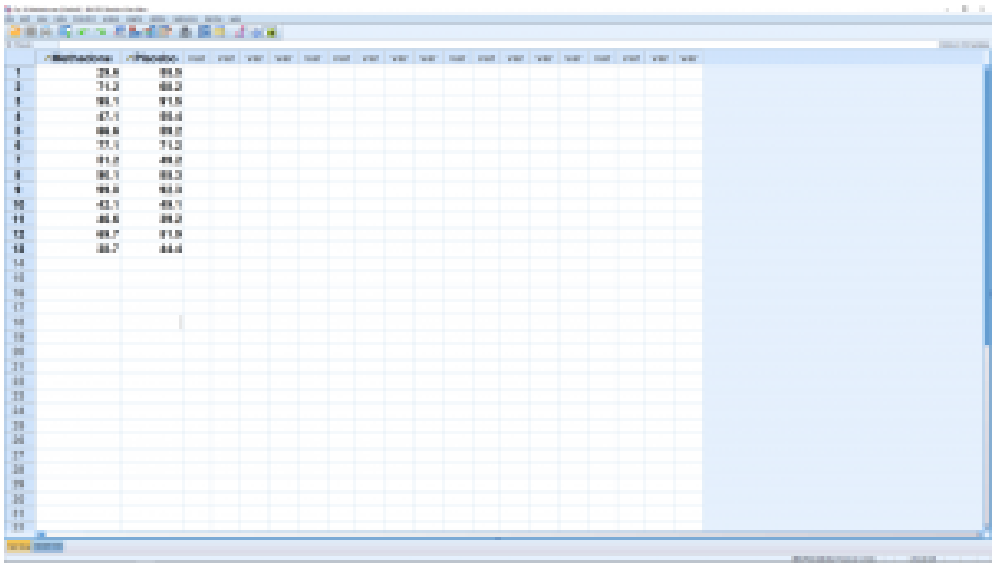
10.9: SPSS Lesson 7- Paired Sample t-Test

To follow along, load in the Data Set "Methadone.sav":



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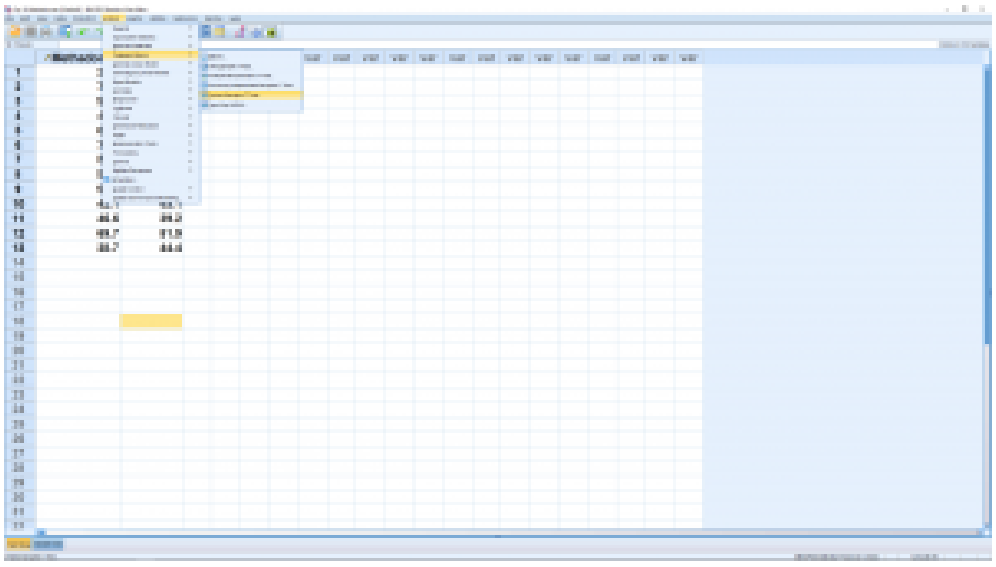
As set up, the file has two dependent variables. This "within subjects" dataset is fundamentally multivariate. When we did the paired t-test by hand we converted the multivariate data to univariate data by taking differences. SPSS will do the differences behind the scene and you won't actually see them. Run the t-test by picking Analyze $\rightarrow$ Compare Means $\rightarrow$ Paired -Samples T-Test:



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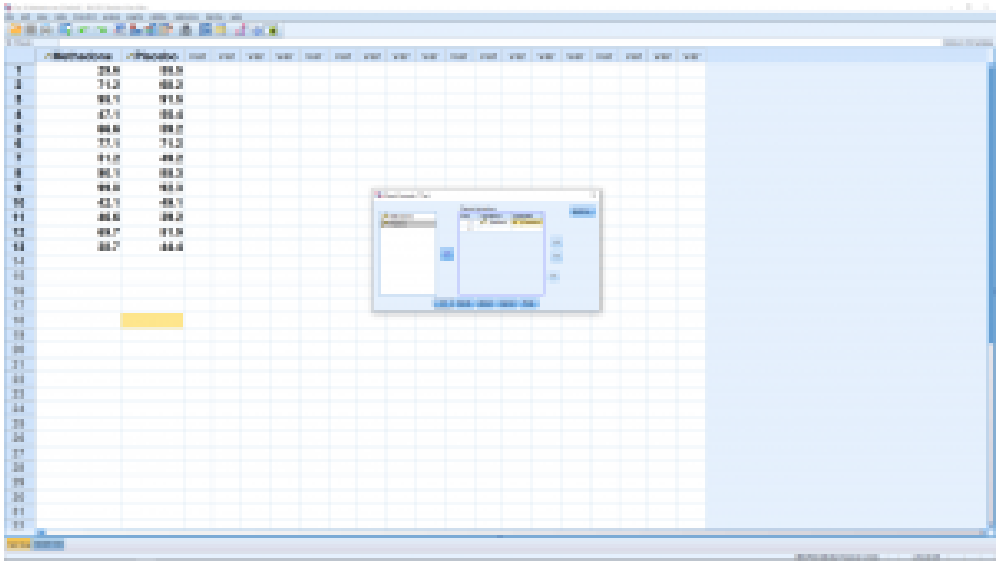
Move the two variables into Pair 1 and hit OK (Options again allows you to specify a confidence intervals percentage):



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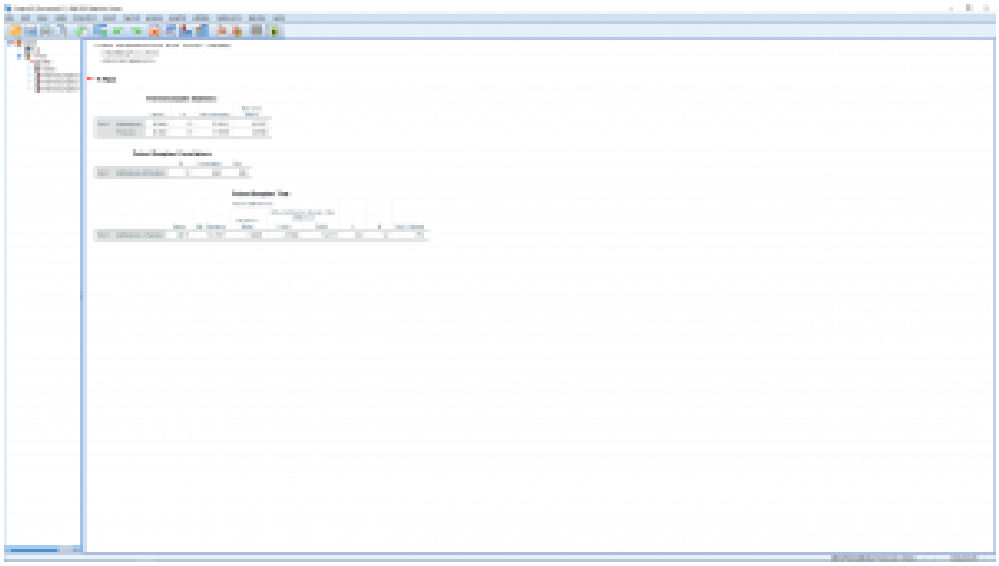
The output is:



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The first two tables are descriptive statistics. The last table gives the stuff we want: $\overline{D} = 0.9615$, $s_D = 10.7067$, the confidence interval

$$-5.5084 < \mu_D < 7.4315,$$

$t_{\text{test}} = 0.324$, $\nu = 12$ and $p = 0.002$ for the two-tailed hypotheses pair

$$\boxed{\text{H\_\{0\}: \& \textbackslash mu\_\{D\} = 0}}$$

$$\boxed{\text{\textbackslash begin\{equation*\} H\_\{1\}: \& \textbackslash mu\_\{D\} \textbackslash neq 0. \textbackslash end\{equation*\}}}$$

The very low p-value (0 in this case) and the absence of 0 in the confidence interval guide us to reject H_0, the differences are significantly different from zero.

The standardized effect size and strength of association for the paired t-test are

$$d = \frac{t}{\sqrt{n}} = \frac{\overline{D}}{s_D}$$

and

$$\eta^2 = \frac{t^2}{t^2 + n - 1}$$

respectively.
