Activity 4.2: Two-Sample T-Test for the Mean

Part 1: Independent Samples

A researcher wants to determine whether children will learn concepts better with positive examples alone or with both positive and negative examples. Ten children are randomly assigned to each of the two experimental conditions. Their scores on the concept-formation task are given in the Excel file **Dataset_4.2a.xlxs** that accompanies Activity 4.2.

Does this data indicate that the average score of the Positive-only group is different to the average score of the Positive and Negative group?

- Import the Excel file into SPSS and correct all variable issues that need to be corrected in Variable View.
- Run **Analyze Compare Means and Proportions Independent Samples T-Test**.
- Click on the **Define Groups** button and enter **P** for the Positive-only group and **PN** for the positive and negative group. Click OK.
- Verify that variances are homogeneous by reading and interpreting the Levene's test results.
- Read and interpret Cohen's D value.
- Read, interpret, and report the Independent Samples t-test results.

Part 2: Dependent Samples

Nine individuals were used in an experiment to determine if an atmosphere involving exposure to carbon monoxide has an impact on breathing capability. The participants were exposed to breathing chambers, one of which contained a high concentration of carbon monoxide. The subject's breathing was measured in both types of environments. This data is contained in the Excel file **Dataset_4.2b.xlxs** that accompanies Activity 4.2.

Import the Excel file into SPSS and run a T-Test for dependent samples, testing the hypothesis that mean breathing frequency is the same in the two environments. Use alpha = 0.05. Assume that the beathing frequency scores are approximately normal.

★ Please create a copy of the Excel file and use the duplicate to complete the activity. Ensure no changes are made to the shared file