Statistical Analysis

[Enter the name of student here]

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In this data, there are ten subjects who have been examined in terms of their response to changes in temperature. A statement has been made that higher temperatures will result in an increase in the aggression in the respondents. The statistical analysis has been performed by running the paired sample t test. A paired sample t test is used when there are same subjects examined in two different situations. The same identities have been used to assess the higher and lower temperature cases regarding aggression. The following tables show the results of the study.

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| --- | --- | --- | --- | --- | --- |
| **Paired Samples Statistics** | | | | | |
|  | | Mean | N | Std. Deviation | Std. Error Mean |
| Pair 1 | Hot Temperature | 32.500 | 10 | 13.1000 | 4.1426 |
| Cold Temperature | 20.300 | 10 | 8.4070 | 2.6585 |

The above table shows the average values of the hot and cold temperature groups. This is calculated by dividing the sum of values by the total number of values. The standard deviation is calculated by taking the deviations of sample mean from the actual values (W.Mee & Chua, 2012). The standard error of mean is the measure used to indicate the fluctuation between the sample mean and population mean.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Paired Samples Correlations** | | | | |
|  | | N | Correlation | Sig. |
| Pair 1 | Hot Temperature & Cold Temperature | 10 | .477 | .164 |

The paired sample t test in this case is not very strong. The strength of this test is shown by the correlation figure given in the above table. A relatively lower correlation in this case is basically related to the means of two groups in the first table (W.Zimmerman, 1997). We can see a considerable difference between the means of two groups namely hot temperature and low temperature. A higher value in the correlation column shows that the ranks of scores in the two groups are the same. Thus, a higher score close to one show that any subject who had a higher score in the first experiment i.e. the higher temperature will have a higher score in the other group as well.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Paired Samples Test** | | | | | | | | | |
|  | | Paired Differences | | | | | t | df | Sig. (2-tailed) |
| Mean | Std. Deviation | Std. Error Mean | 95% Confidence Interval of the Difference | |
| Lower | Upper |
| Pair 1 | Hot Temperature – Cold Temperature | 12.2000 | 11.7170 | 3.7053 | 3.8181 | 20.5819 | 3.293 | 9 | .009 |

The above table shows the results of the t-test run to see if there is a significant difference between the two groups. The last column shows the significance figure at 0.009. Assuming a level of significance of 0.05, we can accept the null hypothesis and conclude that there is no significant difference between the two groups. Stated otherwise, temperature is not found to have any significant impact on the aggression.

# **References**

W.Mee, R., & Chua, T. C. (2012). Regression toward the mean and the paired sample t test. *The American Statistician*, 39-42.

W.Zimmerman, D. (1997). Teacher's Corner: A note on interpretation of the paired sample t-test. *Journal of Educational and Behavioral Statistics*.