PROPOSAL OF STATISTICAL ANALYSIS FOR THE STUDY "PROMOTING BETTER LEARNING AT SCHOOL PROJECT"

I. Generation of questionnaire and databases from *Google Form*

Two links will be generated for the CATS assessment, one for each school. This with the aim of having an identifier of the Telesecundarias N 466 and N 301.

They will apply to all (hopefully 50 from each school) children from each of the schools at three different times:

At the beginning of the project (January 2023). In this first survey, it is expected that in the telesecundarias there is no evidence of a statistically significant difference in the means of the evaluation, since in both no treatment has been carried out.

In the middle of the project (March 2023). In this second survey, it is expected that differences (inconclusive) will be observed in favor of the telesecondary N 466, where TFT treatment will be performed.

In the final part of the project (June 2023). In this last survey of the CATS questionnaire it is expected that significant differences will be found between the telesecundarias.

It should be noted that each information gathering will generate the corresponding database.

II. Data processing: scoring

From the realization of a code in the free software "R Studio", the databases will be processed with the information obtained from the application of the CATS, in order to obtain the score corresponding to each of the children, in each school.

III. Information Analysis: Hypothesis Testing

Step 1: Express the research question as a statistical hypothesis

Question:

Will mental field therapy (TFT) significantly reduce trauma symptoms in middle school children in the intervention group, based on the results of the CATS assessment; compared to a ten-minute-per-day intervention, consisting of an artistic activity for the active, wait-list group of middle school children?

The analysis to be carried out is parametric, where the average of the scores obtained in the 30 students of each school, in the three surveys, will be tested.

Tograr the above, the following hypothesis test will be contrasted:

Null hypothesis:

The mean of the CATS evaluation in the Esc. Telesecundaria N 466 (Tapping) is equal to the average of the CATS evaluation in the Esc. Telesecundaria N 301 (control); that is, there is no significant difference between applying Tapping or not.

Against

Alternative hypothesis:

The mean of the CATS evaluation in the Esc. Telesecundaria N 466 (Tapping) is different from the average of the CATS evaluation in the Esc. Telesecundaria N 301 (control); that is, the treatment applied to the N 466 school suggests that it will improve the level of trauma in children and adolescents.

$$H_0 : \mu_{Esc\ 466} - \mu_{Esc\ 301} = 0 \qquad versus \qquad H_1 : \mu_{Esc\ 466} - \mu_{Esc\ 301} \neq 0$$

If the null hypothesis is not rejected, there will be evidence to conclude that stress levels are the same in both schools.

This will also be reflected in the similar analysis of other variables, such as students' grades in reading and mathematics, decreased absences (and disciplinary measures).

Step 2: Decision about the appropriate statistical test.

A completely random experiment will be carried out to compare the populations of the telesecundarias, using the hypothesis of equality of means, assuming equality of variances in the groups.

Under the statistical model:

$$Yij = \mu + \tau i + \varepsilon ij$$

Where is the overall mean that is common to each treatment, which is relative to the treatment and is the error attributable to the measurement. $\mu \tau ii \varepsilon ij Yij$

This model implies that in the completely random design would act at most two sources of variability: treatments (Tapping and control group) and random error.

Analyzing the methods available for this study, it is considered that the most appropriate is the Prueba F, since there are two groups that will be tested: the group in which the Tapping is applied vs the control group.

Previously, the following tests will be performed:

- Adjustment of theproposed model and normality analysis of the residuals (histogram, normal probabilistic graph and/or Shapiro-Wilk contrast),
- It isuposed of equality of the variances in the groups (with Tapping and control group) in such a way to corroborate that the Pproposed, sthe correct analysis.

In case of not complying with the assumption of normality, non-parametric tests will be explored.

Step 3: The decision rule is determined to reject or accept the null hypothesis.

We will reject the null hypothesis if the p-value is less than the fixed one (probability of rejecting the null hypothesis being correct; called type I error); is being proposed $\alpha\alpha = 0.05$.

Or, under the certainty, that there are no differences in the means of the treatments is H_0true, the quotient is the test statistic for the hypothesis that there are no differences in the means of the treatments:

$$F_o = \frac{MS_{Tratamientos}}{MS_E} \sim F_{(a-1,N-a)}$$

The null hypothesis will be rejected if $F_o > F_{\alpha(a-1,N-a)}$

IV.   Analysis of information and elaboration ofconclusions

Once the calculations have been made, it will be possible to draw conclusions to the project.