**CASE 1:** In a study with schizophrenic patients, some researchers performed a therapeutic intervention using video games to improve the patients’ attention. The participants were randomly assigned to one of two conditions (experimental intervention group based on video games vs. control group without therapeutic intervention). The results showed an improvement in attention (which was measured by their precision in a stimulus detection task) in the group with therapeutic intervention.

1. The research described in CASE 1 is:
2. Experimental because an independent variable was manipulated and participants were randomly assigned to the conditions
3. Non-experimental, since participants only filled in questionnaires
4. Quasi-experimental because the two groups were formed naturally, without random assignment
5. (CASE 1) The variable that measured the patients’ attention after the study is:
6. Dependent, and it is a qualitative variable
7. Independent, and it is an ordinal variable
8. Dependent, and it is a quantitative variable
9. (CASE 1) For the variable “Precision in the task”, Patient #1 is at the 40th percentile; Patient #2 is at the third quartile; and Patient #3 is at decile 3. Indicate the correct statement:
10. Patient #2 is the worst (less accurate) in that variable, comparatively
11. Patient #2 is the best (most accurate) in that variable, comparatively
12. Patient #3 is the best (more accurate) in that variable, comparatively
13. What measure of association would you use to assess the relationship between "level of education" (primary / secondary / university / master) and "income level" (low income / middle income / high income)?
14. Spearman correlation
15. Pearson correlation
16. Cramer's V correlation
17. What theoretical probability distribution is symmetric relative to zero, and can take positive and negative values?
18. Student t distribution
19. Snedecor’s F distribution (Fisher’s F)
20. Both the t distribution and the F distribution
21. We have a discrete random variable (e.g., number of heads after 10 tosses of a coin), and we are told that there is a value f (x) = 3.2 for one of the values ​​of X. Is that possible?
22. It is not possible
23. It is possible, provided that the total area is 1
24. It is possible, because 3.2 is not negative
25. (See chart below) The dots in the box and whisker diagram of self-esteem reflect:
26. Outliers, and the numbers that appear to the side of each dot are the mean of each subject 'atypical' self-esteem
27. The average female self-esteem
28. Outliers, and the numbers appear next to the dots are the rows that occupy the subjects in the database



1. (OUTPUT 1) Which variable shows greater asymmetry? (use the index provided by SPSS)
2. Stress
3. Social reinforcement
4. Self esteem
5. (OUTPUT 1) Between which values ​​would be the lower and upper parts of the box (i.e., the hinges in the box and whisker plot) for the variable "academic performance"?
6. 4.62 and 5.50
7. 1.75 and 8.20
8. 4.62 and 5.12
9. (OUTPUT 1) Indicate the correct statement about the degree of kurtosis:
10. Academic performance has a leptokurtic distribution
11. Stress has a leptokurtic distribution
12. Self-esteem has a mesokurtic distribution

OUTPUT 1

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Statistics | | | | | |
|  | | Stress | Academic Performance | Social Reinforcement | Self esteem |
| N | | 50 | 50 | 50 | 50 |
| Mean | | 4.0800 | 5.0276 | 5.0480 | 5.2330 |
| Median | | 4,0000 | 5.1250 | 4.8000 | 5.0000 |
| Standard Deviation | | 2.09801 | 1.06199 | 1.32684 | 1.42341 |
| Variance | | 4,402 | 1,128 | 1,761 | 2,026 |
| Skewness | | ,401 | - ,169 | , 584 | , 991 |
| Standard Error of Skewness | | ,337 | ,337 | ,337 | ,337 |
| Kurtosis | | - 340 | 3,016 | -, 283 | 1,926 |
| Standard Error of Kurtosis | | , 662 | , 662 | , 662 | , 662 |
| Minimum | | 1.00 | 1.75 | 2.80 | 2.70 |
| Maximum | | 9.00 | 8,20 | 8,50 | 10.00 |
| Percentiles | 25 | 2.0000 | 4.6250 | 3.9500 | 4.4750 |
| 50 | 4,0000 | 5.1250 | 4.8000 | 5.0000 |
| 75 | 5.2500 | 5.5000 | 6.0000 | 6.0000 |
|  | | | | | |

1. (OUTPUT 2) What percentage of variance of self-esteem can be explained by the equation with academic performance, stress and social reinforcement as predictors?
2. 86.5%
3. 93.5%
4. 52.2%
5. (OUTPUT 2) Which variable is more important in the regression equation?
6. Stress
7. Academic performance
8. Social reinforcement
9. (OUTPUT 2). What is the value of the coefficient (unstandardized) corresponding to the variable "stress" in the regression equation?
10. 0.041
11. -0.078
12. -0.115
13. Given the information in OUTPUT 2, if we perform a regression analysis (stepwise), which variables will enter the equation?
14. For sure, the three variables because their coefficients are different from zero
15. For sure, social reinforcement because of its high standardized coefficient
16. For sure, social reinforcement and academic performance because their coefficients are positive
17. In the model given in OUTPUT 2, what would you predict in self-esteem (in raw scores, unstandardized) to someone with 0 in each of the 3 predictors?
18. 0.534
19. We cannot know the answer with the information from the output
20. 0.563

OUTPUT 2

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Summary of the model | | | | |
| Model | R | R-squared | R square adjusted | Standard error of estimate |
| 1 | , 935a | , 874 | 865 | , 52221 |
| Predictors: (Constant), Academic\_Performance, Stress, Social\_Reinforcement | | | | |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Coefficients | | | | | | |
| Model | | Unstandardized | | Standardized Coefficients | t | Sig. |
| B | Standard Error | Beta |
| 1 | (Constant) | , 563 | , 534 |  | 1,052 | , 298 |
| Social reinforcement | 921 | , 065 | 859 | 14,125 | , 000 |
| Stress | -, 078 | 041 | - 115 | -1.932 | , 060 |
| Academic performance | , 067 | , 084 | , 050 | , 801 | , 427 |
| Dependent Variable: Self-esteem | | | | | | |

1. (OUTPUT 2) Indicate the correct statement:

a) The relationship between academic performance and self-esteem is very high

b) Increased stress is related to higher self-esteem

c) Social reinforcement and self-esteem have a direct (positive) relationship

17. Which of the following references follows APA format:

a) Kaufman, A. S., 1997, *K-BIT: Kaufman Brief Intelligence Test*. TEA.

b) Kaufman, A. S. (1997). *K-BIT: Kaufman Brief Intelligence Test*. Madrid: TEA.

c) Kaufman, A. S., *K-BIT: Kaufman Brief Intelligence Test*, 1997, Madrid: TEA.

18. If we want to know whether, in a regression model, some predictors are related to each other (collinearity problem), we will:

a) Calculate the standardized coefficients of the predictors

b) Calculate the VIF (Variance Inflation Factor) of the predictors

c) Perform regression analysis (stepwise) considering the median of the coefficients

19. We have a Student t distribution with 2 degrees of freedom. What proportion of values ​​leave below a value of 2 [i.e., F(2)]?

a) Exactly 0.5

b) More than 0.5

c) Less than 0.5

20. If we want to reduce the positive asymmetry in a distribution of reaction times, we will:

a) square the data (x2)

b) compute the square root of the data

c) calculate the standard scores (z-values) of the data

ACBAA

ACCAA

ACBBC

CBBBB