1. Your project compares first, second and third graders (your IV) on creativity (the DV). They all draw a picture and you rate them on a 25 point scale.

H0:

HA:

First graders Second graders Third graders

25 12 12

24 15 15

19 17 10

19 18 11

18 17 15

∑X 105 79 63

∑X2 2247 1271 815

Complete the source table:

Source SS df s2 F

Between

Within

Total

What do you conclude about your Null Hypothesis?

Describe what this conclusion tells you about the population means of creativity for first,

second and third graders.

Describe the error you could be making with this conclusion.

How often will it happen?

ANSWERS

H0: The three population creativity means are all the same; HA: at least one population mean is different.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Sum of Squares | df | Mean Square | F | Sig. |
| Between Groups | 179.733 | 2 | 89.867 | 12.540 | .001 |
| Within Groups | 86.000 | 12 | 7.167 |  |  |
| Total | 265.733 | 14 |  |  |  |

Reject the Null hypothesis

At least one grade’s pop mean creativity is prob different.

The differences among the means could be coincidence.

0.1% of the time.

2. Your next project compares fourth, fifth and sixth graders on attention span. You have their teachers rate them on how much they pay attention in class.

H0:

HA:

Fourth graders Fifth graders Sixth graders

14 15 13

16 13 15

15 15 15

15 16 13

14 15 16

16 15 12

∑X 90 89 84

∑X2 1354 1325 1188

Complete the source table:

Source SS df s2 F

Between

Within

Total

What do you conclude about your Null Hypothesis?

Describe what this conclusion tells you about the population means of fourth, fifth and sixth

graders’ attention spans.

Describe the error you could be making with this conclusion.

If the power for this experiment is .39, how often will this error occur?

Explain what power of.39 means.

What 2 things could you do to make this error rate go down?

ANSWERS

H0: The three population means for attention time are all the same; HA: At least one population

mean is different.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Sum of Squares | df | Mean Square | F | Sig. |
| Between Groups | 3.444 | 2 | 1.722 | 1.240 | .317 |
| Within Groups | 20.833 | 15 | 1.389 |  |  |
| Total | 24.278 | 17 |  |  |  |

Retain the Null hypothesis.

The three population averages are prob the same.

At least one population average attention span could be different.

61% of the time.

With this experiment design, you would be able to reject the null 39% of the time.

Any two things that increase power.