

AS3 (Assignment 3, Unit 5): Independent and Dependent t-tests on SPSS

Please write your answers in red 😊

Jones and Smith's advertising company wish to know if cartoons on cereal boxes cause children to attribute higher taste ratings to the cereal. The advertising company hires a psychologist to conduct a study before developing a sales plan for the cereal. The psychologist randomly selects 24 participants for a pilot study. She randomly assigns the sample so that 12 participants eat the cereal with the cartoon on the box while the other 12 participants eat the cereal without a cartoon on the box. All participants then rated the taste of the cereal. Here are the ratings:

| <u>Without Cartoon</u> | <u>With Cartoon</u> |
|------------------------|---------------------|
| 3 | 3 |
| 4 | 4 |
| 7 | 8 |
| 5 | 7 |
| 8 | 8 |
| 8 | 8 |
| 4 | 9 |
| 7 | 4 |
| 5 | 7 |
| 6 | 6 |
| 6 | 8 |
| 7 | 4 |

1. What is the researcher's hypothesis? The Researcher's hypothesis is to know if cartoons on cereal boxes cause the children to attribute higher taste ratings to the cereal.
2. What is the null hypothesis? The Null hypothesis is that cartoons on cereal boxes doesn't cause children to attribute higher taste ratings to the cereal.
3. Exactly what mean differences are you comparing here? with and without cartoons are mean differences that I am comparing.

4. What is the dependent variable? **Cartoon on cereal boxes.**

5. What is the independent variable? **Higher Taste ratings to the cereal.**

6. Please analyze the data with the appropriate hypothesis test on SPSS and cut and paste your SPSS results here: Group Statistics

| | VAR00002 | N | Mean | Std. Deviation | Std. Error Mean |
|----------|----------|----|--------|----------------|-----------------|
| VAR00001 | 1.00 | 12 | 5.8333 | 1.64225 | .47408 |
| | 2.00 | 12 | 6.3333 | 2.05971 | .59459 |

Group Statistics

| | VAR00002 | N | Mean | Std. Deviation | Std. Error Mean |
|----------|----------|----|--------|----------------|-----------------|
| VAR00001 | 1.00 | 12 | 5.8333 | 1.64225 | .47408 |
| | 2.00 | 12 | 6.3333 | 2.05971 | .59459 |

Based on your SPSS results that you pasted above, please answer the following questions:

7. Please write your “statistical statement”: $t(22) = -6.58, p > .05$ _____

8. Did you reject or fail to reject the null hypothesis? fail to reject _____

9. Please write your results in a “literature” or “research study” format:

A researcher hypothesizes that arousal levels will be affected by meditation. The sample participates in formal meditation classes for 3 weeks, before and after which arousal is measured.

| Subject | BEFORE MEDITATION | AFTER MEDITATION |
|---------|-------------------|------------------|
| 1 | 72 | 91 |
| 2 | 162 | 155 |
| 3 | 145 | 152 |
| 4 | 183 | 190 |
| 5 | 123 | 134 |
| 6 | 167 | 157 |
| 7 | 76 | 99 |
| 8 | 112 | 104 |
| 9 | 124 | 143 |
| 10 | 137 | 156 |

1. What is the researcher's hypothesis?

The researcher hypothesis that arousal levels will be affected by meditation.

2. What is the null hypothesis? The Null hypothesis is that meditation has no effect on arousal levels.

3. What is the dependent variable? Meditation.

4. What is the independent variable? Arousal levels.

5. What is the appropriate hypothesis test? Dependent measure t test.

6. Please analyze the data using the appropriate hypothesis test on SPSS and cut and paste your SPSS results here: Paired Samples Statistics

Mean N Std. Deviation Std. Error Mean

| | | | | | |
|--------|----------|----------|----|----------|---------|
| Pair 1 | VAR00001 | 138.1000 | 10 | 31.27104 | 9.88877 |
|--------|----------|----------|----|----------|---------|

| | | | | | |
|--|----------|----------|----|----------|----------|
| | VAR00002 | 130.1000 | 10 | 36.76487 | 11.62607 |
|--|----------|----------|----|----------|----------|

Paired Samples Test

Paired Differences
Significance

t df

Mean Std. Deviation Std. Error Mean 95% Confidence Interval of the Difference
One-Sided p Two-Sided p

Lower Upper

| | | | | | | | |
|--------|---------------------|---------|----------|---------|---------|----------|-------|
| Pair 1 | VAR00001 - VAR00002 | 8.00000 | 12.49000 | 3.94968 | -.93480 | 16.93480 | 2.025 |
| | 9 | .037 | .073 | | | | |

Paired Samples Effect Sizes

| Standardized | Point Estimate | 95% Confidence Interval |
|--------------|----------------|-------------------------|
|--------------|----------------|-------------------------|

Lower Upper

| | | | | | | |
|--------|---------------------|-----------|----------|------|-------|-------|
| Pair 1 | VAR00001 - VAR00002 | Cohen's d | 12.49000 | .641 | -.059 | 1.311 |
|--------|---------------------|-----------|----------|------|-------|-------|

| | | | | |
|--------------------|----------|------|-------|-------|
| Hedges' correction | 13.66707 | .585 | -.054 | 1.198 |
|--------------------|----------|------|-------|-------|

a the denominator used in estimating the effect sizes.

Cohen's d uses the sample standard deviation of the mean difference.

Hedges' correction uses the sample standard deviation of the mean difference, plus a correction factor.

7. Based on your SPSS results, do you reject or fail to reject the null?

Fail to reject

8. Please write the “statistical statement” for your SPSS results: $t(9) = 2.025, p > .05$

9. Please write your results in a “literature” or “research study” format: The mean arousal level before mediation classes was 130.1000 with a SD = 36.76487. The mean arousal level after was $m = 138.1000$ with a SD = 31.27104. Our data support that meditation does has an effect on arousal level.