

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

Please write your answers in red 😊

Jones and Smith's advertising company wishes 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?

\_\_\_\_\_ Cartoons on cereal boxes will have an effect on taste ratings

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2. What is the null hypothesis?

\_\_\_\_\_ Cartoons on cereal boxes will not have an effect on taste ratings.

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3. Exactly what mean differences are you comparing here?

\_\_\_\_\_ **The mean of the experimental group and the mean of the control group.**

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4. What is the dependent variable? \_\_\_\_\_ **Taste rating** \_\_\_\_\_

5. What is the independent variable? \_\_\_\_\_ **Placing cartoon on the box**

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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

**Independent Samples Test**

		Levene's Test for Equality of Variances		t-test for Equality of Means				95% Confidence Interval of the Difference		
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
VAR00001	Equal variances assumed	1.417	.247	-.658	22	.518	-.50000	.76045	-2.07707	1.07707
	Equal variances not assumed			-.658	20.960	.518	-.50000	.76045	-2.08162	1.08162

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

7. Please write your "statistical statement": \_\_\_\_\_ **t(22)= -0.658, p>0.05**

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8. Did you reject or fail to reject the null hypothesis? \_\_\_\_\_ **Failed to reject Ho** \_\_\_\_\_

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

\_\_\_\_The mean rating of no cartoon cereal boxes was  $M=5.8833$  with a  $SD=1.64225$ . The mean rating of cereal boxes with a cartoon was  $M=6.3333$  with a  $SD=2.0597$ . The data failed to reach significance. \_\_\_\_\_  
\_\_\_\_\_  $t(22)= -0.658, p>0.05$

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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?

\_\_\_\_Meditation will have an effect on arousal levels

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2. What is the null hypothesis?

Meditation will not have an effect on arousal levels

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3. What is the dependent variable? Arousal level

4. What is the independent variable? Meditation

5. What is the appropriate hypothesis test?

dependent-measures t-test

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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							
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
					Lower	Upper			
Pair 1	VAR00001 - VAR00002	8.00000	12.49000	3.94968	-.93480	16.93480	2.025	9	.073

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

failed to reject Ho

8. Please write the “statistical statement” for your SPSS results:

t(9)=2.025, p>0.05

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

The mean arousal level before meditation was  $M=130.1000$  with a  $SD=36.76487$ . The mean arousal level after meditation was  $M=138.1000$  with a  $SD= 31.27104$ . Our data was insignificant. Our data doesn't support that meditation has an effect on arousal levels.  $t(9)=2.025$ ,  $p>0.05$

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