

## 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 cause children to attribute higher taste ratings to the cereal.

2. What is the null hypothesis?

cartoons on cereal boxes WILL NOT cause children to attribute higher taste ratings to the cereal.

3. Exactly what mean differences are you comparing here?

We are comparing the mean differences of the taste ratings of the 12 participants who eat the cereal with the cartoon on the box with the 12 participants who eat the cereal without the cartoon on the box.

4. What is the dependent variable?

The taste ratings

5. What is the independent variable?

Whether or not there's a cartoon on the cereal box

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							
		F	Sig.	t	df	Significance One-Sided p	Two-Sided p	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
										Lower	Upper
VAR00001	Equal variances assumed	1.417	.247	-.658	22	.259	.518	-.50000	.76045	-2.07707	1.07707
	Equal variances not assumed			-.658	20.960	.259	.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

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

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

The mean for the ratings of eating cereal WITHOUT a cartoon on the box was M=5.83 with an SD = 1.64. The mean for the ratings of eating cereal WITH a cartoon on the box was M=6.33 with an SD = 2.05. The data failed to reach significance. There was not a significant difference between the groups, t(22)=-0.658, p>0.05. 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.

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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?

Medication WILL affect arousal levels.

2. What is the null hypothesis?

Medication WILL affect arousal levels.

3. What is the dependent variable?

Arousal levels

4. What is the independent variable?

meditation

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					t	df	Significance	
		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

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

Failed to reject

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 for the arousal levels BEFORE the sample participates in formal meditation classes for 3 weeks was  $M = 130.1$  with an  $SD = 36.76$ . The mean for the arousal levels AFTER the sample participates in formal meditation classes for 3 weeks was  $M = 138.1$  with an  $SD = 31.27$ . The data failed to reach significance. Our data do not support that meditation will affect arousal level,  $t(9) = 2.025, p > 0.05$ .