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:

Without Cartoon	With Cartoon
3	3
4	4
7	8
5	7
8	8
8	8
4	9
7	4
5	7
6	6
6	8
7	4

l. What is the researcher's hypothesis?

Cartoons on cereal boxes WILL cause children to have higher taste ratings for cereal.

2. What is the null hypothesis?

Cartoons on cereal boxes will NOT cause children to have higher taste ratings for cereal.

3. Exactly what mean differences are you comparing here?

The mean differences I am comparing are children who ate cereal with a cartoon on the box, and children who ate cereal with no cartoon on the box.

4. What is the dependent variable? Higher taste level.

5. What is the independent variable? 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							
						Significance		Mean	Std. Error	95% Confidence Interval of the Difference	
		F	Sig.	t	df	One-Sided p	Two-Sided p	Difference	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)= -.658, p>.05

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

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

The mean for the children who ate cereal with no cartoon on the box is M = 5.83 with an SD = 1.64. The mean for the children who ate cereal with a cartoon on the box is M = 6.33 with an SD = 2.05. The data failed to reach significance, t(22) = -.658, p>.05. There is a probability of a Type II Error.

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

l. What is the researcher's hypothesis?

Arousals methods WILL be affected by meditation.

2. What is the null hypothesis?

Arousal levels will NOT be affected by meditation.

3. What is the dependent variable? Arousal levels.

4. What is the independent variable? Meditation.

5. What is the appropriate hypothesis test?

Dependent measures 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 Lower	Upper			One-Sided p	Two-Sided p
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?

Fail to reject the null hypothesis.

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 of arousal levels **before** meditation was M =130.1 with an SD = 36.76. The mean of arousal levels **after** the meditation was M =138.1 with an SD = 31.27. Our data support meditation did NOT have an effect on arousal levels, $t(9) = 2.025, p>.05$. Type II probability error.