

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?

_____ That the cartoon on the box will make the higher taste rating by the children _____

2. What is the null hypothesis?

_____ The cartoon on the cereal box will NOT cause higher test rating by children _____

3. Exactly what mean differences are you comparing here?

_____ The mean of children having the taste rating of cereal with cartoon on the box, and the mean of children having the taste rating of cereal without cartoon on the box. _____

4. What is the dependent variable? _____ the higher taste rating _____

5. What is the independent variable? _____ the cereal box with cartoon on it _____

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

➔ **T-Test**

[DataSet0]

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

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

The mean of children eat the cereal without the cartoon on the box was M=5.83 with a SD=1.64. The mean of children eat the cereal with cartoon on the box was M=6.33 with a SD=2.05. The data fail to reach significance. There were no significant different between the groups. t(22)=-.658, p>.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.

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 meditation will affect arousal levels

2. What is the null hypothesis?

The meditation will have no effect the arousal levels

3. What is the dependent variable? arousal levels

4. What is the independent variable? _____ **the 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:

➔ T-Test

[DataSet0]

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?

_____ fail to reject the null _____

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 for arousal levels without the meditation was $M=130.1$ with a $SD=36.76$. The mean of arousal levels with the meditation was $M=138.1$ with a $SD=31.27$. The data fail to reach the significance. The meditation has no effect on arousal levels. $t(9)=2.025, p>.05$ _____