

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

Please write your answers in red 😊

It is widely thought that meditation can affect anxiety levels as measured by a 0 to 10 point standardized scale. An investigator wants to test this hypothesis. He selects a random sample and measures all of the participants' anxiety levels before and after a guided meditation exercise. Do the data support his hypothesis?

<u>Before Meditation</u>	<u>After Meditation</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?

Meditation will have an effect on the participants anxiety levels

2. What is the null hypothesis?

Meditation will not have an effect on the participants anxiety levels

3. Exactly what mean differences are you comparing here?

The means we are comparing are the anxiety levels before and after meditation

4. What is the dependent variable? **Anxiety levels**

5. What is the independent variable? **Meditation**

6. Please analyze the data with 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	6.3333	12	2.05971	.59459
	VAR00002	5.8333	12	1.64225	.47408

Paired Samples Test

		Mean	Std. Deviation	Paired Differences		t	df	Significance		
				Std. Error Mean	95% Confidence Interval of the Difference			Lower	Upper	One-Sided p
Pair 1	VAR00001 - VAR00002	.50000	2.19504	.63365	-.89466	1.89466	.789	11	.223	.447

Paired Samples Effect Sizes

		Standardizera	Point Estimate	95% Confidence Interval		
				Lower	Upper	
Pair 1	VAR00001 - VAR00002	Cohen's d	2.19504	.228	-.351	.796
		Hedges' correction	2.27359	.220	-.339	.769

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.

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

7. Please write your "statistical statement": $t(11) = .789, p > .05$

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

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

The mean for the anxiety levels before meditation was $M=5.833$ with a $SD=1.64$. The mean for the anxiety levels after meditation was $M= 6.333$ with a $SD=2.05$. The data was not significant. Our data does not show evidence that meditation affects anxiety levels, $t(11) = .789, p>.05$

A researcher hypothesizes that arousal levels will be affected by meditation. A researcher selects a random sample and randomly assigns the sample to 2 conditions: meditation and no meditation. Based on the following data, did meditation have a significant effect on arousal level?

NO MEDITATION	MEDITATION
72	91
162	155
145	152
183	190
123	134
167	157
76	99
112	104
124	143

1. What is the researcher’s hypothesis?

Meditation will have a significant effect on arousal levels

2. What is the null hypothesis?

Meditation will not have a significant effect on arousal levels

3. What is the dependent variable? Arousal levels

4. What is the independent variable? Meditation

5. What is the appropriate hypothesis test?

An independent measures T-test

6. Please analyze the data using the appropriate hypothesis test on SPSS and cut and paste your SPSS

Group Statistics

	VAR00002	N	Mean	Std. Deviation	Std. Error Mean
VAR00001	1.00	9	129.3333	38.91015	12.97005
	2.00	9	136.1111	32.49017	10.83006

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	.327	.575	-.401	16	.347	.694	-6.77778	16.89711	-42.59805	29.04250
	Equal variances not assumed			-.401	15.507	.347	.694	-6.77778	16.89711	-42.69092	29.13536

Independent Samples Effect Sizes

		Standardized	Point Estimate	95% Confidence Interval	
				Lower	Upper
VAR00001	Cohen's d	35.84418	-.189	-1.112	.740
	Hedges' correction	37.64142	-.180	-1.059	.705
	Glass's delta	32.49017	-.209	-1.132	.727

- a. The denominator used in estimating the effect sizes.
 Cohen's d uses the pooled standard deviation.
 Hedges' correction uses the pooled standard deviation, plus a correction factor.
 Glass's delta uses the sample standard deviation of the control group.

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

8. Please write the “statistical statement” for your SPSS results: **$t(16) = -.401, p > .05$**

9. Please write your results in a “literature” or “research study” format: The mean for no meditation $M=129.3$ with a $SD=38.91$. The mean with meditation $M=136.1$ with a $SD=32.49$. The data failed to reach significance between the groups. Our data did not support that meditation has an effect on arousal levels. $t(16) = -.401, p > .05$.

