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AS1(Assignment 1, Unit 5) Independent Measures t-test

Please write your responses in red

A pharmaceutical company wishes to test the effects of a herbal supplement on anxiety levels. The researcher randomly selects a sample of n=16 adults from Essex County. The sample is randomly assigned to either the herbal supplement, Group B, or a placebo, Group A.
Here are the data:

GROUP "A"	GROUP " B "
12, 16, 18, 21,	13, 18, 20, 16
17, l8, l8, 19	19, 21, 19, 22

l. What is the researcher's hypothesis?

Herbal supplement has an effect on anxiety levels

2. What is the null hypothesis?

A herbal supplement does not have any effect on anxiety levels.

3. What is the independent variable?

The herbal supplement and the placebo

4. What is the dependent variable?

The effect they have on anxiety levels

5. What is the name of the *research design* in this study?

Experimental study

6. What is the appropriate *hypothesis test* to analyze the data from this study?

2 sample t-test

7. What are the two means "differences" you are analyzing in these data?

The two means that we are analyzing in these data is how the herbal supplement will have an effect on the anxiety levels of the people who receive it and what the levels are with the people who have the placebo supplement.

8. What is the definition of a random assignment?

Random assignment is when everyone in the sample has an equal possibility of being placed inside the control group or the experimental group.

9. Why is using a random sample important in this study?

Using a random sample in this study is important because the people are being chosen randomly and everyone has an equal chance to be picked. This allows the researcher to assume that since it is random, it can look like the population without actually having to study the whole population.

10. If a researcher failed to use random assignment, how would this affect the research conclusion?

This could affect the research conclusion because then the researcher could not assume that the only variable to take into consideration is the independent variable.

11. If a researcher failed to use a random sample, how would this affect the research results?

If a researcher fails to use a random sample, then it can ruin the results of the research.If they fail to use it then they will not properly represent the population.

12. Run the appropriate SPSS analysis on the data and cut and paste your SPSS results here:

T-Test

Group Statistics

	VAR00006	N	Mean	Std. Deviation	Std. Error Mean
VAR00004	1.00	8	17.3750	2.61520	.92461
	2.00	8	18.5000	2.87849	1.01770

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
VAR00004	Equal variances assumed	.149	.705	-.818	14	.427	-1.12500	1.37500	-4.07408	1.82408
	Equal variances not assumed			-.818	13.873	.427	-1.12500	1.37500	-4.07661	1.82661

13. Based on your SPSS results, please answer the following questions:

(a) What is the appropriate decision, reject the null or fail to reject the null?
fail to reject the null

(b) Write the "statistical statement" of your SPSS analysis: $t(14) = -.818, p>.05$

(c) Please write your results as they might be written in a research study (refer to the "In the Literature" section of chapter lo of your textbook).

The mean for "Group A" was 17.37 and the SD was 2.61. The mean for "Group B" was 18.50 and the SD was 2.87. The data failed to reach significance.

(d) Is there a probability of Type I error? No

(e) Is there a probability of Type II error? Yes