SPSS ASSIGNMENT #5 Confidence Intervals 55 points

This assignment will teach you how to calculate a confidence interval (CI) for the mean, and help you to see the relationship between sampling error (measured using SEM) and the size of the CI. You will apply the "non-overlapping rule" to see which two means (if any) are likely different because of something in addition to sampling error. Next, you will learn how to find the CI for the difference between two means. Finally, you will see how this last CI can also help us to determine whether the difference is *probably* due to sampling error or due to something *in addition to* sampling error.

The SPSS applications at the end of chapter 6 explains how to accomplish these calculations.

PART ONE

Find the 99% CI for Micro and Macro optimism – for each level of religion. Fill in the table below. Note: to calculate the interval size, get a calculator and punch in: upper limit – lower limit. Do not round until the very end.

A. Complete the following table **(40 points)**

MICRO optimism	**Religious + practice frequently**	**Religious + practice sometimes**	**Religious but do not practice**	**Not religious**
mean				
SEM				
99% CI	≤ μ ≤	≤ μ ≤	≤ μ ≤	≤ μ ≤
Interval size				
MACRO optimism	**Religious + practice frequently**	**Religious + practice sometimes**	**Religious but do not practice**	**Not religious**
mean				
SEM				
99% CI	≤ μ ≤	≤ μ ≤	≤ μ ≤	≤ μ ≤
Interval size				

Copy and paste the relevant SPSS output into a word document. Hi-light those numbers you used in the tables above. Set this aside. You will be adding more to it in a few minutes.

Answers or B, C, D, and E are based on the results of the MICRO optimism analysis

B. Of the four groups above, which one has the least sampling error? _____
and which one has the most? _____ **(2 points)**

C. Complete the sentence: As SEM increases, the size of the interval _____ **(1 point)**

D. For each of the following group comparisons, state whether their CIs overlap or not **(3 points)**

Note: pract-infreq is the same thing as "sometimes"

Groups being compared	Answer YES (they overlap) or NO (they do not)
religious+pract-freq vs religious+pract-infreq	
religious+pract-freq vs religious+do-not-pract	
religious+pract-freq vs not religious	
religious+pract-infreq vs religious+do-not-pract	
religious+pract-infreq vs not religious	
religious+do-not-pract vs not religious	

E. Which groups above, if any, are probably different for reasons in addition to sampling error? **(3 points)**

PART TWO

It appears as though the mean score for Micro optimism is higher than that for Macro optimism. Why are these two means different from each other? First, you need to find the difference between them. This means you will need to "compute" a new variable. Call it **micro_macro**. Then, find the **95% CI** for this new variable.

A. Complete the table below for the difference in optimism scores between these two conditions **(4 pts)**

mean difference between the two groups	SEM	95% confidence interval
		≤ μ ≤

Copy and paste the relevant SPSS output into the same word document as for Part One. Hi-light those numbers you used in the table directly above. Save the file as a doc, docx, or pdf. Upload this to "Digital Wellness Assign 5: Bonus points". If you do all this correctly you will earn 5 bonus points.

B. What is the *most likely* reason why the mean of the difference scores is not equal to 0? **(1 point)**

sampling error _____ OR sampling error + something else _____

C. What did you base this answer on and be specific. Hint: it has to do with "0" **(1 point)**