SPSS Test Practice Problem 1

2 way Mixed ANOVA

A stress researcher wonders whether a person's personality and the type of stress management technique they use might have an effect on skin conductance levels (SC). FYI: SC is a measure of the "flight or fight" response. The higher the SC level, the more stress the person is under.

To investigate this, she has all participants take a personality test to see whether they are extraverts or introverts. Then, she has all the participants practice 20 minutes of meditation, 20 minutes of progressive muscle relaxation (PMR), and 20 minutes of kickboxing (on separate days).

She records SC at the end of each 20-minute session.

The data is in the table below and in the excel file. Enter the data into SPSS. Finally, "ask" SPSS to construct a bar chart to plot the interaction effect with stress management technique on the x-axis and personality as the separate bars. Include error bars using the 95% confidence interval.

	Extraverts	Introverts
meditation	34 22 18 17 29 17 10 19 15 22	11 17 6 12 5 14 9 7 13 16
PMR	19 25 10 12 21 22 17 11 24 18	8 18 20 14 16 7 5 9 12 10
kickboxing	5 4 12 9 17 5 12 8 10 8	32 29 19 24 22 14 20 19 11 21

Which factor is within subjects? _____

Which factor is between subjects? _____

PART A Assumptions

Explain why Mauchly's test of sphericity was tested in this example.

W value	prob	signif (y/n)	assumption holds true (y/n)

To test for HOV, look at the Levene's test results:

	F value	prob	signif (y/n)	assumption holds true (y/n)
meditation				
PMR				
kickboxing				

PART B Inferential Statistics i.e. The ANOVA

Effect tested	df , df	F value	Sig value	Partial eta sq	Signif? y/n
main effect personality					
main effect of technique					
personality x technique					

Write down all 3 effects using correct APA statistical notation format.

main effect of personality	
main effect of technique	
personality X technique	

PART C Post hoc tests

Was a post hoc test on the within-subjects factor necessary? Explain why or why not.

Was a post hoc test necessary for the between-subjects factor? Explain why or why not.

PART D Understanding the Interaction Effect

Simple main effect of stress management technique within personality

Describe the effect of technique for the extraverted participants and indicate whether it is significant.

Describe the effect of technique for the introverted participants and indicate whether it is significant.

Is the effect of the technique the same for extraverts and introverts? To look for a pattern change, calculate the difference between the means for the three techniques for extraverts. Then calculate the difference between the means for the three techniques introverts**.**

Simple main effect of personality within stress management technique

Describe the effect of personality when meditating and indicate whether it is significant.

Describe the effect of personality when using PMR and indicate whether it is significant.

Describe the effect of personality when kickboxing and indicate whether it is significant.

Is the effect of personality the same for meditating, PMR, and kickboxing? To look for a pattern change, calculate the difference between the means for extraverts and introverts when meditating. Next, calculate the difference between the means for extraverts and introverts when using PMR**.** Finally, calculate the difference between the means for extraverts and introverts when kickboxing.