**Psychology 492 Laboratory Homework #5a Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Before we start…** data set **🡪 clinical.sav**

**Something to watch for 🡪 always check your sample sizes, especially in larger designs!!!**

Run the 2x5 (gender x marital status) BG ANOVA, using significant other social support as the DV.

* Take a look at the univariates -- notice anything???
* What should we do about this -- suppose that it **IS** important to test these hypotheses as well as we can …

**Walk Through: kxk BG ANOVA** data set **🡪 clinical.sav**

"Buffering Hypothesis", coding variables & different kinds of a "multivariate convergence"

The "buffering hypothesis" is that … "Social support 'buffers' the stress-depression relationship -- the relationship between stress and depression is stronger for those with less social support and weaker for those with more social support."

Thus, the "buffering hypothesis" hypothesizes a stress X social support interaction with depression as the DV. Draw the basic pattern of this hypothesis below.

L = "low" social support

M = "medium" social support

H = "high" social support

Depression

"low" Stress "high"

We have measures of these three variables in the **clinical.sav** data set -- allowing us to complete a test of this hypothesis.

* **dep** is the Beck Depression Inventory (DBI) possibly the most commonly used depression measure, ever
* **stress** is a self-report index of the amount of "life-related stress"
* there are three measures of social support that are useful for our purposes -- **frss**, **soss** & **fass** are self-report measures of social support from "friends", "significant others" and "family", respectively

**Convergent multivariate research -- a new kind…**

In past analyses "multivariate" has meant the use of multiple dependent variables and "convergence" has meant checking whether or not the results of a particular analysis are consistent across these multiple DVs. This time we will consider a new version of each of these.

In this analysis we will have only one version of the IV stress (**stress**) and only one version of the DV depression (**dep**). However we have three different versions of the IV social support (**frss**, **fass** & **soss**). We will use each of the measures of social support in turn, to test whether the buffering hypothesis "generalizes" across different types of social support, of whether only some types of social support produce the buffering hypothesis. That is, we will be examining the "multivariate convergence" resulting from using different versions of one of the IVs (rather than different versions of the DV. So, we'll have three factorial analyses…

* DV = depression (**dep**) IVs = stress (**stress**) & social support from friends (**frss**)
* DV = depression (**dep**) IVs = stress (**stress**) & social support from family (**fass**)
* DV = depression (**dep**) IVs = stress (**stress**) & social support from significant others (**soss**)

**Transforming "quantitative" variables into "ordered category" variables**

All of the variables we will be using in these factorial ANOVAs are quantitative. While this is fine for the DV -- depression (**dep**) -- our IVs need to be "grouping variables". One common way of "fixing" this problem is to take the original quantitative variable and transform in to an ordered category variable.

You've seen ordered category variables before -- it is commonly done with age (mark the age group of which you are a member 0-20, 21-30, 31-40, 41+) and income (within which of the following does your total family income fall? $0-$10000, $10001-$25000, $25001-$50000, >$50000).

Sometimes the categories or groups are based on some sort of convention (e.g., 10-year age groups) or common categorization (IQ <80 = below normal, 81-120 = normal, 121+ = above normal). Other times -- particularly when the transformed variable will be an "IV" -- the attempt is made to divide the quantitative variable up in to groups with similar numbers of participants in each group. This is the procedure we'll use with these variables.

Let's start working with **stress**. Do a frequency analysis with stress -- asking for one extra analysis…

The "percentiles" tell us the values to use to divide **stress** into a four-category variable. They tell us that about 25% of the sample has **stress** scores less than 3, 25% have scores between 3 and 7, 25% have scores between 7 and 13, and 25% have scores over 13. Thus, we can use these three cutoffs to transform **stress** into a 4-category variable. Like this …

Analyze 🡪 Descriptive Statistics 🡪Frequencies

* move **stress** into the "Variables" window
* click "Statistics" and be sure the "Quartiles" box is checked

In addition to the usual frequency table, you'll get the output shown on the right.

* Open a "syntax window" using File 🡪 New 🡪 Syntax and type the following (exactly).

RECODE stress (Lowest thru 3=1) (3 thru 7=2) (7 thru 13=3) (13 thru Highest=4) INTO stress\_4.

EXECUTE.

This syntax changes each person’s **stress** score to one of the four ordered categories and places the new value into **stress\_4**. We will use the **stress\_4** variable as one of the IVs in our factorial ANOVAs.

"Run" these commands. Now run a “Frequencies” analysis using **stress\_4** (which will be the last variable in the list). You should get group sizes of about 120, 95, 98 & 92, respectively.

We'll have to apply the same process to each of the social support measures (separately for each, of course), with one exception -- for each of the social support measures, we'll divide folks up into **three** (**3**) groups.

Using **frss** as an example…

Analyze 🡪 Descriptive Statistics 🡪Frequencies

* move **frss** into the "Variables" window
* click "Statistics"
* uncheck the "Quartiles" box
* check the "Cut point for " box and put that you want **3** "equal groups"

This should get you the results on the right …

Next, write two new lines in the syntax window to transform this variable from **frss** to **frss\_3** -- a 3-ordered-category "version" of amount of friend social support that we can use as an IV in our analysis.

RECODE frss (Lowest thru 5.25=1) (5.25 thru 6.25=2) (6.25 thru Highest=3) INTO frss\_3.

EXECUTE.



Now you're ready for your first ANOVA, using your transformed ordered-category IVs

* the DV is **dep**
* the IVs are **stress\_4** and **frss\_3**

You should get a 3x4 factorial, with sample sizes like on the right

**Interaction:** F = \_\_\_\_\_\_\_ df = \_\_\_\_, \_\_\_\_\_\_\_ MSe = \_\_\_\_\_\_\_\_ p = \_\_\_\_\_\_\_\_

Since the Buffering Hypothesis is how the relationship between **Stress** and **Depression** is different for different levels of **Social Support**, we need to use EMMEANS to test the **simple effect of Stress for each level of frss**.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Stress pairwise comparisons 🡺 | Low vs, MedLow | Low vs. MedHigh | Low vs.  High | MedLow vs. MedHigh | MedLow vs. High | MedHigh vs. High |
| Low FRSS |  |  |  |  |  |  |
| Medium FRSS |  |  |  |  |  |  |
| High FRSS |  |  |  |  |  |  |

Describe the pattern of the interaction:

Does this pattern support the Buffering Hypothesis? \_\_\_\_\_\_\_\_ Why or why not?

**Main effect of Stress** F = \_\_\_\_\_\_\_ df = \_\_\_\_, \_\_\_\_\_\_\_ MSe = \_\_\_\_\_\_\_\_ p = \_\_\_\_\_\_\_\_

Since Stress has more than 2 conditions, if the main effect is significant, we will need to do EMMEANS to compare the pattern of the marginal means.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Stress pairwise comparisons 🡺 | Low vs, MedLow | Low vs. MedHigh | Low vs.  High | MedLow vs. MedHigh | MedLow vs. High | MedHigh vs. High |
| Marginal means |  |  |  |  |  |  |

Describe the pattern of the main effect of Stress:

Compare the Stress main effect pattern with the pattern of the simple effect of Stress for each level of Social Support shown up above. Is the main effect of Stress descriptive or misleading? Be specific – for what levels of Social Support are what portions of the main effect pattern descriptive?

**Main effect of Social Support**  F = \_\_\_\_\_\_\_ df = \_\_\_\_, \_\_\_\_\_\_\_ MSe = \_\_\_\_\_\_\_\_ p = \_\_\_\_\_\_\_\_

Since Social Support has more than 2 conditions, if the main effect is significant, we will need to do EMMEANS to compare the pattern of the marginal means.

|  |  |  |  |
| --- | --- | --- | --- |
| Social support pairwise comparisons 🡺 | Low vs, Med | Low vs. High | Med vs. High |
| Marginal means |  |  |  |

Describe the pattern of the main effect of Social Support:

To determine if the pattern of the Social Support main effect is descriptive or misleading, we will need to look at the simple effect of Social Support for each level of stress.

|  |  |  |  |
| --- | --- | --- | --- |
| Social support pairwise comparisons 🡺 | Low vs, Med | Low vs. High | Med vs. High |
| Low Stress |  |  |  |
| MedLow Stress |  |  |  |
| MedHigh Stress |  |  |  |
| High Stress |  |  |  |

Compare the Social Support main effect pattern with the pattern of the simple effect of Social Support for each level of Stress shown up above. Is the main effect of Social Support descriptive or misleading? Be specific – for what levels of Stress are what portions of the main effect pattern descriptive?

**Your Turn #1**

Repeat the whole process using **fass**.

* Run a frequencies of **fass**  -- indicating that you want the cutoffs for 3 groups
* Write a compute and a recode statement to convert **fass** into **fass\_3** -- a 3-ordered-category variable
* Complete the 3x4 ANOVA using **fass** as the measure of social support

**Interaction:** F = \_\_\_\_\_\_\_ df = \_\_\_\_, \_\_\_\_\_\_\_ MSe = \_\_\_\_\_\_\_\_ p = \_\_\_\_\_\_\_\_

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Stress pairwise comparisons 🡺 | Low vs, MedLow | Low vs. MedHigh | Low vs.  High | MedLow vs. MedHigh | MedLow vs. High | MedHigh vs. High |
| Low FASS |  |  |  |  |  |  |
| Medium FASS |  |  |  |  |  |  |
| High FASS |  |  |  |  |  |  |

Describe the pattern of the interaction:

Does this pattern support the Buffering Hypothesis? \_\_\_\_\_\_\_\_ Why or why not?

**Main effect of Stress** F = \_\_\_\_\_\_\_ df = \_\_\_\_, \_\_\_\_\_\_\_ MSe = \_\_\_\_\_\_\_\_ p = \_\_\_\_\_\_\_\_

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Stress pairwise comparisons 🡺 | Low vs, MedLow | Low vs. MedHigh | Low vs.  High | MedLow vs. MedHigh | MedLow vs. High | MedHigh vs. High |
| Marginal means |  |  |  |  |  |  |

Describe the pattern of the main effect of Stress:

Compare the Stress main effect pattern with the pattern of the simple effect of Stress for each level of Social Support shown up above. Is the main effect of Stress descriptive or misleading? Be specific – for what levels of Social Support are what portions of the main effect pattern descriptive?

**Main effect of Social Support**  F = \_\_\_\_\_\_\_ df = \_\_\_\_, \_\_\_\_\_\_\_ MSe = \_\_\_\_\_\_\_\_ p = \_\_\_\_\_\_\_\_

|  |  |  |  |
| --- | --- | --- | --- |
| Social support pairwise comparisons 🡺 | Low vs, Med | Low vs. High | Med vs. High |
| Marginal means |  |  |  |

Describe the pattern of the main effect of Social Support:

|  |  |  |  |
| --- | --- | --- | --- |
| Social support pairwise comparisons 🡺 | Low vs, Med | Low vs. High | Med vs. High |
| Low Stress |  |  |  |
| MedLow Stress |  |  |  |
| MedHigh Stress |  |  |  |
| High Stress |  |  |  |

Compare the Social Support main effect pattern with the pattern of the simple effect of Social Support for each level of Stress shown up above. Is the main effect of Social Support descriptive or misleading? Be specific – for what levels of Stress are what portions of the main effect pattern descriptive?

**Your Turn #2**

Repeat the whole process using **soss**.

* Run a frequencies of **soss**  -- indicating that you want the cutoffs for 3 groups
* Write a compute and a recode statement to convert **soss** into **soss\_3** -- a 3-ordered-category variable
* Complete the 3x4 ANOVA using **soss** as the measure of social support

**Interaction:** F = \_\_\_\_\_\_\_ df = \_\_\_\_, \_\_\_\_\_\_\_ MSe = \_\_\_\_\_\_\_\_ p = \_\_\_\_\_\_\_\_

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Stress pairwise comparisons 🡺 | Low vs, MedLow | Low vs. MedHigh | Low vs.  High | MedLow vs. MedHigh | MedLow vs. High | MedHigh vs. High |
| Low SOSS |  |  |  |  |  |  |
| Medium SOSS |  |  |  |  |  |  |
| High SOSS |  |  |  |  |  |  |

Describe the pattern of the interaction:

Does this pattern support the Buffering Hypothesis? \_\_\_\_\_\_\_\_ Why or why not?

**Main effect of Stress** F = \_\_\_\_\_\_\_ df = \_\_\_\_, \_\_\_\_\_\_\_ MSe = \_\_\_\_\_\_\_\_ p = \_\_\_\_\_\_\_\_

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Stress pairwise comparisons 🡺 | Low vs, MedLow | Low vs. MedHigh | Low vs.  High | MedLow vs. MedHigh | MedLow vs. High | MedHigh vs. High |
| Marginal means |  |  |  |  |  |  |

Describe the pattern of the main effect of Stress:

Compare the Stress main effect pattern with the pattern of the simple effect of Stress for each level of Social Support shown up above. Is the main effect of Stress descriptive or misleading? Be specific – for what levels of Social Support are what portions of the main effect pattern descriptive?

**Main effect of Social Support**  F = \_\_\_\_\_\_\_ df = \_\_\_\_, \_\_\_\_\_\_\_ MSe = \_\_\_\_\_\_\_\_ p = \_\_\_\_\_\_\_\_

|  |  |  |  |
| --- | --- | --- | --- |
| Social support pairwise comparisons 🡺 | Low vs, Med | Low vs. High | Med vs. High |
| Marginal means |  |  |  |

Describe the pattern of the main effect of Social Support:

|  |  |  |  |
| --- | --- | --- | --- |
| Social support pairwise comparisons 🡺 | Low vs, Med | Low vs. High | Med vs. High |
| Low Stress |  |  |  |
| MedLow Stress |  |  |  |
| MedHigh Stress |  |  |  |
| High Stress |  |  |  |

Compare the Social Support main effect pattern with the pattern of the simple effect of Social Support for each level of Stress shown up above. Is the main effect of Social Support descriptive or misleading? Be specific – for what levels of Stress are what portions of the main effect pattern descriptive?