Bivariate Correlation

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H_o : There is no statistically significant correlation between negative effect and self-esteem
H_a : There is a statistically significant correlation between negative effect and self-esteem

<u>Analyze → Correlate → Bivariate</u>

- Use Bivariate because of the two variables: Self-esteem and Negative effect
- Self-esteem and negative effect are move to the variable dialog box

<u>Correlation Coefficient</u> – check mark Pearson

- Pearson r- assuming that the variance of the two values are equal, continuous values
- Kendall Tau Beta- used with ordinal or rank variables
- Spearman rho- based on rank and nonparametric values

<u>Test of Significance</u>

- Two-tail because the direction of the effect goes both ways

✓ <u>Check flag significant correlation</u> – This checkbox identifies probability level in the output

- *one asterisk for significant coefficient at .05 probability level
- **Two asterisk for significant coefficient at .01 probability level

<u>Options for Bivariate Correlation</u>

- Select mean and standard deviation

<u>Missing Values Panel</u>

- Check exclude case pairwise – which exclude cases of missing values for the two pairs of values (self-esteem and negative effect)
- Use missing values pairwise for correlation
- If your going to do another procedure with eh descriptive result such as multiple regression use listwise

Continue, then OK

<u>Descriptive Statistic Output Table</u>

- Displays mean, standard deviation and sample size (n)

<u>Correlation Output</u>

- The relationship between negative effect and self-esteem
- First Pearson correlation r-.569 = Significant correlated at the .01 level
- This significant tells probability of r occurring by change if the null is true

- Negative correlation as self-esteem increase negative affect decrease (less negative emotion)
- Sig (2-tail) would be reported as p is less that .001 as its reported to 3 decimal places
- When compared to .05 the correlation is statistically significant
- Determine the strength of the relationship using square r
- 32% of the variance overlap in the Venn diagram= strong relationship.
- Sample size- 422 = 420 degree of freedom (n-2) was what the null was tested against.

Simple Linear Regression

Simple linear regression is a statistical method that allows us to summarize and study relationships between two continuous (quantitative) variables:

- One variable, denoted *x*, is regarded as the **predictor**, **explanatory**, or **independent** variable.
- The other variable, denoted *y*, is regarded as the **response**, **outcome**, or **dependent** variable.

Simple linear regression will predict the negative affect when we know the self-esteem values

Regression equation: y=a+b*x+e

y= dependent variable, a =intersect or constant, b= slope or regression coefficient

x=independent, e=error

Ho= variation in esteem is unrelated to variation in negative affect or there is not supported relationship between negative affect and esteem.

Select Analyze → Regression → Linear

- Move esteem to dependent
- Move negative effect to independent
- Leave Method as Enter

Select Statistics

- Which brings up linear regression statistics dialog box
- Default check is estimates in the regression coefficient panel which tells the system to test for statistical significance
- Check Model Fit- gives R square, adjusted R square, the standard error and ANOVA
- Check R Squared Change- used with multiple predictor that are placed in the output by stages
- Check descriptive - Displays mean, standard deviation and 3 correlation tables
- Check part and partial correlation – make sure overlaps are only check one

<u>Descriptive Statistic Output Table are the same as bivariate</u>

Model Summary

- R Squared = .323, Adjusted R squared =.322
- R shows that negative affect explained about 1/3 of the variance of self-esteem
- Adjusted R squared did not change significantly because of the large sample size and the use of only one predictor.

Coefficients
Unstandardized- used to answer the Regression equation: $y=a+b*x+e$
Self-esteem = 89.726-3.189 (neg effect)

Standardized = $y=b_1(x_2)$