**Simple Linear Regression**

Statistics for the Behavioral Sciences

•Why regression?

•Types of variables in *z, t,* and *F*-tests

•Lose variability

•Can’t predict for individuals

•Limited to three “independent” variables

•Regression is an extension of correlation

**Correlation coefficient**

•No true independent variable

•Regression we choose IV and the DV

•Independent = predictor variables

•As many orthogonal variables as we like

•2+ predictor variables = multiple regression

•Dependent = criterion variable

**Regression**

•Create a prediction equation

*Ŷ* = *a* + *b*(*X*)

Where:

*Ŷ* = predicted criterion (student’s grade)

*a* = *Y*-axis intercept when *X* = 0 (90.12%)

*b* = slope of the regression line (-1.33%)

*X* = predictor variable values (# of absences)

**Regression**

•Standard error of the estimate

• The standard deviation of the observations from the regression line

•Create a prediction equation

*Ŷ* = 90.12 – 1.33(*X*)

Where:

*Ŷ* = predicted criterion (student’s grade)

*a* = *Y*-axis intercept when *X* = 0 (90.12%)

*b* = slope of the regression line (-1.33%)

*X* = predictor variable values (# of absences)

*SEE* = error estimate (7.68%)

**Multiple Regression**

•Create a prediction equation

*Ŷ* = *a* + *b1* (*X1*) +*b2* (*X2*)

Where:

*Ŷ* = predicted criterion (course grade)

*a* = *Y*-axis intercept when *X1* and *X2* = 0

*b1* = slope of the first predictor variable

*b2* = slope of the second predictor variable

*X1* = first predictor variable values (absences)

*X2* = second predictor variable values (hours studied)