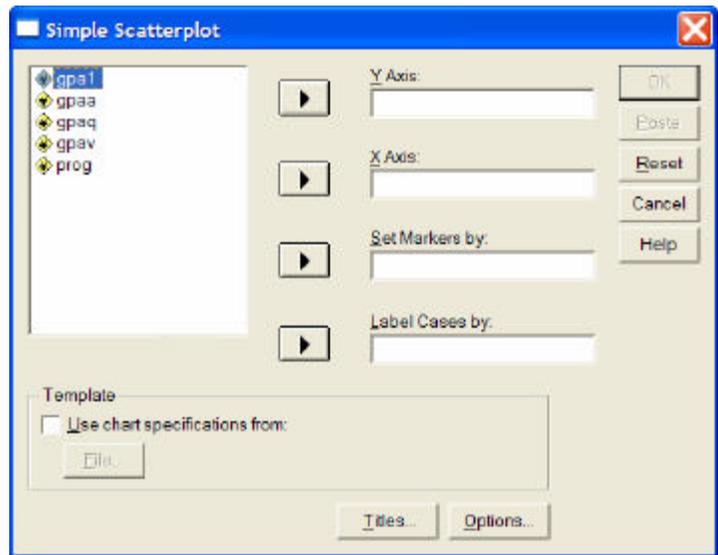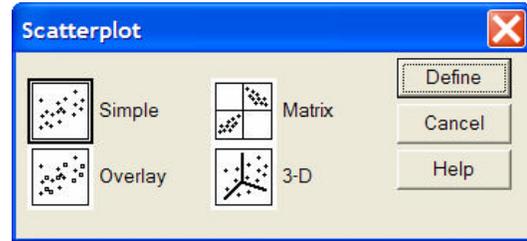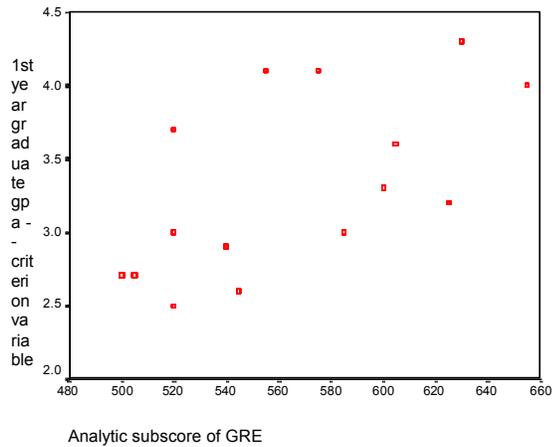# Bivariate Correlation Analyses

Checking for nonlinear relationship, etc. …
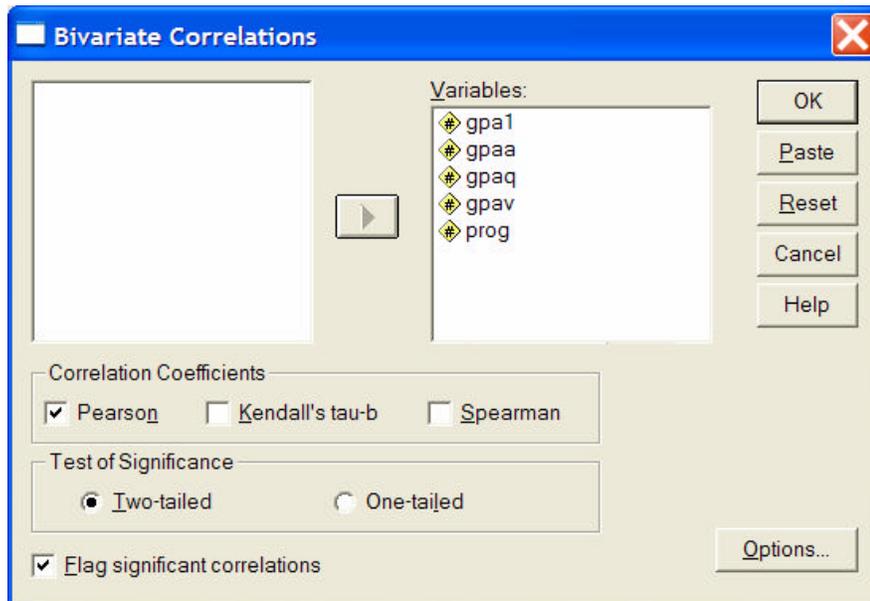
Graphs → Scatter
- Click on "Simple" icon and click "Define" button
- Select x- and y-axis variables

No obvious non-linear aspects -- go ahead with correlation analyses

Analyze → Correlate → Bivariate
- Move desired variables into the "Variables" window

Correlations

		1st year graduate gpa -- criterion variable	Analytic subscore of GRE	Quantitative subscore of GRE	Verbal subscore of GRE	1=clinical & 2 = experimental
1st year graduate gpa -- criterion variable	Pearson Correlation	1	.643**	.613**	.277**	-.186*
	Sig. (2-tailed)	.	.000	.000	.001	.028
	N	140	140	140	140	140
Analytic subscore of GRE	Pearson Correlation	.643**	1	.472**	.539**	-.178*
	Sig. (2-tailed)	.000	.	.000	.000	.036
	N	140	140	140	140	140
Quantitative subscore of GRE	Pearson Correlation	.613**	.472**	1	.465**	-.196*
	Sig. (2-tailed)	.000	.000	.	.000	.020
	N	140	140	140	140	140
Verbal subscore of GRE	Pearson Correlation	.277**	.539**	.465**	1	-.228**
	Sig. (2-tailed)	.001	.000	.000	.	.007
	N	140	140	140	140	140
1=clinical & 2 = experimental	Pearson Correlation	-.186*	-.178*	-.196*	-.228**	1
	Sig. (2-tailed)	.028	.036	.020	.007	.
	N	140	140	140	140	140

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

NHST: Test of bivariate correlation using F-test

H0: There is no linear relationship between GREA and 1st year grad GPA among Psychology graduate students at UNL.

a. Based on computer output   r = .643, p < .001   -- reject H0:

b. Based on F-test

$$F = \frac{r^2}{(1 - r^2) / (N - 2)}$$

N = sample size

Find F-critical using df = 1 & N-2

$$F = \frac{.643^2}{(1 - .643^2) / (N - 2)} = \frac{.413}{.587 / 138} = \frac{.413}{.004} = 103.25$$

F(1, 120, .01) = 6.85   F 103.25 > F-crit 6.85   Reject H0: and conclude GREA and 1st year grad GPA are correlated among Psych graduate students at UNL.

Write-up examples:

Higher GREA scores were associated with higher first year GPA, r(140) = .643, p < .001.

Those with higher GREA scores tended to have higher first year GPA, r(140) = .643, p < .001.

Clinical students had a higher average first year GPA than did the experimental students (coded 0 and 1, respectively), r(140) = -.186, p = .028.

Clinical students tended to have a higher first year GPA than the experimental students (coded 0 and 1, respectively), r(140) = -.186, p = .028.