

First of all, be sure to enter your correct student ID# above (not your telephone number, social security number, license plate, or whatever). I have the correct list of ID#s on the roster, so check to ensure that you're using the correct number. As always, read over the exam carefully and answer each question completely. Good Luck!! Have a relaxing summer...it's been a pleasure!!

1a. Suppose that you are a member of a psychology department who serves as an advisor to students. You have student evaluations for four of your colleagues (Professors 1, 2, 3, and 4). The student evaluations are measured on a 5-point scale. Each professor taught three courses the past semester (Courses 1, 2 and 3). Below is the StatView analysis of the data. Analyze the data as completely as you can. What would you recommend to your advisees about these four professors? Any comments on this study? [15 pts]

ANOVA Table for Evaluation

	DF	Sum of Squares	Mean Square	F-Value	P-Value	Lambda	Power
Professor	3	65.633	21.878	34.142	<.0001	102.426	1.000
Course	2	53.733	26.867	41.927	<.0001	83.855	1.000
Professor * Course	6	43.467	7.244	11.305	<.0001	67.833	1.000
Residual	228	146.100	.641				

Means Table for Evaluation

Effect: Professor * Course

	Count	Mean	Std. Dev.	Std. Err.
Prof 1, Course 1	20	3.650	1.040	.233
Prof 1, Course 2	20	2.500	.827	.185
Prof 1, Course 3	20	3.950	.887	.198
Prof 2, Course 1	20	4.650	.489	.109
Prof 2, Course 2	20	2.800	.696	.156
Prof 2, Course 3	20	4.250	.716	.160
Prof 3, Course 1	20	4.100	.718	.161
Prof 3, Course 2	20	4.150	.745	.167
Prof 3, Course 3	20	4.300	.733	.164
Prof 4, Course 1	20	2.200	.834	.186
Prof 4, Course 2	20	2.350	.933	.209
Prof 4, Course 3	20	3.900	.852	.191

1b. Suppose that the preceding analysis had been conducted as a single factor ANOVA on Professor (i.e., ignoring the classes as a factor and analyzing the same data as a one-way ANOVA). Complete a source table that would show how these results would come out, analyze the data completely, then tell me specifically what sorts of information are lost in computing a one-way ANOVA instead of the two-way ANOVA in 1a. [5 pts]

2. A professor is interested in assessing the difficulty of her exams. She looks at the performance of one class of 20 students over the four exams given during the semester. Shown below is a partially completed output from her StatView analysis of the data. First, complete the source table, then analyze and interpret the data as completely as possible. What could you tell this professor about the difficulty of the exams. Would that be your preferred explanation of the results? **NB This output is from an early version of StatView. You can simply ignore the second line (Within subjects). The other lines are just like those found in the output from the current version of StatView.** [10 pts]

One Factor ANOVA-Repeated Measures for X₁ ... X₄

Source:	df:	Sum of Squares:	Mean Square:	F-test:	P value:
Between subjects		4597			
Within subjects	60	486			
treatments		288			
residual		197			
Total		5083			

Reliability Estimates for- All treatments: .967 Single Treatment: .878

One Factor ANOVA-Repeated Measures for X₁ ... X₄

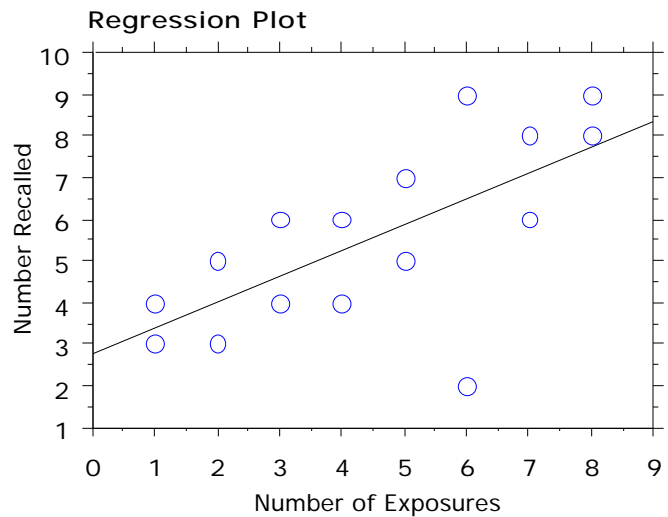
Group:	Count:	Mean:	Std. Dev.:	Std. Error:
Exam1	20	79.85	9.615	2.15
Exam2	20	82.35	7.721	1.726
Exam3	20	83.95	7.265	1.625
Exam4	20	84.85	6.892	1.541

3. A researcher is interested in the relationship between the number of times a word is seen in a list and a person's ability to recall the words. Sixteen people watch a computer screen on which appear 72 words. The words are presented one at a time in a random order, with two of the words appearing once, two twice, two three times, etc., up to the two words presented eight times each. Below is the StatView analysis of the data. Tell me as much as you can about the results from your interpretation of the analyses. What kinds of predictions would you feel comfortable making on the basis of this analysis. [10 pts]

Regression Summary

Number Recalled vs. Number of Exposures

Count	16
Num. Missing	0
R	.675
R Squared	.456
Adjusted R Squared	.417
RMS Residual	1.672



ANOVA Table

Number Recalled vs. Number of Exposures

	DF	Sum of Squares	Mean Square	F-Value	P-Value
Regression	1	32.812	32.812	11.741	.0041
Residual	14	39.125	2.795		
Total	15	71.937			

Regression Coefficients

Number Recalled vs. Number of Exposures

	Coefficient	Std. Error	Std. Coeff.	t-Value	P-Value
Intercept	2.750	.921	2.750	2.986	.0098
Number of Exposures	.625	.182	.675	3.427	.0041

4a. A researcher is interested in whether or not males and females differ in spatial abilities. To that end, he gives a spatial abilities test (SPAT) to a group of 10 males and 10 females. SPAT scores range from 1-10, with higher SPAT scores indicating better spatial abilities. Analyze the data below to test the hypothesis and tell the researcher what he should conclude. [10 pts]

	<u>Male</u>	<u>Female</u>
	10	8
	9	7
	6	8
	7	8
	8	6
	10	5
	4	8
	6	7
	9	6
	8	6
X=	77	69
X ² =	627	487

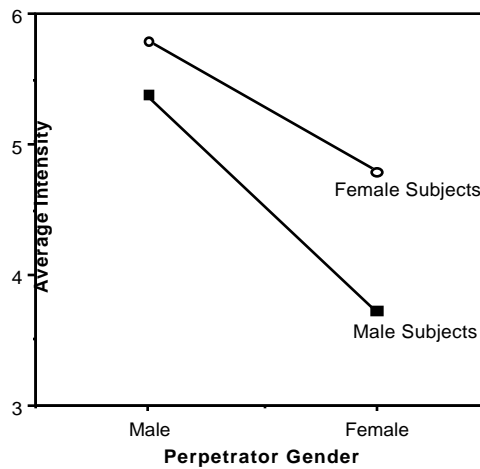
4b. A different researcher is interested in whether or not there is a relationship between gender and spatial abilities. Using the same data, compute the most appropriate statistic for this question. (Be careful. Think. You can't approach this analysis mindlessly.) [5 pts]

	<u>Male</u>	<u>Female</u>
	10	8
	9	7
	6	8
	7	8
	8	6
	10	5
	4	8
	6	7
	9	6
	8	6
X=	77	69
X ² =	627	487

4c. Test the null hypothesis that the males were sampled from a population of SPAT scores with a mean of 10. [5 pts]

5. In a study by Baron, Burgess, and Kao (1991), male and female subjects read accounts of stories that included a description of a sexist act perpetrated by either a male or a female against a female. The 193 subjects described the perpetrator in a way that could be scored for intensity of sexist behavior. The displayed sexist behavior was rated 1 for *slightly displayed* to 7 for *extremely displayed*. Part of their *Results* section reads:

Perpetrator gender and subject gender main effects were both significant. Female subjects, compared with male subjects, gave more intense ratings to both male and female perpetrators...: $F(1,189) = 5.06, p < .03$Furthermore, male perpetrators were seen as displaying more intense gender bias than female perpetrators: $F(1,189) = 15.97, p < .0001$. The interaction between subject gender and perpetrator gender was nonsignificant... $p < .34$...These results can be seen in the figure below:



Briefly describe the meaning of these results. [10 pts]

6. Blanchard, Lilly, and Vaughn (1991) conducted a study of influences on the expression of reaction to racism. In this study, white undergraduate women were approached while walking between classes and asked to participate in a survey. The survey asked what the college should do in response to anonymous racial notes. Half of the students were asked to respond privately (on paper) and half were asked to respond publicly (orally for the researcher and anyone else present to hear). Within each of these groups, a third of the subjects were in the “no influence” condition, in which they simply completed the survey with no one other than the experimenter present. For the other two-thirds of the subjects, before they could begin answering, another student was invited to participate. This other student was actually a confederate of the experimenter, and it was arranged so that she always gave her responses to the questions first. The confederate’s opinions were either very antiracist or not at all antiracist, making the other two levels of this factor “antiracist influence” and “nonantiracist influence.” Analyze the summary data below as completely as possible. [20 pts]

	Public Response	Private Response	Marginal
Antiracist Influence	X = 92 SS = 14 n = 4	X = 84 SS = 14 n = 4	X = 176
No Influence	X = 84 SS = 6 n = 4	X = 84 SS = 20 n = 4	X = 168
Nonantiracist Influence	X = 64 SS = 18 n = 4	X = 72 SS = 14 n = 4	X = 136
Marginal	X = 240	X = 240	X = 480

7. A researcher was interested in investigating the relationship between motivation (measured on a 9-point scale, with 1 = low and 9 = high) and GPA (0 = low and 4 = high). She obtained the data below from a sample of members of Phi Beta Kappa. Analyze the data as completely as possible. If a person got a score of 7 on the motivation scale, what would be your best prediction of GPA? Do you see any limitations to this study? [10 pts]

<u>Motivation</u>	<u>GPA</u>
6	4
8	4
7	4
6	3
9	4
8	4
7	4