

First of all, take a deep breath. Relax! OK, read each question carefully and answer it completely. Show all your work, because that's the only way I can give you partial credit. Use your time wisely. I think of a point as a minute, which means that if you're spending 20 minutes on a 10-point question, you're going to have a difficult time completing the exam. Comment freely on problems or limitations of designs. And, as always, the Skidmore Honor code is in effect for the exam, so remain true to the principles espoused in that document. Enjoy your long weekend!

1. Searching for the dangers of caffeine, Dr. Hy Test adds two types of caffeine (those found in coffee and chocolate) to the water supply of groups of laboratory-bred rats. The water supply of a control group of rats was not fortified. This species ordinarily lives about 13 months. The DV is the number of days that the rats lived. Complete the analysis below, interpret the results as completely as you can, and then tell me very specifically what you would do next. [10 pts.]

ANOVA Table for Days Lived

	DF	Sum of Squares	Mean Square	F-Value	P-Value	Lambda	Power
Caffeine		33.2			.9194	.169	.061
Residual		4136.3					

Means Table for Days Lived

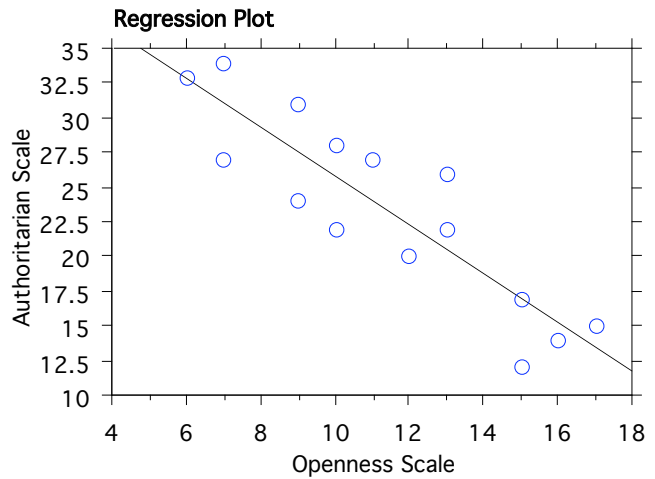
Effect: Caffeine

	Count	Mean	Std. Dev.	Std. Err.
Chocolate	8	397.750	14.140	4.999
Coffee	8	400.500	16.009	5.660
None	8	399.875	11.606	4.103

2. An interesting psychological trait is openness to experience: a willingness to try new things and to keep an open mind (McCrae, 1996). Another often researched trait is authoritarianism: a general belief that society is better off with strongly enforced laws and punitive parents and bosses to keep people in line. To determine if the two traits are related, a randomly selected group of students was given both scales. Interpret the results of the study seen below as completely as you can. If a person had an Openness to Experience Scale score of 6, what would be your best prediction of that person's Authoritarianism Scale score? What about an Openness to Experience score of 15? What proportion of the variability in Authoritarianism Scale scores is shared with the Openness to Experience Scale? [10 pts.]

Regression Summary
Authoritarian Scale vs. Openness Scale

Count	15
Num. Missing	0
R	.885
R Squared	.782
Adjusted R Squared	.766
RMS Residual	3.328



ANOVA Table
Authoritarian Scale vs. Openness Scale

	DF	Sum of Squares	Mean Square	F-Value	P-Value
Regression	1	517.722	517.722	46.735	<.0001
Residual	13	144.012	11.078		
Total	14	661.733			

Regression Coefficients
Authoritarian Scale vs. Openness Scale

	Coefficient	Std. Error	Std. Coeff.	t-Value	P-Value
Intercept	43.402	3.040	43.402	14.277	<.0001
Openness Scale	-1.759	.257	-.885	-6.836	<.0001

3. Drs. Frank Lee and Mai Deere were interested in the impact of time on the nature of romantic relationships (i.e., does familiarity really breed contempt?). To investigate their hypothesis, they recruited 50 people, 10 who had been in a relationship for 6 months, 10 in a relationship for 12 months, 10 in a relationship for 24 months, 10 in a relationship for 48 months, and 10 in a relationship for 120 months. Each participant was asked to rate the quality of his or her relationship on a scale of 1 to 10 (1 = poor and 10 = great). Complete the source table below and interpret the results of this study as completely as you can. [15 pts]

ANOVA Table for Quality of Rel

	DF	Sum of Squares	Mean Square	F-Value	P-Value	Lambda	Power
Length of Rel				25.0	<.0001	100.251	1.000
Residual			.83				

Means Table for Quality of Rel

Effect: Length of Rel

	Count	Mean	Std. Dev.	Std. Err.
006 mos.	10	8.900	.994	.314
012 mos.	10	9.000	.816	.258
024 mos.	10	7.200	.789	.249
048 mos.	10	5.600	1.075	.340
120 mos.	10	8.500	.850	.269

4. Drs. Dewey, Screwup, & Howe are industrial/organizational psychologists who were interested in the impact of noise levels in the workplace on the productivity of workers. To assess the effect of noise, they went to an automobile factory, where they could study 10 workers under each of 3 different noise levels (Low, Moderate, High). Their DV was level of productivity (1 = Low to 15 = High). Complete the source table below, then interpret the results of this study as completely as you can. [15 pts.]

ANOVA Table for Noise Level

	DF	Sum of Squares	Mean Square	F-Value	P-Value	Lambda	Power
Subject			45.0				
Category for Noise Level				3.7	.0436	7.494	.604
Category for Noise Level * Subject			11.2				

Means Table for Noise Level

Effect: Category for Noise Level

	Count	Mean	Std. Dev.	Std. Err.
Low Noise	10	10.900	5.384	1.703
Mod Noise	10	9.700	4.877	1.542
High Noise	10	6.900	3.843	1.215

5. Distinguish between the terms *internal validity* and *external validity*. Are they completely independent? (Could you have one without the other?) Which is more important and why? Briefly describe the Higgins & Marlatt (drinking and tension reduction) *or* the Hecht (dark adaptation) study and articulate the external validity problems. Then tell me why you don't think (or Mook didn't think) that those concerns are sufficiently troublesome that they would negate the value of the study. [10 pts]

6. You would typically want to use a repeated measures design rather than an independent groups design because it is more powerful and more efficient. First, illustrate the source of power that one typically finds in a repeated measures design, including a brief illustration of circumstances in which the repeated measures design would not be more powerful. Next, illustrate why the repeated measures design is more efficient. Then briefly articulate the reasons that would lead you to use an independent groups design rather than a repeated measures design. (Examples will help your answers here.) [10 pts.]