

OK, take a deep breath. CALM. Read each question carefully and answer it completely. Think of a point as a minute, so a 10-point question should take you about 10 minutes. Don't spend a lot more time than that on a 10-point question or you won't finish the exam. Keep your eyes focused on your own exam, adhering to the Skidmore Honor Code. You don't have to answer questions in complete sentences (or quality prose) — but you do have to answer questions clearly and completely. Good Luck!

1. Define both internal and external validity. Which type of validity is more important? Why? Using the Higgins and Marlatt study (drinking alcohol as a means of reducing tension) *and* the Argyle study (glasses and intelligence), tell me what Mook has to say about the importance of external validity. [10 pts]

2. Dr. Juan Moore decided to extend some of Darley and Latané's results by replicating their original experiment on bystander intervention with the addition of a couple of conditions. As you might remember, the original experiment involved 3 conditions (Group Size 2, Group Size 3, and Group Size 6). Dr. Moore decides to include Group Size 4 and Group Size 5 to see if he can determine the trend of delay in helping behavior. He decides to use 6 participants in each of his 5 conditions. Unlike the original experiment, Moore uses response time in *minutes* as his DV. Other than the additional conditions, all else remains the same (communication study in cubicles with different numbers of "participants," talking over telephone, "victim" sounds like he's having a seizure, measure how long it takes real participant to go to help the "victim"). Some incomplete information from the replication conducted by Dr. Moore is seen below.

- a. Complete the source table and tell Dr. Moore what he can conclude on the basis of his experiment.
- b. Suppose that Dr. Moore tells you that he wants to make his experiment more powerful by conducting a repeated measures design. What are two things that you might tell him about using that procedure in his quest for power for this study. [20 pts]

ANOVA Table for Time to Respond

	DF	Sum of Squares	Mean Square	F-Value	P-Value	Lambda	Power
Group Size				100.0	<.0001	401.440	1.000
Residual		20.8					

Means Table for Time to Respond

Effect: Group Size

	Count	Mean	Std. Dev.	Std. Err.
2	6	1.667	.816	.333
3	6	3.500	1.049	.428
4	6	8.333	1.366	.558
5	6	9.667	.516	.211
6	6	9.667	.516	.211

3. Dr. Kip Werkin is an industrial/organizational psychologist who is interested in the impact of environmental factors (such as noise) on productivity. He has a group of workers experience each of a set of background noise levels (70 dB, 80 dB, 90 dB, and 100 dB) as they work on a project that involves creating delicate instruments. The dependent variable is the number of errors made in the construction of the pieces. Complete the source table and tell Dr. Werkin what he should conclude from this study. [10 pts]

ANOVA Table for SPL

	DF	Sum of Squares	Mean Square	F-Value	P-Value	Lambda	Power
Subject		4.0					
Category for SPL		13.9			<.0001	67.018	1.000
Category for SPL * Subject		5.6					

Means Table for SPL

Effect: Category for SPL

	Count	Mean	Std. Dev.	Std. Err.
SPL 70 dB	10	.200	.422	.133
SPL 80 dB	10	.200	.422	.133
SPL 90 dB	10	1.000	.667	.211
SPL 100 dB	10	1.600	.516	.163

3a. If the *same* data were analyzed with an independent groups design, what would the source table look like? Under which conditions would a repeated measures analysis of a data set not lead to a larger F-ratio than an independent groups analysis? [5 pts]

Source	df	SS	MS	F
Treatment				
Error				
Total				

4. Dr. Bing Bada is convinced that sleep deprivation influences aggression. To test this assumption, volunteer participants are randomly assigned to sleep-deprivation periods of 0, 24, 28, or 72 hours and subsequently tested for aggressive behavior in a controlled social situation. The dependent variable (aggression) is operationally defined as the number of times the participant hits or curses at a confederate who attempts to annoy the participant. Complete the StatView output below and then tell Dr. Bada what to do next. [10 pts]

ANOVA Table for Agg Act

	DF	Sum of Squares	Mean Square	F-Value	P-Value	Lambda	Power
Sleep Depriv			.09		.8509	.792	.095
Residual							

Means Table for Agg Act

Effect: Sleep Depriv

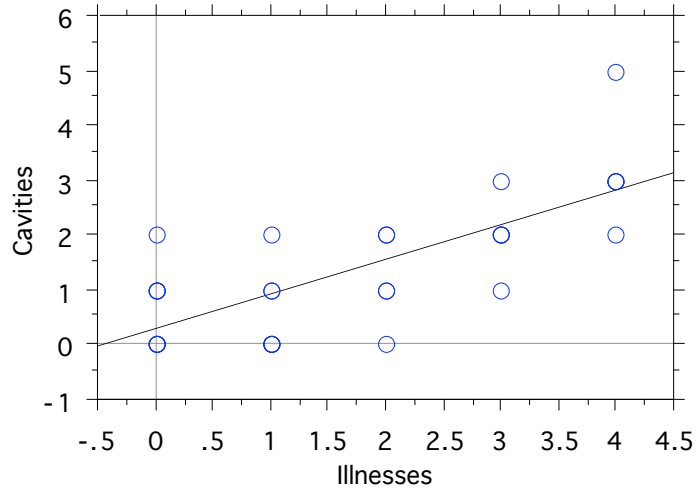
	Count	Mean	Std. Dev.	Std. Err.
0	10	.200	.422	.133
24	10	.300	.483	.153
28	10	.400	.699	.221
72	10	.400	.699	.221

5. Dr. Ginger Vitas is a health psychologist who is interested in the relationship between dental health (operationally defined as number of cavities found in an annual checkup) and general health (operationally defined as the number of illnesses experienced in the preceding year). Analyze the output seen below as completely as you can. If a person had 3 illnesses in a year, how many cavities would you predict? If a person had 6 illnesses, how many cavities would you predict? What proportion of variability do these two variables share? [10 pts]

**Regression Summary
Cavities vs. Illnesses**

Count	30
Num. Missing	0
R	.738
R Squared	.545
Adjusted R Squared	.529
RMS Residual	.855

Regression Plot



$Y = .276 + .629 * X; R^2 = .545$

**ANOVA Table
Cavities vs. Illnesses**

	DF	Sum of Squares	Mean Square	F-Value	P-Value
Regression	1	24.501	24.501	33.521	<.0001
Residual	28	20.466	.731		
Total	29	44.967			

**Regression Coefficients
Cavities vs. Illnesses**

	Coefficient	Std. Error	Std. Coeff.	t-Value	P-Value
Intercept	.276	.245	.276	1.128	.2691
Illnesses	.629	.109	.738	5.790	<.0001

5. Conceptually, how does the error term (MS_{Error}) differ between an independent groups and a repeated measures ANOVA? Why do the error terms need to differ? [5 pts]

6. What is a manipulation check? Give an example of a situation in which you would want to conduct a manipulation check, including an illustration of what it would look like. [5 pts]