

As always, the Skidmore Honor Code is in effect. At the end of the exam, I have a sheet on which you will attest to your adherence to the Honor Code. Read each question carefully and answer completely, showing all your work. Good Luck!

1. (From G&W) There is some evidence to suggest that high school students justify cheating in class on the basis of the teacher's skills or stated concern about cheating (Murdock, Miller, & Kohlhardt, 2004). Thus, students appear to rationalize their illicit behavior on perceptions of how their teachers view cheating. Poor teachers are thought not to know or care whether or not students cheat, so cheating in their classes is viewed as acceptable. Good teachers, on the other hand, do care and are alert to cheating, so students tend not to cheat in their classes. Below is a partially completed source table and summary statistics that are consistent with the findings of Murdock et al. The scores represent judgments of the acceptability of cheating for students in each sample. Complete the source table below and interpret the data as completely as you can. What is your best estimate of the population variance (σ^2)? [15 pts]

Descriptives

Acceptability of Cheating

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Good Teacher	20	2.1000	.85224	.19057	1.7011	2.4989	1.00	4.00
Poor Teacher	20	6.0500	1.27630	.28539	5.4527	6.6473	3.00	8.00
Total	40	4.0750	2.26894	.35875	3.3494	4.8006	1.00	8.00

ANOVA

Acceptability of Cheating

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups				132.4	.000
Within Groups					
Total					

2. (From G&W) In order to study cardiovascular responses to embarrassment, Harris (2001) had people sing the *Star Spangled Banner* in front of a video camera while she recorded their heart rate and blood pressure. She found that blood pressure increases steadily for two minutes before gradually returning to normal. What about the heart rate data? Below is a partially completed source table for these heart-rate data. Complete the table and analyze/interpret the results as completely as possible. Is the pattern for heart rate similar to that for blood pressure? [15 pts]

Descriptive Statistics

	Mean	Std. Deviation	N
Baseline Heart Rate	76.9167	1.72986	12
Heart Rate at 1 Min	89.2500	1.86474	12
Heart Rate at 2 Min	78.0833	1.78164	12

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power ^a
Time				333.800	.000	.968	667.600	1.000
					.000	.968	655.253	1.000
					.000	.968	667.600	1.000
					.000	.968	333.800	1.000
Error(Time)			1.667					

a. Computed using alpha = .05

Even though this is a repeated measures design, no counterbalancing is possible. Briefly explain why not.

3. As you know, when designing a repeated measures experiment, or an experiment with a repeated measures factor, one must counterbalance. Why? In other words, if one did not counterbalance, why would the experiment be confounded? Be *very* explicit! An example might help. [5 pts.]

4. Briefly define Type I Error, Type II Error, and power. Then, tell me at least three ways you can to increase power. [5 pts]

5. Two researchers were interested in studying the effects of reward magnitude on performance. Both researchers used introductory psychology students as participants, the same total number of participants (21), the same type of reward and reward magnitudes (\$1, \$5, \$20), the same apparatus, the same task, and the same performance measure (DV). One researcher used an independent groups design and, on the basis of the results, cannot reject the null hypothesis (that reward has no effect on performance). The other researcher used a repeated measures design and found a statistically significant effect of reward magnitude — larger rewards lead to better performance. Assume that neither study has a major flaw (e.g., repeated measures design is properly counterbalanced, random assignment to conditions). There are two fundamental reasons why the two researchers might have reached different conclusions. One reason concerns the sensitivity of the test of the null hypothesis. The other reason concerns the nature of the participant’s experience in the two studies. Complete the source tables for the two experimenters seen below. Then provide a clear explanation of the two reasons for the different results that the two researchers obtained. [10 pts]

Independent Groups Design ($F_{crit} = 3.55$):

Source	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>
Treatment	28			
Error				
Total	100			

Repeated Measures Design ($F_{crit} = 3.23$):

Source	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>
Treatment	20			
Within				
Subject	100			
Error (Subj x Treat)				
Total	200			