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Exam 1

PS 306, Spring 2004

Read each question carefully and provide a clear and complete response, showing your work where appropriate. As always, the Skidmore Honor Code is in effect and you'll be asked to write out the honor code statement at the end of the exam. The point value for each question is intended as a cue to the amount of time that I think you should need to complete your answer to that question (1 pt = 1 minute). Good luck on the exam!

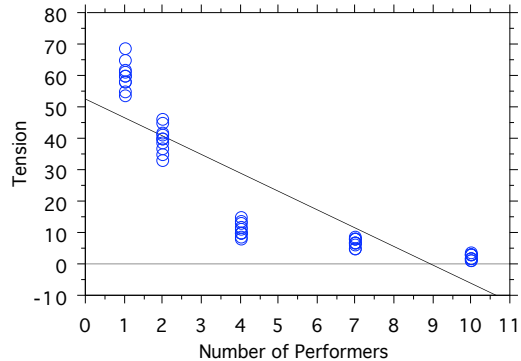
1. The repeated measure design has advantages over the independent groups design. First, articulate those advantages. (Examples would help.) In spite of those advantages, there are circumstances under which an independent groups design makes more sense. What are those circumstances? Finally, carryover effects and order effects are problematic for repeated measures designs, but not for independent groups designs. Articulate why that's the case and then discuss the antidote to carryover and order effects. [15 pts]

2. Jackson and Latané (1981) demonstrated that people are less nervous/tense when they are asked to perform with other people. Moreover, the tension decreased with increasing numbers of fellow performers. People were randomly assigned to perform alone, with one other person, or with 4, 7, or 10 other people and their subjective sense of tension was measured. Look at the analysis below and interpret the results as completely as you can. If a person performed with 4 other people, what would be your best estimate of the level of subjective tension that person would experience? If a person performed with 15 other people, what would be your best estimate of the level of subjective tension that person would experience? Given this design, would you be willing to say that changes in the number of other performers present caused changes in the level of tension experienced? [10 pts]

**Regression Summary**  
**Tension vs. Number of Performers**

Count	50
Num. Missing	0
R	.865
R Squared	.748
Adjusted R Squared	.742
RMS Residual	11.508

**Regression Plot**



**ANOVA Table**

**Tension vs. Number of Performers**

	DF	Sum of Squares	Mean Square	F-Value	P-Value
Regression	1	18835.919	18835.919	142.217	<.0001
Residual	48	6357.361	132.445		
Total	49	25193.280			

**Regression Coefficients**

**Tension vs. Number of Performers**

	Coefficient	Std. Error	Std. Coeff.	t-Value	P-Value
Intercept	52.261	2.867	52.261	18.231	<.0001
Number of Performers	-5.863	.492	-.865	-11.925	<.0001

3. As you know from the Mook article (or from other courses), Stanley Milgram's study of obedience to authority is not externally valid. The lack of external validity may or may not be a problem for the Milgram study. First, describe the ways in which Milgram's study lacks external validity, then discuss which problems strengthen the interpretation of Milgram's results and which problems weaken the interpretation of Milgram's results. Next, tell me which interpretation of Milgram's results makes the most sense to you, and why. Finally, take one more study from the Mook article and illustrate why it lacks external validity and yet might still make an important contribution to the discipline. [10 pts]

4. Professor Phyllis Tyne was interested in doing some research on visual search. She decides to have her participants search for a target geometric shape (e.g., square or circle) of a particular size presented among distractor geometric figures that are (1) equal in area to the target and similar in shape, (2) equal in area but dissimilar in shape, (3) unequal in area to the target but similar in shape, (4) unequal in area to the target and dissimilar in shape, and finally (5) no distractor stimuli at all (target only). The stimuli are to be presented on a computer display, with the participant pointing to the target on the screen (which the computer immediately detects and records the time in seconds to locate the target). The location of the target and distractors on the screen is determined randomly.

a. What would you conclude is the purpose of the final (control) condition -- Target only? [2 pts]

b. As Dr. Tyne's consultant, you are asked to describe for her how this experiment would be conducted as an independent groups design and as a repeated measures design. Briefly describe how the experiment would be conducted under both types of designs, being sure to indicate specifics of design differences between them. Present Dr. Tyne (and me) with the advantages and disadvantages of both designs for her specific research, and then make a recommendation as to which design you would use. [13 pts]

c. Suppose that the study was conducted as an independent groups design and the results were as seen below. Complete the source table and interpret the results as completely as you can. [10 pts]

**ANOVA Table for Time**

	DF	Sum of Squares	Mean Square	F-Value	P-Value	Lambda	Power
Condition				89.7	<.0001	358.968	1.000
Residual			.05				

**Means Table for Time**

Effect: Condition

	Count	Mean	Std. Dev.	Std. Err.
Area=,Shape=	10	1.710	.412	.130
Area=,Shape≠	10	1.400	.170	.054
Area≠,Shape=	10	.900	.200	.063
Area≠,Shape≠	10	.200	.105	.033
Target Only	10	.225	.089	.028

d. Suppose that the study had been conducted as a repeated measures design. (Note that the data are from different participants than those in the independent groups experiment!) Complete the source table below and interpret the results of the study as completely as you can. [10 pts]

**ANOVA Table for Distractor Types**

	DF	Sum of Squares	Mean Square	F-Value	P-Value	Lambda	Power
Subject		.638					
Category for Distractor Types		20.877			<.0001	2364.944	1.000
Category for Distractor Types * Subject			.009				

**Means Table for Distractor Types**

**Effect: Category for Distractor Types**

	Count	Mean	Std. Dev.	Std. Err.
Area=,Shape=	10	1.710	.166	.053
Area=,Shape≠	10	1.595	.130	.041
Area≠,Shape=	10	.810	.179	.057
Area≠,Shape≠	10	.250	.118	.037
Target Only	10	.180	.125	.040