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Exam 1

PS 306, Fall 2001

I decided to skip the Larsen cartoon this time, but you know the implication. That is, as always, the Skidmore Honor Code is in effect for this exam. Please keep your eyes focused on your own exam. Remember that I think of a point as a minute, so you should expect to spend about 10 minutes on a 10-point question. If you find yourself spending substantially more time on that question, you may run out of time on the exam. Read each question carefully and answer it completely. However, don't feel that you need to use perfect prose in your answers. I'm more interested in clarity than in complete sentences. Neatness is always appreciated. ☺ Good luck!

1. In the video at the beginning of the semester, two studies were described (the social psychological study on fear and affiliation and the perceptual development study on the effects of light deprivation). One of the studies would have benefited from a manipulation check and the other would not. Which one would, and why? Which one would not, and why not? Use either of these two studies to illustrate an operational definition by telling me how the researchers operationally defined one of their IV's or DV's. [5 pts]

2. In the Mook article, he argues that external validity is not always a critical concern of the experimenter. How does Mook use the Hecht study on dark adaptation, the Argyle study on eyeglasses and intelligence, *and* the Milgram study on obedience to support his argument. What kind of study *would* require an experimenter to worry about external validity? [10 pts]

3. Many studies indicate that attractiveness is a big plus <darn!>. Thus, physical attractiveness is positively correlated with all kinds of good attributes. Dr. Luke N. Goode was interested in the relationship between perceived physical attractiveness and perceived intelligence. To investigate this relationship, Dr. Goode had 100 female participants use an 11-point scale to rate the attractiveness of 20 female faces (1 = very unattractive, 11 = very attractive). The participants also rated the intelligence of the women using the regular IQ scale. Dr. Goode took the mean of the ratings of the 100 participants for each of the 20 faces and analyzed the data as seen below. Interpret the results as completely as you can. If a woman's face had been given a mean attractiveness rating of 8, what would you expect that women would estimate her IQ to be? Do you have any comments on the design or outcome of this study? [10 pts]

Regression Summary
Intelligence vs. Attractiveness

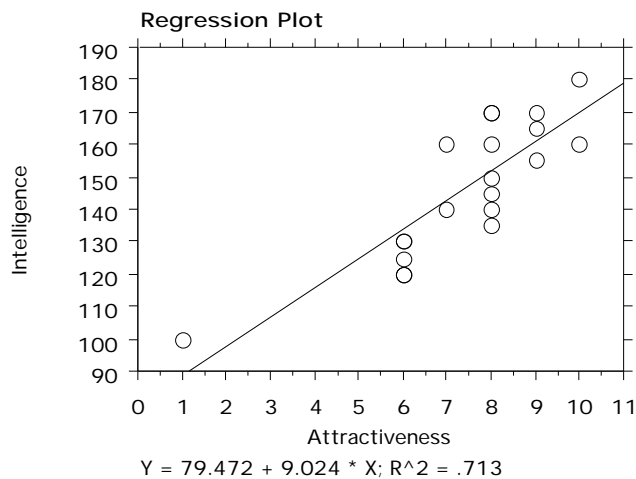
Count	20
Num. Missing	0
R	.844
R Squared	.713
Adjusted R Squared	.697
RMS Residual	11.673

ANOVA Table
Intelligence vs. Attractiveness

	DF	Sum of Squares	Mean Square	F-Value	P-Value
Regression	1	6091.243	6091.243	44.706	<.0001
Residual	18	2452.507	136.250		
Total	19	8543.750			

Regression Coefficients
Intelligence vs. Attractiveness

	Coefficient	Std. Error	Std. Coeff.	t-Value	P-Value
Intercept	79.472	10.323	79.472	7.699	<.0001
Attractiveness	9.024	1.350	.844	6.686	<.0001



4. What are the advantages of using a repeated measures (dependent groups) design compared to an independent groups design? Given those advantages, why would one ever use an independent groups design? [10 pts]

5. It is at least part of the folklore that repeated experience with the Graduate Record Examination (GRE) leads to better scores, even without any intervening study. We obtain ten participants and give them the GRE verbal exam every Saturday morning for three weeks. The data are as follows:

Participant	1st	2nd	3rd
1	550	575	580
2	440	440	470
3	610	630	610
4	650	670	670
5	400	460	450
6	700	680	710
7	490	510	515
8	580	550	590
9	550	590	600
10	600	610	630

Complete the source table below and interpret the data as completely as you can. Note that the nature of this design does not lend itself to counterbalancing of the time of the GRE, because the time is critical (first must be first, etc.). [For extra credit, can you think of how the design would likely involve the counterbalancing of some aspect of the study?] As you can see in the source table, the SS_{Subject} is quite large. Using the data above to make your point, tell me where the SS_{Subject} comes from. What kind of error might you be making in your decision about H_0 and what is its probability? [20 pts]

ANOVA Table for Week

	DF	Sum of Squares	Mean Square	F-Value	P-Value	Lambda	Power
Subject		195980.000					
Category for Week		3271.667			.0046	14.741	.904
Category for Week * Subject		3995.000					

Means Table for Week

Effect: Category for Week

	Count	Mean	Std. Dev.	Std. Err.
Week 1	10	557.000	92.622	29.290
Week 2	10	571.500	82.126	25.971
Week 3	10	582.500	83.041	26.260

6. A study has been replicated several times over several decades. In spite of presumed changes in awareness of Sexually Transmitted Diseases, the results come out in a remarkably similar fashion. In one condition of the study, a young woman goes up to a male college student and says, "I've been noticing you around campus for a few weeks and I'd really like to have sex with you. Would it be possible to make a date for tonight to have sex?" [The prototypical male response is, "Why wait until tonight?"] In the other condition of the study, a young man goes up to a female college student and says the same thing ("I've been noticing you..."). [The prototypical female response is not particularly encouraging. ☺] In no case are the people acquainted, so these requests come from perfect strangers.

Dr. Randi Mann is interested in conducting a variant of this study. She thinks that the nature of the request may be what's producing the extraordinarily different results. Thus, she decides to replicate the study, but have the request changed from sexual intercourse to accompanying the stranger to a concert. Thus, (on a night that the Dave Matthews Band was in town) the request might be, "My friend was supposed to join me at the Dave Matthews concert tonight, but she won't be able to come. She's already paid for the ticket, so if you came with me to the concert it wouldn't cost you anything. Would you join me?" The interactions are videotaped by a hidden camera and three raters independently judge the person's response on a scale of 1 (Definitely won't go) to 5 (Definitely will go). The score used for each interaction is the mean of the three rater's responses.

Complete the source table below and interpret the results as completely as you can. What might be some limitations of this study? [15 pts]

ANOVA Table for Response

	DF	Sum of Squares	Mean Square	F-Value	P-Value	Lambda	Power
Gender			42.0	47.3	<.0001	47.317	1.000
Residual							

Means Table for Response

Effect: Gender

	Count	Mean	Std. Dev.	Std. Err.
Female	20	3.850	.988	.221
Male	20	1.800	.894	.200

7. Power is a very important consideration in any experimental design. Describe at least three specific ways in which one might increase the power of a study. [5 pts]