ID# _____ Exam 2 PS 306, Spring 2001

As always, the Skidmore Honor Code is in effect, and as you leave the exam you will need to sign a form indicating that you have adhered to the code. Read each question carefully and answer it completely. Be sure to show your work so that I can be sure how you are computing your answers (and can then give you partial credit). Keep in mind that I think of a point as a minute, so be sure that you're not spending too much or too little time on an answer. If you spot a problem with a design, be sure to indicate that you have done so. Good luck!

1. A health educator suspects that the "days of discomfort" caused by common colds can be reduced by ingesting large doses of Vitamin C and visiting a sauna every day. Participants with new colds are randomly assigned to one of four different doses of Vitamin C (500, 1000, 1500, or 2000 milligrams) and to one of three different daily exposures to a sauna (0, .5, or 1 hour). The DV is the number of days of discomfort experienced by each of the participants. Complete the source table below and analyze and interpret the results of this study as completely as you can. Then tell me what your next step would be. [10 pts]

ANOVA Table for Days of Discomfort

	DF	Sum of Squares	Mean Square	F-Value	P-Value	Lambda	Power
Dose of C		4.983			.0713	7.475	.576
Sauna		1.200			.4133	1.800	.190
Dose of C * Sauna		3.067			.5998	4.600	.270
Residual		32.000					

Means Table for Days of Discomfort
Effect: Dose of C * Sauna

	Count	Mean	Std. Dev.	Std. Err.
1000 mg, .5 Hr	5	3.600	1.140	.510
1000 mg, 0 Hr	5	3.800	.837	.374
1000 mg, 1 Hr	5	3.600	1.140	.510
1500 mg, .5 Hr	5	3.800	.837	.374
1500 mg, 0 Hr	5	3.200	.837	.374
1500 mg, 1 Hr	5	4.200	.837	.374
2000 mg, .5 Hr	5	3.000	.707	.316
2000 mg, 0 Hr	5	3.600	.548	.245
2000 mg, 1 Hr	5	3.600	.548	.245
500 mg, .5 Hr	5	4.200	.837	.374
500 mg, 0 Hr	5	4.000	.707	.316
500 mg, 1 Hr	5	4.400	.548	.245

2. A researcher was interested in examining the role of gender in the context of bystander apathy. To that end, she randomly assigned male and female college students to observe a man attacking a woman and the woman yelling, "Stop, I don't know you!" The situation is established so that the participants don't realize that the attack is part of the study. The situation is manipulated so that there are 0, 5, or 15 other people present when the attack takes place. The DV is the time it takes a participant to intervene in the altercation (number of minutes). If the participant hasn't intervened within 10 minutes, that participant receives a score of 10. Complete the analysis below and interpret the results of this study as completely as you can. [20 pts]

ANOVA Table for Time to Intervene

	DF	Sum of Squares	Mean Square	F-Value	P-Value	Lambda	Power
Number of Bystanders		99.433			<.0001	106.536	1.000
Gender		160.067			<.0001	171.500	1.000
Number of Bystanders * Gender		90.033			<.0001	96.464	1.000
Residual		50.400					

Means Table for Time to Intervene
Effect: Number of Bystanders * Gender

	Count	Mean	Std. Dev.	Std. Err.
0, Female	10	9.400	1.075	.340
0, Male	10	3.100	1.197	.379
15, Female	10	9.500	.972	.307
15, Male	10	9.200	.789	.249
5, Female	10	9.900	.316	.100
5, Male	10	6.700	1.160	.367

3. Thinking that the type of situation may have influenced the results observed in the preceding study, the researcher changes the situation to another one typically used to study bystander apathy — smoke. In this study, people are in a room and then smoke begins to pour under the door of the room. Of course, when other people are present in the room, they are all confederates of the experimenter (except for the participant). The rest of the study remains essentially unchanged. Complete the analysis, interpret the results as completely as you can, and then try to interpret the results of the two studies together. [20 pts]

ANOVA Table for Time to Intervene

	DF	Sum of Squares	Mean Square	F-Value	P-Value	Lambda	Power
Number of Bystanders				140.866	<.0001	281.732	1.000
Gender				.080	.7779	.080	.059
Number of Bystanders * Gender				1.286	.2848	2.571	.257
Residual			.830				

Means Table for Time to Intervene
Effect: Number of Bystanders * Gender

	Count	Mean	Std. Dev.	Std. Err.
0, Female	10	2.100	.738	.233
0, Male	10	1.900	.738	.233
15, Female	10	6.900	1.197	.379
15, Male	10	6.700	.675	.213
5, Female	10	4.600	1.174	.371
5, Male	10	5.200	.789	.249

4. Suppose that you are interested in studying the effects of a new drug on depression. You decide to conduct a single-factor independent groups experiment with three levels: Placebo, Old Best Drug, and New Drug. You select an equal number of men and women and randomly assign them to the three groups such that there is an equal number of men and women in each group. If you think about it, of course, you could analyze your data with a single-factor ANOVA *or* with a two-factor ANOVA that introduces gender as a variable. Under which circumstances would there be an advantage to analyzing the data with a two-factor ANOVA? When would you be better off sticking to a single-factor ANOVA? Be as explicit as you can in your answer. It may help your thinking if you examine the impact on df of the two approaches. [10 pts]

5. We had discussed the sort of research that Rozin does on disgust. Suppose that you tested four different age groups (4-, 6-, and 8-year olds as well as adults) to see how long it would take them to eat chocolate when it was shaped like a bar or shaped like dog feces. You used a 4x2 independent groups design with n = 25. Suppose that the results turned out as seen in the graph below. Treating any differences as significant, what effects would you expect to find in the ANOVA for these data? What df would you find in the source table? How would you interpret the outcome? [10 pts]