ID# _____ Final Exam PS306, Spring 1997

First of all, please be sure to use your real student ID #, not your social security number, phone number, or some other made up number. I have your ID# on the class roster.

Thanks for making my semester a pleasant one. I know that this is a difficult, time-consuming course, so I really appreciate the enthusiasm and good grace with which you have approached the course all semester long. I trust that you leave for the summer knowing quite a bit about experimental design and analysis. Well, hmmm, I guess I don't have to leave it to trust. Here's an opportunity to strut your stuff. Impress the hell out of me! Read each question carefully and answer it completely. I decided to give you a break and make up an exam that shouldn't take you 3 hours to complete.

Have a peace-filled and relaxing summer.

1. Suppose that a friend is proposing that psychology is rife with examples of unethical research. She has taken only an introductory psychology course, but she knows about the Milgram study and a couple of other studies that she characterizes as unethical. Although you may well be able to make an even stronger case than she can, based on the information you've acquired in this course, what I'd like you to do is present an argument that psychology has policed itself by developing ethical guidelines. Describe those guidelines (as they apply to both human and animal research) and, using appropriate examples from your readings, situations that typically arise for which the guidelines have proscriptions. [15 pts]

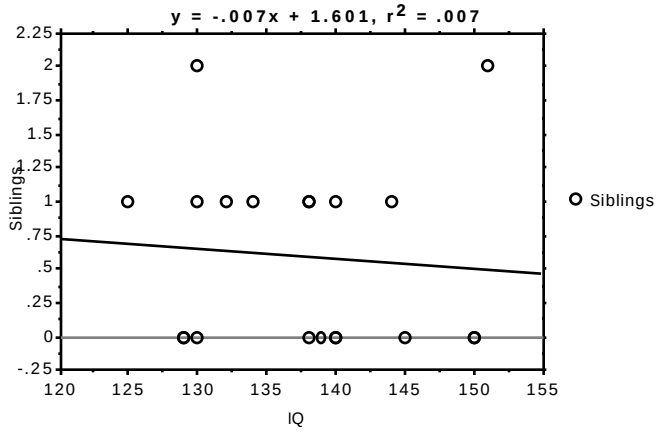
2. Several researchers have argued that intelligence is greater when a person was raised in a family in which that person was an only child. In order to provide more data to assess this relationship, Dr. Juan Derr gained access to a number of people who were members of MENSA (a brainy group) and analyzed the relationship between their IQs and the number of siblings (0 means that the person was an only child). Interpret the output you see below and comment on the outcome of this study. [10 pts]

Simple Regression X_1: IQ Y_1: Siblings

Count:	R:	R-squared:	Adj. R-squared:	RMS Residual:
20	.082	.007	-.048	.697

Analysis of Variance Table

Source	DF:	Sum Squares:	Mean Square:	F-test:
REGRESSION	1	.06	.06	.123
RESIDUAL	18	8.74	.486	p = .73
TOTAL	19	8.8		



3. Several researchers have investigated the encoding specificity effect. The general finding is that people remember best when the testing situation is as similar as possible to the learning situation. (Thus, because the typical testing situation is a relatively quiet classroom, you'd best study/learn under conditions as similar to the testing situation as possible.) Dr. Ivana B. Loude was interested in further investigating this effect, to see the extent to which the learning and testing situations had to be similar. She decided to focus on the noise level of the room. Thus, she had 4 different noise levels (70 dB, 80 dB, 90 dB, and 100 dB) present while people watched a screen displaying pictures of 50 common objects (the acquisition phase of the experiment). After a brief distractor task, Dr. Loude tested some of the people from each noise level at one of 3 noise levels (10 dB less noise than acquisition, the same noise level, or 10 dB more noise than at acquistion). Thus, for instance, for the 70 dB acquisition group, one-third would be tested at 60 dB (-10 dB), one-third would be tested at 70 dB (same), and one-third would be tested at 80 dB (+10 dB). The dependent variable was the number of objects correctly recalled. Thus, this experiment is a 4x3 independent groups design. Below are the analyses of this experiment. The four acquisition noise levels are (1 = 70 dB, 2 = 80 dB, 3 = 90 dB, 4 = 100 dB). The three test noise levels are (1 = -10 dB from acquisition, 2 = Same as acquisition, 3 = +10 dB from acquisition). Interpret the results as completely as you can. Dr. Loude is interested in making her experiment more powerful by making the test noise factor repeated. What do you think about this proposal? [30 pts]

Source:	df:	Sum of Squares:	Mean Square:	F-test:	P value:
Acquisition Noise (A)	3	2032.633	677.544	69.242	.0001
Test Noise (B)	2	1684.85	842.425	86.092	.0001
AB	6	642.217	107.036	10.939	.0001
Error	108	1056.8	9.785		

	Test Noise:	level 1	level 2	level 3	Totals:
Acquisition Noise	level 1	10 25.7	10 31.3	10 24.1	30 27.033
	level 2	10 31.6	10 37.3	10 25.8	30 31.567
	level 3	10 31.7	10 29.7	10 23.1	30 28.167
	level 4	10 26.8	10 21	10 12.9	30 20.233
Totals:		40 28.95	40 29.825	40 21.475	120 26.75

4. Suppose that you decide to take your proposal from this course and use it as the basis for a senior thesis in psychology. You find a thesis advisor and he works with you to make the project more manageable and more theoretically interesting. You complete the thesis and graduate. Several years later, your thesis advisor takes three additional studies and combines them with your thesis work, writing a paper that he submits to a journal with your contribution acknowledged with a footnote acknowledgement. Would you consider your thesis advisor's acknowledgement ethical? Use your readings to argue for your position. [10 pts]

5. Dr. Justin Thyme was sure that people remembered information from some sources better than from other sources. To that end, he had people come into the laboratory and read excerpts from each of 4 different sources about human behavior (*Psychological Bulletin*, *Psychology Today*, *Child Development*, and *People* magazine). Because he was concerned about order effects in this repeated measures experiment, Dr. Thyme decided to come up with a counterbalancing scheme for the order in which participants would read the 4 excerpts. The dependent variable was the percentage of information remembered from the excerpt. Complete the source table, then analyze and interpret the results of this study as completely as you can — including any comments that you think you should direct toward Dr. Thyme. [20 pts]

Source:	df:	Sum of Squares:	Mean Square:	F-test:	P value:
Between subjects		622			.9635
Within subjects					
treatments		5167			.0001
residual		1407			
Total		7197			

Group:	Count:	Mean:	Std. Dev.:	Std. Error:
Psych Bull	10	45	9.718	3.073
Psych Today	10	63	6.749	2.134
Child Dev	10	48	6.325	2
People	10	73	6.749	2.134

6. How many people would you need to run through a 5 x 7 mixed design experiment, with the first factor (5 levels) between (independent) groups and the second factor (7 levels) within groups (repeated measures)? [3 pts]

7. Define power. Tell me why a repeated measures design is more powerful than an independent groups design. Describe the circumstances under which a repeated measures analysis will not produce a larger F-ratio than an independent groups analysis. Finally, tell me what impact counterbalancing has on power. [15 pts]