ID# _____ Exam 2 PS217, Fall 1999

OK, you know the drill by now. Read each question carefully. Answer each question completely. Because of time constraints, you shouldn't linger too long over any one question. I think of a point as a minute, so you should expect to spend about 10 minutes on a 10-point question. Good luck on the exam and have a good weekend.

1. Dewey, Fowlup, and Howe (1999) reported the following results from their experiment investigating the role of sleep deprivation on performance:

ANOVA Table for Performance

	DF	Sum of Squares	Mean Square	F-Value	P-Value	Lambda	Power
Sleep Deprivation	2	2.467	1.233	2.562	.0958	5.123	.457
Residual	27	13.000	.481				

First of all, tell me everything you can about their experiment (what kind of design it was, how many treatment conditions, how many participants). Then, tell me how they should interpret their results and what (very specifically) they should do next. [10 pts]

2. First-born children tend to develop language skills faster than their younger siblings. One possible explanation for the phenomenon is that first-borns have undivided attention from their parents. If this explanation is correct, then it is also reasonable that twins should show slower language development than single children and triplets should be even slower. Davis (1937) conducted research to test this hypothesis. The dependent variable is a measure of language skill at are three for each child (higher numbers indicate better language skills). Analyze these data as completely as you can. [25 pts]

	Single Child	Twin	Triplet
	8	4	4
	7	6	4
	10	7	7
	6	4	2
	9	9	3
T (ΣX)	40	30	20
ΣX^2	330	198	94
SS	10	18	14
X	8	6	4

3. Dr. Beau Peep believes that pupil size increases during emotional arousal. He was interested in testing if the increase in pupil size was a function of the type of arousal (pleasant vs. aversive). A random sample of 5 participants is selected for the study. Each participant views all three stimuli: neutral, pleasant, and aversive photographs. The neutral photograph portrays a plain brick building. The pleasant photograph consists of a young man and woman sharing a large ice cream cone. Finally, the aversive stimulus is a graphic photograph of an automobile accident. Upon viewing each photograph, the pupil size is measured in millimeters. An incomplete source table resulting from analysis of these data is seen below. Complete the source table and analyze the data as completely as possible. [15 pts]

ANOVA Table for Stimulus

	DF	Sum of Squares	Mean Square	F-Value	P-Value	Lambda	Power
Subject		5.					
Category for Stimulus		36.			.0026	27.443	.978
Category for Stimulus * Subject		10.5					

Means Table for Stimulus
Effect: Category for Stimulus

	Count	Mean	Std. Dev.	Std. Err.
Neutral	5	2.600	.548	.245
Pleasant	5	6.400	1.517	.678
Aversive	5	4.400	1.140	.510