10. The extent to which a person's attitude can be changed depends in part on how big a change you are trying to produce. In a classic study on persuasion, Aronson, Turner, and Carlsmith (1985) obtained three groups of subjects. One group listened to a persuasive message that differed only slightly from the subjects' original attitudes. For the second group, there was a moderate discrepancy between the message and the original attitudes. For the third group, there was a large discrepancy between the message and the original attitudes. For each subject, the amount of attitude change was measured. Hypothetical data, similar to the experimental results, are as follows:

SIZE OF DISCREPANCY		
SMALL	MODERATE	LARGE
1	3	0
0	4	2
0	6	0
2	3	4
3	5	0
0	3	0
$T = 6$	$T = 24$	$T = 6$
$SS = 8$	$SS = 8$	$SS = \cancel{8}\ 14$

$G = 36$
$\Sigma X^2 = 138$

a. Use an analysis of variance with $\alpha = .01$ to determine whether the amount of discrepancy between the original attitude and the persuasive argument has a significant effect on the amount of attitude change.
b. For these data, describe how the effectiveness of a persuasive argument is related to the discrepancy between the argument and a person's original attitude.

16. A common science-fair project involves testing the effects of music on the growth of plants. For one of these projects, a sample of 24 newly sprouted bean plants is obtained. These plants are randomly assigned to four treatments, with $n = 6$ in each group. The four conditions are rock, heavy metal, country, and classical music. The dependent variable is the height of each plant after two weeks. The data from this experiment were examined using an ANOVA, and the results are summarized in the following table. Fill in all missing values.

SOURCE	SS	df	MS	
Between treatments	___	___	10	$F = $ ___
Within treatments	40	___	___	
Total	___	___		

19. The following data represent the results of an independent-measures experiment comparing two treatment conditions:

TREATMENT 1	TREATMENT 2
1	5
2	4
2	3
4	2
1	6

a. Use an analysis of variance with $\alpha = .05$ to test for a significant difference between the two treatment means.
b. Use an independent-measures t statistic to test for a significant difference. (Remember, you should find the basic relationship $F = t^2$.)

21. 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 that triplets should be even slower. Davis (1937) found exactly this result. The following hypothetical data demonstrate the relationship. The dependent variable is a measure of language skill at age three for each child. Do the data indicate any significant differences? Test with $\alpha = .05$.

SINGLE CHILD	TWIN	TRIPLET
8	4	4
7	6	4
10	7	7
6	4	2
9	9	3

22. Betz and Thomas (1979) have reported a distinct connection between personality and health. They identified three personality types who differ in their susceptibility to serious, stress-related illness (heart attack, high blood pressure, etc.). The three personality types are alphas, who are cautious and steady; betas, who are carefree and outgoing; and gammas, who tend toward extremes of behavior such as being overly cautious or very careless. Sample data representing general health scores for each of these three groups are as follows. A low score indicates poor health.

ALPHAS		BETAS		GAMMAS	
43	44	41	52	36	29
41	56	40	57	38	36
49	42	36	48	45	42
52	53	51	55	25	40
41	21	52	39	41	36

a. Compute the mean for each personality type. Do these data indicate a significant difference among the three types? Test with $\alpha = .05$.

b. Use the Scheffé test to determine which groups are different. Explain what happened in this study.