**Unit 6.5 Linear Combination of Group Means**

Compare the means of the control group to the combined means of the crutches and wheelchair group.

Data

Condition Control Amputee Crutches Hearing Wheelchair

X 4.9 4.286 5.9214 4.05 5.3429

1. Derive Coefficients
2. Control = -2
3. Crutches = 1
4. Wheelchair = 1
5. Get Value of Contrast

g = -2(4.9) + 5.9214 + 5.3429 = 1.4643

Null hypothesis: population contrast is zero

Alternative hypothesis: population contrast is not zero

N= 14

DF = 65

1. Calculate SE of g

SE(g) = 1.6329 \* sqrt(-22/14 + 12/14 + 12/14)

= 1.069

1. Confidence Interval

T-statistic with 65 DF = 1.9971

1.4643 +/- (1.9971)(1.069)

95% CI = (-0.6706, 3.5992)

1. Calculate t-stat

T = g – 0 / SE

1.4643 / 1.069 = 0.9354

1. P-value

-0.935 0.935

SAS Code to get p-value based on 65 DF and absolute value of t-stat

Data get\_pvalue;

P\_value = (1-probt(abs(0.935),65))\*2;

Run;

p-value = ~0.35

Since the p-value 0.35 >0.05, we fail to reject the null hypothesis that the population contrast is zero. There is not sufficient evidence to suggest that the ratings in the combined ratings are different from the ratings in the control group.