(Continued)

Student_Group

Estimates

Measure: MEASURE_1

Student_Group	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
1	11.696	.873	9.975	13.418
2	17.412	1.376	14.699	20.124
3	13.392	1.128	11.168	15.616
4	19.147	1.556	16.080	22.214

Pairwise Comparisons

Measure: MEASURE_1

(I) Student_Group	(J) Student_Group	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b]	
					Lower Bound	Upper Bound
1	2	-5.716*	1.516	.001	-9.755	-1.676
	3	-1.696	1.344	1.000	-5.277	1.885
	4	-7.451*	1.779	.000	-12.191	-2.711
2	1	5.716*	1.516	.001	1.676	9.755
	3	4.020	1.806	.163	-.793	8.832
	4	-1.735	1.901	1.000	-6.800	3.329
3	1	1.696	1.344	1.000	-1.885	5.277
	2	-4.020	1.806	.163	-8.832	.793
	4	-5.755*	1.965	.023	-10.991	-.519
4	1	7.451*	1.779	.000	2.711	12.191
	2	1.735	1.901	1.000	-3.329	6.800
	3	5.755*	1.965	.023	.519	10.991

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Questions:

1. What is the hypothesis being tested?
2. What is the mean for each of the four groups?
3. What is the standard deviation for each group?
4. What are the two sources of variability in these data?
5. What is the *F* ratio test statistic?
6. Plug in the numbers needed to obtain the *F* ratio test statistic.
7. What is the effect size? Interpret what this number means.
8. According to Appendix C, what is the approximate critical value that was used to see whether we reject or do not reject the null hypothesis?
9. What is the precise probability that the differences among our group means were due to random variation?
10. Did the researchers reject or not reject the null hypothesis?
11. Which means, if any, are statistically different from one another?
12. Given your answer to questions 10 and 11, what does that mean in plain English?
13. Write the result in APA style.