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AY2022-23 S1-AS1&AS2 | BSPSYCH 112L: PSYCHOLOGICAL STATISTICS (UV MAIN: PSYCH1-A2)

Analysis of Variance (ANOVA)

Two-way ANOVA Laboratory Activity

Submissions

Here are your latest answers:

Answers waiting to be graded

Question 1

A statistics professor is interested to test whether a student's GPA in a statistics class is influenced by their gender and membership in either a sorority or fraternity group. A two-way ANOVA was conducted and below are the results.

Between-Subjects Factors

		Value Label	N
Gender	1	Male	9
	2	Female	8
FratSoroMembership	1	In a frat/sorority	8
	2	Not in a frat/sorority	9

Descriptive Statistics

Dependent Variable: Student GPA

Gender	FratSoroMembership	Mean	Std. Deviation	N
Male	In a frat/sorority	2.7250	.27538	4
	Not in a frat/sorority	3.2000	.33912	5
	Total	2.9889	.38550	9
Female	In a frat/sorority	3.0500	.12910	4
	Not in a frat/sorority	3.1500	.17321	4
	Total	3.1000	.15119	8
Total	In a frat/sorority	2.8875	.26424	8
	Not in a frat/sorority	3.1778	.26352	9
	Total	3.0412	.29593	17

Tests of Between-Subjects Effects

Dependent Variable: Student GPA

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	.574[a]	3	.191	3.004	.069	.409
Intercept	154.753	1	154.753	2431.170	.000	.995
gender	.080	1	.080	1.251	.284	.088
frat_soro	.348	1	.348	5.467	.036	.296
gender * frat_soro	.148	1	.148	2.325	.151	.152
Error	.828	13	.064			
Total	158.630	17				
Corrected Total	1.401	16				

a. R Squared = .409 (Adjusted R Squared = .273)

What are your Independent Variables? _____ _____

What is your dependent variable? _____

Response: Gender

Response: FratSoroMembership

Response: Student GPA

Correct answer: Gender, membership in either a sorority or fraternity group, Student's GPA in statistics class

Score: 1 out of 3

Question 2

State your hypotheses for the main effects and interaction effect.

Response: [uploaded as attachment]

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Score: not graded yet

Question 3

Provide the Mean and Standard Deviation of the following (3 decimal places):

1. Male*In a frat/sorority : M= _____ , SD= _____
2. Male*Not in a frat/sorority : M= _____ , SD= _____
3. Female*In a frat/sorority : M= _____ , SD= _____
4. Female*Not in a frat/sorority : M= _____ , SD= _____

Response: 2.7250

Response: .27538

Response: 3.2000

Response: .33912

Response: 3.0500

Response: .12910

Response: 3.1500

Response: .17321

Correct answer: 2.725, .275, 3.200, .339, 3.050, .129, 3.150, .173

Score: 0 out of 8 No

Question 4

Provide the F statistic and p value of the main effects and interaction effect

Gender $F(1,13)=$ _____ , p = _____

FratSoro Membership $F(1,13) =$ _____ , p = _____

Gender*Frat_Soro $F(1,13)=$ _____ , p= _____

Response: 1.251

Response: .284

Response: 5.467

Response: .036

Response: 2.325

Response: .151

Correct answer: 1.251, .284, 5.467, .036, 2.325, .151

Score: 6 out of 6 Yes

Question 5

Is there a statistically significant main effect? Briefly explain your answer.

Response: There is a statistically significant main effect on both the gender and fraternity/sorority membership. Gender is F(1,13),p=.284 and FratSoroMembership is F(1,13),p=0.36

Score: not graded yet

Question 6

Is there a statistically significant interaction effect? Briefly explain your answer.

Response: There is no statistically significant interaction at the p=.151

Score: not graded yet

Question 7

Report the results following the standard of reporting in APA format.

Response: A two way ANOVA was conducted to test whether a student's GPA is influenced by their gender and membership in either sorority or fraternity group. There is no statistically significant interaction between gender and the membership of either fraternity or sorority group on the student GPA, F(1,13) = 2.325, p=.151

Score: not graded yet