Clinical Epidemiology

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QUIZ 28

Ronald Fisher developed the ANOVA. What's a *really* brief summary?

You want to know what brand of chips people like the most: Ruffles, Pringles, Doritos, or Lays? You have 50 people try all four chip brands and rank them on a satisfaction scale of 0-100. What type of analysis would you use to evaluate your data?

You want to see if healthy, recreationally active adults improve their bench press with creatine administration. You test everyone at baseline, 6-weeks, and 12-weeks. *For the entire duration of the study*, one group of subjects receives creatine, and the other group receives the placebo. Then you test if there's a difference in improvement at 6 weeks and 12 weeks. What analysis would you use?

You want to see if healthy, recreationally active adults improve their bench press with creatine administration. You test everyone at baseline, 6-weeks, and 12-weeks. For the first 6 weeks, half the subjects receive creatine and the other half receive a placebo. Then you do your 6-week test. *At this point, you switch what people are taking* (the people who were taking the creatine during the first phase get the placebo during the second phase, and vice versa). What analysis would you use to estimate the effect of creatine on strength?

In an ANOVA, what kind of variable (categorical or continuous) is the dependent variable? What about the independent variable (or variables)?

There is a part of the slideshow with this header: Repeated Measures ANOVA (One Way): Interpreting Outputs – Here are the outputs shown in those slides:

Interpret these outputs:

Descriptive Statistics

	Mean	Std. Deviation	N
BASELINE_HDL	48.21	7.465	14
MID_HDL	50.50	6.607	14
POST_HDL	52.71	5.045	14

Mauchly's Test of Sphericity[a]

Measure: HDL

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b]		
					Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Time	.379	11.634	2	.003	.617	.649	.500

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept
Within Subjects Design: Time

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: HDL

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Time	Sphericity Assumed	141.762	2	70.881	30.594	.000	.702
	Greenhouse-Geisser	141.762	1.234	114.880	30.594	.000	.702
	Huynh-Feldt	141.762	1.298	109.189	30.594	.000	.702
	Lower-bound	141.762	1.000	141.762	30.594	.000	.702
Error(Time)	Sphericity Assumed	60.238	26	2.317			
	Greenhouse-Geisser	60.238	16.042	3.755			
	Huynh-Feldt	60.238	16.878	3.569			
	Lower-bound	60.238	13.000	4.634			

Pairwise Comparisons

Measure: HDL

(I) Time	(J) Time	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b]	
					Lower Bound	Upper Bound
1	2	-2.286*	.425	.000	-3.452	-1.119
	3	-4.500*	.769	.000	-6.610	-2.390
2	1	2.286*	.425	.000	1.119	3.452
	3	-2.214*	.471	.001	-3.507	-.921
3	1	4.500*	.769	.000	2.390	6.610
	2	2.214*	.471	.001	.921	3.507

Based on estimated marginal means

*. The mean difference is significant at the

b. Adjustment for multiple comparisons: Bonferroni.